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THE SPOTLIGHT

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California, Here We Come!



After much due diligence, we have settled on a “green field” site in Fontana, California. This location is 40 miles east of downtown Los Angeles in what is referred to as the “Inland Empire.” This will be a brand new 20,000 square foot building, set to be built to our specifications on a 2.5 acre plot. We have been granted bank approval and placed the build contract December 1, 2009. The entire project will cost \$9 million; a major step of faith in the current market conditions.

Solar Manufacturing is currently building two new vacuum furnaces for this project, a 24’ car-bottom, which is a duplicate of one of our furnaces in Hermitage, Pa., and a 6’ horizontal general purpose vacuum carburizing furnace, also a duplicate of one of our furnaces located at 1983 Clearview Road, Souderton, Pa. There is much infrastructure to install in this building including a 3,000 KVA power supply and switch gear, a 2,000 GPM water cooling system, and all the piping for our nitrogen, argon, helium, and hydrogen process gases. The site will be complete with a 1,500 sq. foot two-story office building, similar to our Souderton and Hermitage operations. Derek Dennis, President of Solar Atmospheres of California, has promised to be operational in late summer 2010.

 William R. Jones, CEO

Chemical Conversion

Solar Atmospheres continues to branch out and find new processes for our Vacuum Heat Treating Services. This now includes modifying basic raw materials such as metal powders and their salts. Solar’s experienced research and development group has successfully developed process cycles in areas of powder technology that were not perceived as possible a few years ago.

Key to our success is our line of small research furnaces which allows us to develop new applications on a small scale prior to entering production. We work closely with our customers’ engineers and scientists to fully understand their requirements and how best to apply our expertise. Shared results and customer input on the quality and properties of the processed materials allows for adjustments to be made continually in the early stages of the program, providing a high value end product for our customer.



Jamie Jones processing various raw materials

By continually modifying our vacuum furnaces with special gas flow systems and pump controls, we are capable of operating in vacuum, partial pressure or various ratios of atmospheric pressure during the heating cycle. Process gasses can be used individually or in combination, and include Argon, Nitrogen, Hydrogen, Ammonia or diluted HCl. Some of our most recent processes include -

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Solar Atmospheres, Where **Going Green** Is Nothing New!

The word “Green” has taken on new meaning over the last decade, and when someone now says “going green”, we all tend to know that means being more environmentally friendly. Being green has been exceedingly difficult for most heat treating organizations due to the fact that most heat treat companies use “conventional” methods. When looking at conventional methods, we think of natural gas combustion, cyanide salt baths, endothermic heating, and the use of oil, polymer, and/or water for quenching. All these methods create undesirable waste streams, and dealing with this waste is not only environmentally difficult, it is expensive. Over the years, little has been done to remedy these challenges because these heat treating methods rely on the very thing that makes them environmentally unfriendly to be effective. Most heat treating companies find going green to be a huge challenge, if not impossible.



At Solar Atmospheres, going green is nothing new. Solar relies on none of the above-mentioned methods to perform our processes, and therefore has none of those challenges to deal with. This means that as environmental laws continue to make it harder for most heat treating companies, Solar continues on, relatively immune to the situation. The vacuum furnace uses electric as a heating method, meaning as environmental laws restrict the power companies, the power companies must deal with the improvements.

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MISSION

The Mission of Solar Atmospheres is to add significant value to our customer's operations by thermally treating parts, principally in a vacuum environment, with an unwavering commitment to honesty in all relationships.

We will strive to fulfill this mission while...

- Performing our work with an emphasis on quality and responsiveness.
- Operating with an awareness and appreciation of the value of our customer's parts while in our care.
- Forever looking "forward" in the area of technical capabilities.
- Demonstrating a willingness to "accept the challenge."
- Providing and maintaining a work environment that is safe, clean, and reflects our respect for human dignity.
- Providing our employees with an opportunity for personal growth, challenge and reward.
- Maintaining a workplace that is environmentally friendly.
- Sustaining long-term growth and profitability.

The Spotlight is a quarterly publication of Solar Atmospheres

Chief Executive Officer
William R. Jones

Corporate President
Roger A. Jones

President, Hatfield Facility
A. Bruce Craven

President, Western PA
Robert Hill, Jr.

President, California
Derek Dennis

Spotlight Editor
Jenna L. Hand

Solar Adds New Office Personnel

Solar Atmospheres of Eastern, PA has added two new faces to our office personnel. By bringing on these new members, Solar continues to add value to our customer service, production and sales teams. Our mission emphasizes quality and responsiveness, and these additions expand Solar's resources and expertise in the heat treating industry.

