

The background of the entire page is a photograph of an industrial facility. On the left, a large cylindrical heat treatment chamber is visible. On the right, a more complex piece of machinery with multiple horizontal rollers or racks is shown. The floor is concrete, and various pipes and structural elements are visible in the background.

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INTRODUCTION

In this month's issue of the new and improved "***The Monty***" we have over 100 pages of the most up to date news and trends in the worldwide heat treatment industry. Some news items for this month include; "***Why Aerospace Heat Treating is Going to Slow Down***", "***Captive Heat Treater John Hassal Inc., Closes-Equipment to be Auctioned***", "***Bodycote a Winner?***", "***Delta Heat Services, Belgium Moves to New Location***" and many, many more.

We hope you enjoy this issue and look forward to your thoughts and comments.

Sincerely,



Gord Montgomery



Jordan Montgomery



Dale Montgomery

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HEAT TREAT NEWS

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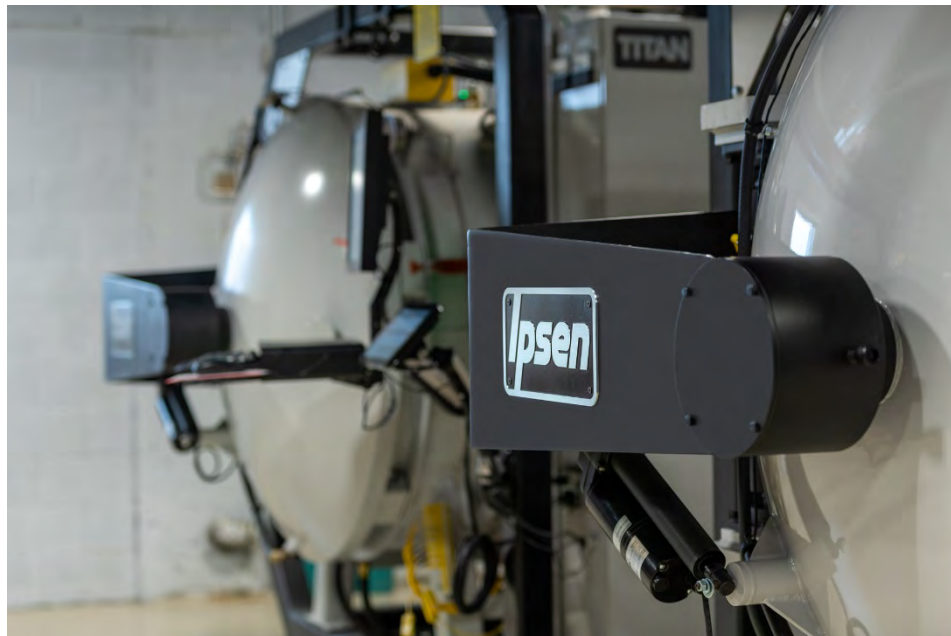
Auto Components Manufacturer Purchases Series of Ipsen Furnaces

Apr 30, 2020

“Cherry Valley, ILLINOIS (April 29, 2020) – Ipsen is pleased to announce the receipt of an order for two TITAN® H6 2-bar vacuum furnaces this week from a rapidly emerging global automotive component manufacturer with locations in the United States and Asia.

“Despite general market conditions at the present time, we are seeing many forward-looking manufacturers continuing to invest in efficient, high performance systems for the future.” Ipsen USA President and CEO Patrick McKenna said.

The customer awarded Ipsen this order as part of a series of eight furnaces – all provided by Ipsen – over the last two years. Ipsen’s TITAN® was the customer’s preferred choice for this series due to the inherent process flexibility and ease of installation anywhere in the world, as well as the local regional support provided by Ipsen’s sales and service teams in both the US and Asia. Learn more about Ipsen’s TITAN® product line here: <https://www.ipsenusa.com/products/vacuum-furnaces/titan>”



Sintavia Achieves Nadcap for Aerospace Heat Treating

Apr 30, 2020

"Sintavia, LLC, a leading Aerospace & Defense additive manufacturer, announced today that it had achieved National Aerospace and Defense Contractors Accreditation Program (Nadcap) approval for heat treatment at both its Hollywood, Florida, and Davie, Florida, locations. Sintavia is the only company in the world with Nadcap approvals for laser additive manufacturing, electron beam additive manufacturing, and in-house heat treatment.

"Since its founding, Sintavia has always defined itself as the quality leader for Aerospace & Defense additive manufacturing," said Brian Neff, Sintavia's Chief Executive Officer. "Nadcap approval for our internal heat treatment capabilities is not only a continuation of this focus, but also will allow Sintavia to provide higher quality production parts more quickly to its customers. Moreover, we are proud of the fact that we are the first manufacturer anywhere in the world to achieve these quality accreditations."



The Nadcap accreditation for heat treatment includes nickel and aluminum alloys, and the initial approval is good through July 31, 2021. In addition to Nadcap approvals for heat treatment and additive manufacturing, the company also holds Nadcap approvals for non-destructive testing and chemical processing through its wholly-owned subsidiary, QC Laboratories, Inc. In the coming months, the company plans also to pursue Nadcap approval for its in-house metallurgical and mechanical testing laboratory, located in Davie, Florida, which is already ISO 17025-certified.

About Sintavia; Sintavia is the global leader for metal additive manufacturing in support of the Aerospace & Defense industry. With high-speed printers co-located alongside precision post processing equipment, a full complement of mechanical testing equipment, and a full metallurgical and powder laboratory, Sintavia is able to optimize parameters, serially manufacture, and audit quality parts for its Aerospace & Defense customers. Sintavia is committed to the highest quality standards in the industry, and holds multiple Nadcap accreditations, as well as AS9100 Rev. D and ISO17025 certifications."



Unusual Heat Treat Photos

Apr 29, 2020



Over the years we at “The Monty” have been fortunate enough to see some of the most memorable heat treatment installations in the world. Today we feature a few which are truly memorable.



Solar Atmospheres of Western, PA has the largest horizontal vacuum furnace we have ever seen anywhere on the planet. In this photo we see Bill Jones, Owner of the company and Gord Montgomery standing inside this 48' long monster when it first went into production.



While this is an impressive photo it is nothing like seeing it in person. This picture was taken at a commercial heat treater in northern Italy by the name of Grupo TTN and what you are looking at are the deepest pit gas nitriding furnaces we have ever seen. As a matter of fact they are so unique that Boeing sent work to this plant as part of a Nasa program to heat treat components for fuel tanks for rockets. If we remember correctly the pit is designed to handle pit furnaces 80' deep.





What you are looking at is probably the largest single location commercial heat treater in the world. SHU, in Ulm, Germany has over 500 employees in a single location which features just about every type of heat treating known to mankind. All the buildings in the aerial view are part of SHU.



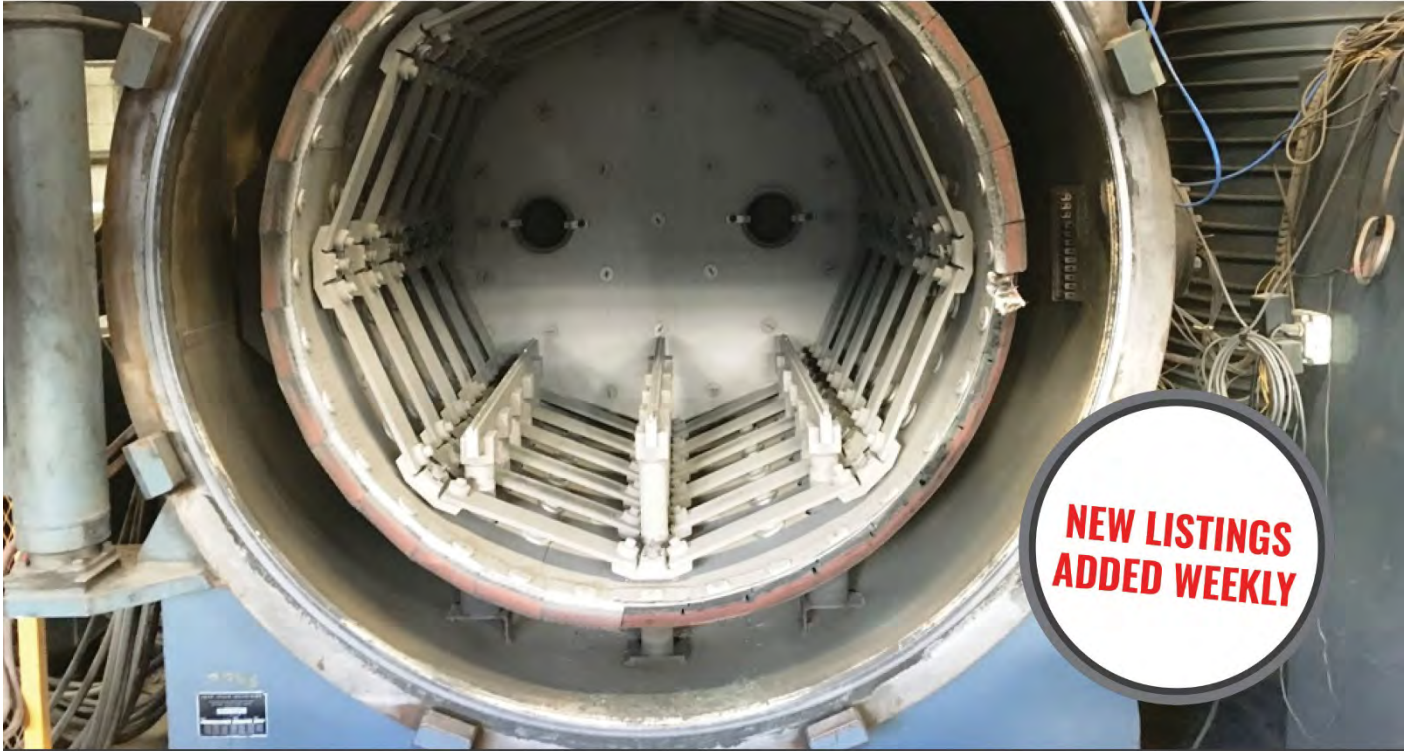
While we used this photo just a few days ago, it has to be included in a list of the “biggest”. This is the largest batch IQ furnace in the world with salt quenching and it is located at Applied Process in Oshkosh, WI., USA.



This is certainly the largest pit carburizing furnace we have ever personally seen. Located at a company by the name of REESE in Bochum, Germany it can handle parts 17' in diameter, 17' high and loads of up to 50 tons.



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IHEA 2020-2021 Board Of Directors & Executive Officers

Apr 29, 2020

"The Industrial Heating Equipment Association (IHEA) recently announced its 2020-2021 Board of Directors and Executive Officers. The new executive officers are Scott Bishop of Alabama Power Company as president, Jeff Valuck of Surface Combustion as vice president and Brian Kelly of Honeywell Thermal Solutions as treasurer. Bishop has served as IRED chairman, presented at numerous workshops and seminars, and provided key support in the recent revision of the Infrared Process Heating Handbook for Industrial Applications. Michael Stowe of Advanced Energy assumes the role of past president. "It is an honor to serve as IHEA's president for the 2020-2021 term," Bishop said. "I look forward to continuing the great work IHEA has done for more than 90 years. During this unprecedented time I would like to encourage our members to be proactive in finding ways to better serve our industry and make an impact."

IHEA also welcomed new board member Alberto Cantu of Nutec Bickley. Cantu has been involved with IHEA since 2011 and participates on the Safety Standards and Codes Committee. Continuing their service on the IHEA Board of Directors for 2020-2021: Gary Berwick, Dry Coolers, Bob Fincken, Super Systems Inc.; Doug Glenn, Heat Treat Today; Francis Liebens, SOLO Swiss Group; Daniel Llaguno, Nutec Bickley; John Podach, Fostoria Process Equipment, a div. of TPI Corp.; and John Stanley, Karl Dungs Inc."

Bill Disler, CEO, AFC-Holcroft

Apr 28, 2020



We are looking forward to an interview with Mr. Bill Disler, CEO of furnace manufacturer AFC-Holcroft later on this week. Bill will be telling us about current market

conditions, where the company is going, new products and giving us some interesting insights into where the industry might be going. Bill joins a long list of some of the most prominent individuals in the worldwide heat treatment industry who have been interviewed by "The Monty" <https://themonty.com/articles-interviews/#>



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Monday Morning Briefing

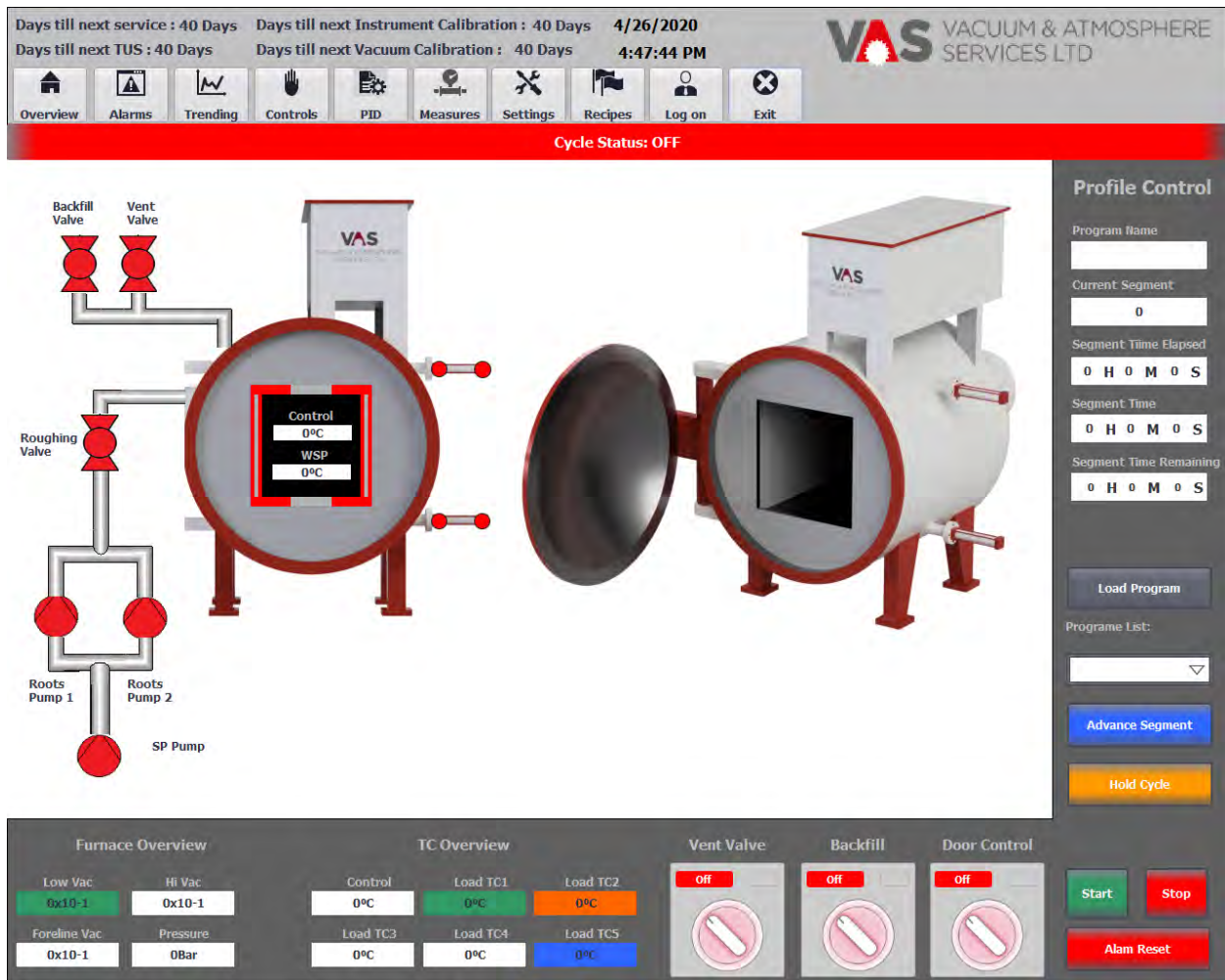
Apr 27, 2020



Today Monday, April 27/2020 *"The Monty"* will start off our Monday Morning Briefing with heat treatment news from the UK. *Mike Long* of *Vacuum & Atmosphere Services Ltd.*, tell us about how captive heat treater *Krohne UK* will be installing the largest diffusion pumped vacuum furnace in the UK. Mike also tells us about the health of the heat treatment industry in the UK and how they are coping with COVID-19;

