

Heat Treat Today

Technology, Tips & News for Manufacturers with In-House Heat Treat

The People of Heat Treat

Meet the 40 Under 40 Class of 2023 and Other Heat Treaters from Around North America



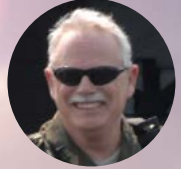
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*The Lord's loving kindness indeed never cease,
For His compassions never fail.
They are new every morning;
Great is Your faithfulness.
Holy Bible, Lamentations 3:22-23*

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Two-time Pro Bowl star quarterback and entrepreneur inspires the rising young leaders of today.

By Joe Theismann, Entrepreneur, Former Washington Redskins Quarterback, Football Analyst



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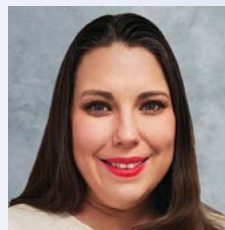
By Heat Treat Today Editorial Team



P24 40 Under 40 Class of 2022 Alums Take the Stage

The Class of 2022 has been busy; read about their one-year anniversary accomplishments.

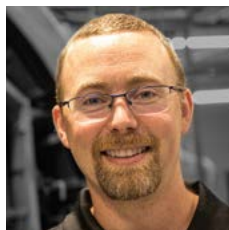
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Check out the rising generation of leaders and the roles they play to move the industry forward.

By Heat Treat Today Editorial Team



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Preview profiles of **Heat Treat Veterans** from the archive.

By Heat Treat Today Editorial Team





Letter from the Publisher In Praise of *Industrial Heating*

BNP Media, once the largest privately-owned industrial publishing company in the U.S., announced recently they are closing down the legendary heat treat industry magazine, *Industrial Heating*, effective August 31, 2023.

Some might think this news would be a source of joy in the **Heat Treat Today** camp, since it is the elimination of a competitive publication. But I can tell you that it is crushing news — crushing for me, personally, having spent 20 tremendous years as the publisher of *Industrial Heating* from 1994 to 2013, and crushing for the North American thermal processing industry, because a nearly 100-year old iconic magazine no longer exists.

Someone needs to sing the praises and acknowledge the greatness of what was *Industrial Heating*, so here we go.

In 1924, in the heart of steel city Pittsburgh, Pennsylvania, a gentleman by the name of Stanley Wishoski started *Fuels and Furnaces* to meet the information needs of the budding steel industry. *Fuels and Furnaces* was published under that name for seven years and was then rebranded

as *Industrial Heating* in 1931. The publication stayed in the Wishoski family for 64 years, being run much of the time under the direction of Chuck McClelland, son-in-law of Stan Wishoski. Some of you old timers might remember Chuck McClelland or *Industrial Heating's* long time editor Stan Lasday. In August of 1988, Business News Publishing Company (now BNP Media) purchased the magazine from Chuck McClelland.

In 1988, *Industrial Heating* was the number two magazine in the industry behind a publication called *Heat Treating*, which was at one time owned by Chilton Publishing Company, a company that was, I believe, part of ABC (American Broadcasting Co.). Dave Lurie of Business News Publishing Company saw to it that *Industrial Heating* grew into the number one spot in the industry in short order. By the mid-1990s, *Industrial Heating* was the leader.

All through the 1990s and well into the 2010s, *Industrial Heating* was the kingpin of the North American heat treat industry. During this span, *Industrial Heating* started *Industrial Heating Brazil*, *Industrial Heating China*,



Industrial Heating people shown in this circa 2005 photo are (left to right): Steve Roth, Bill Mayer, Kathy Pisano, Reed Miller, Doug Glenn, Larry Pullman, Mary Glenn (wife of Doug Glenn, not an *Industrial Heating* employee)

and even *Industrial Heating India*. *FORGE* magazine, which also closed this August, was founded during this time.

Furnaces North America (FNA) was started by *Industrial Heating* in 1995. The Metal Treating Institute helped by providing the technical content for the event. *Industrial Heating* owned and produced FNA '95 (Cleveland, OH), FNA '96 (Dearborn, MI), and FNA '98 (Las Vegas, NV). Then, we sold it to the Metal Treating Institute for \$1.00 and an (undisclosed!) percentage of revenue for the next seven events.

For two to three years, *Industrial Heating* even cooperated with ASM International to publish what is today known as HTPro eNews. The magazine also made the transition from an all-print publishing world to a digital and print publishing world — at least initially. No small feat.

One of the magazine's most successful products was its annual Buyers Guide, which (just to give you a sense of how successful) often brought in more than \$500,000 in ONE MONTH. Annual revenues were in the millions, and profit margins were impressively high. The magazine was enormously successful.



Industrial Heating people shown in this circa 2005 photo are (left to right): Becky McClelland, Mike Holmes, Beth McClelland, Kathy Pisano, Doug Glenn, Reed Miller, Susan Heinauer, and Brent Miller.

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Message from the Editor

Your Words Are Not Everything

This past year, I had the honor of digitally transcribing someone's personal writings. A culmination of spontaneous recollections, the author sought to make copies to better share this memory diary with her family.

The histories of cultural celebrations, professional successes, and childhood joy intermingled with stories of grief and personal poetry. Cursive writing enclosed each of these stories in the most beautiful gift wrapping for her loved ones.

confirm the timeline and the spelling of personal names or companies with the original author. These are all edits that ensure the correct information is preserved.

But so many times in editing the personal voice of this transcript, the decisions were gray; sometimes, the facts that were written could not even be confirmed.

So, what to do? Ultimately, only one option satisfied the need to balance edits for clarity against preservation of

and perhaps even some superficial qualities that come through — an accent, for example. Yet to truly understand the voice of an author or speaker — that is, the style, manner, and intention of their words — we must seek to hear the heart behind the words.

Looking to **Heat Treat Today's 40 Under 40 Class of 2023**, we can begin to hear the heart of the people behind the words that they will speak as they rise into leadership positions across North America's heat treat industry.

You will see the acts of service, the care for the well-being of others, and the humility behind many of the winners when you turn to page 28 and meet this year's class.

This year, we are also grateful to have the words of others in this magazine that encourage and inspire the next generation to use their voices wisely and effectively. Explore the *Words of Encouragement* from industry leaders, the personal stories in the "Women's Roundtable: Leadership in Heat Treat", the forward-looking leadership and brain drain columns, and more for insightful messages.

In person, we get to connect even more and see the heart behind the words even more clearly. **Heat Treat Today** has a tradition of meeting new members of **40 Under 40** at the

annual heat treat tradeshow. So, this year in Detroit, the current class and any available **40 Under 40** alums will gather at **Heat Treat Today's** booth to receive a quick in-person recognition and send-off. If you are at the show, I hope to see you and, perhaps more importantly, hear your heart behind the words. **HTT**

Contact Bethany Leone at bethany@heatreattoday.com



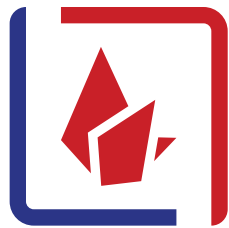
40 Under 40 Class of 2022 honorees with **Heat Treat Today** at Furnaces North America 2022

However, the author — an accomplished writer in her own right — wanted the transcription to be edited. In keeping it a transcript (of a personal nature, no less) and following orders to clean up the original, I faced a dilemma: How does one preserve voice?

This may sound easy, and in many cases, the answer is simple. For unclear text, adjust punctuation. For spelling or grammar oversights, edit! And, of course,

voice: I looked to the heart of the author behind her words. This intelligent, loving, storytelling, and sometimes still grieving woman needed to be heard *through* her words. Thus edit I did, but not everything.

Coming from an editor, the notion that "words are not everything" may be surprising, though I hope, comforting. When we hear the words of others, there is clarity and meaning in the articulation,



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Joe Theismann
Entrepreneur,
Former Washington Redskins
Quarterback, Football Analyst



Find Your Success by Giving Back

Congratulations to the 40 Under 40 Class of 2023. What an honor to be recognized as up-and-coming leaders in the heat treat industry. I am excited for you and the opportunities you have to lead and help those around you succeed. Because success is found by giving back. That may be something you don't hear often, but I truly believe we must measure success by

the way we are helping others.

With leadership comes responsibilities. As a former professional quarterback as well as an owner of several businesses, I've learned a few key principles that I hope will be helpful as you grow as leaders. When performed effectively, they will set up you and your team well.

To succeed by giving back to others, start with the 3 E's — environment, expectations, and execution.

Environment

The environment, or culture, encompasses the people with whom you work and lead. Being intentional about the kind of culture you create is vital to fostering innovation and freedom of communication. Enthusiasm is the engine that drives, and your attitude precedes everything.

Relationship building is key. Mentoring others by sharing your experiences and expertise is as important as learning from

your mentees. Listen and learn — seek knowledge every day and don't think you have all the answers. It's the whole of the team that matters. Asking yourself what you can do to help others succeed is a vital component to building a healthy culture that will enable others to shine.

Expectations

Lead by explaining your "why" — be sure you know it and articulate it well. The details are critically important; ensure your team understands your expectations.

To know your why, identify your direction and practice disciplined leadership. Bill Parcells, former head coach of the New York Giants, talked about the importance of direction and discipline. Be definitive in providing direction

and model discipline to stick with the task. Embrace the failures, learn from them, and encourage others to not fear them; it's a process. Share these insights with your team!

Execution

Finally, if you've built a healthy environment and your team understands your expectations, lead with present-minded execution.

So, think about today, not yesterday; ask, "What is prevalent today?" And, with every day, be sure you are available to those who need you.

Be reliable in showing up to do the hard work. And be accountable to those you are leading and those to whom you

report. Have their backs. Be proud of who you are and who you represent. Execute with confidence.

When Roadblocks Open Doors to True Success

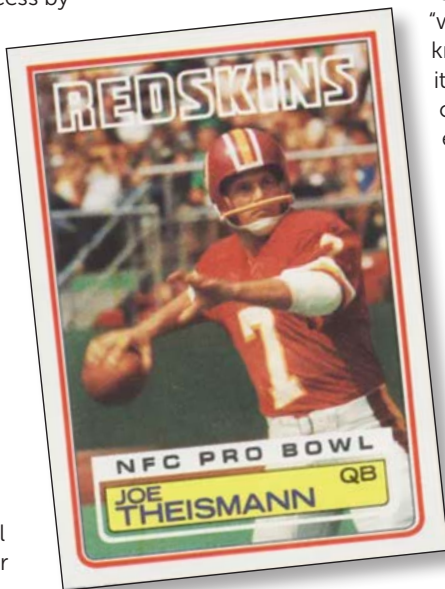
What happens when you experience an unexpected roadblock in this wild adventure called life? Because you know it's going to happen!

In 1985, during a Monday night game against the Giants, I suffered a severe fracture to my right leg between the knee and ankle that eventually led to my retirement from football. Sure wasn't expecting that.

What I had to do was find another path that provided me with the same passion as the one that just closed. Was it difficult at first, yes, but because I spent time learning my trade, I was able to work as a sportscaster and pro football analyst for many years and loved it!

Mental toughness will be necessary when you hit those curves. It may not throw you out of the game, but it might throw you off. Focus on persevering, finding that passion, and remembering that success is found in giving back.

Congratulations! I look forward to seeing your success in the lives of the people you lead. **HTT**



About the Author

Joe Theismann is the former two-time Pro Bowl star quarterback for the Washington Redskins where he played for 12 seasons and led them to winning Super Bowl XVII. Most recently, he spent the last two decades working for ESPN and the NFL Network as an NFL analyst. He is also a successful restaurateur.

For more information:

Visit www.joetheismann.com.

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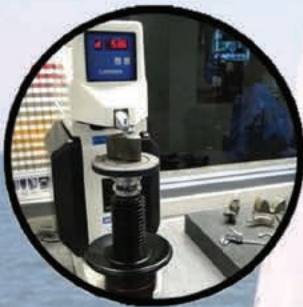
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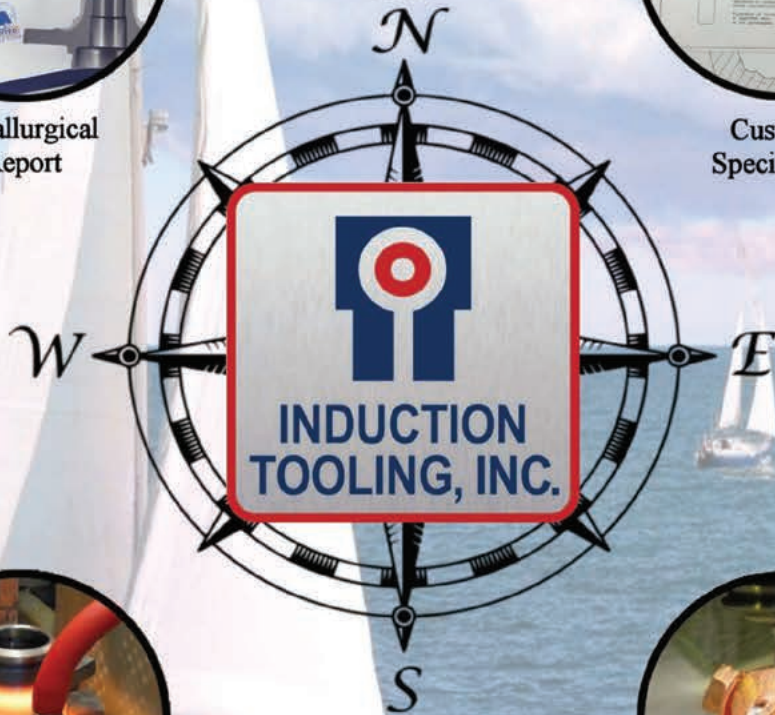
Production Ready Inductor



Customer Specification



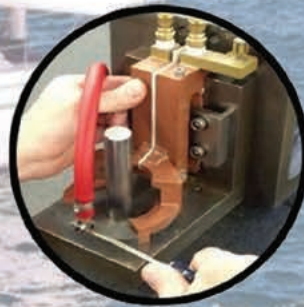
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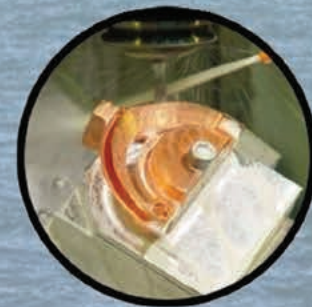
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Paradise Lost?

Dan Herring
The Heat Treat Doctor®,
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*On my way to Heaven's gate,
I met a Heat Treater in a terrible state!
Wandering and miserable,
resolved to his fate,*

I told him simply, it's never too late!

— Dan Herring, inspired by *Paradise Lost*,
John Milton, 1667.

All my years spent in the heat treatment industry have taught me two invaluable lessons. First, ours is truly an empirical science, a science whose secrets reveal themselves by doing and (in large measure) through trial and error. Second, common sense triumphs when all else fails; there is no substitute for practical experience.

that required a new lesson be taught or insights gained. Nowhere was this more fitting than in the heat treat shop.

But what about today? The pressure on engineering and manufacturing to produce has fueled the need for instant answers, achieved through Internet searches and superficial investigations. There is often no time, or tolerance, for failure.

One of my early mentors often lamented that “greed and avarice will be the Achilles heel of young people, too few of you want to work hard — and learning any skill is hard work!”

However, there are many hard-working, young, highly intelligent, and eager-to-

learn individuals

entering today's

workforce. They

tend to fall into

two categories

— those with

excellent

theoretical

skills who

lack practical

experience

and those with

practical skills

who lack a basic

understanding of

the interaction

between the

equipment,

process, and

them to retain them in *our* industry?

Without proper incentive, motivation, and guidance, they will either choose a more rewarding path or seek a more “glamorous” industry.

Teamwork is the key to success in today's heat treat shop. And networking is the key to the acquisition of

knowledge. Understand where the true sources of information lie and seek them

out. Talk to people and understand

not only what they've learned but how they learned it. Motivate others to share

what they know. And share what you know. Tap into the resources available to

you, especially from more experienced people, or those recently retired from

the industry.

Don't be afraid to try or to fail. If you

do, pick yourself up, dust yourself off,

take a moment to say, “That hurt,” and

go out and fail again and again until you

succeed.

Finally, think before you act, and act

only after having thought through both

your actions and their consequences.

Constantly ask yourself, “Why is there

never enough time to do something

right, but always enough time to do it

over (and over) again?”

These are your keys to *success* and a

long, rewarding career. **HTT**

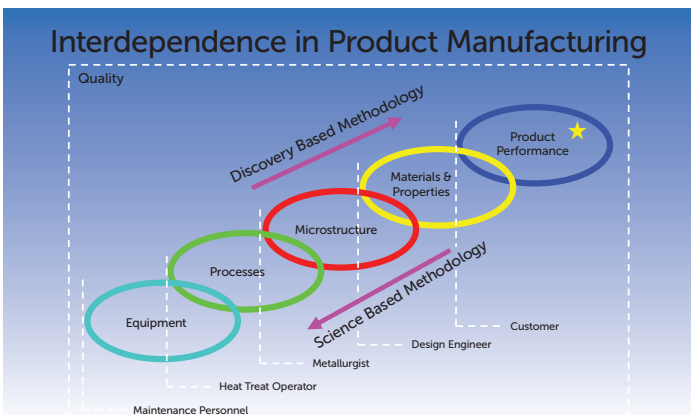


Figure 1. Links between critical steps in product manufacturing
(Source: The HERRING GROUP, Inc.)

The key question then becomes, how does a person entering the workforce in our industry gain the knowledge necessary to become a world-class heat treater? This is especially relevant today given the performance demands placed on products and the rapidly evolving nature of technology (Figure 1).

In “the good old days” — that is, in “Paradise” — skills were acquired through mentoring over time: More experienced personnel imparted hard-earned wisdom to their apprentices, usually in well-metered doses as situations arose

outcome.

The “secret” to heat treating is the control of process and equipment related variability. But the playing field is constantly in flux — as soon as we believe we have the process or equipment under control, something changes: a leak develops, quench media degrades, humidity in the room changes — the list goes on and on.

How, then, do we teach the next generation to meet these challenges? Equally important, how do we teach



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¿El paraíso perdido?

Dan Herring
The Heat Treat Doctor®,
The HERRING GROUP, Inc.



Traducido por: Shawna Blair

*Camino al portal de celestial mansión,
Topé un tratador térmico en terrible
condición
Vagabundo e infeliz, bajo dura
asignación,
—¡Nunca es tarde!— animé en sencilla
afirmación.
— Dan Herring, inspirado por El paraíso perdido,
John Milton, 1667.*

Los cuantiosos años trasegados en la industria del tratamiento térmico me han enseñado dos lecciones invaluable. Primero, la nuestra es verdaderamente una ciencia empírica, una ciencia cuyos secretos se dan a conocer en el hacer y (en gran medida) a través de la prueba y el error. En segundo lugar, el sentido común triunfa cuando nada más lo logra; no hay nada que pueda sustituir la experiencia práctica.

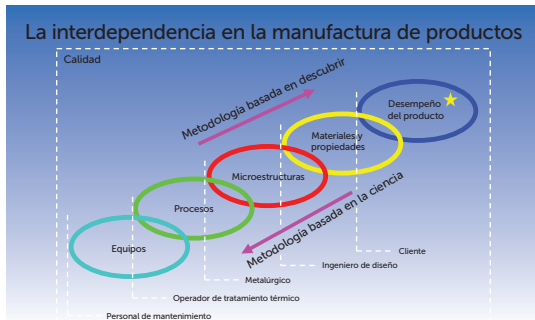


Figura 1. Eslabones entre pasos críticos de la manufactura de un producto (Fuente: The HERRING GROUP, Inc.)

Así las cosas, la pregunta clave a materializar es: ¿de qué manera una persona que ingresa a la fuerza de trabajo en nuestra industria logra adueñarse del conocimiento necesario para convertirse en tratador térmico de talla mundial? El tema es de particular relevancia hoy en día dadas las demandas de rendimiento que pesan sobre los productos, al igual que la naturaleza velozmente evolutiva de la tecnología. (Figura 1)

En los hermosos días de antaño –entiéndase, en el “paraíso”--, las habilidades se adquirían con el paso del tiempo mediadas por un tutor. Las personas de mayor experiencia

impartían a los aprendices la sabiduría conseguida fruto del duro esfuerzo, por lo regular en dosis bien medidas según se fueran presentando situaciones que exigieran enseñar una nueva lección o ampliar algún conocimiento. En el taller de tratamiento térmico esta modalidad cae como anillo al dedo.

Pero ¿qué de la actualidad? La presión hacia la producción que se ejerce sobre la ingeniería y la industria manufacturera ha disparado la demanda de respuestas instantáneas logradas a través de las búsquedas en internet y las investigaciones superficiales. Con frecuencia no hay ni tiempo ni tolerancia para el fracaso.

Uno de mis primeros mentores se lamentaba a menudo de que “la avaricia y la codicia serán el talón de Aquiles de los jóvenes; muy pocos quieren trabajar duro, y aprender cualquier habilidad ¡es duro trabajo!”

No obstante, encontramos muchos individuos jóvenes, esforzados, ávidos de aprender y de gran inteligencia que se vienen incorporando a la actual fuerza de trabajo. Tienen a ubicarse en una de dos categorías –los de excelentes habilidades teóricas que carecen de una experiencia práctica y los de habilidades prácticas que carecen de una comprensión básica de la interrelación entre el equipo, el proceso y el resultado.

El “secreto” del tratamiento térmico radica en controlar la variabilidad relacionada con el proceso y el equipo, pero el terreno de juego nunca permanece estable. Apenas creemos tener el proceso o el equipo bajo control, algo cambia: se presenta un escape, el medio de enfriamiento se deteriora, varía la humedad en el ambiente, y corre la lista sin fin.

¿Cómo, entonces, enseñarle a la próxima generación a enfrentar estos retos? De igual importancia, ¿cómo enseñar de manera tal que logremos retenerlos en nuestra industria? Sin el debido incentivo, motivación y dirección

o elegirán un camino más gratificante o se irán en busca de una industria más “glamurosa”.