In late August, Solar promoted Bob Hinkle to Production Supervisor. Bob has worked for Solar for more than ten years and has over 30 years experience in the heat treating industry. Having acted as a shift supervisor for most of his ten years with Solar Atmospheres, he is very knowledgeable with the different materials and the many processes that we perform. He is more than willing to accept a challenge and Jamie Jones, General Manager of Operations states: "We are pleased to have him as a part of our production team."



Bob Hinkle



Mike Breit

Mike Drakeley, Director of Sales announced the hiring of Mike Breit in mid-September as Regional Sales Manager to compliment the sales team here in Souderton. "Mike brings a wealth of heat treating and brazing ability through his experiences at Wall Colmonoy and a local heat treating facility. Also, his sales experience work as a territory manager at a local semiconductor manufacturer and at a braze filler-metal manufacturer. Mike's twenty plus years of industrial experience from hands-on machining to direct sales should prove to be an asset to Solar Atmospheres."

As a company, Solar is committed to providing our customers with unparalleled knowledge and service through our expert staff.  Jenna Hand, Marketing Assistant


The Flag That Represents Solar's American Spirit

Mr. William Jones, CEO of Solar Atmospheres, and his wife Myrtle are strong supporters of the Flight 93 memorial to be built in Shanksville, PA. In recognition of their financial support, the foundation sent Mr. and Mrs. Jones a flag that was flown for one day at the memorial site, which is now flying everyday in Hermitage, PA.

Solar Atmospheres will never forget the day that the attacks happened 8 years ago. In April of 2001, the company had just invested heavily in the opening of the Hermitage plant. Four employees moved to western PA to help open and run the new building. In only a few months and 8 employees later, the company learned about the attacks in New York City. Bob Hill, President of Hermitage states "I immediately assembled every employee into my small office, informed them, and prayed together for our country. Here we were with a brand new facility while terrorists were trying to bring havoc to the American spirit and economy. Intuitively we felt very vulnerable that day. However that day and the months thereafter proved to make us much stronger. Today that flag is a symbolic reminder to us every morning that we will get through our worse recession in my lifetime. That is what this flag means to us, unlike any other flag. I thank Bill and Myrt for the honor of flying it everyday."



Tim Sloan raising the Flight 93 American Flag

 Jenna Hand, Marketing Assistant

Solar President Wins MTI Award

Roger A. Jones, Corporate President of Solar Atmospheres won the prestigious 2009 Distinguished Service Award from the Metal Treating Institute. This award was bestowed on October 10th at MTT's Annual Fall Meeting.



Roger Jones receiving the 2009 MTI Distinguished Service Award from Past President, Gary Huss

MTI's Distinguished Service Award recognizes individuals who have made outstanding, significant, and well-recognized contributions of lasting importance to the Heat Treating Industry. Tom Morrison, CEO of MTI, reports, "This award, presented by the Metal Treating Institute, was given to Roger Jones of Solar Atmospheres for his many years of exemplary service and contributions to MTI and to the heat treating industry. Roger played an important role in designing technical programs at Furnaces North America, served on numerous committees for MTI, and is starting his second stint on the Board of Trustees." In addition to the many positions he has held for the Metal Treating Institute, Jones served as President in 2004-2005.

In his acceptance speech, Roger shared the award with his employees and colleagues, stating, "when someone wins an award like this, it is never just one person. I want to thank the entire Solar Atmospheres team for their hard work and contributions that allowed me to receive this award and have the time to devote to MTI and ASM." He concluded by thanking his wife of 34 years, Patti, for her faithful support.

In addition to being a nationally recognized industry leader, Roger is also heavily involved locally, by serving his community for the past 30 years as a life member of Perkasio Fire Company #1. He held various executive and line officer positions with the company and is currently President. Roger is a member of Immanuel Leidy's Church in Souderton, Pennsylvania. He has three grown children and six grandchildren. He is proud to have his two sons working alongside him at Solar Atmospheres.

 Kim Horrocks

Going Green - Cont.

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Of course these costs are flowed down to the consumer of the power; however it is far easier and effective to restrict pollution at the power plant than it is at tens of thousands of individual sites. For quenching, Solar utilizes nitrogen, argon, or helium gas, all of which occur naturally, none of which are toxic to humans or the environment. These gases are vented freely into the atmosphere after being used and are not regulated as a waste stream. Occasionally Solar utilizes hydrogen as a partial pressure gas; however hydrogen is also environmentally friendly and also occurs naturally in the atmosphere. The only waste stream generated at Solar is the oil used in our mechanical pumps. This oil is standard motor oil and the waste stream is relatively small compared to even one oil quench furnace at a conventional heat treating plant.