"Vacuum & Atmosphere Services Ltd, despite the current crisis, have remained open for business for 'essential' industries only. Having 'furloughed' 70% of our staff, we still operate with 10 Engineers and 2 Admin staff. We have maintained a healthy level of business. A majority of projects have been put on hold following the UK lockdown, but several projects, for essential businesses still go ahead. Currently we are manufacturing 1 control panel and 2 new control systems, all with Allen Bradley PLC's and with our new VCS+ version II control system. We also have 4 graphite hot zones in build, all to be delivered by end of May. Our emergency service visit business, is very busy, with Engineers travelling daily. Next week we start the decommissioning and relocation of a top loading vacuum furnace. Once installed VAS will then fully commission and support the process of achieving NADCAP accreditation. With no hotels or accommodation available our Engineers are working long hours due to travelling. All Engineers must carry travel documents, from both VAS and the customer.





Our sister companies Vacuum Pump Services Ltd (VPS) and VPS (North) remain open, again only supporting essential industries. Both VPS companies are offering on site and off site pump repairs and servicing. These new businesses were thriving before the crisis and again they are maintaining a healthy level of business, with limited staff. Due to the current crisis, the opening of VPS (Midlands) has been delayed until the end of 2020. Our Spares department also remains open and with great support from our suppliers, we are helping keep our essential industry customers in production.

The most exciting news we have is that in the May and June we take delivery of 4 new furnaces, 2 vacuum furnaces and 2 large drying ovens. Krohne UK will take delivery of the largest diffusion pumped vacuum furnace in the UK. It will be an all molybdenum hot zone with 6 bar quench. At this troubled time, VAS are not only busy supporting essential industries, we are busy planning for the return of our employees and for the future all of

our businesses. Training courses are being planned for our Engineers, 'post' COVID 19 sales strategy implemented, new sales office being built, new computer system installed (by our own Software Engineers) and new stores system in build. Whilst sales are currently very low at this time, there is reason to be optimistic and we are confident all our staff will return in the coming weeks. Finally VAS, VPS and VPS (North) have all agreed to raise funds for our amazing NHS and its tremendous staff. We will donating 5% of all spares and service orders between now and December 31st to the NHS.



Largest North American Commercial Heat Treaters-Solar Atmospheres. Our upcoming list of the largest North American heat treaters will include in the top 10 Solar Atmospheres. *Bill Jones*, founder and owner of the company is known as a very open individual by all who know him so it is no surprise that when we approached him about the size of the company he very obligingly provided very complete details about the size of the company. This is a brief summary, more details will be forthcoming. *"Solar has five heat treat plants, two in Souderton, Pa., one in Hermitage, Pa., one in Fontana, Calif., and one in Greenville, S.C. Total sales in 2019 \$61.2 million USD. Employment is 220 employees or \$280,000 per, generating solid operating profits."*



Auto makers *General Motors Co.*, *Ford Motor Co.*, and *Toyota Motor Corp.*, are all making plans to open some or all of their North American plants by early to mid May. A major Canadian auto parts supplier confirmed to us that they have restarted some of their furnaces and all will be in production by mid May but what will these companies be returning to? *ALG*, a subsidiary of TrueCar is forecasting a worst case scenario of a 34%-plus slump in vehicle sales this year in the U.S. but says the probable outcome is a drop of 23%. This would mean total vehicle sales of 13.2 million vehicles as opposed to 17,047,725 units shipped in 2019. While other forecasts differ slightly all agree that auto sales will fall dramatically this year in every area of the world. Think about that decline for a moment. A 23% drop means that for the foreseeable future there will be that much excess capacity in the batch IQ furnaces, continuous furnaces, vacuum carburizing systems and pusher lines serving the automotive market. Now that is a scary number.

Remember Friday we had a news item about a fire at *S.M Engineering & Heat Treating* in Massachusetts? Well news reports say that the fire was accidental and that it started in a furnace which tells us exactly nothing; *"North Attleboro — A two-alarm blaze that broke out early Wednesday morning at S.M. Engineering & Heat Treating was accidental but the exact cause remains under investigation, Fire Chief Chris Coleman said. Investigators are trying to determine whether a machine at the company on Chestnut Street malfunctioned. Workers left the building before smoke was seen about 1 a.m. by firefighters returning from a separate alarm, Coleman said. The fire was*

contained to a furnace that contained oil and salt that is part of the manufacturing process, he said."

In East Stroudsburg, Pennsylvania, USA we see a small heat treat is for sale. *R & R Heat Treating* is a fairly small commercial heat treater who has been in business since 1985. The current owner has decided it is not for him and consequently the company has been for sale for a number of months. From what we can tell it is nothing fancy but profitable with a loyal customer base. If you would like to speak with the owner just let us know. Who is Jim Moss and why is he building a heat treat? Out in the US Midwest a fellow by the name of *Jim Moss* is in the process of setting up a commercial heat treat. From these photos it would appear that the first furnace will be a car bottom.



We leave you with this final photo showing heat treating during COVID-19. This photo is from commercial heat treater *Themi Lyon*, one of the largest commercial heat treaters in France and a real fan of Nitrex we are assuming.



S.M. Engineering & Heat Treating Fire

Apr 24, 2020

From the *"Sun Chronicle"* we have this story from North Attleboro, Massachusetts, USA. *"Fire officials are investigating the cause of a two-alarm fire early Wednesday morning at S.M. Engineering & Heat Treating on Chestnut Street, near Route 1. The fire was reported just after 1 a.m. Smoke was showing from the rear of the building when firefighters arrived and they tapped a nearby fire hydrant. "Upon entering the building they encountered a very heavy smoke condition with zero visibility," Fire Chief Chris Coleman said. "The fire was located and as they put water on the fire there was a reaction from one of the processes in the building." The smoky fire was seen by firefighters on their way back to the Kelley Boulevard station from an alarm at Lowe's on Route 1, Coleman said. It was initially feared chemicals were leaking inside the one-story building and firefighters were ordered out shortly before 1:30 a.m. A state hazmat team and a representative of the state Department of Environmental Protection responded to the scene.*

It was later determined no chemicals were leaking and that it was an oil-based blaze, fire officials said. "Upon further investigation there were no chemicals involved and the process on fire was a salt base system with oil," Coleman

said. “All the oil that leaked during the firefighting operation was contained with booms, pads and a diking system using sand from the DPW.” The fire was in a furnace that is part of the manufacturing process, according to the fire chief. Firefighters used foam on the fire when they suspected chemicals could be involved. Hydrogen and ammonia tanks were both turned off, and North Attleboro Electric Department workers arrived to cut the power to the building.

“The building did suffer some damage,” Coleman said. “Most of the fire damage was contained to the machines.” Firefighters didn’t leave the scene until about 6 a.m. Wednesday. No injuries were reported. The cause of the fire is under investigation by the North Attleboro Fire Department Fire Investigation Unit. Firefighters from Attleboro, Plainville, Foxboro, Mansfield and Cumberland responded to the scene and Wrentham and Norton firefighters covered fire station headquarters. The business, which has been around for over 60 years, is involved in industrial furnace manufacturing and heat treating, and offers service to medical, automotive and electronic industries, among others. It is located next to Standard Chain Co.”





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Stony Brook University Research Shows Positive Results Using Gruenberg Dry Heat Sterilizer on PPE

Apr 24, 2020

“New Columbia, PA – April 15th, 2020: Thermal Product Solutions, LLC (TPS), a global manufacturer of thermal-processing and sterilizing equipment, recently announced their efforts to prove the efficacy of dry heat sterilization on personal protective equipment (PPE). One of the facilities they have partnered with in this effort is Stony Brook University located in New York. Stony Brook University recently released an article detailing their preliminary research and finding.

Pilot studies were conducted at the MART (Medical and Research Translation) building at Stony Brook University. The research team used a Gruenberg dry heat sterilizer to determine if there was degradation of the N95 masks after several rounds of dry heat treatment. Results from the testing were positive, showing that the heat treatment did not cause visible structural damage and had no effect on the straps. According to Dr. Shroyer of Stony Brook University, “Fit-test scores were virtually identical between masks processed through four repeated cycles, suggesting that this approach could effectively increase the usable supply of N95 masks by a factor of five. It appears that the heat treatment can also be used to treat other types of surgical face masks.” After initial tests, the Gruenberg team visited the site to test with thermal data collection probes inserted into the masks along with bacterial biological indicators populated by Stony Brook and retest. These tests indicated a positive six (6) log kill which means that 99.9999% of the biological material is killed. A six (6) log kill is needed to claim disinfection. The Stony Brook University team reviewed all of the test cycles along with the thermal data collected to make modifications to their sterilization protocol. Read the full article for details on this innovative research https://news.stonybrook.edu/sb_medicine/dry-heat-ovens-can-effectively-disinfect-n95-masks/.”

Bodycote A Winner?

Apr 23, 2020



“Interactive Investor” is a UK firm which describes itself as the UK’s number one flat-fee investment platform. The firm like many around the world is making predictions about which companies are going to survive and prosper after COVID-19. One which the company mentions is commercial heat treating giant **Bodycote** and their stated reasons are below-basically

they feel that some of Bodycote's competitors will not survive the current crisis. A condensed version of their thoughts are below with the complete article available at <https://www.ii.co.uk/analysis-commentary/these-32-stocks-are-clear-winners-corona-crisis-ii511372> Interesting theory, time will tell.

"A team of city analysts name the companies they think will emerge stronger post Covid-19. Heavily-sold shares in [JD Sports Fashion \(LSE:JD.\)](#), [Auto Trader \(LSE:AUTO\)](#) and [Paragon Banking Group \(LSE:PAG\)](#) were today among 32 stocks backed by a City firm to "survive and thrive" in the Covid-19 markets crisis. Peel Hunt's list of companies it expects to emerge from the pandemic with stronger market positions and growth prospects covers 11 sectors, with [Bodycote \(LSE:BOY\)](#) and [Avon Rubber \(LSE:AVON\)](#) among the industrials and [Dunelm \(LSE:DNLM\)](#) and [ASOS \(LSE:ASC\)](#) the other two stocks from the retail category. The broker uses seven themes to determine its "clear winners", including balance sheet strength, technology adoption and potential exposure to significantly increased government spending. It also looks for companies focused on opportunity rather than survival. On Bodycote, Peel Hunt noted that the heat treatment firm's competition was made up of local private companies that might not last a protracted crisis. This would provide the opportunity to acquire high-class assets in an industry where meaningful M&A is rare. Bodycote, which is in the interactive investor Aggressive Winter Portfolio, is tipped to rise from 582p to 800p. The third industrials stock on the list is performance materials business Coats."

Metal Expert, Poland/Nitrex

Apr 23, 2020

"Metal Expert Sp. z o.o. started production last year with the new Nitrex system for nitriding stainless steel turbine components. The addition of the Nitrex system to the company's heat treating operations allows Metal Expert to improve process reliability and meet exacting standards for complex turbine applications that require dimensional control and tight tolerances. Located in Elblag, a city in northern Poland, Metal Expert has over the past 15 years steadily increased its range of gas and steam turbine components developed for mechanical and electrical power generation. To keep up with their production expectations, Metal Expert chose the NX pit-type 615 furnace with a capacity to nitride a 2200 lb. (1000 kg) load. The turnkey system also features the Nitreg®-S technology with proven, tested recipes for nitriding acid-resistant stainless steels and other types of stainless steels with incredibly precise, repeatable results. Complex components such as blades, shafts,

steering discs, stems, and other machined components are nitrided to exact customer specifications for strength, wear and corrosion, as well as dimensional stability within acceptable limits. Since these critical components operate under high temperature and high stress conditions in gas and steam turbines, Nitreg®-S technology improves their structural durability and reliability, prolonging the service life of these components. Moreover, given the relatively high cost of materials used in the manufacturing of turbine parts and the long processing times, the Nitreg®-S process is fully optimized, allowing for more predictable properties and avoiding unnecessary scrap and rework.



NITREG®-S TECHNOLOGY IS VITAL TO THE MANUFACTURING PROCESS, IMPROVES PRODUCT VALUE

“Over the decade, our investments in research have enabled the technological development of nitriding stainless steels and boosted the adoption of Nitreg®-S for a number of applications in a variety of industries. Today, our advances have made it possible to insure the homogeneous formation of the nitride layer in stainless steels. For Metal Expert and all Nitrex customers, we guarantee the homogeneity of nitriding and the degree of dissociation as per the requirements of the AMS 2759/10 and AMS 2759/6 specifications,” said Marcin Stokłosa, Project Manager at Nitrex Poland.