La clave del éxito en el taller del tratamiento térmico hoy en día es el trabajo en equipo, y la clave para adquirir el conocimiento radica en construir redes de información. Identifica fuentes informativas confiables y enfoca en ellas tu atención. Habla con las personas para entender no solo lo que han aprendido sino también cómo lo aprendieron. Motiva a otros a compartir lo que saben, y comparte tu propio conocimiento. Saca provecho de los recursos que tengas a la mano, de manera especial lo que te puedan brindar las personas con mayor experiencia o quienes recién se han retirado de la industria.

No tengas miedo ni de hacer el intento, ni de fracasar. Si fracasas, levántate, sacúdete el polvo, date el espacio de decir –Eso dolió--, y sal de nuevo a fracasar una y otra vez hasta que logres tu cometido.

Por último, piensa antes de actuar y actúa solo después de haber reflexionado tanto en tus acciones como en las consecuencias de las mismas. Nunca dejes de hacerte la pregunta, –¿Por qué no hay tiempo para hacer las cosas bien, pero siempre alcanza para repetir y repetir y repetir?

Aquí tienes las claves del éxito y de una carrera gratificante y duradera. **HTT**

Acerca del autor

Dan Herring, The Heat Treat Doctor®, es el fundador de The HERRING GROUP, Inc. Más de 50 años en la industria le han sumado una inmensa experiencia en campos como la ciencia de los materiales, la ingeniería, la metalurgia, la investigación de productos nuevos y muchas áreas más. De su autoría existen seis libros y más de 700 artículos técnicos.

Para mayor información:

Contactar a Dan escribiendo a dherring@heat-treat-doctor.com.

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Heat Treat Today News Chatter

Business briefs from around the industry

A Few Dozen Quick Heat Treat News Items To Keep You Current

Heat Treat Today is pleased to highlight the announcements of heat treat-related growth and achievement throughout the industry by sharing them in **News Chatter**, where we feature representatives, transactions, moves, and kudos from aerospace, automotive, medical, energy, and other sectors of manufacturing. Here are just a few of the news items that appeared in the **Heat Treat Daily** during the past few months as well as “new” news items.

Subscribe to the **Heat Treat Daily** e-newsletter at heattreattoday.com/subscribe and receive one to two news items from around the heat treat industry five days a week. Submit your news items to editor@heattreattoday.com.

EQUIPMENT CHATTER

➤ **Sheffield Forgemasters** has placed an order of over \$25 million for seven new furnaces – three forging and four heat treat – for the company’s proposed 14,000+ ton forging line with **ANDRITZ**.



Order for 7 new furnaces

➤ A Pennsylvania company, **Metlab**, recently heat treated and quenched a fabricated 47,000-lb. gear for the energy industry.



47,000-lb. gear for energy industry

➤ **SECO/WARWICK Group’s** EV/CAB lines for electric battery coolers’ protective atmosphere brazing will be provided to manufacturers from Poland and the Czech Republic.



EV/CAB lines for battery coolers’ protective atmosphere brazing

➤ **PMS Alüminyum**, an aluminum extrusion company, has added a nitriding system from **Nitrex** to enhance its production capabilities and meet the increasing demand for high-quality metal profiles across industries including automotive, construction, solar energy, defense, aerospace, and rail.



In-house nitriding for PMS Alüminyum

➤ A rod overbend box furnace with powered load/unload table is being shipped from **Lindberg/MPH** in Michigan to a manufacturer.



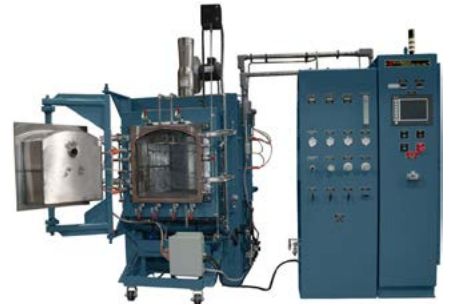
Rod overbend box furnace for air atmosphere applications

➤ A manufacturer has chosen **SECO/WARWICK Group’s** heat treat vertical vacuum furnace to perform low-pressure carburizing for the large structural elements (gearboxes) used in wind power plants.



Atmospheric and vacuum processing for energy industry

➤ **L&L Special Furnace Co., Inc.’s** retort furnace with an Inconel 602CA alloy retort has been shipped from Pennsylvania to a leading manufacturer of motor laminations, located in the U.S. Midwest.



Furnace for motor laminations for various aerospace, military, automotive, medical, and industrial industries

➤ **Solar Manufacturing** recently shipped a vacuum furnace, primarily for annealing firearm components, to a manufacturer based in the Midwest United States.



Firearms manufacturer with in-house heat treating

➤ A multinational aluminum producer ordered a new 100,000 lb.-capacity tilt melting aluminum furnace from **SECO/WARWICK USA** for one of their regional aluminum extrusion plants.



Aluminum reverb furnace with separate loading mechanism

> **Wisconsin Oven Corporation** announces the shipment of a gas fired heavy duty batch oven for heating high-powered magnets used in the energy industry.



Custom batch oven

> **Solar Atmospheres, Eastern PA**, commissioned a new 25,000 square foot brazing facility aimed at high-volume, high-quality braze production including six vacuum furnaces dedicated to brazing.



Brazing components

> **CAN-ENG Furnaces International Limited's** roller hearth isothermal annealing line for steel automotive impression forgings is to be installed for a major American producer located in North Carolina.



New roller hearth system

> To bring heat treat in-house, **MTU Aero Engines AG** will receive a vertical vacuum furnace from **SECO/WARWICK Group**, to be used to process components for civil aircraft jet engines.



Vector® furnace for aerospace industry

> **Nel Hydrogen Electrolyser AS**, a subsidiary of **Nel ASA**, has signed a contract for 40 MW of alkaline electrolyser equipment for about € 11 million with **Bondalti** for its first phase of the H2 Enable project in Estarreja, Portugal.

> **Advanced Heat Treat Corp.** announced the addition of a new gas nitriding system to increase capabilities for gas nitriding and gas nitrocarburizing at its corporate headquarters located in Waterloo, IA.



Advanced Heat Treat Corp. Waterloo location adding capabilities

> A vacuum furnace from **Solar Manufacturing** recently shipped to a U.S.-based aerospace fastener manufacturer.



Furnace for age-hardening various fasteners of high strength alloys

PERSONNEL AND COMPANY CHATTER

> **SMS group GmbH** and **Tata Steel** have signed a memorandum of understanding to make arrangements for conducting a joint industrial demonstration of SMS's innovative EASyMelt (Electric-Assisted Syngas smelter) technology.



T.V. Narendran (left) CEO, Tata Steel and Burkhard Dahmen (right) CEO, SMS group

> The **SECO/WARWICK Group** is the winner of the Social Responsibility Program Leaders and the Emblem in the category of ECO Company (Polish: EKO Firma) 2023.



Green award in heavy industry

> **SMS group GmbH** is implementing a strategic general change: **Jochen Burg** is taking over as chair of the Managing Board on October 1, 2023; and **Fabiola Fernandez** becomes the new CFO of SMS group as of January 1, 2024.



Jochen Burg (left) and Fabiola Fernandez (right)

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› The team at **Wakefield Thermal** is pleased to announce a new partnership with **Johnson Company**, a manufacturer's representative.

› **Benjamin Golding** takes on the responsibility as Chairman of the Board of **ENRX Group**.



Benjamin Golding, Board Chairman, ENRX Group



› **Steven Sumner** has joined **Nitrex Heat Treat Services** as director of Sales.

New sales director for Nitrex, Steven Sumner

› **Alexy Metals** announces the acquisition of Tampa-based **AMP Rings, Inc.**, a manufacturer of industrial rings, brazing preforms, and precision engineering components.

› **Steelhead Technologies** announces the grand opening of their brand new office at 2140 Grand River Annex in Brighton, MI.



New office for Steelhead Technologies

› **Chad Schondelmayer** is the new vice president of Operations with **RoMan Manufacturing**, **Bobbi Warren** is the new chief financial officer, **Shea Hickman** is the new chief people officer, and **Kurt Hofman** is president and chief technology officer.



(Left to Right), Chad Schondelmayer, Bobbi Warren, Shea Hickman, Kurt Hofman

KUDOS CHATTER

› **Nitrex** has been awarded the TOP 10 SPACE SOLUTIONS PROVIDER IN APAC 2023 by the Aerospace Defense Review for expertise in aerospace surface treatment solutions.



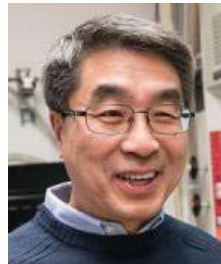
Companies in APAC at forefront of space solutions

› **Solar Atmospheres** hosted over 40 high school students enrolled in the Summer Engineering Institute at Lehigh University.



Two-week residential program for students

› Metallurgical engineering professor **Zhigang Zak Fang** is a recent recipient of the prestigious Humboldt Research Award for developing a breakthrough technology that can produce high-quality, low-carbon emitting titanium powder at a significantly reduced cost.



Humboldt Award for Zhigang Zak Fang

› The **Metal Powder Industries Federation's (MPIF) Awards Committee** presented **Mark Saline**, president of **Gasbarre Thermal Processing Systems**, with the 2023 MPIF Distinguished Service to Powder Metallurgy (PM) Award. This recognition is for individuals who have actively served the North American PM industry for at least 25 years and are deserving of special recognition.

› **HT-MX Heat Treat & HIPing** completed its periodic Nadcap audit, obtaining Merit status for the second year in a row.

› **Gasbarre** sponsors **Camp GLEEM** and hosts a tour for students attending GLEEM (Girls Learning Entrepreneurship, Engineering, and Manufacturing) Summer Manufacturing Camp.

› **Jim Norton** steps up as the new manager of Operations for **Gefran's** North Andover, MA, plant. With 2+ decades of industrial manufacturing experience, Jim has been helping the company since April 2023 by his approach to lean manufacturing and cycle time reduction.

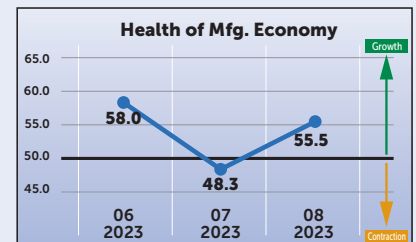
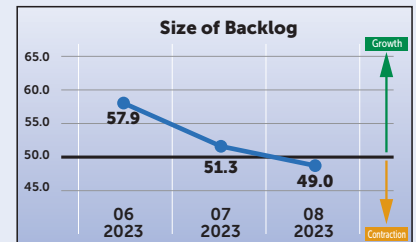
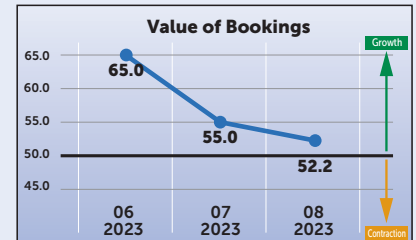
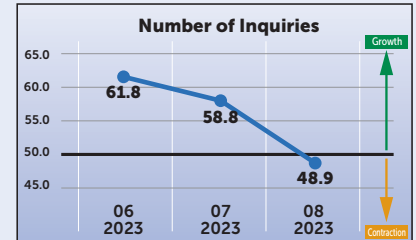
› **Aalberts surface technologies** shares news of the 40th anniversary for their team in Weiterstad.

Heat Treat Today Economic Indicators

August Results

Heat Treat Today is releasing their second month of economic indicator numbers for four (4) separate heat treat industry specific indices. Data is gathered on a monthly basis from industry suppliers and are forward-looking.

The results from August's survey are as follows; numbers above 50 indicate **growth**, numbers below 50 indicate **contraction**, and the number 50 indicates no change



The numbers, which were compiled the first week of August, show that responding parties anticipate that inquiry levels will be down for August compared to July, but that the value of August bookings will still be more than July. Backlogs are anticipated to shrink whereas the overall health of the manufacturing economy is anticipated to accelerate. This is only the 3rd month that these numbers have been collected, so it would be unwise to base business decisions on this small selection of data.

The four index numbers are published monthly by **Heat Treat Today** and are available on our website.

The questionnaire from which these index numbers are derived is sent out monthly to over 800 industry suppliers.



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Women's Roundtable: Leadership in Heat Treat

For this magazine release specifically concerned with the different "People of Heat Treat," **Heat Treat Today** was curious what a group of distinguished women taking the lead in North America's heat treat industry had to say about their experiences in a space where women are the minority.

Hear a bit of their personal stories of challenge and success in the roundtable below.

1. What is your "origin story" of entering the heat treat industry?

Deidra Miner, Operations Manager & Metallurgical/Process Engineer, The Euclid Heat Treating Company: I entered the heat treating industry because it was a family business. That wasn't my original plan, though, as I started my college career in pharmacy. Summer jobs were at the family heat treating business that my grandfather started, and one summer I decided to change schools and study metallurgical

engineering, with the intent to join the business after college.

Debra James, President/CEO at METALEX THERMAL SPECIALTIES: I began working for a company that did ion nitriding in 2012. I was hired as the office administrator, but it was a small company, so we wore many hats that included helping the guys in the shop loading and unloading parts when they needed a hand. From there, it was a learning process of understanding the heat treating industry, working with customers to meet their expectations, and developing business relationships.

The gentleman that owned the company was a great mentor who encouraged growth and development. He wanted me to purchase the company, and we had started down that path when he passed away. In 2019, his successors took over the company, but they did not focus on customer service, growing the company, or making improvements.

That is when we began looking for an outside company to purchase. We were able to purchase a small heat treating company in Berthoud, Colorado. Immediately, we took steps to focus on customer service and offering updated processes to our customers. We have received very good feedback from our customers, and we have been



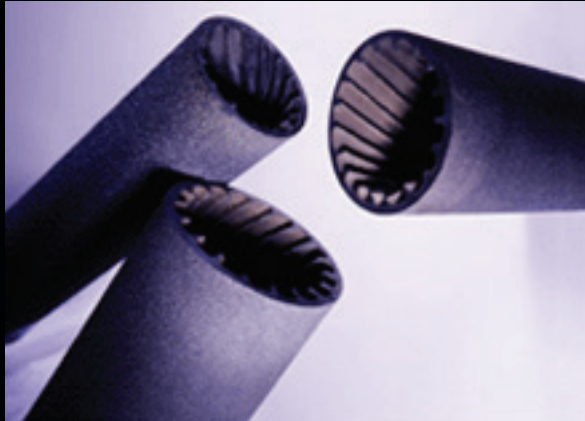
Debra James, President/CEO of METALEX (Source: METALEX)

Continued on page 20

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"[My father] decided to roll the dice again and started ThermTech. My brother was studying metallurgy at UW-Madison, and my older sister was working in the office. I felt a longing to be a part of it again. . . ."

— Mary Springer

able to grow our sales by 20% each year. We also took steps to get our Women's Business Enterprise National Council (WBENC) certification, as well as our AS9100 certification. In addition, we were able to relocate the business to a much larger facility that will enable us to continue to grow and expand.

Mary Springer, Executive Vice President at ThermTech Of Waukesha, Inc: In 1968, my dad started his own heat treating company called Midland Metal Treating in Franklin, WI. I was 10 years old. He had worked as a tool and die heat treater at Simmons Company, and other places. He was very proud of his heat treat journeymen's card.

Midland was very much a family endeavor. There were four of us and we all went to work with dad, mostly to spend time with him. I became an expert at running the induction hardening department. I was a tomboy, so I loved the shop environment. I worked as much as I could, in the beginning for root beer and Cheetos! However, spending hours and hours pushing a button



Mary Springer received MTI's Heritage Award in 2019, an award which recognizes an individual's lifetime commitment to the betterment of the commercial heat treating industry. (Source: MTI)

and watching a part heat up became pretty monotonous.

My dad never dissuaded me from working with him, but I got the sense that he wanted me to go to college, yet the subject of engineering never really came up. I wanted to be an oceanographer and follow Jaques Cousteau around the globe, but found that I really did not want to leave my family. So, I ended up with several of my friends in nursing school, working for dad in the summer.

After obtaining a master's degree in Nursing and a minor in Business Management, I worked as a nurse educator for a large hospital system and taught at the local university. In the late 1970s, the recession took its toll on Midland, and my dad had sold the company under duress.

A year later, at the age of 54, he decided to roll the dice again and started ThermTech. My brother was studying metallurgy at UW-Madison, and my older sister was working in the office. I felt a longing to be a part of it again. In 1987, I left my job at the hospital and joined my dad and siblings. Everyone did everything they could to make a go of it and little by little, we grew ThermTech. I kept a job working weekends as a home IV oncology nurse until 2004, as I did miss my old job!

As ThermTech grew, my older sister left, and my brother and I learned to work together sharing the duties of running a business. My dad retired when he was 70, and my brother and I became equal stock owners.

2. Have there been any challenges that you've encountered in heat treat?

Deidra Miner: One challenge I faced when I started was translating what I learned in college to what was happening on the shop floor. I had a lot of book knowledge, but I didn't know how to run a heat treating furnace. I had to make the effort to learn from people on the shop floor, ask questions (even if they sounded like stupid questions), and

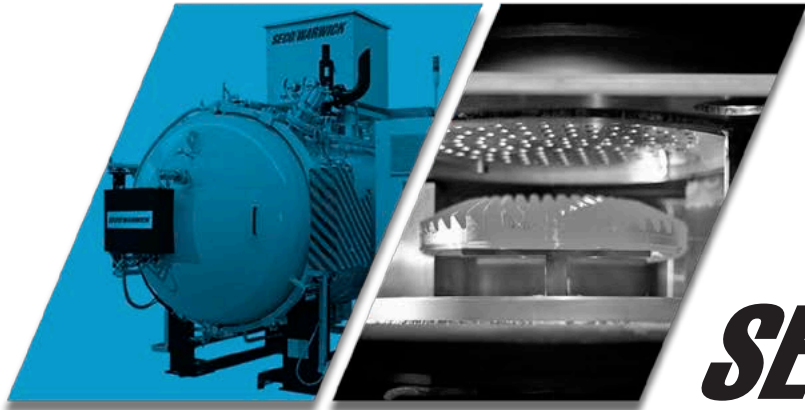
"There is an additional set of skills necessary to successfully lead a group of people and/or a business, and that set includes humility, patience, integrity, good communication skills, and the ability to see the big picture and be open to change."

— Deidra Miner

get my hands dirty so I could learn and earn their respect.

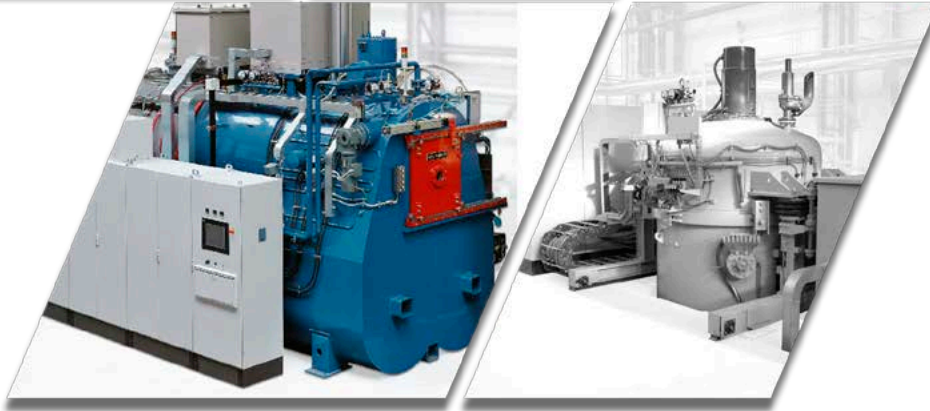
Debra James: Occasionally I encounter people who do not think women really belong in the heat treating industry and assume that I am just an employee rather than an owner of the business.

Continued on page 22



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Deidra Miner receiving Distinguished Service Award in 2018.

Continued from page 20

The other major hurdle that we have encountered is getting financing for equipment. Our equipment purchases are usually used equipment due to the prohibitive costs of new equipment and being able to access financing for used equipment can be difficult.

Mary Springer: Heat treating is VERY challenging. Different problems every day. That is what I love about it. I work hard to develop relationships with employees. Currently, we employ 155 people, we run 3 shifts 24 hours/6 days a week. I love planning expansion, figuring out financing on large projects, and solving problems.

3. What solidified your leadership in this industry?

Deidra Miner: While I certainly don't feel like an expert, I'm reminded every now and then that I have certainly collected quite a bit of expertise over the years. An important lesson I learned, however, is that having the most technical knowledge does not necessarily make you the best leader. There is an additional set of skills necessary to successfully lead a group of people and/or a business, and that set includes humility, patience, integrity, good communication skills, and the ability to see the big picture and be open to change. Years ago, my mentor, Roger Fabian, suggested that I would be a good leader in my company, and that was an important moment for me. He had been a leader in the heat treating industry, and I valued his opinion and appreciated that he noticed that in me.

"What I love about heat treating is the history and consistency of metallurgy."

— Deidra Miner

Debra James: The key factor that solidified my desire to own our heat treating business was first the support and encouragement that I had

received from the gentleman that originally owned the ion nitriding company I worked for. He was a very knowledgeable person and knowing that he thought I could run my own heat treating business made me see that possibility. In addition, knowing that I could do a better job of owning, managing, and operating a company than the successors that took over his business was also a motivating factor.

Mary Springer: As a company, the realization that my brother and I have built a "brand" in the industry, watching our sales/profit grow, and knowing how proud our mom and dad would be of what we did with the great opportunity they afforded us . . . feels very nice. Also, we each have a son in the business, and they are coming into their own, hearing their ideas for the future . . . exciting! I guess I do not consider myself an expert in the industry, only someone who is hardworking and always curious!

4. Any advice you'd give to women in heat treat to enjoy and "own" their position?

Deidra Miner: My advice to women would be to "own" their knowledge and be confident in it, but also be willing to ask questions. I think young people may be hesitant to say they don't know something, for fear of not being perceived as "smart." However, a lot of knowledge is gained from peers instead of from books, so the ability to constantly learn is important.

"[Embrace] this industry and realize all that there is to learn. Always be looking at ways to improve what you do and how you can best meet your customer's needs."

— Debra James

Debra James: First of all, embrace this industry and realize all that there is to learn. Always be looking at ways to improve what you do and how you can best meet your customer's needs. Establish yourself as the person the customer/contact needs to talk to.

