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Nitrocision® News

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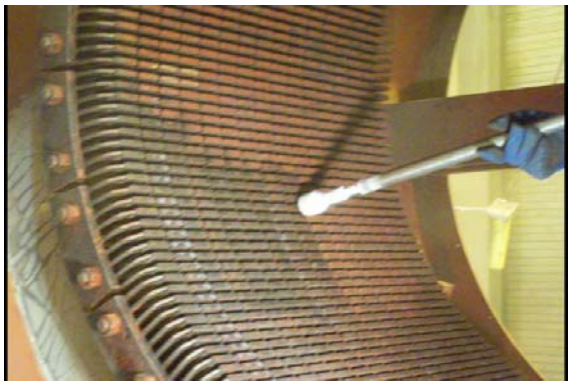
Road Trip Reaps Results

On June 8, **Dave Hathaway** hit the road in his semi truck with the NitroJet in tow. The trip would involve several stops in several states to show off the capabilities of the liquid nitrogen system to prospective customers. **Don Noah** joined Dave and together they put on several demonstrations.



The NitroJet proved to be very efficient in removing paint and fiberglass material from the motor.

Stop 1: Praxair Services, Griffith, Ind. -- A presentation and demonstration was provided to senior executives and regional sales managers for Praxair. Our goal was to show the sales force the system's capabilities so they can market it to their customers in the petrochemical industry for heat exchanger cleaning and pipeline cleaning. This strategic alliance has been months in the making as Praxair looks to provide the NitroJet as a solution for their customers.

Stop 2: Crucible Research, Pittsburg, Pa. -- Crucible Research produces powdered metals and needs to remove the hardened metal from inside large stainless steel vats. Currently, they are sending an individual into the vat with a hand grinder. The testing was a success on titanium. Crucible is looking at a service contract for cleaning the vats.

Continued on page 3

NASA to qualify NitroJet®

NASA's Marshall Space Flight Center has purchased a NitroJet-6000 system and will install the unit in the National Center for Advanced Manufacturing outside Huntsville, Ala.

Within the center, engineers work to find better materials and methods for producing and maintaining space hardware. Installation of the NitroJet will allow engineers to test the technology for application in the space program.

Installation of the NitroJet allows testing on the system to qualify it for use in the space program. Enhancements developed at the center could also further NitroJet applications for commercial use.

"NASA is the pinnacle for testing the NitroJet," said **Ron Warnecke**, Nitrocision president and CEO. "No other organization has been able to evaluate the NitroJet with such extreme materials and safety requirements. The opportunity to contribute to our national space program highlights the viability of our liquid nitrogen technology, and we look forward to the deployment and qualification processes."

Tidbit:

The NitroJet-6000 will be installed in the same research cell at the National Center for Advanced Manufacturing where the water jet was originally pioneered.

Milestones

Employees celebrating anniversary milestones between July and September:

Gary Palmer - 6 years

Jeff Halverson - 6 years

Dave Hathaway - 3 years

Kathy Buck - 2 years

Part-time Employees

Leslie Fekete - 6 years

David Snedigar - 2 years

Paul Hathaway - 2 years

Welcome to **Paula St. Martin**, our newest employee. Paula is responsible for inventory control.

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R&D at Nitrocision®

By Howard Hume, Executive Vice President/Chief Technology Officer

Since Nitrocision's inception, we have developed – and continue to develop – many components unique to our technology. Current R&D activities include the design and development of a new high-pressure cryogenic heat exchange; a gear-driven rotary lance; and a gear- or belt-driven robotic swivel unit suitable for mounting on a multi-axis robot or on an X-Y-Z table.

We completed testing of the new high-pressure heat exchanger prototype and it is in final design. The new design is more compact, quicker, and less expensive to construct than the previous design. The gear-driven rotary lance is currently in testing but thus far has performed well. Its advantage is that it does not use a belt drive which is prone to breakage if not carefully treated. For the now, both the existing belt-drive and the newer gear-drive configurations will continue to be available.

Finally, the robotic swivel unit is an extension of a unit initially developed a few years ago but is now undergoing refinement to create a more flexible product with greater application. It will be available in both belt- and gear-drive configurations.

The nature of the technology and the needs of users have always driven the research and development of the overall system technology, tools and components. We have chosen to develop existing approaches that showed some promise of being able to be modified to suit our needs rather than research from scratch. In many cases, this has proved to be successful. On occasions, however, we have had no option other than to "go it alone" and perform research ourselves because of our technology has no equivalents anywhere else.

The NitroJet successfully removed winding materials from a burned-out motor at the Brown's Ferry power plant. Left photo: motor before cleaning; Right photo: motor cleaning in process.

Continued from page 1

Stop 3: Conco Systems, Pittsburg, Penn. -- Conco Systems provides cleaning services of condenser and heat exchanger tubes to various customers. They are interested in the NitroJet as an improved solution for their cleaning services. A presentation was provided to senior management and the Northeast sales force. Conco is negotiating the purchase of a portable system to provide cleaning support to their customer base.

Stop 4: Penn State College, State College, Pa. -- Penn State Applied Research Laboratory is interested in using the NitroJet for removing coatings from the inside of tanks and removing corrosion. The laboratory contracts with the US Navy for process development.

Stop 5: Northrop Grumman Shipyard, Norfolk, Va. -- Our goal was to remove sand castings, approximately three feet thick, from large components. While the NitroJet was unable to achieve sustainable removal rates of the thick coating, those in attendance were impressed with the results and are looking at other activities within the shipyard that could benefit from the use of the technology.

Stop 6: Space Shuttle Suppliers Symposium, Huntsville, Ala. -- Don, Dave and **Ron Warnecke** attended the symposium sponsored by United Space Alliance. The symposium was an opportunity to obtain a status of the Crew Launch Vehicle program and network with other prime NASA contractors. This networking netted the opportunity to demonstrate the NitroJet to TAW and the Tennessee Valley Authority. A small scale motor cleaning demonstration was performed with great results.

Dave Hathaway stands in front of the motor, giving a good perspective of its size.

Stop 7: Global Heat Exchanger Services, Houston, Texas -- The next stop for the road warriors was in Texas where they demonstrated the NitroJet's ability to clean heat exchangers. Representatives from Global Heat Exchanger, a subsidiary of Conco, set up a demonstration for one of their customers.

Dave used the system to clean 27 heat exchanger tubes which were compared to tubes that were cleaned by water jet. The demonstration was a huge success, especially when it was noted how much dry waste the NitroJet generated that needed to be disposed of — approximately one-half gallon — compared to the truckloads of waste water generated by the water jet system. Global Technologies is negotiating the purchase of a system to use in heat exchanger cleaning.

Stop 8: TAW/TVA, Mussel Shoals, Ala. -- The final stop was to perform a cleaning job on a 2,000 horsepower cooling motor that came out of the Brown's Ferry power plant in Tennessee. The large motor was pulled from the power plant and needed to be 'rewound'. Historically, TVA uses manual methods to remove the wedges and a hammer and chisel to remove the remaining paint, which must be removed because the jagged edges damage the new material when it is inserted. TVA was spending 15 minutes per wedge and Dave was able to remove the wedge in 15 seconds using the NitroJet. Overall, the motor was cleaned in about three hours compared to the typical three weeks. TAW and TVA are excited about the results and looking to Nitrocision to perform additional motor cleanings for them.

Nitrocision®
The world leader in liquid nitrogen-based cutting and cleaning technology.

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