“Investments in new technological capabilities have allowed Metal Expert to specialize in power generation projects built to the highest standards of performance,” said Andrzej Strankowski, Head of Technical Department at Metal Expert. “Technological innovations such as Nitreg®-S nitriding that are vital to the manufacturing process and which help improve product value have earned the company industry accreditations and the trust of many prestigious companies in the energy and machinery industry like Alstom Power, Siemens Turbochargers, and many others. The Nitrex system with Nitreg®-S technology provides Metal Expert with repeatability and reproducibility of the process from load to load, uniformity of temperatures according to the AMS 2750E specification as well as nitriding results, which was not possible with the previous furnace.”

Solar Manufacturing Joins Forces with MetalPro Resources

Apr 23, 2020

Solar Manufacturing is pleased to announce that MetalPro Resources will assume the role of Sales Representative for the states of Ohio, Indiana and Kentucky. MetalPro Resources consists of three extraordinarily qualified individuals in the field of thermal processing and metallurgy. Jim Senne, Steve Maus and Bill Andreski bring a combination of over 100 years of heat treating knowledge and experience. With offices located in the Cincinnati, Indianapolis and Cleveland areas, MetalPro Resources offers many valuable services to their customer base.

In making this announcement, Adam Jones, Midwestern Regional Sales Manager remarked, “I am excited to have the opportunity to work with Jim, Steve and Bill. They are all great contributors to the heat treating market and the value that this will provide for our customers is immeasurable.”

Steve Maus of MetalPro Resources commented, “We have relationships with the people of Solar going back decades, and the time was finally right for us to join forces. Our region is rich in vacuum furnace applications and opportunities and we’re moving forward with the best possible partner in Solar Manufacturing.”

For more information on MetalPro Resources, visit www.metalproresources.com. For additional information on Solar Manufacturing, contact Adam Jones at adam@solarmfg.com or 267- 384-5040 x1525, and visit www.solarmfg.com.



left to right: Steve Maus, Jim Senne, Bill Andreski

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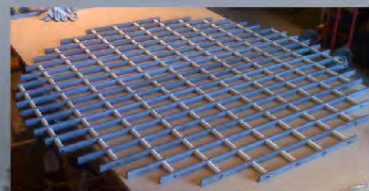
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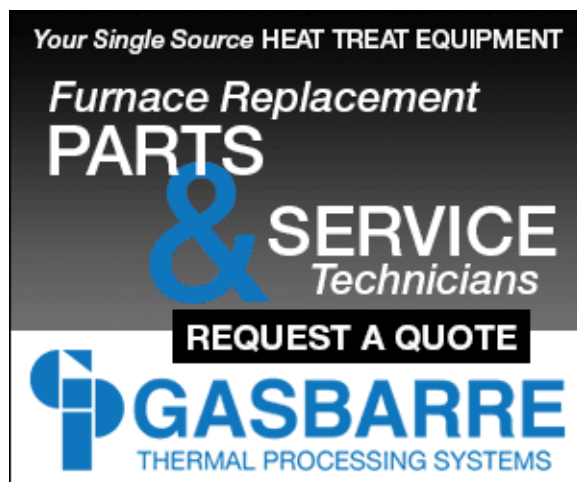
Protolabs Doubles Down on Metal Additive Manufacturing With World's Largest Metal 3D Printer (and adds another vacuum furnace)

Apr 21, 2020

As metal additive manufacturing grows so too will the heat treating associated with it. In this case Protolabs in Minneapolis, MN, USA needed to expand their in house heat treating department as they added to their powder-bed metal additive systems. The expanded heat treat department will include another new vacuum furnace from Ipsen.

"Digital manufacturing leader Protolabs (NYSE: PRLB) will soon 3D-print parts on the largest powder-bed metal additive system in the world—giving customers a powerful new way to get large-format metal parts. The GE Additive Concept Laser X Line 2000R machine will be added to Protolabs' production services in late summer 2020. Protolabs will further expand its additive manufacturing production capabilities with the GE Additive Concept Laser X Line 2000R, the world's largest powder-bed metal additive system. The DMLM (direct metal laser melting) machine achieves an extremely large build volume of 31.5 in. x 15.7 in. x 19.7 in. (800mm x 400mm x 500mm). The ability to additively manufacture parts of this size means that entire assemblies can be designed and printed as a single piece.

Along with the X Line 2000R, to further grow its DMLM production capacity, Protolabs has added four more GE Additive Concept Laser M2 printers, capable of manufacturing parts up to 9.8 in. x 9.8 in. x 13.8 in. (250mm x 250mm x 350mm). This brings Protolabs' total DMLM machine count to more than 30 metal additive machines, all capable of producing AS9100-production parts. In its ongoing effort to enhance and expand its production capabilities in additive manufacturing, Protolabs has invested in new post-processing equipment. A Solukon powder removal system that thoroughly removes trapped powder from internal cavities and complex geometries. Also, a new Ipsen vacuum heat-treat furnace will enable more in-house heat treatment. This will improve the consistency of mechanical properties of manufactured parts."



Largest Commercial Heat Treaters in North America

Apr 21, 2020



Our upcoming list of the largest commercial heat treaters in North America will include one company which demonstrates how closely knit the worldwide heat treating industry is. No we are not referring to the Bodycote, rather Hauck, a division of Aalberts Industries which is based in the Netherlands. Hauck is probably the second largest in Europe and over the years it has been growing steadily in North America with the end result that it is one of the 10 largest commercials in North America. It achieved this distinction when it purchased Applied Process less than a year ago. While many things distinguish Applied Process quite possibly they are best known for their “monster” batch IQ furnace which is capable of handling 20,000 pound loads. This furnace is the world’s largest integral quench batch austempering furnace with an operating window of 84"W x 96"L x 54"T, a gross capacity of 20,000 pounds and a quench tank which holds 400,000 pounds of salt. It was built and installed in 2011 by furnace builder AFC-Holcroft of Wixom, Michigan and it is located in the Applied Process facility in Oshkosh, Wisconsin, USA.





Solar Atmospheres of Western PA Appoints Melissa Gruszka as Quality Manager

Apr 21, 2020

"Solar Atmospheres of Western PA (SAWPA) is pleased to announce the addition of Melissa Gruszka to our team as Quality Manager. Melissa has over 20 years of experience in all levels of manufacturing including Aerospace, Automotive and the Navy Nuclear sectors. Under her tutelage, she has led various technical teams to ensure process compliance within the Department of Defense, Department of Energy, and ISO. She was a lead auditor for ISO9001-2015. Through her commitment to excellence, Melissa has demonstrated a unique ability to learn and lead. Melissa obtained her Bachelor of Arts degree from Cleveland State University and her Master's degree from Kent State University. In her free time, Melissa distinguishes herself as Chairperson of ASQ, a volunteer position for the American Society for Quality. On a personal note, she enjoys training search and rescue dogs for our military and police forces.

Bob Hill, President of Solar Atmospheres of Western PA states, "We are extremely excited to have Melissa join our ranks. Melissa's 20-year multi-

industry experience will continue to elevate Solar's standards of operations and quality. SAWPA is proud to have Melissa join the team!" For additional information about Solar Atmospheres, contact Bob Hill at 1-855-934-3284 or bob@solaratm.com, and visit us at www.solaratm.com.



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Heat Treating In Texas

Apr 21, 2020



Perhaps this item should be entitled “How Real Men Heat Treat”. As we research the largest commercial heat treaters in North America we are coming across some fascinating stories and some interesting photos. These photos are from a commercial heat treat in Texas who will be making our list.

While this installation might look rather foreign to many heat treaters it is not that unusual in Texas which is used to heat treating vast quantities of pipe and bars stock. More later.

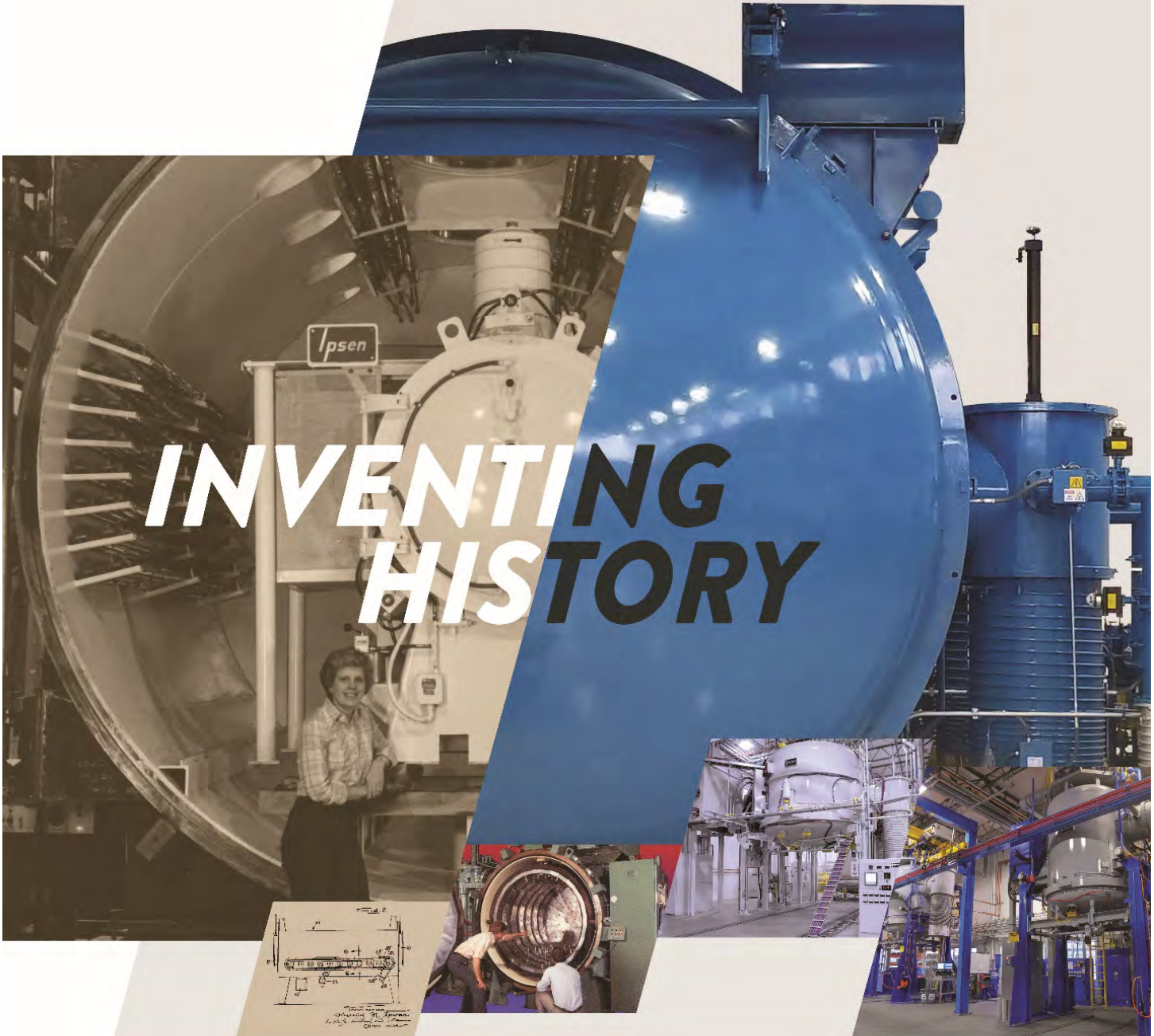






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Kevin Cyrulik Appointed Quality Assurance Manager at Solar Atmospheres, Inc.

Apr 21, 2020

Kevin Cyrulik was just appointed Quality Assurance Manager for commercial heat treater Solar Atmospheres, Greenville, SC, USA. Solar is one of the largest commercial heat treaters in North America and will be appearing in our updated list of the largest commercials in North America which will be coming out within the next couple of weeks. Solar has 5 locations in the US, Two in Souderton, Pa., one in Hermitage, Pa., one in Fontana, Calif., and one in Greenville, S.C.. It would appear that Kevin is a long time “quality guy” having worked with companies such as DRT Aerospace, Bodycote and B & F Machine Company.



Baker Furnace Provides Solution for Handling Infectious Medical Waste During COVID-19 Pandemic

Apr 21, 2020

“Brea, CA – April 16th, 2020 – Baker Furnace, a leading supplier of pollution control equipment, is excited to announce an incineration solution for infectious medical waste. As more and more people are treated for COVID-19, the amount of infectious waste produced will continue to increase. Baker Furnace manufactures medical waste incinerators that use temperatures in excess of 1,000° C to eliminate infectious pathogens and reduce waste. According to preliminary data the COVID-19 virus survives longer outside the body than the common flu. The medical waste that hosts these pathogens will

need to be treated at help centers and hospitals across the world. For example, medical personnel are using N95 masks throughout their shifts. These N95 masks may contain the COVID-19 virus and will need to be disposed of properly to eliminate the potential of infecting others. The sheer number of N95 masks and other PPE that are being used and disposed of creates a waste issue at medical facilities. If this waste is simply sterilized and taken to a landfill instead of incinerating, the environmental impact will be significant.

Medical waste incinerators provide an effective, environmentally friendly solution to the impending medical waste crisis. Baker Furnace specializes in pollution control equipment including waste incinerators that are used on pathological and infectious medical waste. These incinerators effectively destroy COVID-19 along with other virus by using a thermal oxidation process and heating the medical waste to extreme temperatures in excess of 1,000°C. Baker Furnace's medical waste incineration systems are designed in configurations that allow for them to be transported from site to site and only require an electric and gas connection. This provides facilities with the option to maximize their usage and waste reduction. A medical waste incinerator will not only eliminate the virus on waste but also reduce the amount of waste by up to 99%. This secondary benefit is important to consider because it minimizes the increase in landfill waste due to this pandemic and provides a cost savings to facilities on waste disposal services."

"Autoclaves can use steam to sterilize medical waste but there is no reduction of waste. Our systems can be designed to process a few pounds of waste to thousands of pounds of waste. As medical waste increases during this pandemic it is important to limit the environmental impact and minimize additional landfill waste." - Greg Jennings, President and CEO"



Monday Morning Briefing

Apr 20, 2020



We mentioned previously that *Poclain Hydraulics* a manufacturer of hydrostatic transmissions and in house heat treater in Wisconsin, USA is planning on discontinuing carburizing at this location in favor of other technologies. This means their 3 cell ECM vacuum carburizing system will be available sometime in the future, however it will be a little way down the road as the company like many these days will be closed for the next number of weeks.