Mary Springer: For me this has never been about being a "woman in a man's world." I have never experienced anything but acceptance in this industry. Working hard is working hard. If you put your best effort forward, you will enjoy the fruits of that effort. Dedication earns respect, there's no other way around it. Never stop learning, and remember, no one can "have it all." Choices have consequences, good and not so good. But never complain about the consequences of your choices, you have to own it. Don't do it if you don't love it!

5. What is the best part of the heat treat industry?

Deidra Miner: What I love about heat treating is the history and consistency of metallurgy. You can have a very fancy furnace that follows a program minute-by-minute with thermocouples to monitor the temperature of the part, or you could heat it up in an open-fire furnace and quench it with tongs in a 5-gallon bucket of oil, and it will respond the same way. New technology doesn't change the basics of metallurgy.

Debra James: The best part of the industry is that there is always something to learn and new avenues to explore for growth and development of yourself personally and professionally. I truly enjoy our customers and the relationships that we have built with them. It is so rewarding when they tell us how much they appreciate what we do for them.

Mary Springer: In commercial heat treating, I find it very challenging to anticipate the needs of our regional market, to be able to reinvent ourselves technically to serve new demands. It is exciting to bring new equipment in and see the growth. I love to see our people grow and learn, prosper from their careers here. We have many people with over 15 years' experience. Figuring out how to connect with the younger generation has been a journey . . . Also, it is always interesting, but difficult to learn from mistakes. Surviving whatever! I remember in late 2019, my sales manager came in one day and said, "Do we have a plan for a pandemic? There is this COVID thing going on in China . . ." I kind of chuckled and said, "It's just the flu!!!!" HA! You just never know where the next challenge will come from. Try always to keep a light heart. [HTT](#)

About the Industry Leaders



Deidra Miner is the Operations Manager & Metallurgical/Process Engineer at The Euclid Heat Treating Company



Debra James is the president/CEO at METALEX THERMAL SPECIALTIES



Mary Springer is the Executive Vice President at ThermTech of Waukesha, Inc.



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40 Under 40 Class of 2022 Alums Take the Stage

Since 2018, **Heat Treat Today** has been striving to honor young people in the industry. The **40 Under 40** award gives names, faces, and words to the rising generation of industry professionals.

Catch up with exemplary classmates from the past year to hear where they are now and what comments they have about the industry. You can also read their original nominations at heatreattoday.com/40Under40.

Aniket Maske



"Currently, I'm the chief metallurgist and director of Quality and Launch (program management) at Automatic Spring Products Corp. (ASPC). In addition, I'm now part of the Executive Leadership Team (ELT)."

At ASPC, heat treating processes have significantly improved with Aniket as a member of the Executive Leadership Team. Long-term strategic planning, reducing customer complaints, improving customer relationships, and implementing corrective actions to improve processes are all areas that see his influence. He has been an integral part in helping ASPC transition to the latest technology in heat treat controls and fuel injection which will result in significant gas savings and increased quality and control.

This recognition in **Heat Treat Today's 40 Under 40**, Aniket explains, "[has] helped me in networking as I focus on future sustainability — which is important as a heat treat professional. The professionals in the heat treat industry are provided a platform to collaborate and know about the progress — which was not readily available on a mass scale — with larger scope."

This Class of 2022 alum closes with the fact that he "enjoy[s] reading Doug's editorial page in **Heat Treat Today** magazine."

Sarah Lombardo



With a bachelor's degree in Materials Science and Engineering from Penn State, Sarah has been gaining experience in aerospace industry quality systems in the heat treat industry for 18 years, all beginning with an internship at Sikorsky Aircraft.

"Things continuously improve," she explained. "Even though we've been heat treating steel for decades, there's always something new coming out: new material, new processing methodology, etc."

Sarah has this advice for future leaders in the industry: "Get involved. Join an organization such as MTI; explore the Nadcap program; look into AMEC and writing standards we use every day. Get involved and do the networking. It will take you farther than you can imagine."

Casey O'Neill



During this past year, Casey completed his MBA from University of Michigan in April. He shares gratitude for those who helped him along the way: "First and foremost I could not have done it without the unwavering support of my wife Anna O'Neill, MBA. I also sincerely appreciate Bob Roth's encouragement to pursue this degree. It was both a challenging and rewarding experience. Thank you Nelson Sanchez, Kurt Hofman, and everyone at RoMan Manufacturing for your guidance, support, and patience as I did my best to juggle all the work we are doing at RoMan along with successfully completing this program."

Prior to managing RoMan's sales effort to the heat treating industry, Casey played a pivotal role in growing RoMan's non-ferrous foundry business. He has proven himself to be a quick technical learner as well as a customer-focused representative of the RoMan values. Casey has contributed very much to his company, and they have appreciated his work. **Heat Treat Today** especially enjoyed meeting Casey last year at FNA. While at the event, Casey picked up five **Heat Treat Kids** t-shirts for his crew!

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Jessica Rittwage



On a normal day at Cleveland Electric Laboratories, Jessica often balances multiple expedited requests to assure customer equipment is up and running. Finding ways to creatively beat industry standard lead times has become her norm.

Jessica shares that her life is about to change, as the future holds excitement for her and her husband: "I have been having a very busy year so far! My husband and I bought and renovated a new home, and I'm currently pregnant with our first child! I have been training a temporary replacement to take the reins while I am out on maternity leave. And even though I have been mostly preoccupied with baby stuff, I can say that here at CEL we are on track to have a record year! Acquiring new accounts and expanding our reach within existing accounts has required some creative scheduling on my part. I'm excited to see what the future holds both professionally and personally!"

Ben Isaak



Since receiving **Heat Treat Today's 40 Under 40** award, Ben has filled us in on some updates: "The past year was full of exciting developments at Solar Manufacturing, and I am proud to be part of the team working on improving our business every day to provide our customers with high quality vacuum furnaces and hot zones."

An MTI YES Management Training Program graduate, Ben has worked on standardization for vacuum furnace hot zones across Solar Manufacturing's product line and worked to create designs for improved thermal efficiency, leading to two U.S. patents. He shares, "In the past year, I have focused on providing support to customers with difficult process requirements by assisting in hot zone material selections. I have also worked on vertical integration of several manufactured assemblies to bring more work in-house, resulting in shorter lead times and lower prices for our customer base. And lastly, I have continued to work on standardizing our existing product lines to increase our efficiency and lower our costs."



Heat Treat Today's 40 Under 40 Authors

Check out some of the technical content that **40 Under 40** award winners have published with **Heat Treat Today** over the years and read their profiles by searching their names at www.heatreattoday.com.

Happy reading!

Alberto Cantú

- Achieving High Furnace Production

John Chesna

- Upfront Planning: What To Expect with Induction Design and Fabrication

Heather Falcone

- **Heat Treat Radio** #84: Heat Treat Tomorrow — Digital Security with 4 Industry Experts

Brian Flynn

- **Heat Treat Radio** #84: Heat Treat Tomorrow — Digital Security with 4 Industry Experts

Scott Fogle

- Parallel Positioning Burner Controls for Uniform Temperature

Ben Gasbarre

- Effective Integral Quench Furnace Maintenance
- Tech Trends: Heat Treat Technologies to Watch in 2022
- Heat Treat Future with AM and 3D Printing

Josh Hale

- **Heat Treat Radio**: Heat Treat's Tight Labor Market: Gaining and Maintaining Workers, with Josh Hale

Mike Harrison

- Elevate Your Knowledge: 5 Need-to-Know Case Hardening Processes

Kyle Hummel

- Induction Hardening: Understanding the Basics
- Induction Hardening: Strengthening the Automotive Industry into the Future
- The Heart of Heat Treat Today's 40 Under 40
- **Heat Treat Radio**: Spotlight on 40 Under 40 Leaders (Part 1 of 3)

Caleb Johnson

- **Heat Treat Radio** #99: 365° Look at Troubleshooting Vacuum Furnace Maintenance Issues

Trevor Jones

- Why AM Medical Devices Should Be Vacuum Heat Treated
- Heat Treat Future with AM and 3D Printing

Don Marteeny

- **Heat Treat Radio** #84: Heat Treat Tomorrow — Digital Security with 4 Industry Experts
- **Heat Treat Radio** #99: 365° Look at Troubleshooting Vacuum Furnace Maintenance Issues

Jonathan McKay

- Reverse Engineering Aerospace Components: The Thought Process and Challenges

Aniket Maske

- **Heat Treat Radio** #89: Metallurgical Posterchild Aniket Maske

Ellen Conway Merrill

- **Heat Treat Radio**: Women in Heat Treat

Shawn Orr

- Heat Treat E-Commerce: A Growing Trend or a Passing Fad?
- EthernetIP
- **Heat Treat Radio**: Spotlight on 40 Under 40 Leaders (Part 3 of 3)

Alberto Ramirez

- 10 Steps To Troubleshoot Your Induction System
- 10 pasos para solucionar las fallas en un equipo de inducción

Justin Sims

- **Heat Treat Radio**: Heat Treat Modeling with Justin Sims
- Fatigue Improvement for Gear Steels in Helicopter Powertrains
- Fatigue Improvement for Gear Steels in Helicopter Powertrains, Phase 2
- Case Study: The Low-Pressure Carburizing Process Improvement for a Ring Gear
- Process Innovation to Reduce Distortion During Gas Quenching
- Testing Underway for Innovative Gas Quenching Unit

Sasha Tupalo

- **Heat Treat Radio** #98: Heat Treat NextGen Sasha Tupalo

Andy Wilkosz

- **Heat Treat Radio**: Laser Heat Treating with Laser Hard

Nic Willis

- **Heat Treat Radio** #96: Making the Leap to Laser Heat Treat with Nic Willis

Victor Zacarías

- How To Choose the Right Thermocouple in Heat Treatment
- ¿Cómo elegir el termopar correcto en Tratamientos Térmicos?

Erika Zarazúa

- Guide To Conducting SATs According to CQI-9 4th Edition
- Guía para conducir pruebas System Accuracy Tests conforme a CQI-9 4ta. Edición **HTT**



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Meet the Class of 2023

Heat Treat Today is honored to present the **40 Under 40 Class of 2023**. Perseverance and humility define these young professionals and the mark they are leaving on the industry. Read how this year's class is using their unique skills and experiences to shape their heat treat operations and serve others.

Do you have a young professional in mind who qualifies as a *rising young leader*? The nomination page is now live for **40 Under 40 Class of 2024** submissions. Do it now! Go to www.heattreattoday.com/nominate. And don't forget to check out this year's Honorable Mentions listed on page 71!



Javier Rodríguez Arreguín
Quaker Houghton

Business Development Manager for Heat Treatment

Supplier to the Industry

Years in Industry: 12

Nominated By: Quaker Houghton

Javier Rodríguez Arreguín is a metallurgical engineer and graduated from the Metallurgy and Materials program at the Instituto Politécnico Nacional in Mexico City. Throughout his academic career at Instituto Politécnico Nacional, he specialized in heat treatment, studying materials science and focusing his thesis on the study of nanostructured bainite.

In his professional journey, he worked as a process engineer in various departments at Gerdau (a steel company) with a primary focus on cost reduction and process standardization within the plant. During this time, he led improvement projects as part of the Problem Solving Group, tackling areas such as safety, energy reduction, and metal scrap reduction. Additionally, he provided consultation to the SIZUCA plant in Ciudad Ojeda, Venezuela.

During this period, he also participated in training programs related to Six Sigma, MASP, the 7 Tools of Quality, and management and leadership skills.

In 2015, he joined Quaker Houghton as a Technical Sales representative in the Metals division, where his expertise lies in various steelmaking processes. He collaborates with specialized teams in casting, secondary metallurgy, continuous casting, hot rolling, cold rolling, rebar quenching and tempering, as well as the heat treatment of ferrous and non-ferrous metals including quenching, annealing, homogenizing, and normalizing processes.

In terms of professional achievements, in 2016, he achieved first place in sales for Mexico. In 2017, he was globally recognized with the High Performer Award (Good to Great 2017) for his outstanding performance in steel business projects. That same year, he joined the Helix Sales Development program, which focused on developing a high-performance sales organization to address client problems that require understanding and technical involvement in their metallurgical processes. In 2019, he obtained his MBE from the Universidad Rey Juan Carlos in Spain. From 2018 to 2020, Javier earned his MBA from Instituto Europeo de Posgrado (IEP).

In 2022, he assumed the role of manager of Business Development for Heat Treatment in Mexico at Quaker Houghton, where he focuses on the sales of quenchant developed and sold by Quaker Houghton, including quench salts, cold quench oils, oils for martempering, and various aqueous polymers used in the steel and aluminum heat treatment industry. He actively engages with all his business partners to ensure the achievement of their goals.

One of his key objectives is to provide ongoing training on interpreting cooling curves, product maintenance, and basic topics for non-metallurgical personnel involved in various projects. Additionally, he collaborates with talks at universities such as IPN and UAM in Mexico and participates in various tradeshows, including Expoacero AIST, EUROGUSS, and automotive meetings. Since joining Quaker Houghton's technical sales team, he has consistently achieved sales growth while maintaining long-term client relationships.



Chad Beamer
Quintus Technologies LLC
Applications Engineer

Supplier to the Industry

Years in Industry: 9

Nominated By: Quintus Technologies LLC

Chad Beamer currently runs the Quintus Technologies LLC Application Center in Columbus, OH. Before Quintus Technologies, Chad gained a BS degree (University of Cincinnati) and an MS degree (Ohio State University) in Materials Engineering, spent six years at GE Aviation as a Material Application engineer, and worked for another six years as a manager of Technical Sales at Bodycote.

Utilizing state-of-the-art HIP equipment, which allows for combined HIP and heat treatment, Chad helps some of the nation's most advanced aerospace, medical, and industrial manufacturers define HIP and heat treatment approaches for the most challenging materials and applications. This has resulted in various white papers, conference presentations, and broad recognition of Chad as one of the leading material experts in the industry, continuously pushing the boundaries for Quintus' clients and collaborators.

Heat Treat Today has also been honored to learn from Chad's expertise, publishing his work, research, and opinions

on several occasions including: "Hot Isostatic Pressing: A Seasoned Player with New Technologies in Heat Treatment – Expert Analysis," "Hot Isostatic Pressing for Orthopaedic Implants," "Heat Treating: The Best Medicine," and "Status from the Industry: What's Hip in HIP?"

Chad's knowledge and abilities have continually proven vital for Quintus Technologies' clients, and ongoing collaborations with companies and institutions like EOS, Launcher, Honeywell, SLM Solutions, University of Arizona, Ohio State University, and dozens more that cannot be announced (yet) are proof of Chad's expertise and value to the industry.



Michelle Bennett
Idemitsu Lubricants America
Quality Assurance Specialist

Supplier to the Industry

Years in Industry: 12

Nominated By: Bodycote, Idemitsu Lubricants America, Allied-Locke Industries

Michelle Bennett began her time at Idemitsu Lubricants America as a Quality Assurance lab technician using the skills she learned while earning her BS degree in Chemistry from Indiana University. Today, Michelle is well known as a technical resource to clients.

She is responsible for the Used Oil Analysis Program that the company offers for heat treat clients in North America. Her role includes writing the comments and recommendations for oil sample analysis results and contacting clients in cases of abnormal results that can cause malfunction or risks for the operations. When oils are out of specification, Michelle makes recommendations as to things clients can do to get the oil back in spec. While overseeing the Used Oil Analysis Program, Michelle shortened response time from multiple weeks to approximately five business days.

Throughout her career at Idemitsu, Michelle ensures that clients receive Nadcap and CQI-9 compliant used quench oil reports. The tests she runs are the JIS K 2242 and ASTM D 6200 for cooling curves, ASTM D 6549 to determine the maximum cooling rate and the temperature at the maximum cooling rate, in addition to the normal ASTM tests for pH, viscosity, sludge, Karl Fisher moisture testing, flash point and total acid number. Michelle also uses the JIS K 2242 to determine the coefficient of heat transfer for a quench oil.

Michelle is also trained and certified to use the Fourier transfer infrared analysis spectrometer (FTIR), as well as ICP (inductively coupled plasma spectrometer). The FTIR and ICP analysis allow Michelle to determine the composition of quench oils and if there is any unwanted contamination, any thermal breakdown due to pyrolysis, or other factors causing excessive stress on a quench oil.

When the clients have unusual issues such as staining, residues, water, etc. and they can send parts or additional oil samples, Michelle will do special testing to identify the issue and how to correct it. Sometimes this even means helping to make changes to the process if it shows that the contamination is a rinse or cleaner. Because of this, she is a known person in the community, and it's common to hear compliments from clients about her great work.

Michelle not only oversees the in-service testing, but also the quality at Idemitsu's contract blenders by conducting yearly audits of the five locations and routinely receiving samples, which the team cross checks for lab reproducibility. Michelle oversees and teaches two new technicians on how to conduct the testing and think with a more critical mind and notice if there are trends in the test results that could start to cause problems, such as acid value or pentane sludge that is creeping up.

Michelle provided the research for and co-authored a paper published by **Heat Treat Today** ("Heat Treater vs. Water: Best Practices to Avoid Water Contamination"), describing the effects of water in a quench oil. Michelle researched and analyzed the ways water stays in solution or falls free and the effects this has on the oil and the quenching properties.

Idemitsu continuously receives positive feedback on Michelle's professionalism and passion with clients. She is truly worthy of being recognized as a young leader.





George Bernhard

Consarc Corporation

Technology and Application Engineer

Supplier to the Industry

Years in Industry: 8

Nominated By: Consarc Corporation

George Bernhard has an encyclopedic knowledge of metallurgy and is very well versed in process control which he uses to bring value to those he works with. Before starting at Consarc Corporation, George earned a BS in Materials

Science and Engineering from Drexel University and an MS in Engineering Management from Temple University.

At Consarc Corporation, George is a technology and application engineer. He helps clients obtain metal processing equipment specifically for their operations and desired outcomes. George has an incredible job history in the field of metallurgy beginning with powdered metals and continuing into bulk materials. He is a specialist in both powder manufacturing and vacuum processing of metals.

George loves being client-facing and is not afraid to take on the challenges of helping clients with equipment startups or ongoing process concerns. His commitment to clients is unwavering, and he is always willing to hop in to troubleshoot equipment when it doesn't perform as expected. His ability to marshal resources and knowledge from various entities and departments is second to none. Despite coming to Consarc with a limited background in casting and forging operations, he has added to his existing knowledge of metallurgy to help the metals processing industry.

George is an active member of various professional societies and committees including MPIF and ASM.

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Kale Brian

Metal Craft and Riverside Machine & Engineering
Associate Manufacturing Process Engineer

In-House Heat Treater

Years in Industry: 9

Nominated By: Metal Craft and Riverside Machine & Engineering

In 2014, Kale Brian made a choice to leave behind the familiarity of his warehouse job and set out on a remarkable journey into the world of aerospace manufacturing at Riverside Machine and Engineering as a braze technician working in aluminum vacuum brazing and heat treat.

From the very beginning, Kale's hunger for knowledge and his unwavering commitment made him stand out. There was no challenge too daunting for him to tackle, and he swiftly proved himself to be an invaluable asset to the company. Through tireless dedication and a thirst for growth, Kale rose above his peers to become the braze technical lead.

Kale's leadership style is a testament to his exceptional character. He embraces a hands-on approach to teaching and exhibits boundless patience, readily sharing his expertise with others. His attention to detail has led to thorough pyrometry and product processing procedures that don't just check the boxes; they do so with efficiency and end-user ease of use in mind. Kale's natural talent regarding thermal processing has led to the creation of innovative fixturing plans and optimized thermal profiles. Kale's willingness to provide the highest degree of support has led him to be an invaluable resource.



Josh Burich

The Euclid Heat Treating Company
Maintenance Manager

Commercial Heat Treater

Years in Industry: 20

Nominated By: The Euclid Heat Treating Company

As a manager of approximately eight employees in the maintenance department of Euclid Heat Treating (EHT), Josh exudes a calm but strong leadership style to effectively manage and lead his department. He constantly shuffles competing priorities with equipment break downs and immediate repairs, while still making progress on the ever-present routine maintenance and long term goals, such as new equipment installation and continuous improvement. He uses his knowledge of employees' skills and training to assign them tasks on a daily basis, while also looking for opportunities to train employees — by himself or by other qualified technicians — to learn and master new skills.

Josh worked at EHT as a young man and while attending college. He returned a few years after graduating and has been at EHT for 17 years. He has held his current role as the manager of the maintenance department for four years. There isn't a piece of equipment he can't fix, nor a time of day he won't come in to check or fix equipment or buildings. Josh is a 2022 graduate of MTI's YES Program, and routinely takes part in company-provided training, such as leadership training and first aid/CPR. He is a member of a four-person company management team, which provides direction and establishes priorities for the company. EHT is a better organization because of this dedicated, hard-working individual.

WORDS OF ENCOURAGEMENT Advice to 40 Under 40 Class of 2023



Heather Falcone,
CEO, Thermal-Vac
Technology

Congrats 2023 40 Under 40 honorees, enjoy this time in the spotlight! There are a lot of credible sources out there to receive very practical advice about next steps in this industry, I'm not here to reiterate all of that to you. There is one thing that I want you to remember: YOU are the new voices. Don't let anyone tell you your voice doesn't matter, because it does. . . Now more than ever.

Leaders are not defined by job title, they're defined by action. Use your voice and actions to be remembered as someone who treats people well, gives full credit and celebrates their team, and takes responsibility when something doesn't turn out right. Our industry will survive and thrive by investing in diversity, and through the inclusion and celebration of different voices that can bring new thoughts, ideas, and innovation, we can ensure that heat treating will be here for future generations.

If you don't think you belong here, you do. If you're not sure you're ready, you are. If you don't know if you'll grow, you will.

Use your voice to raise up others, stay true to your authentic self, and know your value. We're all just one big band of bodacious blacksmiths forging and tempering the future of the industry, and we're in it together.

"Go where your energy is reciprocated, celebrated, and appreciated." – Unknown
I cannot wait to see what the next evolution of YOU will do.



Paul Calhoun
Mercury Marine
Heat Treat Materials Engineer

In-House Heat Treater
Years in Industry: 11
Nominated By: Mercury Marine

Paul Calhoun is an engineering professional with over a decade of experience in the industry — specifically in the automotive, aviation, aerospace, and defense industries. This decade of experience has given Paul excellent skills in steel, nickel, titanium, and aluminum metallurgy.