Simply being inherently green does not mean Solar does not make additional efforts to reduce our energy consumption. For one, many of our furnaces are heated by a "dry" power supply that increases efficiency by 5% to 20%. Developed through work with subsidiary Magnetic Specialties Inc., the FCS 2000 power supply does not require cooling water to maintain required operating temperatures, and additionally, it protects against power factor penalty charges by running at unity power factor. Solar also conserves energy by utilizing variable speed drives on most of our pumps and motors, allowing us to limit electrical consumption when there is less demand.

Going green goes further than just the equipment in the plant, however, and here Solar has made additional changes to keep up with the effort. Several years back, Solar discontinued the use of paper charts for recording our heat treating processes. Now, all of our

processes are recorded electronically and we produce less paper waste than we did before. Solar recycles used materials such as stainless steel foil used to wrap customers' parts for heat treating. In our offices, the paper we generate does not simply go in the trash. Through the use of designated bins, we recycle all of our paper and cardboard at Solar.

As one of the tenets of our mission statement reads, we continue to strive to fulfill our mission while maintaining a workplace that is environmentally friendly.

 Mike Moyer, Corporate Quality Manager



SHARP Program


In continuing with the safety training of the company's employees, Solar Atmospheres of Western PA made the decision in June 2009 to take things to the next level. They entered into the SHARP program, which is OSHA approved and funded.

The following is a descriptive paragraph from the SHARP website. "The Safety and Health Achievement Recognition Program (SHARP) recognizes small employers who operate an exemplary safety and health management system. Acceptance into SHARP by OSHA is an achievement of status that will single you out among your business peers as a model for workplace safety and health. Upon receiving SHARP recognition, your worksite will be exempt from programmed inspections during the period that your SHARP certification is valid".



Western PA discussing the posted progress report

To date, we have successfully addressed all of the findings from our initial audits. The next step is a review of our Health and Safety procedures by an OSHA consultant. There are 57 questions in the review with each one graded on a scale from one to three. Depending on the score that we achieve, Solar will have up to eighteen months to correct any hazards as defined by the consultant. There are only 33 companies in the state of Pennsylvania that have achieved this status. The goal of Solar Atmospheres of Western PA is to be numbered among them.

 Bob Sandora, Vice President of Operations

Did you know?

Heat treating materials sometimes requires a freezing cycle as part of the process?

-Materials such as 17-7PH stainless steel and Carpenter AerMet are steels that develop extra strength by experiencing a phase transformation during heat treatment; that is, a change in microstructure. These steels are first heated to high temperature in a furnace, and then cooled to room temperature, followed by cooling in a freezer to -100°F. Freezing completes the phase transformation of the microstructure.

-Most tool steels will benefit from a freeze cycle for two reasons. First, a more complete phase transformation of the microstructure obtains maximum hardness while stabilizing the tool. In other words, it will not change in size during final grinding. The second benefit is improved resistance to sliding wear. Much has been written on this subject debating this benefit. However, some of our customers consistently specify freezing; so you have to ask, would someone pay for a process if they didn't know it improves performance?

Can a freezing cycle help you?

Chemical Conversion Cont. *Continued from page 1*

Drying Raw Materials:

Powdered materials purchased overseas often arrive wet due to high humidity, poor packaging, or the prior extraction process.

Solar has developed processes to remove moisture locked in the crystals of salt compounds or metal lattice, resulting in a free flowing or lightly agglomerated dry powder that can be easily handled and used for further production processes which cannot withstand high moisture content.

Reacting Metal Components and Powders:

Our vacuum furnace processes allow us to chemically alter material by the addition of a reactive gas such as Hydrogen, Nitrogen or Ammonia. Mixtures of components, when heated in a specific process cycle, react to produce different material. Processes have been performed on large metal parts, bulk powders, and nano-powders.

Resizing Powdered Materials:

Solar has developed a library of vacuum/gas thermal processes designed to agglomerate or fully sinter very fine powdered materials. The extent of sintering is determined by the customer, with crushing to follow to provide larger particle size than the pre-sintered state. In many cases this process allows customers to reclaim dust sized production by-products, resulting in less waste and greater value.