We are in the process of updating our annual list of the Largest Commercial Heat Treaters in North America and this year we will be expanding it to the 30 largest-in the process we are learning lots of fun stuff. For instance *Thermal Vac* out in California, USA is doing lots of stuff and have some very ambitious projects in the works. These plans include more equipment and more location (s). For the time being we can't say much but you can take it to the bank that the company is growing. Thermal Vac offers brazing, heat treating and finishing processes and includes amongst their customers NASA, Aerojet Rocketdyne, and Space-X which is a pretty impressive list. By the way for the

first time ever our list of the largest will include a commercial heat treater who is almost exclusively *Induction* which is rather interesting.

A new addition to our list will be *Metex Heat Treating* in Canada who just might be the largest commercial heat treater on the continent when it comes to mesh belt furnace capacity. If there is another one larger we are not aware of it. We also learned that one of the heat treaters on our list of the largest also has the largest oil quenching vertical vacuum furnace in the world. This monster has 65' of continuous vacuum chamber from the bottom of the 10,000 gallon quench tank to the top of the furnace. The company? Family owned *Rex Heat Treat* in PA, USA.



While we are on the topic of the largest vertical vacuum oil quenching furnace in North America we had always thought of *Vac Aero* owning this title. A few years back the company built a giant with working dimensions of roughly 30' high (*the photo below shows the furnace under construction, to give you an idea about perspective the President of the company Mr. Scott Rush is well over 6' tall*). So if anybody ever asks you where the largest vertical, oil quenching vacuum furnace is you now have the answer.



It's a changed world and currently not as much fun as it used to be but companies are still buying and installing new furnaces so all is not lost. For instance **Rubig** in Austria is saying that their rep in the USA, **Mr. John Young** just landed an order for a new Rubig Plasma Nitroder and that this was the quickest order the company has landed in North America. We will be interested in hearing more details. **Unitherm Furnace** recently commissioned a large 40ft car bottom furnace for a MidWest forging company. Unitherm, based in Missouri, USA is part of a very small, select group by the way in that they build furnaces and also do commercial heat treating through another division, **Missouri, Heat Treat**. We can only think of approximately 6 companies in North America which do both.



SECO/WARWICK is another company which has also been busy installing equipment. Recently the company installed 2 systems in the US including this large unit designed for FNC using Endothermic gas as the carbon source.



COVID-19 Update. From furnace builder **Rohde** in Hanau, Germany we have this report about how they are coping with the current situation. Interesting that they like many German companies insist on only using German suppliers. Also interesting how they are coping with sales engineers and accommodations.



"The Coronavirus is affecting life and the economy worldwide. We see how many companies depend upon delivery of parts and supplies from other countries and especially from China. Production has stopped in many factories, because the supply chain has been interrupted. At Rohde Schutzgasöfen we have a huge advantage which is due to our company philosophy "made in Germany". As we only order our material and parts from German suppliers, if possible even from local suppliers, we still get all the needed material to continue to build our furnaces and salt recovery units which allows us to cope with our delivery times. The spare parts for our furnaces are available locally, or can be produced locally and can be shipped to our customers worldwide. And as the production and assembly takes place exclusively in Hanau, we haven't experienced a huge impact from the Coronavirus.

The control systems of our furnaces are open which allows the customers full control even without the manufacturer. They can also be configured with parts that the customer can get locally, so that there is no dependency. Of course our service is always available if the customers want it. With remote maintenance we can offer full support if our customers can't solve the problem on their own or need an adaption of their processes. In Germany all hotels are closed at the moment, in case a customer wants a maintenance or a repair, we offer to send our service engineers with a camper van. This allows us to offer even service interventions for companies that are located far away." **Natasha Rohde**

COVID-19 Images

Apr 17, 2020

The COVID-19 situation is generating photos about the heat treating industry which we never thought we would see. Some examples include the ones below. If you have a funny or interesting photo you would like to share we would be happy to post it for you.



Plasma Nitriding Furnace manufacturer Ion Heat posted this photo of a ventilator they just produced, we are impressed at how quickly they came out with this product.

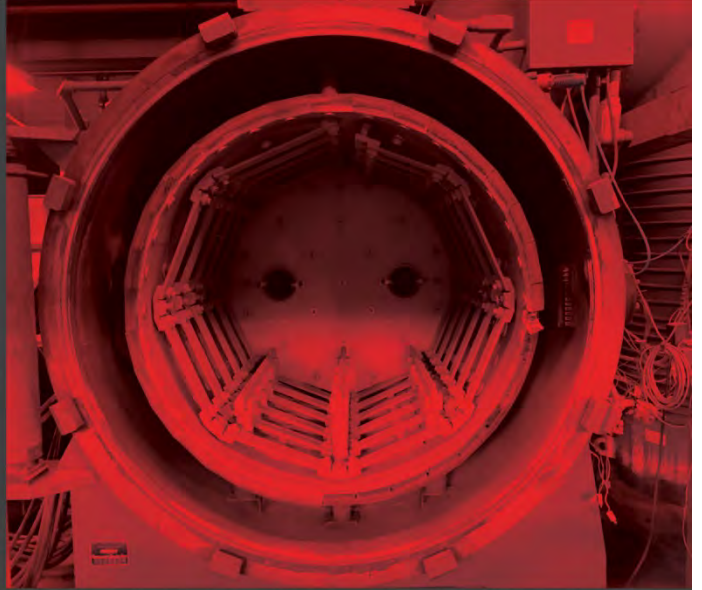


Harald Berger of furnace manufacturer Aichelin GesmbH with an Aichelin approved mask.



Captive/Commercial Heat Treater Ramada in Portugal is well prepared.

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GRUPO ETSA, Mexico

Apr 16, 2020



We welcome our most recent advertiser, GRUPO ETSA of Mexico whose banner ad can be found on the right hand side of this page. Founded in 1979, Especialidades Termicas, S.A (ETSA Group) is one of the two largest commercial heat treaters in the country with 6 locations, Guadalajara, Celaya, Aguascalientes, San Juan del Rio and Mexico City. The company has 350 employees, annual sales close to \$20 million USD and a partnership with HEF-France (the salt nitriding people). We'll give you some more background including the business mix which is 85% automotive/oil components and 15% vacuum tooling. In actual number of furnaces we can say that the company has 6 vacuum furnaces, 4 nitrocarburizing, 20 batch IQ's, 3 mesh belt lines, 2 large pit carburizers, 4 bell type for annealing and 1 austemper line. While the company is known for a number of reasons they are possibly best known as the largest commercial mesh belt heat treater in Mexico. We will let you in on a bit of a secret-the company will be the only commercial heat treater in Mexico to make our list of the 30 largest commercial heat treats in North America. More details about the company can be found at

<https://themonty.com/etsa-group-mexico/>



Why Aerospace Heat Treating is Going to Slow Down

Apr 16, 2020

From the Wall Street Journal comes the summary below about current and future aircraft sales for Boeing and Airbus. For the captive and commercial heat treating industries this could perhaps be more aptly entitled ***“Why Aerospace Heat Treating is Going to Slow Down”***. To date many of the heat treaters we have spoken to who concentrate on the aerospace industry have reported sales to be good, however looking at these forecasts tell the story that at some point they will slow down.

“The travel slump has coincided with continuing delays in returning the 737 MAX to service, with customers canceling orders for 150 of the jets in March, and Boeing said Tuesday it had downgraded the status of some existing deals because of airlines’ weakening financial health. Boeing and rival Airbus SE still have orders for almost 13,000 jets placed over the past few years and have started to cut production rates in response to the collapse in global airline traffic caused by virus-related travel restrictions and the resulting economic slowdown. Both plane makers are expected to suffer more cancellations as some airlines are expected to collapse because of a crisis that analysts expect to cost at least two or three years of growth. The International Air Transport Association on Tuesday forecast global passenger numbers would fall 55% this year compared with 2019. The trade group’s revised estimate includes a limited recovery in some domestic markets starting in the third quarter. Boeing’s March cancellations come ahead of a window for some customers to cancel orders without onerous penalties because of contracts that allow them to walk away from deals if planes are a year late, said aviation bankers. The company is expected to update investors on its orders, compensation to MAX customers and continuing efforts to strengthen its balance sheet when it reports quarterly earnings April 29. The MAX cancellations in March came from a variety of customers, including 75 from lessor Avolon Holdings Ltd. and 34 from Brazil’s GOL Linhas Aereas Inteligentes SA . It didn’t lose any deals for larger wide-body planes. The airline industry’s deteriorating financial health led Boeing to downgrade orders for another 163 jets, including 139 of its MAX aircraft. It still has contracts to sell the planes, but they have been removed from its firm backlog because of a reduced expectation they will be delivered. It ended the quarter with 5,049 firm orders.

March deliveries included 11 787 Dreamliners, three 777s and two 767 freighters. It also handed over three KC-46A military tankers and a P-8 surveillance jet to the U.S. Navy, which ordered 18 more of the planes last month. Boeing this week restarted limited production of the military versions

of its commercial jets at a facility near Seattle following a temporary closure because of virus-related travel and work restrictions in Washington state. Production of commercial jetliners in the state and at a separate facility in South Carolina remains shut down indefinitely. Boeing secured orders for 31 jets last month, more than half of them from the Navy, with previously announced deals for a dozen 787s from All Nippon Airways parent ANA Holdings Inc. and a single 767 freighter from FedEx Corp. Its shares closed down more than 4%. Airbus last week said it delivered 36 aircraft in March, down from 55 in February. It booked net orders for 21 jets after 15 cancellations. The company said it would cut production rates by about a third."

Plasma Nitriding/Modern Metals India

Apr 16, 2020

From Mr. Ankit Gupta, Director of commercial heat treater Modern Metals India we have this article about Plasma Nitriding, where and how you use it. In the first photo we see Gord Montgomery, Ankit and Rakesh, Gupta at the Thermprocess show in Dusseldorf, Germany June 2019. The second photo shows a typical Plasma Nitriding unit, one offered by Ion Heat.

Plasma nitriding (ion nitriding) is a plasma-supported thermochemical case hardening process used to increase wear resistance, surface hardness and fatigue by generation of a hard layer including compressive stresses.

Application and materials. Typical applications include gears, crankshafts, camshafts, cam followers, valve parts, extruder screws, pressure die-casting tools, forging dies, cold forming tools, injectors and plastic mould tools, long shafts, axis, clutch, and engine parts. Plasma nitriding and plasma nitrocarburising are often preferred to the corresponding gas processes if masking is required.

Plasma nitriding is suitable for all ferrous materials, including sintered steel with higher porosity, cast iron and high alloyed tool steel even with chromium contents higher than 12 percent. Stainless steel and nickel-based alloys can be plasma nitrided and keep most of their corrosion resistance if low temperatures are applied. Special applications include plasma nitriding of titanium and aluminium alloys. For heavy loads on large machine parts such as shafts and spindles, the use of special chromium and aluminum alloyed nitriding steel gives a huge benefit, as plasma nitriding generates surface hardness of more than 1,000 HV.

Process details. Plasma nitriding/nitrocarburising is a modern thermochemical treatment, which is carried out in a mixture of nitrogen, hydrogen and an

optional carbon spending gas. In this low-pressure process, a voltage is



applied between the batch and the furnace wall. A glow discharge with a high ionisation level (plasma) is generated around the parts. On the surface area that is directly charged by the ions, nitrogen-rich nitrides are formed and decomposed, releasing active nitrogen onto the surface. Due to this mechanism, shielding is easily done by covering the concerning areas with a metal blanket. Plasma nitriding allows modification of the surface according to the desired properties. Tailor-made layers and hardness profiles can be achieved by adapting the gas mixture from a compound layer-free

surface with low nitrogen contents up to 20 microns thick, to a compound layer with high nitrogen contents and an add-on of carbonic gas (plasma nitrocarburation). The wide applicable temperature range enables a multitude of applications beyond the possibilities of gas or salt bath processes.

Benefits. The advantages of gaseous nitriding processes can be surpassed by plasma nitriding. Particularly when applied to higher alloyed steels, plasma nitriding imparts a high surface hardness which increases resistance to wear, scuffing, galling, and seizure. Fatigue strength is increased mainly by the development of surface compressive stresses. Plasma nitriding is a smart choice whenever parts are required to have both nitrided and soft areas. The possibility of generating a compound layer-free diffusion layer is often used in plasma nitriding prior to PVD or CVD coating, and customized layers and hardness profiles can also be achieved. Ankit Gupta, Director, Modern Metals India.



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Captive Heat Treater John Hassal Inc., Closes-Equipment to be Auctioned

Apr 15, 2020

Back in June of 2019 it was announced that custom fastener manufacturer in Westbury, NY, would be closing the plant by the end of the year (a news report is below). It has now been announced that the equipment will be auctioned June 30 of this year. Included in the auction will be a number of heat treat items including induction systems, some atmosphere equipment and three vacuum furnaces. The centerpiece will be a fairly nice VFS vacuum furnace which we guarantee will sell, however in this market it is debatable how many of the other items will find buyers, at least buyers for anything over scrap value.

"A nearly 170-year-old manufacturer that made fasteners for the plane Charles Lindbergh flew across the Atlantic will close its Westbury plant and lay off 39 workers later this year, according to state filings. Founded in 1850, John Hassall LLC will close the plant at 609 Cantiague Rock Rd. by Nov. 30, according to the state. The company cited "economic" reasons for the plant closure in its state WARN notice. Hassall, which makes custom-designed metal parts and fasteners for the aerospace, automotive, defense and other industries, filed for Chapter 11 bankruptcy protection in 2014. The company reported at the time that it could lay off its entire staff of 83 employees between July 28 and August 10, 2014. The following year, the firm staged a turnaround after being purchased by Texas-based Novaria Group. Novaria said it planned to move its subsidiary, Sky Aerospace Products, from Los Angeles to John Hassall's 65,000-square-foot Long Island facility. To encourage that move, Empire State Development, the state's primary business-aid agency, said in December 2015 that it would provide up to \$1.2 million in tax credits to Novaria, which agreed to retain John Hassall's 81 jobs, add 57 more and maintain those employment levels through 2025. But the company did not file appropriate paper work, including an initial employment report, and was never awarded the tax breaks, according to ESD. The WARN notice filed last week lists the Westbury plant as having a total of 39 employees."