While earning his bachelor's degree in Materials Science and Engineering from the University of Wisconsin-Madison, Paul was a research assistant in the John H. Perepezko Research Group, which investigated oxidation and diffusion on pack-cementation vapor deposition aluminide coatings on ferritic and austenitic steel substrates.

In 2012, Paul joined ATI Forged Products as a metallurgical engineer, where he developed and maintained processes for aerospace and general industrial forgings and broadened his expertise on titanium, nickel, aluminum, and steel alloy forging and heat treating. Paul began to make use of his management skills in 2018 when he was hired as the quality control manager at Service Heat Treating. There, Paul managed the metallurgical laboratory, maintaining and applying the ISO quality system. At Service, heat treat processes Paul was involved in were batch carburizing, nitriding, nitrocarburizing, carbonitriding, and vacuum heat treating.

Paul was brought to Mercury Marine to run the new, state-of-the-art Low Pressure Carburizing and High Pressure Gas Quench (LPC and HPGQ) system produced by ECM USA, Inc. Currently, Paul oversees Mercury Marine's heat treat metallurgical laboratory and is responsible for all heat treat product testing.

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Guillermo Campos
PT Coupling
Heat Treat Manager

Commercial Heat Treater

Years in Industry: 12

Nominated By: Quaker Houghton, PT Coupling, Caterpillar

Guillermo Campos began his academic career at FIME, UANL México (Facultad de Ingeniería Mecánica y Eléctrica, Universidad Autónoma de Nuevo León) in the materials engineering class of 2010. He continued his education by earning a master's degree in Quality Systems and Productivity in 2019.

Guillermo began his over a decade long career in the industry as a quality engineer at Cuprum Group and a junior researcher at TenarisTamsa.

Guillermo is the manager of Heat Treatment at PT Coupling based in Oklahoma. In this position, Guillermo provides engineering direction to the heat treating shop, as well as in engineering-related safety, scheduling, production, quality control, shipping, and enhancement. Due to his metallurgical background, he also collaborates with the foundry department to meet the materials specification requirements for his clients, ensuring the quality of the parts.

At PT Coupling, Guillermo also worked in thermal processing with processes such as carburizing, neutral hardening, normalizing, annealing, and quenching. Additionally, he has worked with other alloys such as aluminum, stainless steels, and ductile iron and now is creating and updating procedures and documentation for the company. Also, he is considered as an internal consultant on heat treatment, casting, and metallurgy, and has been a very valued element in his area.

Another of Guillermo's key positions in the heat treatment industry was his role at Caterpillar where he developed several part numbers for the gears heat treatment facility in Monterrey, Mexico.

He has been active in the industry for 12 years, serving at different companies such as AHMSA (Altos Hornos de México, where Guillermo worked as a project and process engineer), which is one of the most important steel mills in Mexico. Guillermo worked along with Siemens VAI on the Steckel Mill Project, a fundamental part for the hot strip mill, and as a metallurgical engineer for the development of different steel grades. From 2015 to 2016, Guillermo also worked at Grupo Industrial Saltillo (GIS), a Mexican company that designs, manufactures, and wholesales automotive, construction, and houseware products.

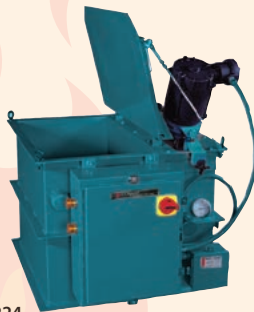
Guillermo is known for his skills as a leader, such as leading by example (mentorship), time management (focused on goals), conflict resolution, strategic thinking, and others. Also, Guillermo is skilled in continuous improvement, root cause analysis, 5S, Six Sigma, and lean manufacturing.

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Juan Eliseo Cruz Ortega

ECM USA, Inc.

Operations Manager Mexico & South America

Supplier to the Industry

Years in Industry: 15

Nominated By: ECM USA, Inc., APRISA, Cleveland Hardware and Forging, BMI Fours Industriels, Tetia Heat Treatment, General Motors, TecNM Campus Tepeaca, Clarios, BIC, Commercial Sewing

Juan Eliseo Cruz Ortega is always helping the heat treat industry with new projects and process development. He has gained knowledge from his hard work, and he has a spirit to share with his colleagues. Juan has an extensive work history including APRISA, GE EDESA, ALD Thermal Treatment, Inc., and ECM USA, Inc.

Juan entered the heat treating industry over 15 years ago and embodies all the qualities of a heat treat professional through technical ambition, excellent problem-solving skills, and precise attention to detail. With a master's degree in Business Manufacturing (with specialization in plant operations and project management), Juan is currently the manager of Operations for Mexico & South America at ECM USA, Inc. He is the main contact for client support on current equipment and provides guidance on maintenance operations (e.g., schedules, retrofits, new equipment installations).

Juan is known to be a professional, friend, and someone to trust in all areas. He is results-driven and has a high standard of leadership, in fact his strong negotiation skills won many projects for ALD, such as the LPC treatment lines at Ford MoCo in Irapuato, Guanajuato, Mexico. In another position at a company, he improved the way the position of the quenching chamber was measured: Measuring the position of the quenching chamber with a draw wire encoder was accurate, but dirt on the wire gave bad readings. Juan's idea was to move to a laser system. This change eliminated many maintenance problems, and the accuracy of the system increased. The wire system was replaced in all the equipment at that company.

As a versatile professional heat treader, he has demonstrated his ability to adapt to new responsibilities and roles, having worked with a team to improve and execute preventive maintenance plans. In another instance, while working on one important and difficult heat treatment furnace commissioning project, Juan demonstrated his initiative and ability to find solutions to every problem by making good proposals, coordinating his

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team effectively, and even finding external resources to solve problems quickly.

What sets Juan apart is his team spirit and his interpersonal qualities that inspire his colleagues to outdo themselves. These qualities make him an excellent trainer in different areas, such as maintenance and furnace operations. People follow him naturally, and he supports the people that work under his command. His sense of humanity allows him to understand the needs of the team in professional and personal life. Juan's character is very strong and solid because he solves problems by focusing on the problem at hand, facts, and solutions, rather than by losing control under pressure.

A good example of his leadership was when he was the coordinator for a large project that needed the build, delivery, installation, and commissioning of two large FNC furnaces, which was a project coordinated between several nations (France, Germany, U.S., and Mexico). There were challenges that Juan met with dedication and always maintained excellent communication between all parties.

At ECM Group, Juan started as a project manager, quickly becoming an expert in project development and equipment installations which elevated him into a management role. His support-focused, can-do attitude delivers a unique level of client service that not only improves up-time and productivity but upholds a trustworthy business relationship. Juan is a reliable source of knowledge within the ECM Group and surpasses expectations to provide the best support necessary.

Beyond his support and service accomplishments above, Juan also excels in business development within his territory — all while continuing to be a pillar of support to the Mexican and South American client base. There is no limit to the growth of Juan in the future, and ECM is proud to have him on their team.



Gabriel Duenes

Lark Heat Treating
Heat Treat Team Leader

Commercial Heat Treater

Years in Industry: 17

Nominated By: Lark Heat Treating

Gabriel Duenes offers close to twenty years of thermal technology and metallurgical experience with the ability to train, manage, troubleshoot, and motivate staff to achieve production goals in a timely manner. Before beginning his career at Lark Heat Treating in 2012, Gabriel worked at Bodycote Thermal Processing as a vacuum/braze/nitride operator. Gabriel manages daily operations, oversees staff, upholds company policy, and provides quality client service. Keeping staff up to speed with training, maintaining open communication, and providing a positive workspace are some of his strengths, as well as scheduling preventative maintenance and performing maintenance duties.

Gabriel exemplifies what the heat treating industry needs today: a worker who is willing to learn any and all aspects of the heat treating facility and help his fellow employees learn what it takes to accomplish the task at hand. He does not shy away from a challenge.

During his 17 years in the industry, Gabriel has grown from an atmosphere furnace operator to the leader of a vacuum furnace department, having learned how to operate, maintain, install, and improve furnace equipment, operations, and processes. Most recently, he has taken the initiative to learn Lark's induction processes and help to improve turnaround times for clients.

WORDS OF ENCOURAGEMENT Advice to 40 Under 40 Class of 2023



Stawomir Woźniak,
CEO, SECO/WARWICK
Group

Congratulations to **Heat Treat Today's 40 Under 40 Class of 2023!** Thanks to your dedication and hard work, you have already reached an exceptional level of knowledge in such a demanding industry as heat treating.

Despite your expertise, there is always room to learn and grow. Embrace a mindset of continuous learning and stay updated on the latest advancements in our industry. Seek out new knowledge, attend conferences, and engage in professional development opportunities.

Don't shy away from challenges; instead, view them as opportunities for growth. Step out of your comfort zone, take calculated risks, and tackle new projects or responsibilities. Embracing challenges will expand further your skill set and open doors to even greater achievements.

Share your expertise and insights with others. Write articles, speak at conferences, and engage in thought leadership activities. Becoming a trusted voice in your field will not only enhance your professional reputation but also contribute to the advancement of the heat treatment industry.

Best wishes on your continued journey of success!



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Alejandro García Pérez
Dana Incorporated
Induction Heat Treatment Champion

In-House Heat Treater
Years in Industry: 11
Nominated By: Dana Incorporated

Alejandro García Pérez is a highly accomplished, results-oriented professional engineer with experience in the automotive industry. Over the years, Alejandro has proven his ability by holding different roles in a company, especially by leading teams and managing projects. Known for delivering fiscal results, Alejandro's background is in supervising, inspection, and lab testing.

After earning an engineering degree (BS in Chemical and Metallurgical Engineering), Alejandro worked at Kiriu USA Corporation as a melting area supervisor and a quality inspector engineer and later worked as the heat treatment coordinator for American Axle & Manufacturing.

Today, he is the induction heat treatment champion at Dana Incorporated. In this role, he travels globally to assist Dana facilities and work with suppliers to the industry issues as well. Alejandro also has a lot of furnace heat treatment/carburizing and other metallurgical processes experience, such as in welding and nondestructive testing. He is also able to assist in many product and processing issues, which makes him very valuable.

As a corporate global resource, he is implementing software for plants to enter their CQI-9 assessments. As a testament of his technical leadership, he gave a technical presentation in an industry conference last year in Mexico.



Trevor Gibson
Dana Incorporated
Lead Materials Engineer

In-House Heat Treater
Years in Industry: 11
Nominated By: Dana Incorporated

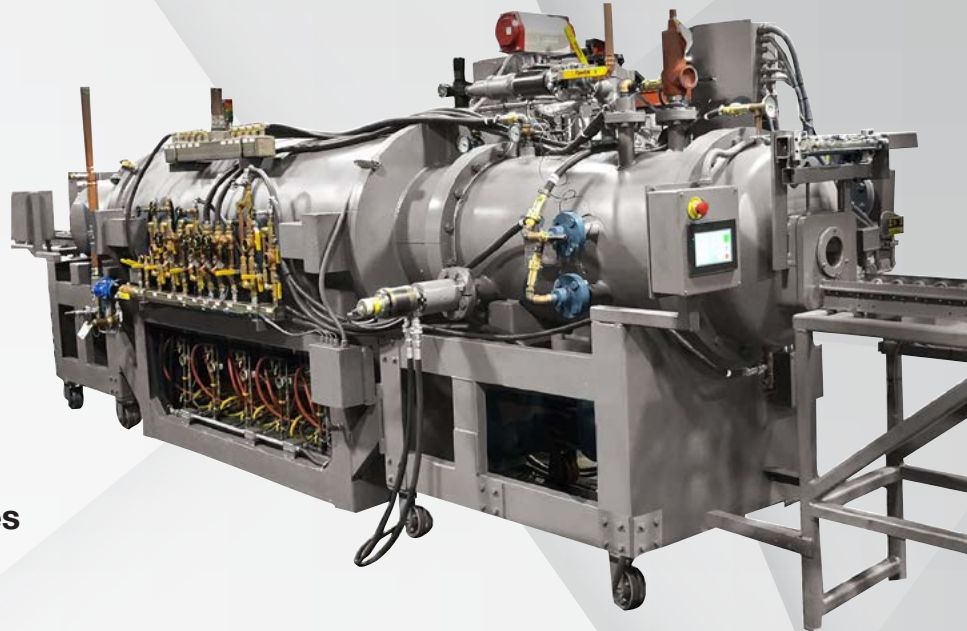
Trevor Gibson's primary responsibility at Dana Incorporated is supporting Dana's product groups in materials selection and design (specifically in heat treatment) as well as supporting Dana's global materials team in material and failure analysis. Trevor writes specifications and product design reviews, specifying heat treatment, design calculations for case depths of product, and materials for Dana products globally.

A graduate of Michigan Technology University with a bachelor's degree in Materials Science and Engineering, Metallurgy, Trevor began his career in the heat treating industry as a field engineer, and later as a technical sales engineer, at Surface Combustion, Inc. Since 2017, Trevor has been with Dana Incorporated working as a materials engineer, where he is now lead materials engineer.

For the last few years, Trevor has been supporting the design of EV products. He provides guidance for lab analysis of components in the lab and mentors engineering students who also work in Dana's lab. He also supports quality and manufacturing issues related to furnace and induction heat treatment which includes troubleshooting the processes. He is a representative for the company on the AIAG CQI-9 committee. Over the last six years that he has been with the company, he has become a heat treatment expert and resource with Dana Incorporated globally. He was hired as a senior materials engineer and was recently promoted to lead materials engineer because of his work and materials/heat treatment leadership in the company.

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Tyler Goodwin
Bodycote
Maintenance Manager

Commercial Heat Treater
Years in Industry: 16
Nominated By: C3 Data

Tyler Goodwin entered the heat treating industry as a maintenance technician at Bodycote. Later, Tyler worked for Bluewater Thermal Solutions in the same role and was promoted to operations manager at Bluewater. Adding to his experience in the industry, Tyler worked as a shift supervisor at Mobex Global and a production control and logistics (PC &L) at BWI Group. Today, Tyler is the maintenance manager at Bodycote.

Tyler's remarkable career progression and exceptional leadership in 5S initiatives, Overall Equipment Effectiveness (OEE) optimization, and process utilization have significantly enhanced organizational performance.

Tyler's passion for the heat treating industry began at a young age, and since joining Bodycote Indianapolis in 2007 as a maintenance helper, he has continuously excelled. Holding various roles at Bluewater Thermal Solutions and Bodycote, including regional engineer and operations manager, Tyler has consistently demonstrated his commitment to excellence.

As the maintenance manager at the Bodycote Indianapolis facility under the AGI division, Tyler has been instrumental in driving efficiency and fostering a culture of continuous improvement. Tyler's dedication, problem-solving skills, and adaptability enable him to tackle complex challenges with ease. His commitment to staying updated with industry advancements ensures the Bodycote Indianapolis facility operates at the highest standards.

Tyler has a positive attitude and a great sense of humor. People enjoy working with him and learn a lot from him.



Anna Haydock
Volvo Cars USA
Quality Action Lead

In-House Heat Treater
Years in Industry: 6
Nominated By: Volvo Cars USA

Anna Haydock graduated from South Dakota School of Mines and Technology with a bachelor's degree in Metallurgical and Materials Engineering. Currently, Anna is finishing her master's degree in Engineering Management. She has worked as a metallurgical engineer in copper mining, aerospace, aluminum manufacturing, failure analysis, and nuclear reclamation. Her history of work experience includes Freeport-McMoRan Copper & Gold Inc., Emerson, Alcoa, Arconic, and Ball Aerospace.

Anna currently is in the automotive industry at Volvo Cars USA, in the quality department. Her strengths across all industries are root cause analysis, Six Sigma, failure analysis, FMEA, and continuous improvement.

Anna's most significant accomplishment was in the aluminum manufacturing industry. She ran an oven heat treat trial, investigating the upper and lower temperature limits that were currently set for different gauges. Transition strip lengths were also studied to see if shorter strips could be used to reduce the time needed to transition to a new gauge. After confirming the required metallurgical properties were not compromised for different gauges, the heat treat trial resulted in saving roughly \$3.5 million/year.

Anna is a lean Six Sigma Black Belt (currently completing her Master Black Belt) and, from 2016 to 2017, served as the National Membership Chair for the National Society of Black Engineers (NSBE). She plans to continue her Ph.D. in Education with a STEM emphasis in hopes of teaching and retaining future women and BIPOC in the metallurgical and heat treat industry.



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John Hollman

Aerospace Testing & Pyrometry, Inc.
West Coast Division Manager

Supplier to the Industry

Years in Industry: 7

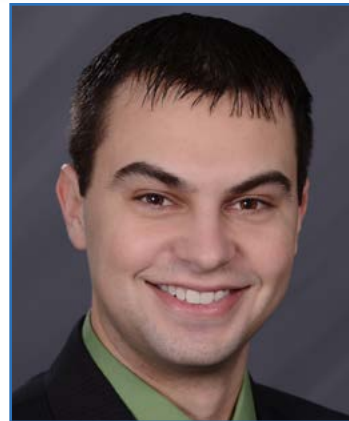
Nominated By: Aerospace Testing & Pyrometry, Inc.

Take charge! — two words that best describe John Hollman. Since joining Aerospace Testing & Pyrometry, Inc. in July 2020, John always has had a can-do attitude. John had prior experience in the field of pyrometry for a large commercial heat treater prior to joining ATP, and it showed right from the start.

With a loss of an employee shortly after John joined ATP, John stepped right up to handle over 30 clients in California. He has never said no to any challenges that have been thrown his way, not only including his pyrometry skills, but troubleshooting clients' equipment, installing new equipment, and guiding the clients with specification requirements.

John goes above and beyond for clients by traveling to Washington, Nevada, Utah, and all parts of California to help with any emergency services that clients may need. When the call comes in, he responds immediately. Clients praise John for his professionalism, knowledge, and client satisfaction. ATP could not ask for a better team member. The sky is the limit for John Hollman with ATP.

John is currently enrolled in MTI's YES Management Training Program (2023) and has been enjoying learning about what it takes to run a company.



Justin Jennings

John Deere
Staff Materials Engineer

In-House Heat Treater

Years in Industry: 14

Nominated By: John Deere

Justin Jennings is an accomplished materials engineer at John Deere who is notably on track to reach high technical leadership roles within Deere in both materials and engineering competencies.

Before beginning his career at John Deere, Justin earned his bachelor's degree in Materials Science Engineering from Purdue University, gained experience in commercial heat treating and process metallurgy, and grew his experience in the commercial heat treating sector through developing process metallurgy and lab technician skills. Several conventional heat treat processes that he is skilled in include carburizing, carbonitriding, quenching and tempering, induction hardening, stress relieving, annealing, and more. He performed metallurgical heat treatment verifications, managed a metallurgical lab and technicians, developed heat treat recipes for new client orders, and engaged with suppliers regarding material and heat treat standard feedback.

In 2011, Justin began working at John Deere and yet already he has reached the highest technical level of leadership in heat treatment at Deere as the Enterprise Heat Treatment Competency lead. In this role, he leads the heat treatment community in creating roadmaps for heat treatment,

Continued on page 44

WORDS OF ENCOURAGEMENT Advice to 40 Under 40 Class of 2023



Herbert (Herb) Dwyer,
CTO at Nanmac and
President at Herb
Dwyer & Associates
LLC Consulting

As I look back on my time in the field working with heat treaters, material experts, and challenging alloys, I am reminded of the statement that "new things" are just an improvement on the "old." In this quasi analog/digital world we must think differently than many others.

You may be challenged as to whether you picked the "right" career or not. This will happen, but don't lose your enthusiasm and focus on the end goal of delivering the best product at the best quality and one that exceeds your customer's expectations.

The good news is that your career represents the best of the two worlds: you are neither pure analog nor pure digital but have learned to combine the best of the two to deliver client-focused solutions. You are working in a field that really offers significant improvement in the way material systems deliver robust solutions for medical, industrial, and military problems, and even help us fulfill our curiosity in exploring the world around us, be it in deep space or here on earth.

Without you and your tribal knowledge combined with your technical training and experience many of the things we enjoy would not exist.

As Winston Churchill was reputed to have said, the key is to "never give up!" Your career can be both frustrating and yet fulfilling at the same time. Thank you for making that effort and continuing to make these contributions. You may not feel it, but you are an important part of the human experience towards helping all of us to live better and more productively.



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Continued from page 42

prospecting and executing technology development projects in heat treatment. Justin resolves difficult heat treat related issues throughout the enterprise; he is a certified lead for supplier audits for heat treatment.

How he has grown in the company is filled with technical leadership benchmarks. Early in his career as a materials engineer at John Deere, Justin worked in process engineering for crankshaft induction hardening and magnetic particle inspection production operations including the management of inductor coil tooling and adjustment verifications. He performed metallurgical lab evaluations for internal and purchased engine components along with failure analyses from internal lab testing and client field return parts.

From 2013 to 2016, after a promotion, Justin became the materials engineer at the drive train operations factory, performing heat treatment process verifications for captive heat treat operations. He led many metallurgical capital improvement projects and developed and revised numerous internal John Deere material and heat treatment standards. Justin also mentored a John Deere Materials Engineering Development Program employee through the development of carburizing and induction hardening microstructure interpretation reference guide sheets that were provided throughout the enterprise's heat treatment locations to improve John Deere's internal employment training and development and consistency of microstructure evaluations.

From 2016 to 2021, Justin was the materials engineer at John Deere's Product Engineering Center. He provided material and heat treat process selection design consultation for new tractor development programs. Justin supported material and heat treatment supplier selection and development through part reviews, standard requirement discussions, and supplier visits and audits. He developed a Forging Supplier Audit Assessment and trained internal employees to conduct audits accordingly. Justin also developed an internal John Deere Standard for gear steels with improved nonmetallic inclusion cleanliness including verification methods and acceptance criteria.

Justin's most recent accomplishments at John Deere have been leading John Deere Enterprise Material Competency Areas of Bar Steel, Heat Treatment, Adhesives & Non-Ferrous Electrical Materials and guiding research and development of new material technologies and process for various John Deere applications. Justin co-led an internal John Deere Heat Treatment Core Technology Team consisting of heat treatment manufacturing engineers, materials engineers, product designers, and quality engineers that focused on sharing heat treatment knowledge, investigating new heat treatment opportunities, and developing heat treatment specifications and requirements. He represented John Deere at multiple Material and Heat Treatment University Consortiums, providing industry-relevant research direction and project mentorship.