Hydriding and Dehydriding Strategic Metal Scrap:


As part of a reclaiming process, various scrap metals such as tantalum, niobium and titanium are hydrided in our vacuum furnaces, producing a brittle hydride which can be crushed to a powder. After crushing, Solar's carefully controlled heating cycles enable the degassing of hydrogen, resulting in a pure metal powder which can be used for new production. Our customers are able to eliminate waste and get the best value for their materials.

Annealing of Tool Steel:

Solar is involved with high temperature annealing of M₂ high speed powder along with D₂ tool steel powders. Both materials are used in the Automotive Market.

Other Processes:

We realize that there are many other basic products and compounds that could be processed in our modified vacuum/gas atmosphere furnaces. Our experienced team of engineers, scientists and operators continues to develop new applications and take on new challenges in our mission to add value for our customers.

 Reál Fradette, Technical Consultant, Ken Baubof, Vice President Corporate Synergy, and Virginia Osterman, Research Chemist and Technical Director

ASM Power Plant Tour

Solar Atmospheres' professional staff is very active in local and national technical societies. Currently, Vice President and Corporate Metallurgist Don Jordan serves as the Executive Secretary for the American Society for Materials Philadelphia, Liberty Bell Chapter. Along with fellow ASM members and Solar Atmospheres' colleagues, Don recently participated in a tour of an Exelon Nuclear Power Plant and returned with the following observations.

“ Located on 600 acres in Limerick, PA, Exelon Nuclear Power Plant contains two 1200 Megawatt, boiling water reactor units designed by General Electric that draw the plant's cooling water from the nearby Schuylkill River, generating enough electricity for over two million homes. As emergency backup, the facility has a piping and pumping system to draw water from the huge Delaware River, 30 miles away!



The highlight of the full three hour tour was standing directly on top of a 1200 Megawatt operating nuclear reactor! Nearby, employees dressed in special suits were observed monitoring a huge spent fuel rod storage and cooling pool. They were using special cameras and temperature probes on long poles to gage the integrity of the rods. The arrangement of the rods is continually evaluated and repositioned to keep the pool at the requisite temperature while maintaining adequate shielding from radiation still being emitted from the fuel rods. Following the reactors, the group toured the huge main control room where everyone was mesmerized for a good 20 minutes by the vast amount of instrumentation and systems involved in running the facility.

The tour group left the Exelon Nuclear Power Plant with a great sense of having experienced a unique educational event, and great comfort knowing the emphasis placed on safety with all of the equipment and personnel, including the significant amount of redundant systems. Exelon was a fantastic host, and they openly said that their goal with these tours is to educate the public of the benefits, safety, and pure economics of nuclear power, which we all know is the most powerful, most efficient, cleanest, safest, and least visually intrusive energy source available today - **Nuclear!**”

 Don Jordan, Vice President / Corporate Metallurgist

Solar Hermitage President Wins ITA Award

On September 16, 2009, Robert Hill, Jr., President of Solar Atmospheres of Western PA, was awarded the 2009 prestigious Titanium Achievement Award from the International Titanium Association. Bob's development of vacuum thermal processing solutions for the aerospace industry, including the utilization of the world's largest vacuum car bottom furnace, has earned him international recognition. “We reviewed a number of highly qualified nominees and the individual that clearly rose to the top was Robert Hill,” said Dan Buwalda, chairman of the Achievement Award selection committee. “He is recognized as a pioneer in developing titanium vacuum-thermal processing solutions for the aerospace industry.”

In his acceptance speech, Bob acknowledged the following, “First, this award goes to our customers that enabled this to happen. Nine years ago four of us left our home base in Souderton PA, which is a suburb of Philadel-



Bob Hill accepting the
2009 Titanium Achievement Award

phia, to set up another world class facility over the Allegheny Mountains in western PA. Secondly, this award goes to our founders and CEO Bill and Myrtle Jones. Being a private company it is their pockets that funded this

success story.” Bob went on to say, “Ultimately, this award is all about our 40 hard working employees in Hermitage PA, who consistently take on the challenges of the unbelievable work that we do.” “During the BASCA 160 development phase for Boeing, many of us did not sleep for weeks. Boeing's / VSMPO's 5553 forgings were most challenging for fixturing and pyrometry control. Many said it could not be done. Also, people questioned that we could not get a 32' Ti welded extrusion seat track flat to within .030". We are currently doing this on a daily basis. Many said we could only process one-15,000 pound CP Ti coil at a time, but also we now process up to 10 coils per load totaling 150,000 pounds in each run of our state of the art vacuum furnaces.”

“Since the inception of the company, Solar Atmospheres of western PA has processed a grand total of 75 million pounds of titanium within nine years. That is a lot of metal!”

 Kim Horrocks



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