Heat Treat Industry Market Reports

Apr 15, 2020



Not a day goes by at “The Monty” that we don’t receive an e mail offer promoting the most recent heat treat industry report. Examples from this week include; *“Informative Report On Vertical Vacuum Furnaces Market 2020 With Key Players Ipsen, Tenova, IHI Machinery and Furnace etc.”*, *“Automotive Heat Treatment Market Emerging Trends, Size, Share and Growth Analysis by 2025”*, *“High Temperature Furnaces Market Trends, Opportunities, Key Players, Growth, Analysis, Outlook & Forecasts To 2025”*-and these examples represent a very small fraction of the total we receive. While we suppose there are some good reports out there, many that we see are very poorly researched, full of inaccuracies and expensive to boot. As an example today we received an offer about a report on the Gas Nitriding Furnace Market; *“Gas Nitriding Furnace Market Huge Incredible Growth by World 2029 / Surface Combustion, Bodycote (Nitrex Metal), Seco/Warwick”*. Right off the bat this headline is incorrect in their reference to Bodycote (Nitrex Metal). Yes several years ago Bodycote did buy Nitrex Metal Technologies in Burlington, Canada but that was a different company from Nitrex Metal in Montreal and as we all know Bodycote does not build nitriding furnaces. The report continues with this; *“The Major Players Covered in this Report: Surface Combustion, Bodycote (Nitrex Metal), Seco/Warwick, Solar Manufacturing, Ipsen”*, which of course leaves out the largest supplier of Gas Nitriding Furnaces in the world-Nitrex Metal. Another issue with reports in the time of COVID-19 is that the industry has changed so drastically in just a couple of months that we would question the validity of any report more than just few months old. A prediction about the aerospace industry from just 3 months ago will be hopelessly out of date now. We are certainly not saying that all industry reports are poor value for the money but we would say that like everything else in the world do your research before spending several thousand dollars on an a report which can be of dubious value.

Largest North American Commercial Heat Treaters

Apr 14, 2020



Since 1999 “The Monty” has regularly put together a list of the largest commercial heat treaters operating in North America, our 2019 list can be found at <https://themonty.com/project/largest-north-american-commercial-heat-treats-august-2019/> We are in the process of

putting together our list for this year which will be based upon 2019 sales for each company. While we originally listed the 10 largest heat treats, this grew to 15 last year and for this year it will double in size to 30 which means we are going to be mentioning some commercial heat treaters who have never made our lists before. As an example we will be including one Mexican company and one Canadian company which will be the first for each. As always we appreciate suggestions and comments.

Gasbarre Delivers Custom Batch Tempering Furnace

Apr 14, 2020

"Gasbarre Thermal Processing Systems recently delivered a custom built batch tempering furnace to a commercial heat treating company located in the heart of the Aerospace industry on the West Coast of the United States. With a working load size of 168" wide, 48" deep, and 48" tall, coupled with a max load weight of 10,000 pounds, the furnace can accommodate a number of differently sized parts within its market. The gas fired air furnace passes survey at +/- 10°F over a temperature range of 850°F to 1350°F per AMS2750E. At our customer's request, the electrical controls are UL approved and include the latest in Eurotherm brand temperature controlling instrumentation. Gasbarre was chosen as the provider of this equipment because of our ability to provide key custom sizing at the desired temperature uniformity and proven performance from prior equipment purchases.

With locations in Plymouth, MI, Cranston, RI and St. Mary's PA Gasbarre Thermal Processing Systems has been designing, manufacturing, and servicing a full line of industrial thermal processing equipment for nearly 50 years. Gasbarre's product offering includes both batch and continuous heat processing equipment and specializes in Temper, Tip Up, Mesh Belt, Box, Car Bottom, Pit, and Vacuum Furnaces as well as a full line of replacement parts and auxiliary equipment which consists of atmosphere generators, quench tanks, and charge cars. Gasbarre's equipment is designed for your process by experienced engineers and metallurgists that understand your requirements."





Delta Heat Services, Belgium Moves to New Location

Apr 14, 2020

Delta Heat Services based in the Netherlands has 5 locations in Europe and 1 in the Caribbean offering annealing, stress relieving and induction heat treating services. Just a week ago the company proudly announced that they had moved into a brand new facility in Antwerp. The photo below shows one of their furnaces, in this case a large carbottom.





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Monday Morning Briefing

Apr 13, 2020

We will start off with a bit of “people” news. First up we see that **Jesús Gerardo Calderón Reyna** recently became Vice President of Operations at **ALD TRATAMIENTOS TERMICOS SA DE CV** in Mexico. ALD TT (Thermal Treatment) is a commercial heat treater specializing in vacuum carburizing and Jesús has been with the company a number of years now. If you would like to know more about the company and their future plans we refer you to an interview we very recently did with the Senior VP of the company, **Dr. Klaus Loeser** https://themonty.com/project/dr-klaus-loser-ald-senior-vice-president-heat-treatment/?no_cache=1585746881 We seldom have news from Australia as the market is so small however we can say that **Mrinal Nandi** recently became Chief Metallurgist at captive heat treater **Hofmann Engineering Pty Ltd.**, in Perth, Australia. Prior to that Mrinal was with commercial heat treater **Unique Heat Treating Services** in Australia and before that auto parts maker Bosch in India.

Where are they now-**Dirk Otto**. For 5 years Dirk was Chief Sales Officer for furnace builder **Ipsen** in Kleve, Germany before parting ways with the company in 2019. It would appear that he has a new position, completely unrelated to the heat treating industry. **Nitrex** whose name is known around the world for their nitriding systems has appointed a new representative in Turkey, the press release is below. We will add that we are looking forward to some comments from the company about their recent acquisition of vacuum furnace builder **GM Enterprises**.

“NITREX WELCOMES NEW MANUFACTURER REPRESENTATIVE, MR. UTKU INAN Nitrex Metal is pleased to announce the addition of Mr. Utku Inan as the newest manufacturer representative of its global sales network, serving Turkey. Inan has a 18-year history with the heat treat industry, beginning his career at Tamçelik Heat Treatment Company. He has deep knowledge about heat treatment applications including vacuum treatments, austempering & martempering applications, induction surface hardening, carburizing, material selection, failure analysis and of course nitriding. He had also many different roles at Turkish Heat Treaters’ Society (MISAD) for 10 years including vice presidency.”



COVID 19 Updates. Many of the commercial heat treaters in the US remain open and surprisingly enough busy (the exception to this would be the auto industry and those heat treaters which service it). For instance **Metlab** in Wyndmoor, PA has this to say; *“We are working at full strength and are quite busy with customers engaged in power generation, oil drilling, medical instruments and the like.”* Two other examples include **Vacu Braze** in PA and **Stack Metallurgical Group** headquartered in Portland, Oregon. The companies have this to say; *“Vacu Braze is committed to the fight against COVID-19. We believe that in times of difficulty American ingenuity can lead the way. Our team and facility are positioned to move faster, create stronger results, and support new challenges. In an effort to support the ongoing work to mitigate the damage of COVID-19, Vacu Braze is offering FREE and expedited heat treating of parts made to fight the global pandemic. This includes medical components, 3D printed or additive manufactured parts, tooling, molds, ventilator parts, or anything associated with fighting the spread of the disease.”*

“The full resources of the Stack Metallurgical Group are available to any manufacturers supporting our efforts against the COVID-19 pandemic. Capacity for the processing of any medical and/or ventilator components, 3D printed/additively manufactured parts, tools and dies, or anything else related

is immediately available. All capacity that we can offer is **available free-of-charge to our manufacturing partners**. Our team of metallurgists and engineers are also available to provide any knowledge-based support.” We recently visited Stack and have this photo.



We have all heard about how hard hit Italy has been with the COVID 19 virus. **Francesco Pieropan** of furnace builder **Meapforni** in Italy tells us this; “The virus made the Italian government decide to close all heat treaters for almost 1 month from the beginning of March. All activities were shut down to protect employees from possible infection. Only a few could run a very small production to continue feeding agricultural and food industry supply chain. Next week probably some more companies will be cleared to restart production but again with less personnel (in order to maintain social distance) and only for some specific industrial fields. The target is to restart economy step by step, protecting involved people and maintain a high level of safety and human distancing. For the months of April till the beginning of May this will be the rule, while all citizen not involved in these activities have to remain at home.”

In happier news, furnace builder **Nutec Bickley** whose ad appears on this page is celebrating 40 years in business. Nutec is best known for their ovens

and Aluminum Drop Bottom Ovens, as an example we have this photo from a visit a couple of years ago. *"February the 18th 1975 marked the first day in the life of Nutec Group, a family-owned company that over time has become a recognized leader in the world of industrial heating and high-temperature insulation. Throughout the intervening period, the company has experienced several different transformations, some of them prompted by tough times, but mostly in its drive to grow and keep positioning itself as a key player in the international markets. And so here we are in 2020, with Nutec Group celebrating its first 45 years – and this is a celebration that includes all our associates, whom we are proud to call the 'Nutec family'. Across all our facilities, the teams came together to mark this milestone, in the process sharing anecdotes, memories and talking about their long-term vision for the company."*



An example of a commercial heat treater temporarily closing down because their automotive customer has closed would be Paulo in Mexico (Paulo is the second largest commercial heat treater in North America <https://themonty.com/project/largest-north-american-commercial-heat-treats-august-2019/>). *"Operations Update – Monterrey Division; As the coronavirus continues to impact business around the world, at Paulo we are continuing to monitor the situation in each of our locations. Maintaining the safety and health of our team members enables us to provide*

thermal processing services to our customers and is of utmost importance. We are working closely with our customers to update forecasts and understand their needs over the coming weeks and months. We continue to focus on social distancing and hygiene in addition to adopting temperature taking and other policy and procedure changes to protect our team. As a result of our Monterrey Division's customer base ceasing operations temporarily, we will suspend operations of our Monterrey plant effective April 6th. We plan to resume operations on May 4th to coincide with our customers returning to work. We are working with the team members at our Monterrey location to continue work from home when possible and to ensure a smooth transition as we resume work in early May."

We have all heard about how hard hit Italy has been with the COVID 19 virus. **Francesco Pieropan** of furnace builder **Meapforni** in Italy tells us this; "The virus made the Italian government decide to close all heat treaters for almost 1 month from the beginning of March. All activities were shut down to protect employees from possible infection. Only a few could run a very small production to continue feeding agricultural and food industry supply chain. Next week probably some more companies will be cleared to restart production but again with less personnel (in order to maintain social distance) and only for some specific industrial fields. The target is to restart economy step by step, protecting involved people and maintain a high level of safety and human distancing. For the months of April till the beginning of May this will be the rule, while all citizen not involved in these activities have to remain at home."



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Mercer Technologies Press Release

Apr 13, 2020

Below we have a press release from Mike Mercer Sr. regarding the status of Mercer Technologies in these challenging times.

"For all Mercer Technologies customers:

Subject: Critical Infrastructure Continued Operations during the COVID-19 crisis

Mercer Technologies, Inc. is a supplier for companies such as Williams International Co, General Electric and Tinker Air Force Base. These companies are identified as Critical Infrastructure as defined by the Department of Homeland Security and its Cybersecurity and Infrastructure Security Agency (CISA). As a supplier for these companies (and many more), our workforce is Critical Manufacturing, i.e., "necessary for the manufacturing of materials and products needed for the Defense Industrial Base."

Memoranda from the U.S. Department of Defense, Department of Homeland Security and CISA, enclosed herewith, clarify the details regarding these categories and definition. Of particular note: Companies aligned with the essential critical infrastructure workforce definition are expected to maintain their normal work schedules.

Mercer Technologies, Inc. will follow any guidelines from the Centers for Disease control for appropriate social distancing in the workplace, and/or shift alterations to decrease human density while maintaining output. We may experience longer lead times, due to our vendors being restricted and/or shut down, but we promise to do the best we can to get things moving as fast as possible. We appreciate your patience and understanding."



In House Heat Treating, AGCO/FENDT, Marktoberdorf, Germany (Part II)

Apr 9, 2020



Yesterday we looked at part of the in house heat treating department of FENDT Tractors in Germany, specifically we took a look at the immaculate “*pusher*” furnace department. Today we look at the other part of the department which consists of a number of batch IQ furnaces with an entire cell dedicated to press quenching. The advantages of pusher furnaces is their “economy of scale”, meaning a lower cost per pound of heat treating IF and only if you keep them full. Batch IQ furnaces would have a higher cost per pound for processing but much more versatility which is why many in house heat treaters have a combination of both. Continuous furnaces such as pushers for larger volume work, batch IQ (or sealed quench) furnaces for smaller volumes. FENDT is like many large in house heat treaters with a combination of both based upon volumes. One of the photos below shows the batch IQ department featuring a number of *Aichelin* sealed quench furnaces.



Our last series of 5 pictures ([link below](#)) shows the automated press quenching cell. This is dedicated to a small group of parts requiring the

tightest specs on distortion and this cell is 100% automated-parts go in one end and robots take over all of the loading/unloading. We can't tell you off hand who supplied the press quenching system, there are two major suppliers of press quenching systems in Germany, both of whom do a very good job.

In House Heat Treating, AGCO/FENDT, Marktoberdorf, Germany (Part I)

This concludes our summary of the in house heat treating department of one of the foremost tractor manufacturers in the world, FENDT Tractors. We will be continuing on a regular basis our profiles of some of the largest in house heat treat departments in the world.





Obituary for David Miles Kailburn

Apr 9, 2020

We very much regret mentioning that David Miles Kailburn recently passed away. Dave's entire working life revolved around the commercial heat treating industry in Upstate, NY, USA working with companies such as **Jasco Heat Treating** and **Rochester Steel Treating Works**. We found this photo of Dave (on the right) which we took several years ago at RST shortly after they had purchased a new vacuum furnace. We will remember Dave for always being very calm and methodical, in short a person perfectly suited to his maintenance roles.

"David Miles Kailburn, 69 of East Rochester, NY passed away April 2, 2020, in Fort Collins, CO. Dave was predeceased by his father, Laverne Kailburn, and survived by his mother, Mary Lou, brother, Mark (Cindy), and sisters, Diane (Lee), Sharon, and Darcy (Mike). Dave is lovingly remembered by his wife of 53 years, Sandra Merrill Kailburn and his sons, Miles (Vallene) and Luke (Ashley), dear daughter Dana (Evan), and grandsons Avery and Henley. Dave enjoyed summer trips with his family to Watkins Glen and Lake Ontario, maple-sugaring at his cabin in Upstate New York, building his '47 Indian Chief motorcycle, and completing endless projects around the house, big or small. He was a well-loved husband, father, grandfather, son and friend to all."