In terms of giving back to the industry, Justin has mentored numerous senior design projects at Iowa State University and Purdue University, as well as summer interns and fresh graduates at Deere, helping them work in heat treatment and materials engineering. He also sits on the industrial advisory

board for Worcester Polytechnic Institute's Center for Heat Treating Excellence (CHTE), Purdue University's Purdue Heat Treatment Center (PHTC), and Bar Steel's committee for Advanced Steel Processing & Products Research Center (ASPPRC) in Colorado School of Mines.

In addition to his current University-Industry Consortium participation, Justin has also mentored multiple material and heat treatment related University Senior Design Projects providing industry exposure, technical mentoring, and career advice to university students at Purdue University and Iowa State University, including:

- Purdue 2016: Remediation of Lost Compressive Residual Stress in Carburized Steel Gears
- Purdue 2017: Effects of Thermally-Sprayed Molybdenum Coating Characteristics on Wear Performance
- Purdue 2019: Charpy Energy Measurements of Cast Steels for Roll Over Protection Structures
- ISU 2022: Effect of Regional Chemistry and Processing on Steel Impact Toughness Properties

Justin has participated in the AGMA (American Gear Manufacturers Association) Metallurgy & Materials Committee supporting industry standard development and is an active member of ASM Heat Treatment Society. He has participated in multiple ASM Heat Treat shows over the years networking with heat suppliers and other industry participants.



Bradley Johnson
Bodycote
Quality Engineer

Commercial Heat Treater
Years in Industry: 8
Nominated By: Bodycote

Bradley Johnson is the go-to person when there is a quality issue. Because of his accomplishments and contributions, he is on the path to becoming a good leader. Bradley absolutely loves the heat treating industry and the science behind it all.

His career in the heat treating industry began as a load builder and load unloader. After just two weeks at Bodycote, Bradley was promoted to furnace operator. In operations, he worked as a BQI furnace operator as well as a phosphate operator.

Continued on page 46



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Continued from page 44

Three months after that, he transitioned to the maintenance department as a technician, where he gained an enormous amount of knowledge. After three years he was ready for change, and transitioned into the quality department, where he found his niche. Bradley wanted to learn everything he could on a deeper and higher level. Bradley has full understanding of the heat treat process and champions the performance of both System Accuracy Tests (SATs) and Temperature Uniformity Surveys (TUS). Both are key parts of state-of-the-art heat treatment operations.

Bradley is currently enrolled at Morehead State University, studying for a BS in Engineering & Technology Management. This fall semester 2023, he will graduate with an associate of arts degree. Bradley holds three certifications from American Society of Quality (ASQ): Certified Quality Engineer, Certified Quality Auditor, and Certified Six Sigma Green Belt.

One of the most significant accomplishments has been his involvement in completing the implementation of an electronic real-time visual job board tracking system that improves visibility in processes and quickly removes roadblocks to productivity. This project yielded successful results at the batch IQ line, and Bradley is currently a key player in implementing it throughout the entire facility. At the batch IQ line, the job board has made a great impression on the employees as well as the local management team and the executive management. The visual management aspect of the board aids in tracking workstation efficiency.



Caleb Johnson
SECO/VACUUM
Field Service Manager

Supplier to the Industry
Years in Industry: 7
Nominated By: SECO/VACUUM

At SECO/VACUUM, Caleb Johnson supervises the installation, startup, and commissioning of vacuum furnaces, as well as troubleshooting furnace issues and performing furnace rebuilds and repairs. After earning his bachelor's degree in Mechanical Engineering from Geneva College, Caleb began his career with SECO/WARWICK Corporation in 2015.

Caleb has repeatedly shown hard work and dedication (along with some good old-fashioned determination) pays off. Starting as a field service engineer, he quickly showed he was not afraid to roll up his sleeves and dig into any problem that

Continued on page 48



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Continued from page 46

faced him in the field. Within the first year, Caleb advanced to commissioning new furnaces on his own with only minimal help from his colleagues and superiors. By 2017, he was one of the key members of the service team. His responsibilities included new equipment assembly and startup, troubleshooting furnaces in direct support of his clients, and traveling to distant areas of North America assisting his clients with on-site support.

It became clear that Caleb was not only dedicated, but would always put the client first. Many times, he was sent to some of the most challenging projects, which he approached with enthusiasm. Through those challenges, his determination was clear as he remained laser-focused on the fact that the client must come first.

This attitude enabled him to commission 10 furnaces while also assisting or leading several rebuilds over the next three years.

This experience, coupled with his insight and understanding of the importance of field service in the heat treating industry, meant he was the perfect match for the position of field service manager when the opportunity arose in 2021.

Since advancing to this leadership position, he has guided the field service team through the challenges of the post-COVID-19 market while developing new processes to streamline and strengthen field service operations. Each day, Caleb continues to grow as a contributor to the team at SECO/VACUUM and is certain to continue to have an ever-increasing impact on the heat treating industry.

Recently, Caleb was a guest on **Heat Treat Radio**: 365° Look at Troubleshooting Vacuum Furnace Maintenance Issues. Along with Don Marteeny, vice president of Engineering at SECO/VACUUM and previous **40 Under 40 Class of 2021** award winner, Caleb outlined top vacuum furnace maintenance concerns.



Karen Gantzer,
Associate Publisher/
Senior Editor,
Heat Treat Today

WORDS OF ENCOURAGEMENT Advice to 40 Under 40 Class of 2023

"All you have in business is your reputation, so it's very important that you keep your word." — Richard Branson, Virgin Group
Despite what the culture says, our words have meaning and power. As leaders, people are watching to see if your words match your actions. I encourage you to always be mindful of your words before you speak. Do they reflect the leader you are or are becoming? Do they build up or tear down? Are they sincere? Are the promises you make realistic and attainable? How is the tone? Are your words and follow through building trust? Taking that extra moment to consider your words will be most helpful not only as a leader, but in all areas of your life — Enjoy the journey!
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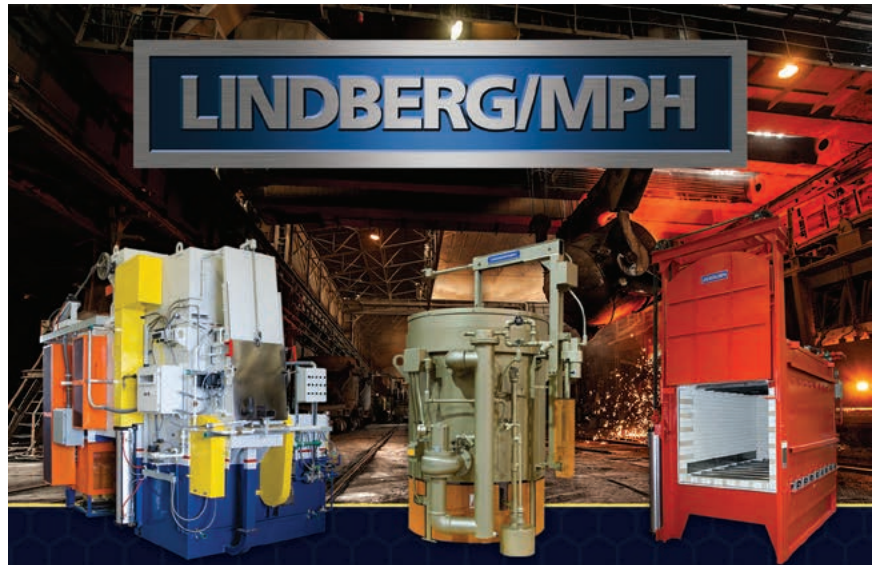
Solar Manufacturing, Inc.
Midwest Regional Sales Manager

Supplier to the Industry
Years in Industry: 13
Nominated By: Solar Manufacturing, Inc.

After graduating from Lockhaven University with a bachelor's degree in Business, Adam Jones began his career at Solar Manufacturing, Inc. as an inside sales engineer, performing tasks such as proposal and budget preparation. In this role, Adam interfaced with clients and made contacts with new prospects.

In 2015, Adam became the Midwest Regional Sales manager. Adam is very knowledgeable about Solar Manufacturing, Inc.'s product line in addition to the heat treating processes, and he is extremely productive in terms of achieving his tasks and goals. Key to his success is that he enjoys educating his clients about the operation of a vacuum furnace and is very intuitive in understanding and solving his client's needs.

Adam completed MTI's YES Program in 2016, as well as ASM International's course "Metallurgy for the Non-Metallurgist." In addition to this, Adam has served on Solar Manufacturing, Inc.'s Safety Committee for eight years. Outside of work, Adam has been a volunteer firefighter since his teens with the Perseverance Fire Co. of Souderton, PA. He also assists in fundraising events.



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**Brynna Keelin
Kelly-McGrath**

Moog, Inc.
Materials and Process Engineer

In-House Heat Treater

Years in Industry: 2

Nominated By: Moog, Inc., Heat Treat Today

Brynna Keelin Kelly-McGrath received her bachelor's degree in Materials Science and Engineering from the Purdue University Honors College. She is currently working on a master's degree in Manufacturing Engineering from the University of Michigan Ann Arbor. Brynna conducts metallurgical support for day-to-day heat treat issues and non-conformances across several divisions within the company. She also conducts operator training for all East Aurora heat treat operators and supports client special process audits of heat treat. Brynna recently led furnace hardware and software modification efforts for complex Moog parts, including assisting with new fixture design.

Brynna has been with Moog full time for approximately two years (three if internships count). During her time with Moog, Brynna has had the privilege of learning about heat treatment under the mentorship of Moog's principal engineer and several senior metallurgists. At Moog, Brynna's role includes providing metallurgical support for the heat treatment of dozens of alloys. Moog's internal heat treatment capabilities involve tens of furnaces and freezers, some operated through three shifts, located at Moog plants, across the U.S., and internationally. Brynna's excitement for her work stems from her enjoyment of taking on the unexpected.

Brynna has enjoyed creating Moog-specific heat treatment training courses for on-site operators to cover metallurgical theory, practical heat treatment operations, and internal/external heat treatment specifications. Brynna enjoys participating in the SAE committees, and she is able to maintain internal heat treatment documentation to the latest industry standards and support frequent client special process audits. Brynna's favorite projects involve combatting distortion, tight thermal tolerances, or microstructural issues with a combination of metallurgical theory, furnace or programming modifications, and fixture design.

Brynna is a member of the SAE AMS Metals Committees B, D, E, F, and G, and the SAE AMS Aerospace Metals and Engineering Committee (AMEC). Brynna has greatly enjoyed attending these

Heat Treat Today

meetings, learning from metallurgists in many industries, participating in the discussions, and engaging with the content by sponsoring revisions.

Even in such a short time, Brynna has learned so much and been able to contribute to Moog's heat treatment capabilities. She is greatly looking forward to many more years of learning and involvement in the heat treatment community!



Nic Krause
J&M Plating
President

Commercial Heat Treater
Years in Industry: 8
Nominated By: CAN-ENG

Nic Krause's passion is helping things grow (people, processes, organizations, and himself). Curiosity catalyzes his thirst for more knowledge and understanding as it relates to our surroundings and what we can do to impact them. Nic believes and lives out his conviction that all people should strive to leave the world and everything they touch in better condition than how they found it; passion, determination, grit, and personal/organizational accountability are what Nic sees as the keys to reaching that end.

Following the completion of his undergraduate degree, Nic went on to complete an MBA in Finance at Rockford University. Shortly after, Nic accepted a position with United Technologies (now Raytheon Technologies) as part of their Space Systems Business Unit, working as an aftermarket repair buyer and a space systems senior buyer.

Seeking out further challenges, Nic decided to enter the commercial heat treating and coatings service provider industry when he accepted a supervisory position in 2015

with J&M Plating. Nic realized his passion for problem solving would be a tremendous asset to support team building, client service, and operational improvement initiatives. Nic continued to advance his career shortly after starting with J&M Plating, moving into progressive

quality engineering and continuous improvement management and quality manager positions.

As a result of the quality, service, and operational improvements achieved under Nic's guidance, Nic was promoted to the position of president in 2021, a position he currently holds.



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Sergio Luevano
G-M Enterprises, a Nitrex Company
Product Manager/General Manager

Supplier to the Industry

Years in Industry: 19

Nominated By: Nitrex, G-M Enterprises, a Nitrex Company

Over the course of Sergio Luevano's 19-year career in the heat treating industry, Sergio has leveled up from cad/drafter to mechanical engineer to engineering manager to regional technical director to product manager. Most of Sergio's work has been in the aerospace, automotive, and military industries, with additional experience in aluminum and titanium composites.

In his role of day-to-day vacuum furnace builds and aftermarket fulfillment, Sergio has demonstrated his knowledge of project management and uses his extensive background in heat treat furnaces to deliver to clients vacuum furnaces built in the U.S.

Sergio is also responsible for understanding, growing, and updating the G-M Enterprises vacuum line to Nitrex's standards and leading Nitrex in the world of vacuum furnaces. Sergio helps Nitrex to offer dozens of aftermarket hot zones annually and to grow tremendously in the manufacture and delivery of vacuum furnaces for aerospace and general heat treatment markets worldwide.

Sergio's nomination is whole-heartedly supported by executives at Nitrex. In his various roles, Sergio created an augmented reality platform for ovens and furnaces, which Nitrex was able to offer to clients to advance capabilities in their controls while greatly improving their user experience; wrote "An In-Depth Look at Polymer Quenchants" (2019), an article about converting from oil quenches to polymer quenches; worked as West Coast representative for WIRCO, Tenaxol, and INEX; and made many presentations on quenching applications on behalf of Tenaxol in the United States and Mexico.

Sergio worked on a composite tent project where he and his team were able to design a furnace that could be erected around a part in six hours and disassembled in less than two hours after a complete cycle. In Sergio's own words, this project stretched the limits of the composite world.

Another credit to Sergio's management abilities was in working with Baker Furnace, Inc., where he used an existing product line to repurpose designs for managing industrial waste.

Sergio believes that product management is where he belongs. With his experience in engineering, sales, management, and finances, Sergio is able to take existing product lines and take them to the next level. One of the best parts of the job: seeing a finished product and the client's reaction.

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Connor Montgomery

Aalberts surface technologies HIP | braze | heat treatment
Plant Manager

Commercial Heat Treater

Years in Industry: 8

Nominated By: Aalberts surface technologies HIP | braze | heat treatment

After graduating from University of Wisconsin — Platteville with a bachelor's degree in Industrial Technology Management, Connor Montgomery began his career in the heat treating industry at Neenah Enterprises, Inc. as a melt foreman. Connor also worked as the manager of foundry operations and later as the general manager of Crucible Metal Solutions, Inc. In

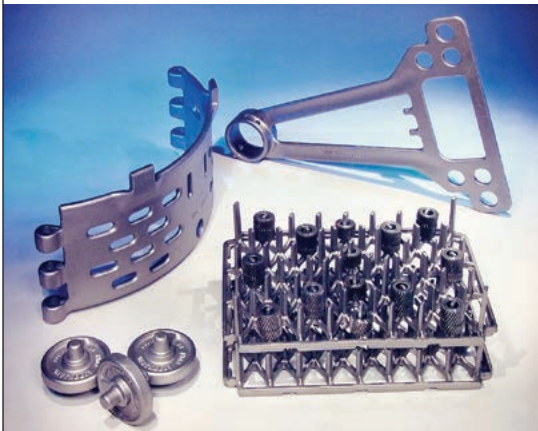
2015, Connor began his career with Aalberts (formerly Applied Process) as a process engineer in 2015 and had demonstrated his leadership skills by transitioning into the quality manager position before assuming the role of plant manager in Oshkosh, WI in 2022.

Connor is a strong proponent of "Quality of Life" improvement for employees to make daily work tasks easier and more efficient. Understanding the importance of building strong teams and supporting them for success, his focus on the examination of hiring and retention practices as well as his emphasis on effective communication have resulted in a complete cultural change within the facility that he manages.

Connor is leading major efforts to improve flow, efficiency, and throughput in the Oshkosh plant. He has introduced the use of modern lean tools such as 5S, FIFO, and Supermarkets to reduce the amount of unproductive manhours. He is actively involved in the reduction of additional waste within plant processing. Connor is a graduate from MTI's YES Program and is currently working on earning an MBA from the University of Wisconsin — Oshkosh.

Under Connor's leadership, the Oshkosh plant has realized dramatic increases in throughput resulting in record sales and increased client satisfaction. The Oshkosh plant is one of the largest commercial austempering facilities within North America and includes the "Monster Furnace," which is the largest atmosphere-to-salt furnace in operation within North America.

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Zach Morgan
Super Systems, Inc.
Senior Project Engineer

Supplier to the Industry

Years in Industry: 6

Nominated By: Triumph Group, Cook Induction Heating Co., Bodycote, Super Systems, Inc.

Zach Morgan wields extensive knowledge of controls as it relates to the heat treat industry, his ability to put that knowledge into practice in a way that yields real world results, his initiative, leadership, and most importantly his care that he has demonstrated for his clients.

Zach is an experienced electrical engineer with a Bachelor of Applied Science in Electrical and Electronics Engineering. Zach is skilled in MATLAB and RSLogix 500/5000. In 2017, Zach joined Super Systems, Inc. as a project engineer. He is now senior project engineer. For the past year, Zach has been setting up new controllers and troubleshooting problems. His knowledge of aerospace flow downs and programming is well beyond his years. He has vast knowledge about all types of furnaces and endothermic generators and has great ideas to improve these processes. While employed at Super Systems, Inc., Zach has been studying for a Professional Engineer (PE) certification. He has passed the initial tests and is working towards the license.

At Cook Induction Heating Co., Zach has been the lead engineer on a number of projects at Cook's facility. Zach implemented SSI's fully electronic SCADA package at Cook Induction. Zach went above and beyond to ensure personnel at Cook were fully trained and comfortable with the new system. Zach's extensive knowledge and experience gave Cook the confidence to reach back out to help solve issues they were having with the reliability of combustion burners on a few furnaces.

Another instance of his leadership and problem-resolution abilities came up with a burner redesign that solved the issues at Cook Induction. Zach worked diligently to plan the project with little furnace downtime and minimal impact on production. He communicated each phase of the upgrade to ensure Cook's team was in the loop. Most impressive was Zach's genuine passion for improving operations at Cook Induction. A clear leader with an exceptional work ethic, he has gained the respect of those he's worked with.

Zach has been supporting Bodycote's West Coast plants in multiple capacities. He has assisted Bodycote personnel on several plant-wide controls retrofits, SCADA retrofits, and numerous other smaller scale or localized controls projects. In managing the projects from start to finish, he oversaw the engineering, personally performed the installations of the controls, performed controls/software integration, and performed start-up and tuning of all the systems.

He has demonstrated deep knowledge of controls, software, wiring, plumbing, mechanical retrofits, and understands how a furnace (any furnace) works and thus how to manage and execute a project from start to finish.



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Kevin Norton
Technical Field Services, LLC
Branch Manager

Commercial Heat Treater
Years in Industry: 15
Nominated By: TMC

Kevin Norton is a graduate of Bethune-Cookman University with a bachelor's degree in Accounting and Finance. He holds an OSHA 30 certification from the University of South Florida. He began his time in the heat treating industry in 2009, freelancing with Analytic Stress Relieving, Inc. Before

his time at Technical Field Services, LLC, Kevin also worked at TEAM, Inc. as a heat treating technician, at Superheat as a unit supervisor and a project manager, and at Millennium Torque & Tensioning, Inc./Millennium Industrial Services as a regional supervisor.

Kevin has a thirst to learn and grow in the business. He managed to work his way through the industry, earning Level I and II Technician certifications in heat treating, while mentoring and training younger men and women on best practices in the field. He has written study and test material for companies to ensure their new hires are knowledgeable and comfortable with the craft. Having held positions consistent with those of a true leader in supervision for many years, his role of branch manager exemplifies this progression as an industry leader.



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Josh Parslow
Gasbarre Thermal Processing Systems
Manufacturing Manager

Supplier to the Industry

Years in Industry: 12

Nominated By: Gasbarre Thermal Processing Systems

Josh Parslow is a graduate of the University of Pittsburgh with bachelor's degrees in both Mathematics Education and Applied Mathematics. Josh started his career in the powder metallurgy industry as a continuous improvement team leader at GKN Sinter Metals. During that time, he worked to implement lean manufacturing concepts while improving efficiencies and operational controls of the in-house sintering department.

Josh has been with Gasbarre for the last eight years, starting as a sales engineer. At that time, he supported the outside sales team developing furnace equipment specifications, proposals, and developing relationships with local clients. Since then, Josh has grown into the manufacturing manager role for Gasbarre Thermal Processing Systems utilizing his experience in continuous improvement and technical knowledge gained through his technical sales role. Josh now manages a 150,000 square feet manufacturing operation for Gasbarre, as well as a large field service team. He works closely with the sales and engineering groups to successfully complete each project.

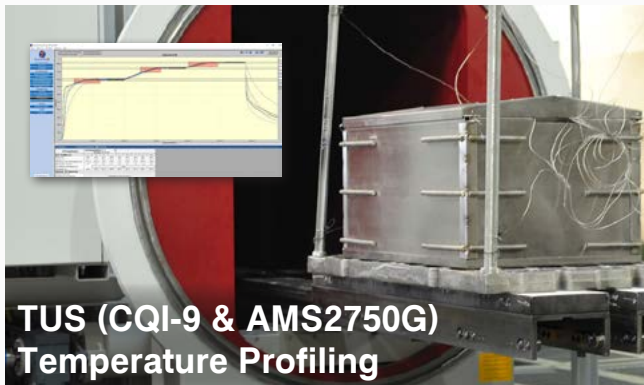
Josh has shown great leadership skills managing a team of skilled fabricators, assemblers, electricians, and technical field service personnel. He has improved efficiencies through planning systems, technology advancement in manufacturing, quality systems, and hiring practices. Josh has served on the Western Pennsylvania APMI executive committee supporting efforts to plan monthly social events, networking events, and technical presentations. He is also enrolled in the Vistage Emerging Leaders program to further advance his leadership skills.

Over the last several years, Josh has been extremely active with local trade schools, jobs fairs, high schools, and colleges to help promote the industry and attract new talent. Josh resides in Western Pennsylvania with his wife and three children. When he's not in the heat treat shop, Josh stays active coaching his sons' sports teams and staying involved in the community.

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Christopher Pietszak

Aalberts surface technologies HIP | braze | heat treatment
Quality Manager

Commercial Heat Treater

Years in Industry: 10+

Nominated By: Aalberts surface technologies HIP | braze | heat treatment

Chris Pietszak is an experienced quality systems professional with a focus on the implementation and support of ISO, IATF, and Nadcap as well as CQI-9 compliance. Chris began his time in the heat treating industry at Skyway Precision, Inc. and later joined Aalberts in 2016 as a quality management representative and has transitioned into the role of quality manager of the Livonia, MI austempering facility. In addition, he leads major quality initiatives for the Aalberts surface technologies group on the corporate level. He is a trained ISO and IATF auditor, as well as an MTI YES Program graduate.

An example of an important role that Chris played was in the implementation of quality systems during the start-up of the Aalberts Fort Smith, Arkansas facility. He is currently leading efforts to align the quality management system process for 18 plants in the Aalberts surface technologies group — the second largest heat treating consort in North America. Through these efforts, Chris is making a significant contribution to the implementation and continuous improvement of quality systems in the commercial heat treating industry. More recently, Chris has started to share his experience by getting involved with heat treating industry specification initiatives.



Humberto Ramos Fernández

HT-MX Heat Treat & HIPing
CEO & Founder

Commercial Heat Treater

Years in Industry: 11


Nominated By: HT-MX Heat Treat & HIPing

Humberto Ramos Fernández is a graduate of Tecnológico de Monterrey with a bachelor's degree in Mechanical Engineering and the University of Texas Austin with a master's degree in Engineering Technology, General. Before founding HT-MX,



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Humberto gained experience working at GE Energy and TECSA Tanks. He describes himself as a mechanical engineer with an entrepreneurial mindset, always looking for the next opportunity.

Humberto is the CEO and founder of HT-MX, the first ever HIP processing supplier with aerospace certifications in Latin America. In addition to this claim to fame, HT-MX is also the only Honeywell certified heat treater in Mexico. HT-MX is a Nadcap certified heat treat plant supplying aerospace OEMs, Tier 1 and Tier 2. This journey was described in an article Humberto published in **Heat Treat Today's** March 2023 Aerospace edition: "Overcoming Challenges and Finding Success in Latin America's First HIP Batch." In addition to this article, Humberto has published two articles in *Mexico Business News*: "Mexico is Ready to Tackle Upcoming Manufacturing Demand: HT-MX " and "Taking the Mexican Aerospace Industry to the Next Level." In addition to this article, Humberto has published two articles in *Mexico Business News: Mexico is Ready to Tackle Upcoming Manufacturing Demand: HT-MX* and *Taking the Mexican Aerospace Industry to the Next Level*.

HT-MX is a project Humberto started when he was in his 20s, and it has survived a lot of external crises (pandemic, aerospace crisis, automotive crisis, etc.) and somehow has been able to adapt and evolve. He has led the company through the design and implementation of an AS9100D and Nadcap compliant operation from scratch with local, young talent. This year, Humberto expects 100% growth of his company.

Humberto is very active in the Chihuahua Aerospace Cluster as well as the Mexican Aviation Industry Federation (FEMIA) and has participated in multiple events and programs. He is involved in supplier development support programs for Chihuahua and Mexican companies. Humberto is committed to leading the way for HT-MX to develop relationships with both city and state governments and working together to create a better offer to attract foreign investment. Better suppliers mean better opportunities and more jobs created in the region.

Humberto's success at HT-MX has allowed the company to fill gaps in the supply chain and enabled clients to grow their manufacturing operations.



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William Regula

RBC Precision Products
Manufacturing Engineer

In-House Heater Treater

Years in Industry: 5

Nominated By: Integral Power Technologies

William Regula's extensive knowledge of heat treating automation is observed in the way he logically applies solutions to complex problems. He is self-driven and is largely responsible for advancing the use of technology at RBC Precision Products. William is highly respected by his fellow employees, and he is the last one to take credit for a success that he would objectively deserve.

While troubleshooting an induction heat treating cell on a service call, William ensured that the finished parts met specifications. Williams's responsibilities as a manufacturing engineer at RBC are diverse. As related to heat treating, he is responsible for maintaining the heat treat cell, identifying deviations in quality, and designing and then applying corrective measures.



Ramon Romero

Hudapack Metal Treating of Illinois, Inc.
Supervisor

Commercial Heat Treater

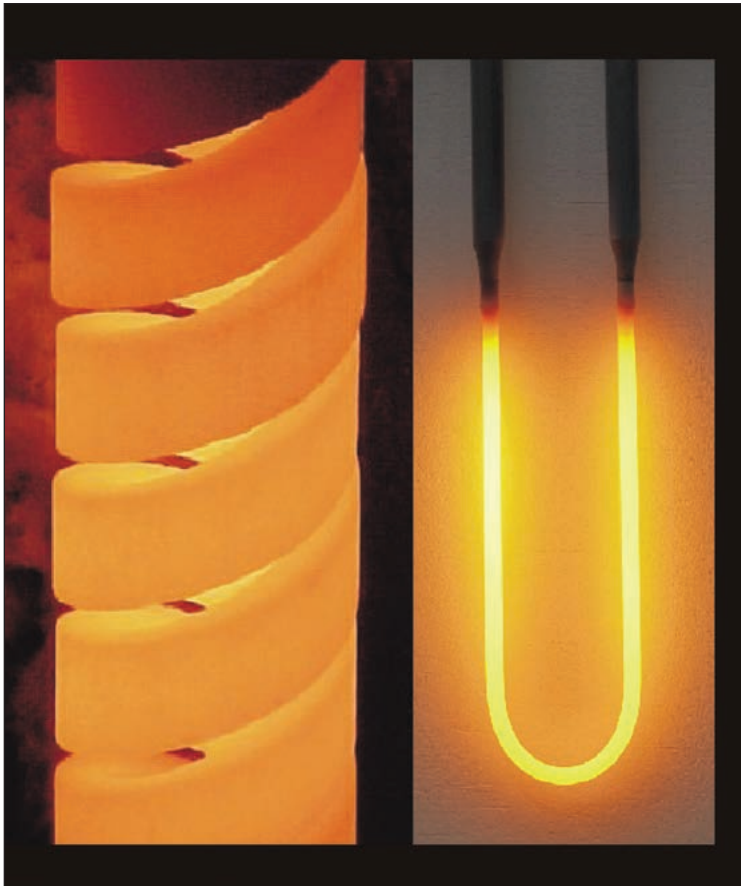
Years in Industry: 6

Nominated By: Hudapack Metal Treating of Illinois, Inc.

Ramon Romero was just 15 years old when he began his heat treating career at Hudapack Metal Treating of Illinois, Inc. He started as a racker after school and on the weekends. Later, he grew into a full-time position as a furnace operator after high school. Over the last year he earned the quality inspector position and has become a supervisor. Ramon goes above and beyond by working any shifts the company needs him

on — which is not easy, since Hudapack runs 24/7. He always shows a willingness to learn, takes on new tasks and adapts very quickly.

Ramon has an infectious smile that brightens everyone's day and always has a positive attitude no matter what kind of day he is having. Ramon will be graduating this fall from MTI's YES Management Program and Hudapack looks forward to seeing him apply what he has learned from the program into his work at Hudapack Metal Treating of Illinois, Inc.



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Justin Rydzewski

Controls Service, Inc.

Director of Sales & Market Development

Supplier to the Industry

Years in Industry: 12

Nominated By: Controls Service, Inc.

Justin Rydzewski technically joined Controls Service, Inc. when he was 16 years old as “corporate master of custodial arts” (or “office janitor,” as Justin’s father, the CEO of Controls Service, put it). Justin continued his work at Controls Service while earning a bachelor’s degree in Business Administration. In 2010, Justin was offered an entry level sales and marketing

position in which he quickly grew from selling services to developing an understanding of heat treaters’ needs and how those needs could be implemented into compliance with a vast range of specifications from CQI-9 to AMS2750. Justin loved the work, the team, the clients, and the opportunity to work with his father. Justin spent a lot of his time shadowing his father’s work on the CQI-9 work group, and his first big project was rebranding Controls Service with a new logo, new website, and new business/field reporting documents.


Justin endlessly studied quality and pyrometry standards/specifications like ISO/IEC 17025, AMS2750, and CQI-9. He wanted to become and be seen as an expert. In 2014, Justin was promoted to his current position of director of Sales and Market Development, and in 2016, he was invited to join the CQI-9 work group as a pyrometry subject matter expert and to help author the 4th Edition. In 2018, Justin was invited to do the same for the CQI-11 and 12 work groups.

Justin has devoted many invaluable hours to CQI-9-4, 11-3, and 12-3 and has provided guidance and answers for countless pyrometry inquiries received by the AIAG from heat treaters around the world. Several of his pyrometry illustrations have appeared in international publications.

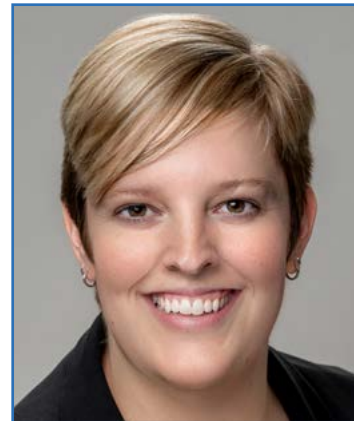
Today, Justin is a minority shareholder at Controls Service and participated in a four-part series on **Heat Treat Radio** that discussed the newly released 4th edition of CQI-9. Justin stands out above his peers in dedication and commitment to all aspects of the business. He is on track to move Controls Service, Inc. into the future and continue to provide service that truly is “Second To None.”

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Angella Sell

Aalberts surface technologies HIP | braze | heat treatment
Research & Development Engineer

Commercial Heat Treater

Years in Industry: 8

Nominated By: General Motors

Angella Sell is a Missouri University of Science and Technology graduate with both a bachelor’s degree and master’s degree in Metallurgical Engineering. Angella worked as a metallurgical engineer at Columbiana Foundry Company and ELLWOOD Engineered Castings and began working as an R&D engineer at Aalberts surface technologies HIP | braze | heat treatment (then Applied Process) in 2015.

Angella is a proven leader, having chaired the ASM Detroit Chapter from June 2020 to June 2021. Her tenure was in the middle of the COVID pandemic. She led the transition to Zoom meetings, which were very well attended despite the struggles with Zoom fatigue. In 2022, Angella was presented with the ASM Detroit Chapter President’s Award for her leadership role during the challenging pandemic years.

Angella is the vice-chair of the AFS Cast Iron Research Committee and will assume the role of chair in May 2024. Within this group, she serves as a subject matter expert for heat treatment research. Angella specializes in programs related to austempered ductile iron.

With the Aalberts surface technologies HIP | braze | heat treatment group, Angella manages an R&D laboratory with a focus on working with clients on heat treatment development programs. Many of these programs are materials conversion related and require both research and development efforts.



José Armando Sosa Cortés

John Deere México

Strategic Manufacturing Materials Competency and Heat Treatment Lead

In-House Heat Treater
Years in Industry: 8
Nominated By: John Deere México

At John Deere México, José Armando Sosa Cortés is sought out by the company when there are heat treating, forging, and materials questions. As a mentor and a leader, he is a very important element of the company, supporting all eight John Deere factories in Mexico as a heat treatment expert.

José Armando Sosa Cortés has a master’s degree in Materials Science with a specialty in heat treating from Universidad

Continued on page 63

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Continued from page 61

Autónoma de Nuevo León, as well as Electrical and Mechatronics degrees. In addition to these degrees, he draws from work experience at Nematik and Whitney Blake Company.

He also oversees a production line with hot forming, quenching, tempering, painting, and packaging. His ability to choose the right temperatures and times for different kinds of materials and different mechanical properties has increased production capacity up to almost 50%. José Armando Sosa Cortés is also skilled in root cause analysis, and leverages this to achieve success. He has made other contributions to cost reduction, as well as optimized projects that helped to enhance the process capabilities and delivery times using Six Sigma (Green Belt status) strategies like DMAIC methodology.



Ryan Sybo
SECO/WARWICK USA
Project Manager

Supplier to the Industry

Years in Industry: 9

Nominated By: SECO/WARWICK Corp.

Ryan Sybo stands out due to his commitment to lead the company as it grows from an engineering and project management perspective. Ryan is a graduate of Penn State Erie, The Behrend College with a bachelor's degree in Mechanical Engineering Technology. Ryan began his career at SECO as a project engineer and was promoted to project

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manager in 2019.

Ryan's ability to teach others while not talking over the person's head is something few can accomplish, especially when not all are engineers. The skill set to design, estimate, and balance current projects at the same time is key, and Ryan does this with marginal effort. Currently Ryan is actively working on two rebuild projects at one location, which have components arriving from overseas. There have been delays with the equipment, and he has managed to push the vendor to deliver two at one time so the projects stay within the completion timeline. The company is going through a transitional stage of legacy employees retiring, and Ryan is working with the team to ensure the knowledge base is transferred so nothing is lost. Ryan is on track to become the engineering manager of the future SECO USA.



Nirbhay Tandel
ASW Pengg LLC
Process Metallurgist

In-House Heat Treater
Years in Industry: 5
Nominated By: ASW Pengg LLC

Throughout his career in the heat treating industry, Nirbhay Tandel has demonstrated exceptional leadership as the primary facilitator for the ISO 9001:2015 certification audit, successfully guiding both external and internal teams towards achieving and maintaining certification. This commitment ensures unwavering adherence to rigorous quality management standards.

One of Nirbhay's key contributions was when he successfully collaborated with the chief operating officer (COO) to commission a state-of-the-art heat treatment line, exceeding a \$3 million investment, and achieved seamless production of wire. In addition to this commissioning, Nirbhay effectively led the heat treatment training program, standardizing work processes among operators and optimizing machine productivity. This achievement exemplifies a dedication to operational excellence and a culture of continuous improvement.

He implemented and oversaw a comprehensive preventive maintenance program, leading to a consistent machine efficiency rate exceeding 98% over the past three years. This initiative drove optimal productivity and operational excellence.

Nirbhay has maintained an exceptional track record of client satisfaction, evidenced by a sustained client rejection rate of less than 1% for the five million pounds of material supplied annually. Through close collaboration with the manager, Nirbhay actively contributed to a surface improvement project that has not only led to increased order volumes but also positively impacted client satisfaction. This collective effort underscores his commitment to enhancing operations and delivering exceptional value to clients.

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Héctor Leobardo Torres García

SISAMEX – SISTEMAS AUTOMOTRICES DE MEXICO
Project Manager

In-House Heat Treater

Years in Industry: 13

Nominated By: SISAMEX – SISTEMAS AUTOMOTRICES DE MEXICO

Héctor Leobardo Torres García began his career at SISTEMAS AUTOMOTRICES DE MEXICO (SISAMEX) in 2010 as an intern in the metallurgy area. In 2014 he carried out an industrial stay in Spain within GH Induction (a global group specialized in induction heating solutions), in the Applications department,

with Pedro Moratalla as his main mentor. Throughout his career, Héctor has demonstrated his extensive knowledge in the areas of ferrous metallurgy, heat treatment, and process simulation.

He has led projects for the implementation of new technology, design, and development of induction heating processes, and actively participated in the launch of new products for SISAMEX and SUDISA. Héctor currently works as project manager and is responsible for the selection and definition of technology related to induction heating processes and special processes. He researches new technologies around the world.

As a project manager, his leadership skills have been outstanding, as well as his professional demeanor, tenacity, and respect for his colleagues. Héctor shares extensive knowledge in the area of induction heat treatment as applies it to the automotive industry.

In addition to the above, Héctor is in the process of obtaining his Ph.D. in Materials Engineering directed by Dr. Rafael Colás.



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Ryan Van Dyke

Paulo
Metallurgical Engineer

Commercial Heat Treater
Years in Industry: 3
Nominated By: Paulo

Ryan Van Dyke is a 2019 graduate with a bachelor's degree in Metallurgical Engineering from Missouri University of Science and Technology. During his studies he was the president of both the American Foundry Society and Climbing Club. Even with his tight schedule, he managed to do two tours as an undergraduate researcher focused on heat treatment and chemistry optimization of austenitic lightweight steels among other studies. Ryan joined Paulo right as the COVID lockdown

hit. Even with this handicap, he was not hindered in his ability to acclimate to the world of physical metallurgy and heat treatment technology.

Even with the disadvantage of his employment coinciding with the COVID lockdown, Ryan has become a go-to person for internal answers. This includes activities such as physical metallurgical analyzation for reverse engineering, failure analysis, and problem solving. He is also an energetic resource for assisting quoting feasibility reviews along with plant assistance for job development and handling day to day activities.

Besides his experience being president of university clubs, Ryan has been accepted as an Emerging Professional Board Member of the HTS Board starting in October 2023. As part of this role, Ryan will gain a position in the heat treat community and help drive improvements for the future.

Ryan has been given leadership roles in critical company objectives. He is currently leading a group of internal professionals with respect to process evaluations for all major heat treatment and metal finishing operations within Paulo. This includes groups of plant managers, production managers, quality managers, metallurgists, and engineers who focus on process optimization and reduction in variation. This is a high honor, since he is leading one of only six primary company objectives for 2023.

Ryan will be presenting a paper at this year's IMAT Conference and Exposition in Detroit. This paper will focus on causes and mitigation strategies concerning quench cracking during heat treatment. Ryan's additional contributions to the industry



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include being a member of the NADCA Heat Treat Task Force where he played an active role in the rewriting of the NADCA 207 specifications of "Special Quality Die Steel & Heat Treatment Acceptance Criteria for Die Casting Dies."



Davis Wilson
Framatome
Welding Engineer

In-House Heat Treater

Years in Industry: 9

Nominated By: Heat Treat Today, Framatome

Davis Wilson is an experienced and educated welding engineer

and metallurgist. He is an AWS Certified Welding Inspector, holds a bachelor's degree in Welding Engineering from LeTourneau University, and is currently pursuing a Ph.D. in Mechanical Engineering from Liberty University. Along with his welding certification, Davis holds a Six Sigma Green Belt. Davis spent time at John Deere and United Launch Alliance as a welding engineer intern, worked at Honeywell FM&T, and is now a welding engineer at Framatome.

One of Davis's primary focuses is researching temper bead welding and developing models to predict the tempering effect of weld thermal cycles on the martensitic heat affected zone in HSLA forgings. In his career, he is known for his creative thinking and problem solving. Davis has developed processes and parameters for laser powder bed fusion systems on SLM, MLAB, and Renishaw platforms; performed R&D work on microstructural development, innovative processing techniques, and AM specific alloy chemistry development. He has developed and qualified procedures for the following processes: automated and manual GTAW welding, orbital tube welding, electron beam welding, laser beam welding, vacuum furnace brazing, and various resistance welding processes on austenitic stainless steel, aluminum, and titanium.

R&D expertise is another specialty of his and includes overseeing and contributing to projects related to the weldability of various alloys, advanced pulsed gas metal arc welding, modelling of high energy density welding processes, atmospheric effects on molten pools for welding, and additive manufacturing at his previous company.



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In order to assess the tempering characteristics of the heat affected zone during a temper bead welding of HSLA steels, Davis designed an experiment to physically simulate a range of welding thermal cycles with Gleeble testing and developed a new approach to calculate the tempering parameter which allows for accurate estimations of hardness and impact energy for a given non-isothermal thermal cycle. This advancement was used to help develop and qualify a field weld repair for a nuclear pressure vessel.

Davis has the ability to connect the metallurgical theories that govern welding and heat treating with the practical application of them in the shop or on site to drive progress and increase quality.



Ben Witoff

Fives North American Combustion, Inc.
Manager, Data Engineering

Supplier to the Industry

Years in Industry: 7

Nominated By: Fives North American Combustion, Inc.

Going by his educational background (a BSE in Mechanical and Aerospace Engineering from Case Western Reserve University), Ben Witoff is a mechanical and aerospace engineer, but he has spent the last 10 years in the combustion industry as a design

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engineer, thermal process specialist, and data engineer.

Ben was a guest on **Heat Treat Radio: Algorithmic Combustion Tuning** with Justin Dzik and Ben Witoff at Fives. When Ben saw the need for greater data analytics and insights in industrial processes, he founded the Data Engineering department at Fives North American Combustion, Inc. in 2019. He still manages this department today. Leveraging his unique background as a combustion-focused mechanical engineer, Ben and his team use data science to develop internal and external solutions to provide Fives' clients with smart, data-driven tools and IIoT products.

As can be easily seen, Ben is a leader at Fives in data engineering and IIOT. He is currently managing Fives' products that go to market in this new field and has pushed products such as Fives' PLC portal and Firelogger to market for clients to get a better understanding of their combustion systems. His leadership of the CertiFire® product, specifically for the forge and heat treat market, has been integral to its success. The product automatically adjusts a furnace to satisfy AMS2750 Rev G uniformity standards. He looks to grow the department as the products gain traction in the marketplace.



Miguel Zempoaltecatl

Nexteer

Advanced Manufacturing Engineer for Heat Treatment Processes

In-House Heat Treater

Years in Industry: 7

Nominated By: Quaker Houghton

Miguel Zempoaltecatl began his academic career at Instituto Politécnico Nacional in the field of Mechanical Engineering. He continued with his education, completing a postgraduate with international recognition on metallurgy at the CINVESTAV

(Centro de Investigación y Estudios Avanzados del IPN) and obtaining a master's degree in Metallurgical Engineering.

Miguel is the Advanced Manufacturing Engineer (AME) for heat treatment processes mainly at Nexteer based in Queretaro, Mexico. In this role Miguel works on new projects for the Queretaro site, and is involved in all phases of project development; this includes upgrades and retooling or refurbishing efforts for current machines until new machines can replace older equipment. Miguel also works with suppliers' development for new techs, new machines, chemicals, devices, etc. needed for certain projects.

Miguel was also senior process engineer for heat treatment processes at Nexteer. In this position Miguel was responsible for heat treatment, NDT, traceability, and washing processes. In these roles, Miguel focused on safety and quality processes, documentation updates, lean manufacturing, improving processes, new launches, and finally he supported the metallurgy laboratory as internal consultant.