In House Heat Treating, AGCO/FENDT, Marktoberdorf, Germany (Part I)

Apr 7, 2020



FENDT Tractors (Photo1), a division of AGCO is known around the world as a top end manufacturer of tractors. Manufactured in Germany the company makes many of the components in each tractor including drive train items in house. Today we are looking specifically at the Marktoberdorf, Germany facility which is where many of the drive train items are manufactured and subsequently heat treated.

Drive train components, shafts and gears as an example are almost always heat treated in either pusher style furnaces, rotary hearth, batch IQ or LPC systems and FENDT follows this model with a mixture of batch IQ and pusher furnaces combined with press quenching in some cases. Today we are looking at the pusher furnace department which is as automated as possible. Parts are loaded by robot on investment cast fixturing (photo 2), processed through



the oil quenching pushers (photos 3 & 4) and subsequently unloaded with the empty fixturing being returned by conveyor to the part loading area (photo 5). Everything in this department is completely automated from process variables such as carbon potential and load tracking to loading

and unloading of parts. The entire department by the way offers the cleanest oil quenching pusher furnaces we have ever seen. Each and every day the furnaces are wiped down, the floors cleaned and the floor mats replaced all while the furnaces are in full production. It is quite an experience to see such a clean, automated heat treat department with so few workers. Tomorrow we look at the company's batch IQ and press quenching department.





Bargains During the COVID-19 Age

Apr 7, 2020



had. As an example we would point to this surplus mesh belt furnace line which is being replaced by a new, larger mesh belt line. It has a very respectable capacity at 3500 pounds per hour and

Granted there are few companies in North America looking to add heat treating capacity, however for those companies which need more capacity there are certainly bargains to be



was in operation until just a few weeks ago. Asking price is \$50,000 which we would have considered a super bargain just 2 months ago. These days? Impossible to tell but we will report back to you within a couple of months to update this story.

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A row of various flow meters from the eFlo line, including different sizes and models, some with digital displays and others with analog gauges.

The eFlo line of Flow Meters

Rhode Island Heat Treating Services-New Owner

Apr 6, 2020



Commercial heat treater Rhode Island Heat Treating Services has a new owner. Just a few weeks back experienced, long time heat treater Joel Poirier purchased the company from the previous owners Mary Emerson and her husband. Rhode Island Heat Treating Services is a very typical commercial heat treat for the US Northeast offering a mixture of heat treating processes including annealing, tempering, hardening, normalizing and stress relieving. We wish Joel the best of luck.

Bodycote in the Era of COVID-19

Apr 6, 2020

The world's largest heat treater yesterday announced that they had completed their acquisition of North America based Ellison Surface Technologies. At the same time they issued a statement about the current economic climate.

"Macclesfield-based Bodycote announced the completion of its acquisition of North American-based Ellison Surface Technologies, and a trading update for the first quarter. The group, which is the world's largest provider of heat treatments and specialist thermal processing services, said trading in the first quarter has not been significantly impacted by disruption from the coronavirus pandemic. But is said it has already been taking mitigating actions in anticipation of tougher conditions to come. These actions are designed to align its cost base with any reduced demand and it said the group will continue to take further action in response to developments and as it deems necessary."

Following today's announcement today of the completion of the acquisition of Ellison Surface Technologies, Bodycote is approximately £83m drawn on its £230m revolving credit facility, which has two more years to run. Accordingly, there remains £147m of immediately available liquidity. The group said it has a very strong balance sheet and can withstand a significant decline in trading conditions. Nonetheless, given the uncertainty in the current environment, the board said it is keeping the proposal for the final dividend under review. Group chief executive, Stephen Harris, said: "Bodycote's financial position is strong and our agile and devolved approach to managing the business from day-to-day puts us in a good position to weather the unprecedented disruption which we are likely to face. "I also take this opportunity to recognize the

commitment, courage and professionalism shown by our employees during this challenging time.” The group reiterated that its primary concern has always been the safety and well-being of its stakeholders, including its



employees, customers and the wider community. The reality of the COVID-19 pandemic has given this priority even greater predominance, it said.

The group’s facilities have introduced additional personal protection measures, intensified hygiene, and social distancing

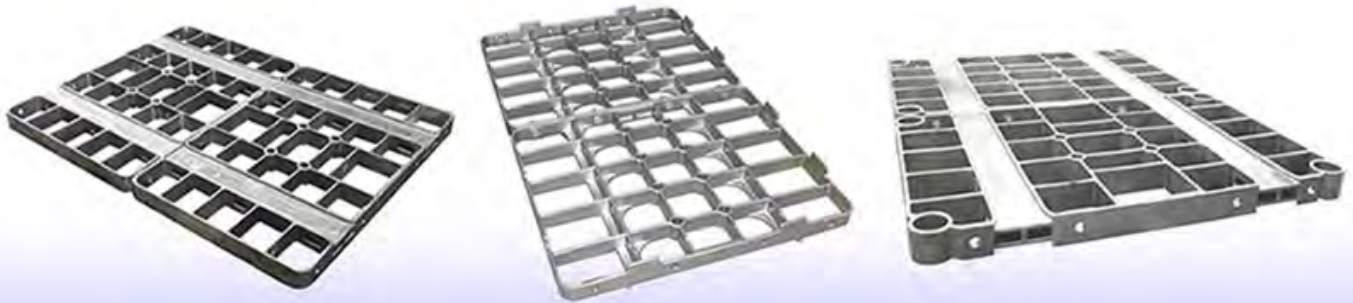
protocols that meet, or exceed, WHO, government and local guidelines. Operations are being managed safely as Bodycote maximizes business continuity to provide its essential services and continues to support customers. A COVID-19 task force convenes daily to monitor the situation and coordinate activities on the ground while managing communications with customers and employees, keeping them informed about the evolving situation. Bodycote announced the proposed acquisition of Ellison Surface Technologies in December 2019, for a total of £162m. It said £97m was paid on April 3, 2020, the date of completion of the deal, with the remaining £65m due to be paid on April 3, 2021. Ellison employs almost 400 people across six sites located across the United States, Canada and Mexico. The business generated revenues of £48m for 2019, with associated pro-forma EBITDA of £10m. This represented revenue growth on 2018 of 17%, while pro-forma EBITDA increased 48%, reflecting the fact that Ellison has been successfully gaining share.

This also positions the business for further revenue and profit growth in future years. Bodycote will receive tax benefits worth at least £24m in the years to come. Bodycote said the acquisition creates one of the largest providers of thermal spray and engineered coating surface technology services in the world.

Stephen Harris said: “This acquisition continues our strategy to build our specialist technologies portfolio and enhance our exposure to the civil aerospace market, where we see structural growth over the long term, notwithstanding the current hiatus in the industry. “Ellison’s business is one that we have respected for a long time and is a perfect strategic fit for Bodycote’s specialist technologies businesses.”

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Thermal Product Solutions Moving To Prove Efficacy of Dry Heat Sterilization on PPE and N95 Masks

Apr 6, 2020

“New Columbia, PA – April 6th, 2020: Thermal Product Solutions, LLC (TPS), a global manufacturer of thermal-processing and sterilizing equipment, announced they are working with hospitals to prove the efficacy of their Gruenberg product line for dry heat sterilization on PPE and N95 masks for re-use.

Recent tests at a research hospital show positive results in the dry heat sterilization of masks, face shields, gowns and other PPE, with minimal deterioration of the material. During the process, masks were heated to a specified temperature for a calculated period of time that resulted in sterilization of the material. After the sterilization process, fit tests were performed on the masks that passed filtration efficacy, structural integrity and mask fit. TPS is continuing to work with facilities to further confirm test results.



The Gruenberg sterilizers utilize convection airflow and dry heat for the process. Heat is absorbed by the item being sterilized for a period of time until it reaches the proper temperature needed to destroy microorganisms and achieve sterilization. Dry heat sterilizers range in size from small tabletop models (Picture 1) starting at 1.25 cubic feet (cf) to large truck-in models (Picture 2) offering 1,000cf of sterilization capacity. The larger truck-in unit is estimated to have the capacity to sterilize 15,000 to 18,000 masks per day based on a cycle time of roughly one hour.

Gruenberg's smaller dry heat sterilizers feature a unique design where the process chamber is sealed throughout the entire cycle, containing any airborne particulates and sterilizing them. Larger chamber systems are easily customized and feature intake and exhaust HEPA filters and offer several door seal options for peace of mind.

"We are dedicated to finding methods that aid in protecting the health and safety of all those serving on the front lines during the COVID-19 pandemic. Our dry heat sterilizers have been used for decades in the decontamination and sterilization of all forms of microbial life and it only made sense to begin testing their efficacy on sterilizing PPE for hospitals and emergency personnel. We are looking to find additional testing partners quickly and ultimately receive FDA approval to help fight the COVID-19 spread." Greg Jennings, President & CEO"



Bodycote Completes Acquisition Of Ellison Surface Technologies

Apr 6, 2020

Bodycote, the world's largest provider of heat treatments and specialist thermal processing services, is pleased to announce completion of the acquisition of Ellison Surface Technologies. The acquisition creates one of the largest providers of thermal spray and engineered coating surface technology services in the world. Stephen Harris, Group Chief Executive of Bodycote plc, commented: "This acquisition builds upon our ongoing efforts to build our Specialist Technologies portfolio and enhance our exposure to the civil aerospace market, where we see structural growth over the long term, notwithstanding the shorter-term hiatus in the industry. Ellison's business is one that we have respected for a long time and is a perfect strategic fit for Bodycote's Specialist Technologies businesses." Bodycote continues to execute its strategy to invest in Specialist Technologies and secular growth businesses. Ellison's business is an excellent strategic fit with Bodycote's existing Surface Technology business, which itself has seen strong structural growth in recent years. Bodycote's expanded Surface Technology business can offer additional technologies and added resources to consolidate its leadership in surface coating solutions and specialist processes, including thermal spray coating, liquid coating, thermal processing, and diffusion coating. These operations will be fully integrated into Bodycote's business model both from an operational and commercial perspective, and will operate going forward under the Bodycote brand. Stephen continued: "The acquisition

will also help position Bodycote to reach its next phase of growth. Ellison has been successful in winning new business in recent years and it will be very complementary to Bodycote's existing Surface Technology business. We look forward to leveraging our combined workforces to create a new strategic position to successfully enhance our services to support the aerospace market."

About Bodycote. With more than 185 locations in 23 countries, Bodycote is the world's largest provider of thermal processing services. Through heat treatment, metal joining, surface technology and Hot Isostatic Pressing (HIP), Bodycote improves the properties of metals and alloys, extending the life of vital components for a wide range of industries, including aerospace, defence, automotive, power generation, oil & gas, construction, medical and transportation. Customers in all of these industries have entrusted their products to Bodycote's care for more than 30 years. For more information, visit www.bodycote.com.

For further information, please contact: Michaela Yasin, Chief Marketing Officer. Email: michaela.yasin@bodycote.com / Tel: +41 79 154 0758



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Monday Morning Briefing

Apr 6, 2020



COVID-19 Update. It's easy to get bogged down with the endless stream of bad news about the corona virus however at the end of the day the heat treating industry is very much alive and functioning. We have not run across a single commercial heat treater who has shut down either temporarily or permanently and there are many that say business remains strong. Amongst industry suppliers it is a similar story, all remain open and functioning and while business is down for many and there have been lay offs they all report that they are in full operation. A casualty of the virus has been trade shows though. The *7th Heat Treat Forum* which was to be held in Wroclaw, Poland April 21 and 22 has been postponed until later this year due to COVID-19. As far as we can tell all trade shows and exhibitions for the industry which were to be held before July of this year have been cancelled or postponed although all events for the fall are still being planned. We attended the Heat Treat Forum in Poland back in 2015 and have this photo which features *Janusz Kowalewski* (centre) of Ipsen receiving an award from the events organizers.



In related news it is interesting to see how captive heat treaters are helping out by making ventilators. One example is global auto parts maker **Linamar** who recently announced that they would be tooling up to produce ventilators. One of the Linamar facilities in Canada has what we would consider to be the largest batch IQ installation in North America with twenty five 36" X 48" X 36" batch IQ furnaces in one department. It is rather odd to think that these furnaces could be potentially used to heat treat ventilator parts (see how they rank in our list of the largest North American captive heat treaters <https://themonty.com/project/10-largest-north-american-captive-heat-treaters/>)

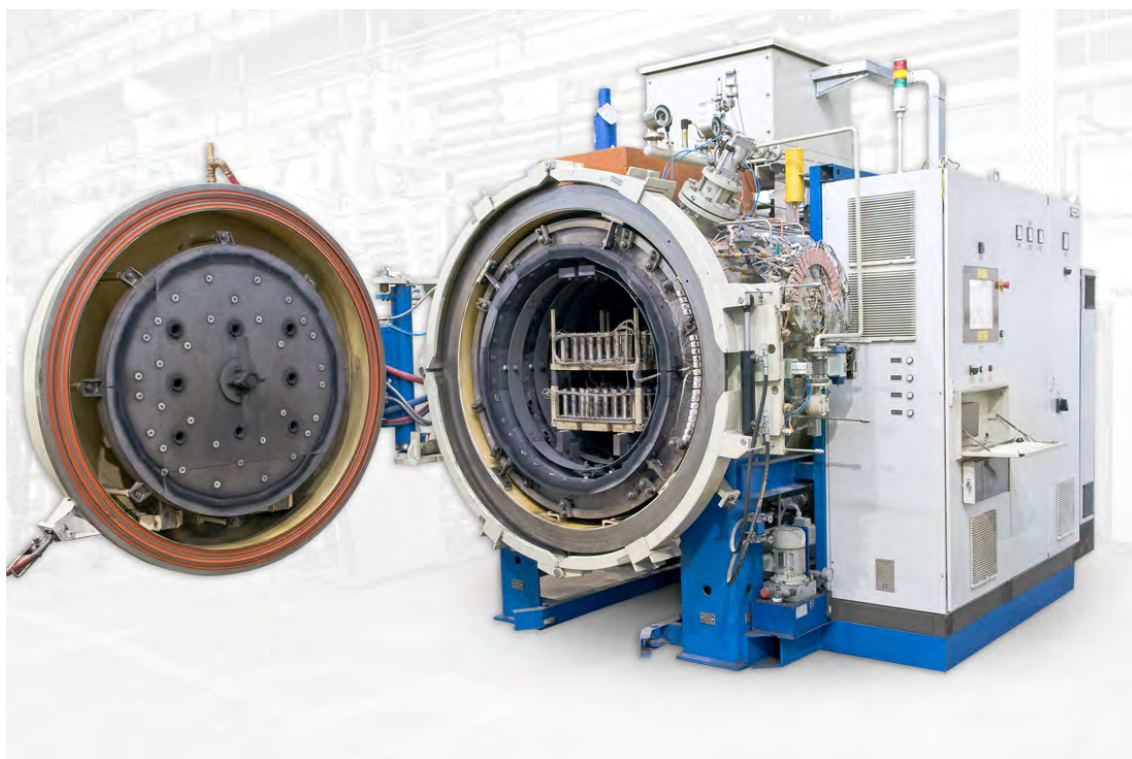


From furnace builder **Can-Eng** we have this press release; “*Can-Eng Furnaces International Ltd. was recently contracted to engineer and commission two large capacity heat treatment furnaces for a global producer of highly engineered metal earth moving, construction and mining wear equipment. As part of this turn-key contract, Can-Eng designed and commissioned individual tempering and stress relieving furnaces. Both Heat Treatment systems were assembled and tested at Can-Eng’s Niagara Falls facility prior to shipment and commissioning at the customers facility. The customer was impressed with Can-Eng’s controls capability to seamlessly integrate the systems Level 1 controls with the company’s existing Plant Supervisory and Production Control*

Systems (Levels 2 & 3). Both Systems integrated the company's preferred PLC hardware which was upgraded to include a more flexible safety rated PLC over conventional hardwired safety circuits.