Due to his experience in metallurgy and heat treatment, he also collaborates with other plants in the region of Mexico for metallurgical processes to accomplish client safety and quality specifications. Miguel collaborates with suppliers/vendors of raw material and metalworking fluids such as polymer quenchants used in induction hardening. As senior project engineer for Heat Treatment, Miguel had experience in different metallurgy areas and processes such as hot shearing, forging, aging, tempering, annealing, normalizing, welding processes like a friction, projection and powder, induction hardening, nitriding, carburizing, and quenching.

Additionally, Miguel has an NDT Level II certification for magnetic particle inspection method. He also is skilled in Eddy current, X-ray, ultrasonic, Barkhausen noise inspection, and he is working on developing a "Process Compensated Resonance Testing" method.

Miguel has been active in the heat treating industry for seven years serving at different companies, such as Dana Heavy Axle and Federal Mogul Powertrain. In 2021 he obtained first place in Champion I&CIM World Cup Awards 2021 for the best project solved using the Red X Methodology. Another recognition is "The Million Award" for reaching \$1 million USD or more on savings for the plant on heat treatment improvement projects.

Miguel is known for skills as a leader, such as leading conflict resolution, strategic thinking, team work, and development of new projects, among others. Miguel is skilled in CQI-9 assessment, continuous improvement, root cause analysis, 5S, Six Sigma, Red X Methodology, and lean manufacturing.



2023 Honorable Mentions

The privilege of unveiling the **Heat Treat Today 40 Under 40 Class of 2023** comes with the disappointment that not every one of the nominees could be included in the final count, even though each young, up-and-coming, talented heat treating professional whose name was submitted is making a significant difference in their field. We will be back next year looking for candidates for the **40 Under 40 Class of 2024**. In fact, you can begin the process right now by going to www.heatreattoday.com/40-under-40-nominations to nominate the young professional you have in mind who is not listed among the finalists.

To this year's Honorable Mentions: We acknowledge you as an Honorable Mention for your contributions to your company, your dedication of service to your clients, and your commitment to pursue skills and knowledge within your field. You should know that we are rooting for you to be back next year for the **40 Under 40 Class of 2024!**

Heat Treat Today encourages the rest of you to keep your eyes open for young professionals you encounter within your heat treating sphere, especially those with in-house heat treating departments, who deserve recognition and encouragement to stick to the path that will take the industry to greater heights of technology, quality control, standards, and leadership.

Uriel Avila

Production Supervisor, Paulo

Christian Brower

Mechanical Engineer, Lindberg/MPH

Chris James

General Manager,
Metalex Thermal Specialties

Chris Kline

Senior Materials Engineer,
Dana Incorporated

Stacy Kreklau

Operations Manager,
Franklin Brazing & Metal Treating

Bud Lyman

Vice President of Operations,
Eastern Metal Treating, Inc.

Jesus Mejia

Maintenance, Hudapack Metal Treating
of Illinois, Inc.

Laura Oviedo

Account Manager,
Global Thermal Solutions, Inc.

Levi Pietila

Project Engineer, AFC-Holcroft

Julio Salazar

Assembly Expert,
Thermal-Vac Technology, Inc.

Christopher Sullivan

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Aftermarket, SECO/VACUUM

Roberto Torres Barrios

Quality and Productivity Manager,
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From the Archives: Heat Treat Veterans

This new feature from **Heat Treat Today** recognizes the military service veterans who have donned the heat treat hat during their career. Thank you for your service and sacrifice for our country

Below, you will find profiles of **Heat Treat Veterans** from our archive.

Heat Treat Today is continually updating our records of individuals in the heat treat industry who have served/are serving in the U.S. military. If you are or know a military veteran whom we can add to this living archive, please reach out via the online form or email Bethany Leone, managing editor, at bethany@heattreattoday.com.

Larry Bradley

Bradley has been in the heat treat industry for **two years** and works as **quality manager** at **Bodycote**.

Military Branch: Army

Active Service: January 1972 to December 1979

Highest Rank Achieved: E-6 Staff Sergeant

Service Details:

- Vietnam War
- Basic — Fort Knox
- AIT — Fort Benning
- Airborne School — Fort Bragg
- Aberdeen Proving Ground in Maryland (Introduction to Quality)
- Bronze Star, Silver Star, Purple Heart, Army Commendation Medal
- Also stationed at Kaiserslautern Germany, and 100th Division Echo Company at Morehead, KY
- Mobilized for Operation Enduring Freedom and stationed at Camp Atterbury, IN



Bradley Johnson

Johnson has been in the heat treat industry for **8 years** and works as **quality engineer** at **Bodycote**.

Military Branch: Army

Active Service: October 2000 to August 2007

Highest Rank Achieved: E-5 Sergeant

Service Details:

- Involved with Operation Enduring Freedom
- Basic Training at Fort Leonard Wood, MO
- AIT at Fort Lee VA
- First duty Station at 400th QM
- Also stationed at Kaiserslautern Germany, and 100th Division Echo Company at Morehead, KY
- Mobilized for Operation Enduring Freedom and stationed at Camp Atterbury, IN



As far as stories, I tend to not delve too deep into my tenure as a serviceman, but what I will share is: There are very few people in the United States that truly understand what it means to sign a blank check of your life, being willing to risk it for the county that you love, as well as the millions and millions of its citizens, at the drop of a hat, if called to action.

With regards to basic training, I as well as numerous others I am sure, believe that the experience was the most fun and exciting adventure that I would never do again. I was in AIT when the 9/11 attacks happened, and on that day, we all knew we were going to war. It was just a couple short years later when I was mobilized for OEF. I was attached to the 658th out of Mississippi, and we traveled to Camp Atterbury, IN, for our pre-deployment training.

We were there for around 3–4 months, chomping at the bit, to go do our part in protecting our country and for a lack of better terms, enact revenge for the ones we tragically lost that fateful day in September 2001. We were three days

away from boarding the plane and heading overseas when we got word from the Pentagon that our particular mission was cancelled, and they were sending us home. Come to find out, we were going to be sent to the southeastern part of Turkey, to be able to invade Iraq at its northwestern border. When Turkey denied our access, that was the ticket home.

After getting back home I submitted a transfer request to be able to join the 100th Division. It took about a month, but the transfer went through, and I was now a part of a drill sergeant unit (Echo Company) and was making trips to Ft. Knox to push troops through their basic combat training. To be able to come full circle in that regard was one of the most rewarding adventures I have ever had. To clarify, I was not a drill sergeant myself, merely cadre, but I was an NCO, and just by having that rank, the fear in the recruits' eyes when you walked into the room took me back to being in their shoes. And this is where I ended my career.

Jon Tirpak

Tirpak has been in the heat treat industry for 42 years.



Branch of Service: United States Air Force

Active Service: 1982 to 1988

Highest Rank Achieved: Captain

Service Details:

Captain, United States Air Force, Norton Air Force Base, CA, 1986 to 1988.

Led an \$18M Air Force-wide, integrated effort to evaluate materials and structures in underground nuclear tests and managed Small Business Innovative Research Projects.

Lieutenant, United States Air Force, Wright Patterson Air Force Base, OH, 1982 to 1986.

Served as an Executive Officer within Project Forecast II (an Air Force "think tank") and focused expertise on advanced materials and manufacturing in Plans and Programs.

Office of the Air Force Materials Laboratory — conducted structural failure analyses; characterized effects of plastic bead paint removal. Centrifuge test subject with 43 tests, some approaching 8.5 Gs. Designed and conducted data generation programs to characterize the fatigue and fracture of cast aluminum and generated static and dynamic property data for various metallic alloys.

My military career took off in 1982. Earning a Bachelor of Science degree in Metallurgical Engineering at Lafayette College and completing four years of Air Force ROTC Training, the best assignment for me was the Air Force Materials Laboratory at Wright Patterson Air Force Base. Those formative years linked me to heat treating, for most alloys without thermal processing are just metallic chemistries! For example, a popular alloy then was A357 comprised primarily of aluminum, silicon, and magnesium. To impart useful properties after casting, heat treating is required, and in the case of A357 industry specified -T6. We can't have one without the other; we need alloy suppliers and metal workers (foundries, forges, etc.) AND heat treaters. We don't need a lot of them; we need just the best, world-class producers with the passion, people, processes, and purpose for serving humanity. Back in '82, my take off for success was via the Air Force and cast aluminum alloy A357 with a heat treat "afterburner" of -T6. In 2023, I have yet to land!

Awards:

- United States Air Force Commendation Medal
- United States Air Force Achievement Medal with two Oak Leaf Clusters
- United States Air Force Outstanding Unit Military Ribbon
- United States Air Force Service Longevity Ribbon
- United States Air Force Training Military Ribbon
- United States Air Force Centrifuge High G Test Subject Certificate
- Lifetime Member Air Force Materials & Manufacturing Alumni Association, Dayton, OH

Danny Woodring

Woodring has been in the heat treat industry for 28 years and works as manager of the Quality/ISO & Flow Team at UPC-Marathon.



Branch of Service: Army

Secondary Branch: Army National Guard

Active Service: 1982 to 1996

U.S. Reserves: 1996 to 2022

Highest Rank Achieved: Sergeant Major/E9

Service Details:

- Participated in three Combat Tours

Timothy Wright

Wright has been in the heat treat industry for 30+ years. He was founding owner of WIRCO.



Branch of Service: Army

Secondary Branch: Army National Guard

Active Service: Yes

U.S. Reserves: Yes

Highest Rank Achieved: Major General

Service Details:

- Vietnam War
- Desert Storm
- United Nation's SFOR in Bosnia-Herzegovina
- Indiana National Guard
- Silver Star, Legion of Merit, Bronze Star, Meritorious Service Medal x8, Air Medal x27 (1 for Valor), Army Commendation Medal x5 (1 for Valor), Kuwait Liberation Medal, and more.

Heat Treat Today interviewed MG Wright and will be releasing the full story of his extraordinary service and sacrifice on **Heat Treat Radio** in fall 2023. Watch for it at www.heatreattoday.com/radio.



MG Timothy Wright's last flight, 2008 (Source: Wright Family)

If any information is inaccurate or if you would like to add information to these catalogued items, please email Bethany Leone: bethany@heatreattoday.com.



(Image Source: ASM)

Heat Treat 2023 Set For Detroit

Plans are currently underway for the 32nd Heat Treating Society Conference and Exhibition, scheduled for October 17–19 in Detroit. With the theme of “Driving the Future of Thermal Processing,” the show promises 2.5 days of opportunities to bridge research and industry.

This year’s Heat Treat conference and expo is co-located with ASM’s annual meeting, International Materials, Applications, and Technologies (IMAT) Conference & Expo, and continues the long-standing and successful co-location with AGMA’s Motion & Power Technology Expo (MPTE).

These co-located conferences offer the power of three events in one location, providing more content, more attendees, more networking, and more ROI.

We’re excited to announce that we have confirmed three keynotes for this year’s show, including Dr. Stefanie Tompkins, director, Defense Advanced Research Projects Agency (DARPA); Dr. Iver Anderson, FASM, senior metallurgist, division of materials sciences and engineering at Ames National Laboratory; and Dr. Marvin Barnes, branch chief, advanced propulsion research and development at NASA.

In addition to featuring these prestigious keynote speakers, the Heat Treat 2023 technical program will feature the latest research and development on a wide variety of important topics, including atmosphere technology and surface engineering, microstructural

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development and characterization, green heat treating/low carbon, new trends in global heat treating, residual stress, vacuum processes, quenching, simulation and modeling, and many more!

Heat Treat 2023 will also continue to offer several exciting opportunities for students to showcase their skills and knowledge in the field of heat treatment/thermal processing. The Fluxtrol Student Research Competition provides an avenue for students to present their research findings to a panel of industry experts, allowing them to gain valuable experience and feedback on their work. Meanwhile, the HTS Strong Bar Competition challenges students to heat treat a load-bearing bar to provide maximum strength while maintaining ductility. These competitions not only offer students a chance to learn and grow in their field but also provide a platform for them to network and connect with professionals in the industry.

You won't want to miss the annual Women in Manufacturing and Engineering Breakfast on Tuesday morning. This event, organized in

partnership between the Heat Treating Society, ASM International, and AGMA, is open to all attendees. To guarantee your spot at this empowering and inspiring gathering, make sure to secure your tickets early. In addition, the ASM Leadership Luncheon, Awards Dinner, and Evening Networking Event at the Waterview Loft are additional opportunities to celebrate the achievements of colleagues and make additional connections.

With more than 200 companies from the heat treating industry, the Heat Treat 2023 expo show floor remains the go-to destination for networking and making valuable connections. Furthermore, the co-located conferences offer access to an additional 200 exhibitors, providing even more opportunities to explore the latest products and services available. Attendees can look forward to a range of engaging activities on the show floor, including a VIP guided industry tour on Monday, Solutions Center presentations, a Welcome Reception with exhibitors, and special activities for students. Come join us for an unforgettable experience! Plan today to make your reservations and register at heattreatevent.org. **HTT**

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Process Heating and the Energy-Carbon Connection

By Michael Stowe, PE, Senior Energy Engineer, Advanced Energy



Over the past several years, process heating energy markets have shifted in response to significant global pressures. The need to understand the impact of greenhouse gases (GHGs), especially carbon-based emissions, on climate change is gaining more interest from organizations that have industrial process heating. Organizations that manufacture or use process heating equipment need to understand the impact their equipment can have on carbon emissions. The terms “carbon emissions” or “carbon footprints” use the word “carbon,” but these terms can include other GHGs, and the carbon refers to carbon dioxide gas (CO₂).

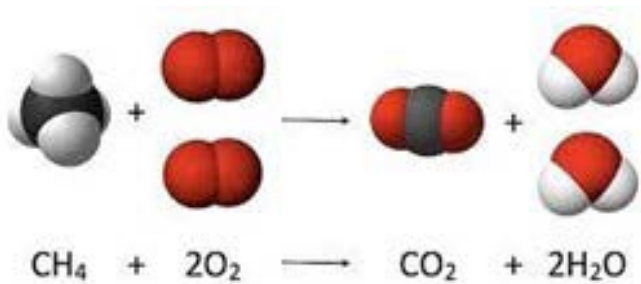


Figure 1. Chemical process for methane combustion
(Source: Advanced Energy)

Process heating requires energy input. The energy sources for process heating most frequently include the combustion of carbon-based fossil fuels such as natural gas, propane, fuel oil, diesel, or coal. Also, most combustion processes have a component of electricity to operate combustion air supply blowers, exhaust blowers, circulation fans, conveyors, and other items. Figure 1 shows the chemical process for the combustion of methane (i.e., natural gas).

Figure 1 demonstrates that during combustion, methane (CH₄) combines with oxygen (O₂) to form carbon dioxide (CO₂) and water (H₂O). This same process is true for any carbon-based fuel. If you try to imagine all the combustion in progress across the globe at any given time, and knowing that all this combustion is releasing CO₂, then it is easy to see the problem and the need for CO₂ emission reduction.

In basic terms, if you have a combustion process on your site, then you are emitting CO₂. The electricity consumed to support the combustion

processes also has a carbon component and the consumption of this electricity contributes to a site’s carbon footprint. Climate change impacts due to these carbon emissions have prompted government and corporate actions that are creating unique new opportunities for more sustainable and lower carbon process heating methods.

So, combustion and electricity consumption on your site contribute to your carbon footprint. Knowing this, organizations may now want to understand the actual level of their carbon footprint and ways to reduce it. There are many methods and resources available to help organizations understand and work to improve their carbon footprint.

The Industrial Heating Equipment Association (IHEA) has recognized this need to understand carbon footprints and is in the middle of a four-part webinar series on this topic. Session three (held on July 20, 2023) covered methods and resources to help organizations determine and improve their carbon footprint.

Session 3: DOE Tools and Programs for GHG Reduction

There are many options available to help determine carbon emissions for equipment, processes, sites, and organizations. This presentation will review some of these available tools and how to apply them to different situations. Carbon emissions are directly tied to energy consumption, so it is very important to understand how all your energy is consumed on site by energy type. This presentation will provide tools and programs to help you understand your energy consumption and thereby understand your carbon emissions. Additionally, energy improvement projects are also carbon emission reduction projects. This session will help you understand how to determine the impact of energy projects on your carbon footprint.

Session 4: Ongoing Sustainability — Industry Best Practices for Continual Improvement

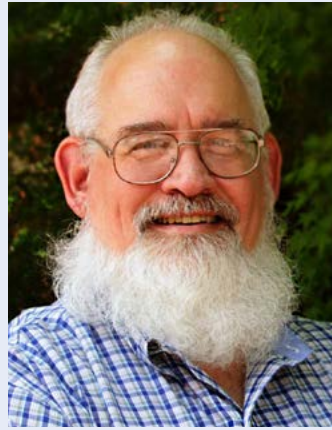
Carbon reduction is not a project, it is a process, and must be ongoing. Earlier sessions will help you determine your carbon footprint and understand ways to track and improve your carbon footprint. In this presentation, we will review methods and programs to ensure the continual improvement of your carbon

reduction efforts. Following the “plan, do, check, act” method used in many continual improvement programs, we will review steps to take for keeping your momentum moving in the right direction. We will also plan to have industry case studies for success in ongoing and improving carbon reduction programs.

Registration for these sessions can be found on the events page of www.ihea.org. If you or your organization want to learn more about your carbon footprint and how to measure and reduce it, you will not want to miss this opportunity.

In summary, heat treating, and other process heating methods, require significant energy, much of which is fueled with carbon-based fossil fuels, and associated with support electricity consumption. Both combustion and electricity consumption contribute to an organization’s carbon footprint. One of the best ways to help manage your carbon footprint is to understand and manage your energy consumption. For more information on this topic, please check out the [IHEA Sustainability & Decarbonization Initiatives](#).

HTT



About the Author

Michael Stowe (PE) is the senior energy engineer at Advanced Energy. Michael focuses on process heating and energy efficiency in manufacturing plants. He has significant experience in the manufacturing industry serving in various roles as design engineer, production manager, plant engineer, and facilities engineer over the past 27 years.

For more information:

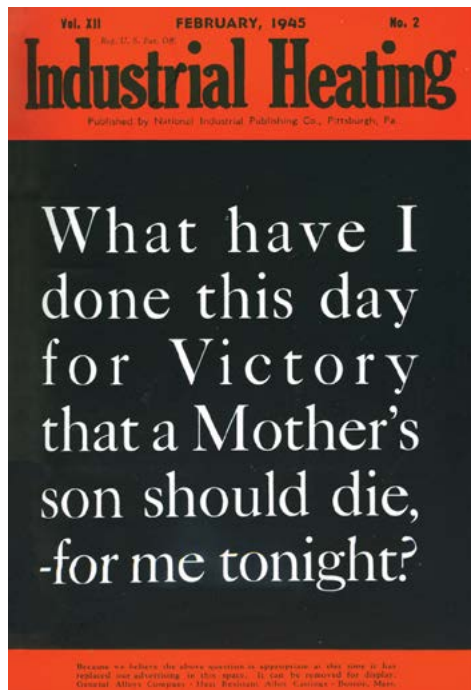
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Continued
from page 4

What made *Industrial Heating* so successful was the people working there. During its heyday, the real “secret” behind the success was people like Jim Henderson, owner and president of Business News Publishing at the time; Dave Lurie, one of the best bosses I’ve ever had and a natural born leader; Kathy Pisano, see my Publisher’s Page about Kathy in [Heat](#)

[Treat Today’s](#) August 2022 Automotive edition; Reed Miller, one of the best and longest-tenured editors the magazine ever had; Bill Mayer, a hard-charging,



Industrial Heating cover from February 1945, a testament to the power of the written word in society.

Heinauer, Patrick Connolly, Keith Patrick, and the dozens of administrative and support staff at BNP Media headquarters in Troy, Michigan were also part of

talented editor; Becky McClelland and Beth McClelland, both granddaughters of Stan Wishoski and daughters of Chuck McClelland; Brent Miller, who had no relation to Reed Miller, but was an outstanding graphic artist; Ed Shaud, father of the actor Grant Shaud from *Murphy Brown* fame; and Ed Kubel, of ASM fame. Mike Holmes, Kristine Haben, Dick Schiffman, Larry Pullman, Steve Roth, Susan

this outstanding team. It was this group and their unwavering focus on innovation and on what was best for the customer that made *Industrial Heating* a powerhouse . . . revenues and profits followed.

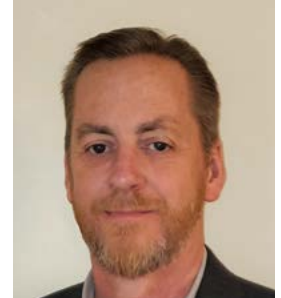
In fact, at its peak, *Industrial Heating* was one of the three largest revenue producers at BNP Media. When I left *Industrial Heating* at the end of September 2013, it was indisputably the 800-pound gorilla in the North American heat treat industry. Ten years later, it is closing down.

Theories about *Industrial Heating’s* closing are many. Whatever the reason, it is more important to recognize the publication for its dominant place in the North American heat treat market and for its nearly 100 years of existence.

Thank you, *Industrial Heating* and the people who worked there, for the decades of excellent content curation. You truly are “The International Journal of Thermal Processing.” The industry is worse off today than yesterday. It is a sad day. **HTT**

(Photo Source: [Heat Treat Today](#))

Contact [Doug Glenn](#) at doug@heattreattoday.com



NIST SP 800-171 Is Changing But Don't Panic...

Introduction

This 10th article in the series from Heat Treat Today's Cybersecurity Desk will explain some of the changes that are being proposed in the IPD (Initial Public Draft) of NIST SP 800-171 Revision 3. On May 10, 2023, the National Institute of Standards and Technology (NIST) released a draft version of Rev. 3 for Special Publication (SP) 800-171, the foundational framework of requirements for protecting controlled unclassified information (CUI). The final version of NIST SP 800-171 Rev. 3 is expected to be released in early 2024.