Speaking of press releases from furnace manufacturers we have this one from SECO/VACUUM Technologies; "SECO/VACUUM Technologies (SVT), a SECO/WARWICK Group company begins 2020 with sales of 4 Vector® vacuum furnaces in the first two months of the year. Vector® is SECO/WARWICK's most versatile vacuum furnace, a single chamber HPGQ model loaded with capabilities, and highly flexible to accommodate a wide range of thermal processes including hardening, tempering, annealing, solution heat treating, brazing and sintering applications. It is characterized by high speed cycles, low consumption of energy and low process gas emissions, and is available with curved graphite elements or an all-metal hot zone. Tooling and aerospace component manufacturers, in particular, are benefiting from expanded capabilities afforded by this technology. Two Vectors HPGQ furnaces of different sizes were purchased by a Midwest tool and die manufacturer; an additional temper furnace was purchased by a cutting tool manufacturer, their third SVT Vector in 3 years, and an aerospace components manufacturer purchased the other."

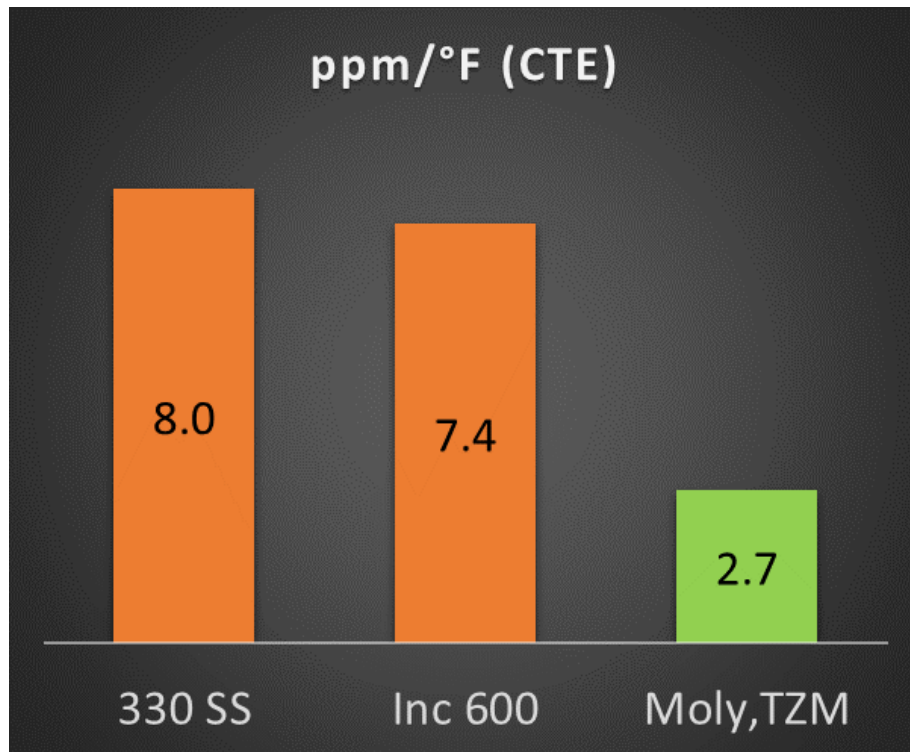


From Bob Grammer of Grammer Vacuum Technologies we have this information article about reducing hearth damage in a vacuum furnace due to grid distortion.

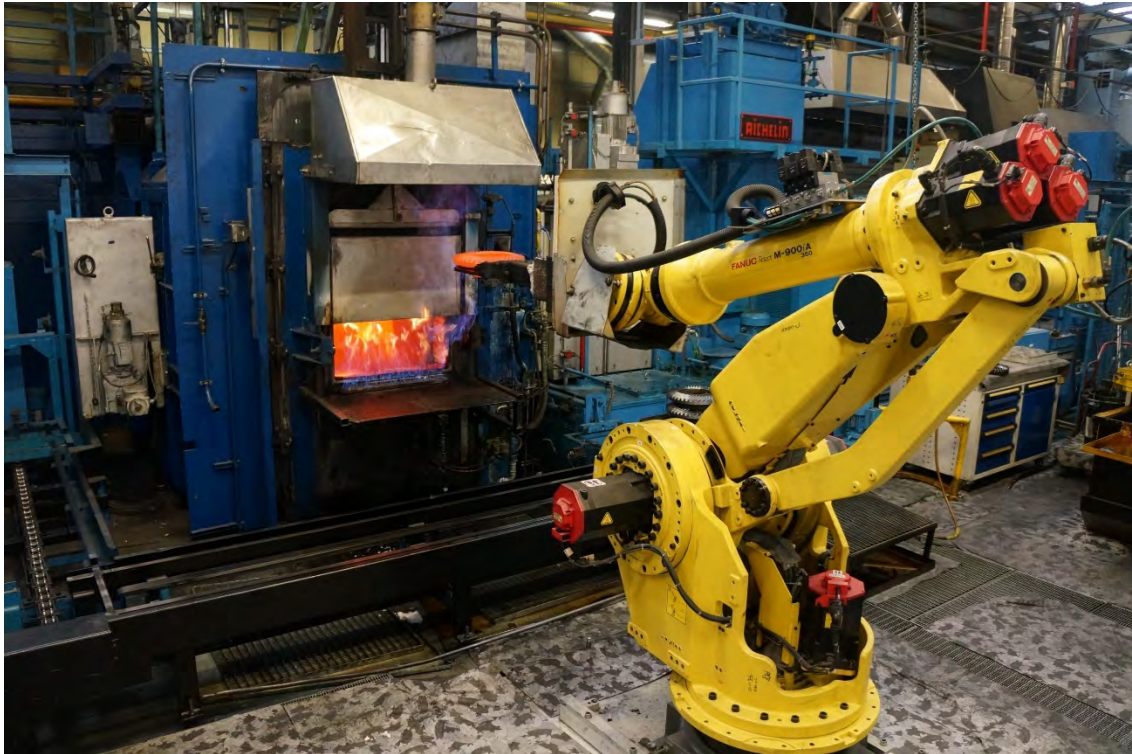
"A very commonly observed failure mechanism with a moly post hearth assembly is bending of the moly posts. They will stay fairly straight at the center of the hearth area, but they can distort badly toward the outer sides of the work zone. The outer rows of vertical posts end up leaning away from each other. This is due to the very high linear thermal expansion coefficient of nickel-iron alloy grids (usually 330 SS or Inconel). With a high load on the nickel alloy grid, it is not able to slide on the perpendicular hearth beams as the temperature rises. The outer hearth post rows are forced in an outward direction. The quenching of the furnace load does not reverse all of this effect and over time results in the severe bending of the hearth posts.

By replacing the stainless steel or nickel alloy grids with a moly or TZM alloy moly grid, which exhibits very low thermal expansion, the hearth life can be increased. For comparison, the figure shows the coefficients of linear thermal expansion for commonly used grid materials. For example, a 36" wide 330 SS grid at 70°F grows to 36.6" wide at 2200°F. Another significant benefit of TZM moly grids is use at higher furnace process temperatures without the problem of a softened, sagging grid that cannot support the load properly.

Author: Robert Grammer, Grammer Vacuum Technologies, Inc. GVT provides an extensive inventory of Molybdenum and TZM alloy mill products for vacuum heat treating. To learn more: sales@gvtinc.com or visit www.gvtinc.com



And in upcoming news we are going to have a close look at the *In House Heat Treating Department* of this very large manufacturer later this week.



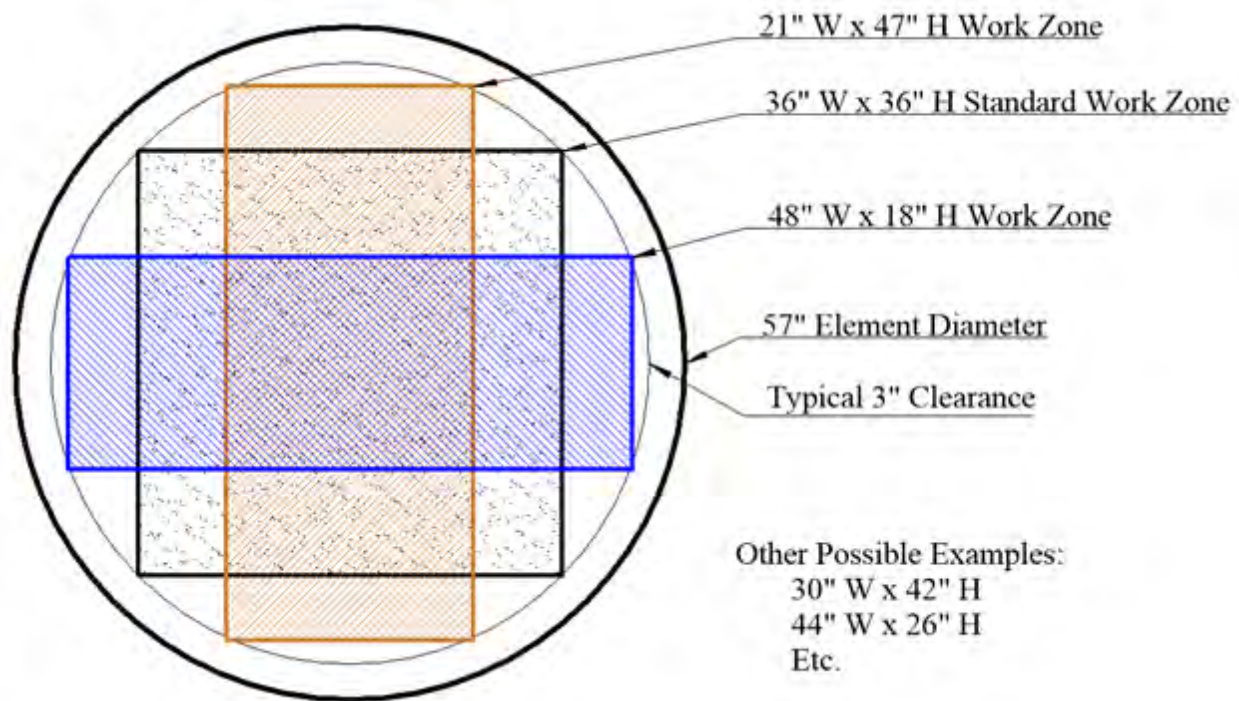
Enhance your Hearth Series, Part 2 Hearth Height Adjustment

Apr 3, 2020

From Bob Grammer of Grammer Vacuum Technologies a US supplier of Molybdenum and TZM alloy mill products we have the this article about Hearth Height Adjustment in vacuum furnaces. This is the second of a three part series.

“Adjustable Hearth Height for Wider or Taller Load Capability

*The available width and height of the work zone in a vacuum furnace with a round hot zone is determined by the elevation placement of the top of the furnace hearth. This distance is determined by the length of the vertical hearth support posts. **By having spare, interchangeable hearth post sets of varying lengths, one can extend the work zone width or height as needed.** The figure shows a variety of work zone dimensions that are possible with a standard 36” wide x 36” tall typical work zone as an example. The important thing in choosing your work zone shape is to maintain an (approximately) 3” clearance between the elements and the work zone to avoid part to element contact.”*



"Note: With the symmetric shapes of modern, round hot zones there is good reason to expect good temperature uniformity anywhere within the 3" clearance ring shown in Figure 1. If you can build a survey fixture capable of surveying all the space you want to use, you theoretically could use more than just the rectangular space shown in the examples. Getting an auditor to accept the survey is a separate task.

Author: Robert Grammer, Grammer Vacuum Technologies, Inc.

GVT provides an extensive inventory of Molybdenum and TZM alloy mill products for vacuum heat treating. To learn more: sales@gvtinc.com or visit www.gvtinc.com"



Largest Pit Nitriders in The World

Apr 2, 2020



A long time reader in Michigan posed this question to us earlier this week; *"Hello Gord, I hope all is well and that the current crisis is not hindering you too much. Do you know who has the largest pit FNC/Nitride unit in the world and who manufactured such?"*

It is a very fair, interesting question and we don't have a definite answer, however these are our thoughts. **Nitrex** has installed some monsters out there but personally the largest I have ever seen or heard about are at a heat treater

in Remscheid, Germany by the name of **Härterei Carl Gommann GmbH** who has pit gas nitriders. The largest diameter one is 13' and the deepest is 37'. These were built by a German company by the name of KGO who has furnace installations around the world. In the one photo we see on the left **Harald Roth** of KGO and on the right have **Volkher Diehl** of **Härterei Carl Gommann GmbH**.

We will stress that that these are the largest pit nitriders we are aware of but probably there are larger ones out there somewhere. If anybody has any suggestions we are all ears.





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Pure Molybdenum vs. TZM For Your Vacuum Furnace Hearth - Part 1

Apr 2, 2020

We have an interesting news item today about why TZM alloy is better than pure Molybdenum for your vacuum furnace hearth. This is written by Bob and Ben Grammer of Grammer Vacuum Technologies, Inc. and their contact information can be found at the bottom of the news item. There will be a follow up as well so stay tuned for more information!

"In the case of furnaces with all-molybdenum hearths or of graphite hearths with molybdenum ("moly") support posts, a direct replacement of those moly



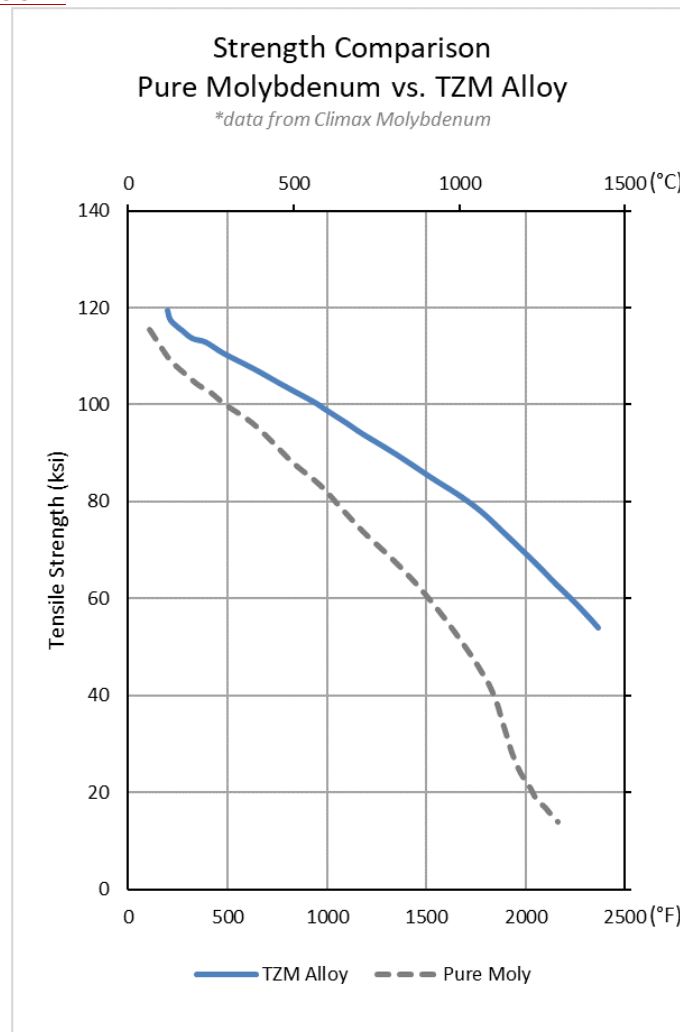
posts with TZM alloy moly posts will both increase strength of the hearth

assembly and eliminate problems with recrystallization-induced embrittlement of the posts. (For an all-moly hearth, replacement of the horizontal load beams with TZM would have a similar benefit.) The comparative strengths vs. temperature of TZM alloy and pure moly are shown in the graph. Whereas at room temperature the strengths are very similar (around 110KSI-120KSI), once you exceed the 2000F recrystallization temperature of pure moly, the difference becomes dramatic. At 2000F the pure moly is about 40% of the strength of TZM alloy. By the time it reaches 2300F the pure moly is only about 25% of the strength of TZM alloy. Not only is the TZM alloy much stronger than pure moly at temperature, but it also does not suffer from the same embrittlement problems. Pure moly, once it has recrystallized, forms very brittle grain boundaries in its microstructure. Its behavior begins to resemble that of glass. This is the primary mode of failure of moly components in vacuum furnaces - breakage due to intermetallic grain boundary embrittlement. TZM's recrystallization temperature is around 2500F, and even when it does recrystallize, it forms very fine new grains that still have decent ductility. Hence, we recommend TZM alloy as a replacement for pure moly in all structural applications for vacuum furnaces. It is the "right stuff".

Note that all metals used in a vacuum furnace, moly and TZM alloy included, will suffer from distortion due to the numerous thermal cycles they experience. Moly hearth beams are a good example. Once distorted moly

hearth beams can be very difficult if not impossible to straighten without breaking them. To have any chance at all they must be heated to forging temperatures. TZM hearth beams however, due to their good ductility can often be heated to forging temperatures and successfully straightened. Most heat treating shops scrap out the moly hearth beams rather than even trying to straighten and re-use them. With a TZM hearth the hearth components can typically be re-used with a newly re-lined hot zone saving a large additional expense.”

Author: Robert Grammer, Grammer Vacuum Technologies, Inc. GVT provides an extensive inventory of Molybdenum and TZM alloy mill products for vacuum heat treating. To learn more: sales@gvtinc.com or visit www.gvtinc.com



The Monty Newsletter April, 2020

Apr 1, 2020

The link below will take you to the April 2020 issue of *"The Monty"*, exactly one hundred pages of the latest news and trends in the global heat treatment industry. As the world's largest heat treat industry news source this *"new and improved"* edition of *"The Monty"* features news items about in house and commercial heat treaters from around the globe including detailed stories about the heat treating departments of companies such as *"Dana"*, *"Sutton Tools"*, *"Tremec"* and several others. Regular readers will see something else new in this issue - *"The Monty Exclusive"* news items. We are rather proud of the fact that for almost 25 years *"The Monty"* has featured news about the industry which is not found in any other news sources. These exclusive news items will feature *"The Monty Exclusive"* logo.

This issue is sponsored by many of the most well known and reputable industry suppliers in the world including *"Fluke Process Instruments"*, *"Williams Industrial Services"*, *"Ipsen"* *"Hubbard Hall"*, *"Nutec Bickley"*, *"Heat Treat Central"*, *"Solo"* and *"Graphite Materials"* to name a few.

<https://themonty.com/wp-content/uploads/2020/03/themontyapril2020a.pdf>





The Monty Interviews Dr. Klaus Löser ALD, Senior Vice President Heat Treatment

Apr 1, 2020



We are very pleased to be able to offer you this interview with Dr. Klaus Löser, Senior Vice President, Heat Treatment, ALD. Dr. Löser talks about the company, future plans and changes within the industry.

Klaus, I really appreciate your time. We have known each other for many years, so having the opportunity to interview you is something I have been looking forward to. To begin, let's start with your background. What is your doctorate in and how did you end up in the heat treating industry?

"Hi Gord, nice talking to you. I completed my university education at the Technical University of Darmstadt in Germany. After studying general mechanical engineering, I completed my doctorate at the Institute of Materials Science in Darmstadt. There I studied long-term component properties under high temperature stress, especially components for use in stationary gas and steam turbines, but also for applications in aviation. Already at that time I was concerned with the influence of heat treatment on the properties of components, especially nickel-based alloys. So it was obvious to apply the knowledge and findings gained in this field in my professional life."

What is your role in the company?

"I gained my first professional experience as a development and process engineer in the industrial furnace division at Degussa AG, one of the

predecessors of ALD Vacuum Technologies. After positions in sales in North America and Mexico I became head of research and development. Presently I am a senior vice president, in charge of the heat treatment division of ALD. In addition, I was head of the scientific advisory board of the Research Association for Industrial Furnaces Engineering for many years and actually I am serving as a member of the board of directors of the German heat treating association AWT.”

ALD is a very interesting company. One way it differs from many others in this industry is that you build both Thermal Processing Equipment and you also offer commercial heat treating. Could you give us some details about the company both on the equipment side and the heat treating services side?

“When we developed and introduced low-pressure carburizing and high-pressure gas quenching for high-volume applications in automotive industry in the 1990s, many customers were uncertain in dealing with this technology. The transition from atmosphere heat treatment with oil quench to vacuum technology with gas quench was a paradigm shift for them. This gave rise to the idea of giving these customers the opportunity to participate in the advantages of this technology in the form of a service, a real win-win situation for our customers and us. On the one hand they benefit from the longstanding heat treatment know-how of ALD and can therefore use the advantages of the new heat treatment technology. On the other hand they don’t have to pay the financial and technical hurdles that have to be overcome with the introduction of a new technology in their own plant. At the same time, our plant engineering and construction division also benefit from the service companies in that production experience and ideas for optimization flow back directly to our process and plant development.”

Klaus recently you made some changes in the structure of the company in North America, could you share with us what form this took?

“As part of a strategic realignment of our worldwide activities, we decided last year to combine our previously separate heat treatment and metallurgy activities and locations for the North American market at the East Windsor site in Connecticut. From there ALD Vacuum Technologies North America is responsible for over 100 installations of mission critical equipment in advanced heat treatment technologies, superalloy materials companies and special technologies in partnership with top OEM’s in aerospace and automotive. Since the merger of these companies in 2019 ALD North America has continued to expand their capabilities in customer support services and

technical sales. They have increased the number of field service engineers and just recently our new sales & application engineer Andrew Chan joined our team to support our heat treat activities.”

Your heat treatment business, ALD TT (Thermal Treatment) is very unique in that it is so focused. What I mean by that is, most commercial heat treaters offer numerous different processes. However, that is not the case with ALD Thermal Treatment. Could you please elaborate why?

“This historically results from the idea to offer our customers a brand-new technology where a lot of process knowledge is available in ALD. Case-hardening is also a process that is mainly used in large series, so the automotive and supplier industry was one of our first customers. Our speciality is certainly the improvement of distortion control with tailored gas quenching processes. Meanwhile our service plants have expanded their range of processes, so besides case hardening and neutral hardening, we also offer brazing and nitriding technologies in our two North American facilities. We are continuously looking into complementary offerings in the future, such as low-pressure carburizing or neutral hardening combined with oil quenching.”

Recently you issued a press release about a new ALD TT location in China. Will this be similar to your facilities in Germany, the US, and Mexico?

“The short answer is: yes. The size will be similar to our facility in Germany, service offerings will be similar to our existing plants and be adjusted flexibly to local market demands.”

Are there any upcoming changes at ALD TT that you can tell us about?

“ALD TT Port Huron has already started the transition process from a contract heat treater for one pilot customer to a multi customer service provider. This process is ongoing and will continue for the foreseeable timeframe.”

I had the opportunity to visit your headquarters in Germany a few years back. However since that time I understand you have embarked on a major expansion of the building. I would be interested in knowing what changes have been made.

“Since our move to a new location in 2016, the company has grown rapidly and we have built into a new warehouse. Further, just a few weeks ago, a new building was inaugurated where we are concentrating our

customer service, spare parts activities, and all R&D departments including automation and Industrial Internet of Things (IIoT) applications. Besides offices, the new building includes a new technical center which will host leading edge heat treatment and metallurgy furnaces, from lab-scale until production size including a SyncroTherm-system and new ModulTherm-line. This will allow us to further intensify our future R&D activities and perform basic trials and investigations for and with our customers.”

Which future trends and market demands do you identify with current projects and orders?

“Currently we still see a trend towards further flexibility in heat treatment plants, mainly with regard to the quenching processes, e.g. hybrid systems offering gas and oil quench. In times of increasing uncertainties in the heat treatment market regarding future production figures, the trend is towards modular and flexible systems, such as our ModulTherm plant, whose throughput can be adapted to current production requirements in a timely manner.

Sustainable and ecological heat treatment is very much in vogue. The increasing share of renewable energy in the energy mix means that the proportion of electrically heated furnaces is rising. In the age of digitalization, all systems must be equipped for IIoT today, at least with the necessary interfaces, so that they can communicate with the preceding and subsequent processing machines, among others.

So-called small batch production in systems such as SyncroTherm are increasing in demand where small batch sizes of components can be produced flexibly, and where there are particularly high demands on component quality, in particular regarding distortion control. In all cases our customers demand that the furnace manufacturer also supplies the corresponding automation.

One major focus of our R&D activities is low pressure carbonitriding (LPCN) where we focus on the high contents of control on retained austenite which will lead to higher pitting fatigue, if we trust recent publications from universities.

In addition, we have some process- and equipment- innovations in our pocket, which will be released in 2020 and 2021. So this is something we look forward to!”

With all due respect Klaus, you and I have both been in this industry for many years and have seen a lot of changes, especially when it comes to

how business is conducted. How has e-mobility changed how ALD operates/functions?

“For the past 25 years, ALD has developed heat treatment technologies for serial production in automotive applications. This industry is the main contributor to ALD’s turnover in the heat treatment sector, especially for case hardening of transmission components. First of all electrically driven vehicles use single or two-stage transmissions with significantly fewer toothed components, reducing the necessary amount of heat treatment capacity. But on the other hand, we also see this as a great opportunity for our technology. Higher demands are placed on the new transmission components, especially higher strength, but also higher precision in gear dimensions in order to avoid noise and vibration. Here we see ourselves very well positioned with vacuum technology and gas quenching, especially with regard to minimizing distortion. If we put the current Corona crisis to the side for a moment, then we see for the short-/mid-term future even more need for carburizing if we think about hybrid drivetrains, where even more gears are needed per gearbox. Last but not least in the future, there will be even greater demand for flexible, modular plant systems that can be integrated into production. The ever-increasing demands for environmentally friendly and low-emission heat treatment make up the rest.”

The Corona- virus has turned the world on its head, how has this changed how ALD does business?

“Absolutely. The Corona crisis and the enforced measures mean that we have to make massive changes to our working methods. Many of us are working from home and conferences are held via web-ex. Unfortunately, we are forced to restrict our travel activities which of course limits us as a company with a particularly high export share. Nevertheless, we try to continue to look after our customers well within the scope of our possibilities.”

Now this is an unfair question but where do you see ALD and the heat treatment industry in general being 1 year from now?

“Currently facing a situation where we don’t know what will happen tomorrow, it is hard to forecast the business in a year from now. As an optimist, I predict it as follows: The Corona crisis has subsided worldwide to a level that is medically manageable and a vaccine has been developed. The economy, including the heat treat industry, is in the process of recovering from the low and is benefiting from catch-up effects from the year.

The economy has learned its lessons from the crisis and is developing more crisis-proof supply chains. Some forms of work that were necessarily introduced during the crisis, such as home office and web-conferencing, will find their way into our normal working lives because they have proven their worth. Finally, I hope to meet you at a heat treatment event somewhere in the world, which can then take place regularly again. Until then, I wish you and your family and all our customers in North America all the best and every success in overcoming the Corona crisis. "Stay well!"

Klaus, I appreciate your time. Sincerely, Gord



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