Acronym	Definitions	Acronym	Definitions
3PADO	Third Party Assessment Organizations	CDA	Cyber Defense Agency
3PSP	Third Party Service Provider	CDCA	Classified Defense Contractors
AAL	Authenticator Assurance Levels	CDI	Covered Defense Information
AC	Access Control	CERT	Computer Emergency Response Team
ACL	Access Control List	CEM	CEM Practice Management Model
AD	Active Directory	CMG	Configuration Management
ADM	Asset Definition and Management	CFR	Code of Federal Regulations
AI	Artificial Intelligence	CI	Continuous Improvement
AIO	Adapt, Implement, and Operate	CIS	Confidentiality, Integrity, Availability and Safety
AM	Asset Management	CIEM	Cloud Infrastructure Endpoints Management
AMM	Amazon Machine Image	CIRP	Cybersecurity Incident Response Program
AOD	Authorizing Official	CIRT	Computer Incident Response Team
API	Application Programming Interface	CIS	Center for Internet Security
APN	Access Point Name	CIS	Controlled Information Security Summary
APN	Apple Push Notification service	CISA	Cybersecurity & Infrastructure Security Agency
APS	Advanced Planning and Scheduling	CISO	Chief Information Security Officer
APT	Advanced Persistent Threat	CM	Configuration Management
ASM	Asset Spillage Management	CNDB	Configuration Management Database
AT	Awareness and Training	CMMC	Cybersecurity Maturity Model Certification
ATO	Authority to Operate	CMMC AB	CMMC Accreditation Body
ATP	Advanced Threat Protection	CMMG	Comprehensive Maintenance Management System
AU	Audit and Accountability	CMPP	Configuration Management Plan
AUP	Acceptable Use Policy	CMS	Content Management System
AWSS	Amazon Web Services	COI	Chemical of Interest
BAAS	Backup As A Service	COMM	Communications
BCM	Business Continuity Management	COOP	Continuity of Operations Plan
BCP	Business Continuity Plan	COPI	Commercial Off The Shelf
BIA	Business Impact Analysis	CP	CMAC Certified Professional
C-Scan	CEC, CFC, CDD & CDO	CPAP	Code of Professional Conduct
CBPO	CMMC Third Party Assessment Organizations	CSA	Cybersecurity Risk Assessment
CA	Security Assessment	CRAP	Critical Resources & Acquisition Path
CAC	Connection Admission Control	CSA	Cloud Security Alliance
CAC#	Common Access Card	CSA	Cyber Security Assessment and Management
CASP	CMMC Assessment Process	CSF	Cybersecurity Framework
CCM	CACDO Approved Training Materials	CSI	Customer Support Identifier
CEI	Confidential Business Information	CSO	Cloud Service Offering
CCA	Certified CMMC Assessor	CSOP	Cybersecurity Standardized Operating Procedures
CCB	Change Control Board	CSP	Cloud Service Provider
CCI	Certified CMMC Instructor	CTI	Controlled Technical Information
CCSE	Controlled Contractor Information Systems	CTRL	Control Management
CCM	Cloud Controls Matrix	CTS	Certified Test Suite
CCO	Corporate Compliance & Oversight	CUI	Controlled Unclassified Information
CCP	Certified CMMC Professional	CVE	Common Vulnerabilities and Exposures
CCPA	California Consumer Protection Act		

Don't panic about these proposed changes in Rev. 3. If you handle CUI and you are working towards your compliance, continue to implement Rev. 2. Don't wait until Rev. 3 is fully released to start. Remember, DFARS mandates that if you are a DoD prime contractor or subcontractor with CUI, you need to be compliant with NIST 800-171 Rev. 2 as well as CMMC Level 2 or 3 certified. CMMC certification deadline is in 2025 and it's fast approaching.

Modifications & Additions to Rev. 3

The changes in Rev. 3 should have a positive impact on your ongoing compliance management program. They simultaneously made the requirements easier to understand and implement while also preserving and even adding flexibility that allows companies to make risk-based decisions about their environments and the data managed in those environments. These include the merging, addition, removal, and clarification of several different requirements.

The most obvious difference is that the requirements went from 110 controls down to 109. This was because they had withdrawn 27 of the original controls (most are migrated into another existing control) and added 26 new requirements.

Categories of Changes

- 18 Controls with "No Significant Change": Editorial changes to requirement; no change in outcome.
- 49 Controls with "Significant Change": Additional detail in the requirement, including more comprehensive detail on foundational tasks for archiving the outcome of the requirement.
- 18 Controls with "Minor Changes": Editorial changes. Limited changes in the level of detail and outcome of requirements.
- 26 Controls with "New Requirements": Newly added requirement in IPD SP 800-171 Rev. 3.
- 27 Controls with "Withdrawn Requirements": Requirement withdrawn.
- 53 Controls with "New Organization-Defined Parameter (ODP)": New ODPs can apply to all change types with the exception of withdrawn requirements. Each requirement includes one or more new ODPs.

Implications for Heat Treaters

What has not changed is that companies that handle CUI must comply with the NIST 800-171 cybersecurity standards. Failure to comply can result in significant consequences, including loss of contracts and damage to the company's reputation. With the release of Rev. 3, heat treaters must ensure they are up to date with the latest security requirements.

One of the most significant changes in Rev. 3 is the addition of new security requirements. Heat treating companies must review these new requirements and ensure they have implemented the necessary controls to meet them. Also, organizations must review the updated requirements to ensure they meet the latest best practices.

The reorganization of the security requirements may also impact heat treaters. The alignment with the NIST Cybersecurity Framework provides a more comprehensive approach to security. However, some companies may need to adjust their current security programs to align with the new structure.

By staying informed and implementing the necessary controls, heat treat organizations can ensure they are adequately protecting CUI and meeting their compliance obligations to their clients. **HTT**

Contact Joe Coleman at
joe.coleman@go-throughput.com

Scan to download a list of cybersecurity acronyms.



Heat Treat Today partners with two international publications: **heat processing**, a Vulkan-Verlag GmbH publication that serves mostly the European and Asian heat treat markets, and **Furnaces International**, a Quartz Business Media publication that primarily serves the English-speaking globe. Through these partnerships, we are sharing the latest news, tech tips, and cutting-edge articles that will serve our audience — manufacturers with in-house heat treat.

In this issue, all eyes are on CO₂ and hydrogen.



At the RATH plant in Krummnußbaum, Lower Austria, two new vacuum nitriding furnaces are being operated. (Source: heat processing)

RATH Limiting CO₂ Emissions with Furnace Operations

"[Two] new vacuum nitriding furnaces, used exclusively for the production of silicon carbide plates and bricks in a nitrogen atmosphere, are now being operated with electricity. The result: CO₂ emissions are around 70% lower than with the previous gas-fired furnace, and fossil fuels are reduced to a minimum."

Read More: "RATH reduces CO₂ emissions by 70% in silicon carbide production" at heat-processing.com



With the recently awarded grant by the Department for Energy Security & Net Zero, Novelis' Latchford plant will test the use of hydrogen on one of its recycling furnaces in a demonstration phase in 2024. (Source: Furnaces International)

£4.6m Grant Assistance for Novelis To Establish Hydrogen Burning Trials

"Depending on the final configuration, replacing natural gas with hydrogen to feed the remelting furnace could reduce CO₂eq emissions by up to 90% compared to using the same amount of natural gas."

Read More: "Toward Carbon Neutral Production: Novelis to Trial Use of Hydrogen in Recycling Furnaces" at furnaces-international.com



Pfeiffer Vacuum Technology AG announced in May 2023 a seven-year, €75 million investment plan for its Annecy site. (Source: heat processing)

Bigger, Greener, and Employee-Centered Growth in France

"Our investment plan will serve to modernize and digitalize our production in order to continue our growth. We want to double the operations of our French subsidiary with a sales target of €600 million by 2030 and create 100 to 150 additional jobs," emphasized Dr. Britta Giesen, CEO of Pfeiffer Vacuum. During the same period, the Group intends to accelerate its course to reduce its CO₂ emissions in Scope 1 and 2 to net zero by 2030."

Read More: "Pfeiffer Vacuum invests €75 million in its location in France" at heat-processing.com



Green hydrogen is one of the most promising emission-free fuels to address the environmental challenges of heavy polluting industries, including aluminium. (Source: Furnaces International)

Fives and Hydro Successful Batch of Hydrogen-Fueled Recycled Aluminum

"The test in Hydro Extrusion's plant is the world's first on an industrial scale. The natural gas was successfully replaced with green hydrogen in the recycling of aluminium, a key step towards decarbonization of Industry."

Read More: "Fives and Hydro partner to produce the world's first batch of hydrogen-fueled recycled aluminium" at furnaces-international.com

Heat Treat Shop

Heat Treat Today believes that people are happier and make better decisions when they are well informed. To get a sense of what options the market has for you, check out some of the heat treat components, parts, services, and supplies listed below. These products have been featured in our monthly e-newsletter called **Heat Treat Shop**, where manufacturers with in-house heat treat departments — especially in the aerospace, automotive, medical, energy, and general manufacturing sectors — can easily share this information.

Want to see your product listed here? Contact Michelle Ritenour at michelle@heattreattoday.com.

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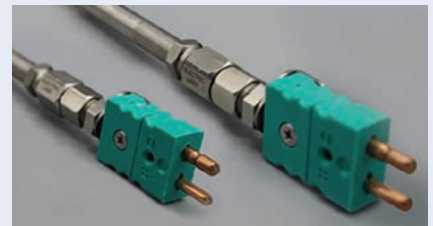


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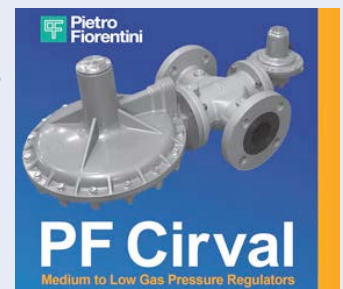


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Braddock Metallurgical

Heat Treat Today's
MTI MEMBER
PROFILE 

The journey began in 1953 for this family-run business, which started with only a single salt pot furnace and grew into a company with eight production facilities across the U.S. and Puerto Rico. Braddock Metallurgical was founded by its namesake, William R. Braddock, who mandated a mission to "help our customers succeed," a goal

ferritic nitrocarburizing (FNC) with post-oxidation, low-temperature nitriding of stainless steels, and vapor degreasing and bright hydrogen processing without discoloration.

When it comes to equipment for these services, quality is of utmost importance. All high-positive pressure-quench vacuum furnaces and batch IQ furnaces

of-the-art cleaning processes, brazing filler metals, binders, and atmospheres to deliver braze joints of high quality.

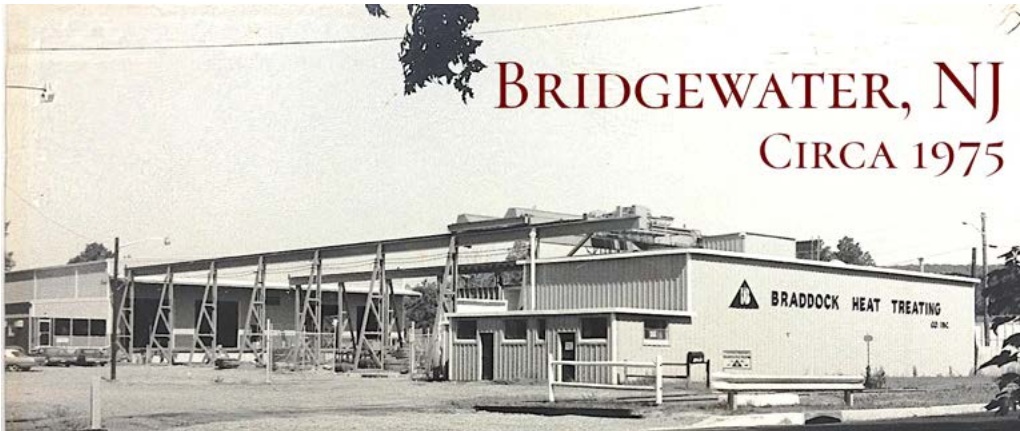
From 50 ton pressure vessels, automotive transmissions, musical handpans, and surgical implants, to NASA space components, they encounter many unique and interesting parts, all of which testify to the creativity and talent of the team and their clients.

Throughout their history, the heat treater has partnered with their customers. From developing and bringing in new processes, investments in additional equipment and capacity, and even expansion into additional facilities, Braddock's growth has been based on the needs of its customers.

As they look to the future, they will evaluate and act on any required additional capacity or capability

and implement new technology when necessary to benefit existing equipment and instrumentation. Braddock Metallurgical will continue innovating and implementing efficiencies to keep up with growing demand for high quality heat treating.

(Photo Source: Braddock Metallurgical)



Original location of Braddock Metallurgical in Bridgewater, NJ, circa 1975.

still paramount to the company today. His belief that a well-trained workforce would result in superior customer service is the backbone of the company's client-centered reputation of 70 years.

Today, grandsons Griffith and Clay Braddock, along with the company's senior management, led by President and CEO, George Gieger, work diligently on developing the company's eight sites. Going back to the founding belief that a well-trained employee makes all the difference, Griffith and Clay also ensure that all employees are among the best trained and supported in the industry.

Aerospace, military, medical, automotive, and electronics industries are among those served by the company. As a full-service heat treat provider, the company facilities are equipped with state-of-the-art equipment and offer a comprehensive range of services including cryogenics, brazing, induction heat treating, black oxide, and more, as well as various metallurgical testing services. Unique capabilities include

are certified to AMS2750E. They have nitriding and induction equipment at select facilities and car bottom furnaces up to 35 feet long in New Jersey and 18 feet long in Tampa for stress relieving and aging. The company holds Nadcap accreditation for heat treating and brazing at four locations and is ISO & AS9100 certified at all facilities. All Nadcap accredited locations have achieved Merit status, thanks to the hard work and dedication of their employees.

To continue founder William's commitment to the success of their clients, the company prioritizes upgrading technology and support systems, including instrumentation, laboratory equipment, and computer systems to stay on the cutting edge of technological advancements.

The team members have developed a high proficiency for brazing intricate honeycomb applications. Their expertise and techniques are applicable to a wide range of complex geometries and configurations, achieving results where others fail. Braddock leverages state-



For more information

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United States
mzeygel@braddockmt.com
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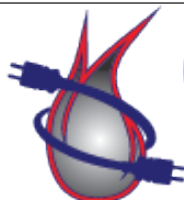
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- Analyzing equipment specifications and performance requirements and designing Electrical Engineering aspects of vacuum and controlled atmosphere furnaces
- Coordinating efforts with Mechanical Engineering, creating bills of materials, preparing design modifications if required, preparation of manuals, and analyzing and cataloging test procedure results
- Electrical equipment and controls configuration conceptualization, design layout, and programming.
- Preparation of detailed drawings and schematics
- Preparation and configuration of PLC and HMI code
- Completion of "as built" drawings, schematics, and other documentation

Qualifications:

- Bachelor's degree and at least four (4) years related experience and/or training
- Knowledge of AutoCAD, MS Excel, VBA
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- Experience with at least some of the following programs is a must: Allen Bradley: Micrologix, SLC500, Control Logix, Factory Talk View ME/SE, Kinetix & PowerFlex Drives; GE - Proficy iFix, Mitsubishi - FX PLC's, Specview, Honeywell - HC900, Siemens - S7 PLC and Yokogawa and Eurotherm instruments
- Familiarity with NFPA 70 (NEC), NFPA79, UL 508A, desired with NFPA 86 a plus
- Controls trouble shooting skills
- Ability to manage productively and efficiently your own time in dealing with multiple priorities
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Type: 6-Bar Horizontal Vacuum Furnace

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Vacuum Control: Recorder/Controller with partial pressure point

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Abar Ipsen V-1205
Horizontal Vacuum Furnace – 6-Bar



Inside Dimensions:	48" diameter x 72" deep
Load Area:	36" wide x 72" deep x 30" high
Maximum Temp:	2500°F / 1371°C (uniform within ± 10°F)
Ultimate Pressure:	10-3 Torr range
Maximum Load:	3500 pounds gross
Cooling Fan:	2-speed: 125 HP/31 HP at 3600/1800 RPM
Temp Control:	Honeywell UMC 800
Vacuum Control:	Recorder/Controller with partial pressure point
Mechanical Pump:	Stokes 412
Booster Pump:	Roots 615

Batch Temper Furnaces	
C0189	Williams Industrial Batch Temper Furnace (30"W x 48"D x 30"H, 1250°F, gas)
U3697	B&W Temper Furnace (36"W x 72"D x 36"H, 1400°F, gas)
U3737	Wisconsin Oven Batch Temper Furnace (24"W x 48"D x 24"H, 1250°F, elect, 48kw, 66amp)
U3782	Williams Batch Temper Furnace (36"W x 72"D x 36"H, 1450°F, gas)
U3785	Unique Batch Temper Furnace (40"W x 40"D x 51"H, 1200°F, gas)
U3810	Surface Combustion Temper Furnace (36"W x 48"D x 36"H, 900°F, gas)
U3837	Surface Combustion Temper Furnace (36"W x 54"D x 30"H, 1250°F, elect)
U3838	Surface Combustion Temper Furnace (30"W x 48"D x 30"H, 1250°F, elect)
U3842	Lindberg Temper Furnace (36"W x 96"D x 36"H, 1250°F, gas-fired)
V1170	Grieve Batch Temper Furnace (48"W x 48"D x 48"H, 1100°F, gas)
V1182	Wisconsin Oven Temper Furnace (24"W x 18"D x 36"H, 1250°F, gas)
V1196	Surface Combustion Temper Furnace (36"W x 72"D x 36"H, 1600°F, gas)
Batch High-Temp Furnaces	
UV1130	Onspec High-Temp Batch Furnace (72"W x 96"D x 48"H, 2400°F, gas)
U3843	Lindberg High-Temp Batch Furnace (96"W x 96"D x 84"H, 2100°F, elect)
V1185	Coolley High Temperature Batch Furnace (12"W x 32"D x 16"H, 2000°F, elect)
Car Bottom Furnaces	
V1166	Rockwell Car Bottom Furnace (60"W x 121"D x 72"H, 1000°F, gas)
V1179	Tilt-Up Car Bottom Furnace (8"W x 16"D x 8"H, 1600°F, gas)
Internal Quench Furnaces	
U3687	Surface Combustion IQ Furnace with Top Cool (36"W x 72"D x 36"H, 1750°F, gas)
U3718	Surface Combustion IQ Furnace (36"W x 48"D x 36"H, 1750°F, gas)

U3770	AFC IQ Furnace with Top Cool (36"W x 48"D x 36"H, 1800°F, gas)
U3807	Surface Combustion IQ Furnace (36"W x 48"D x 36"H, 1800°F, gas)
UV1082	Holcroft IQ Furnace with Top Cool (36"W x 48"D x 30"H, 1850°F, gas)
V1173	AFC IQ Furnace with Top Cool (36"W x 48"D x 36"H, 1800°F, gas)
V1193	Surface Combustion IQ Furnace (36"W x 48"D x 30"H, 1800°F, gas)
Oil Quench Furnaces	
C0201	Abar Ipsen Vacuum OQ Furnace (36"W x 48"L x 30"H, 2300°F, elect)
Vacuum Furnaces	
C0170	Seco Warwick Vacuum Carburizer Furnace (36"W x 48"D x 32"H, 2300°F, elect)
U3831	Surface Combustion Vacuum Furnace 2-Bar (36"W x 48"L x 36"H, 2400°F)
V1131	Abar Vacuum Furnace 2-Bar (24"W x 60"D x 24"H, 2450°F, elect, 150kw)
V1138	Ipsen Vacuum Furnace 5-Bar (24"W x 36"L x 14"H, 2400°F, elect, 112.5kw)
V1205	Abar Ipsen Vacuum Furnace 6-Bar (36"W x 30"H x 72"D, 2500°F, elect)
Mesh Belt Brazing Furnaces	
UV1035	Seco Warwick Mesh Belt Brazing Furnace (18"W x 12"H x 10' heated, 2100°F, elect)
Tip-Up Furnaces	
V1202	Atmosphere Systems Tip-Up Furnace (168"W x 102"D x 44"H, 1400°F, gas)
V1203	Atmosphere Systems Tip-Up Furnace (168"W x 102"D x 44"H, 1800°F, gas)
V1204	Atmosphere Systems Oil Quench Tank with Load/Unload Transfer Cart
Heat Treat Lines	
U3687	Surface Combustion IQ Furnace Line (36"W x 72"D x 36"H, 1750°F, gas)
UV1082	Holcroft IQ Furnace Line with Top Cool (36"W x 48"D x 30"H, 1850°F, gas)
Ovens - Cabinet & Batch	
U3699	Wisconsin Cabinet Oven (25"W x 24"D x 25"H, 650°F, elect, 12kw)

U3752	Precision Quincy Batch Oven (36"W x 36"D x 36"H, 500°F, gas)
U3792	Grieve Batch Oven (24"W x 24"D x 24"H, 1250°F, elect)
Ovens - Walk-In	
U3788	Wisconsin Walk-In Oven (96"W x 240"D x 96"H, 650°F, gas)
U3799	Walk-In Oven (72"W x 72"D x 72"H, 800°F)
U3834	TPS Walk-In Oven (68"W x 72"L x 65"H, 842°F, elect)
U3839	Jackson Walk-In Oven (72"W x 60"D x 91"H, 500°F, gas-fired)
V1181	Grieve Walk-In Oven (52"W x 76"D x 72"H, 750°F, elect)
Charge Cars	
U3762	Surface Combustion Charge Car DE/DP (36"W x 72"D)
Washers	
C0134	Surface Combustion Washer SDA (60"W x 60"D x 48"H, 180°F, gas)
U3689	Surface Combustion Washer - spray only (36"W x 72"D x 36"H, elect) with holding station
U3711	AFC Holcroft Washer SD (24"W x 36"D x 24"H, gas)
U3800	Ipsen - Spray/Dunk Washer (36"W x 48"D x 24"H, elect)
UV1084	Holcroft Washer SD (36"W x 48"D x 30"H, 190°F, elect)
V1177	AFC Washer SDA (36"W x 48"D x 36"H, 190°F, gas)
Endothermic Gas Generators	
C0194	Lindberg Endothermic Gas Generator (1500 CFH, 1950°F, gas)
U3594	Atmosphere Furnace Endothermic Gas Generator (3000 CFH, gas)
U3635	Lindberg Hydrolyzing Endothermic Gas Generator (6000 CFH, gas)
Exothermic Gas Generators	
U3652	Surface Combustion Exothermic Gas Generator (10,000 CFH, gas)

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