



## From the President's Desk ...

Welcome to the latest edition of *Acceleron Beams into the future*. As we head into the final quarter of 2003, we would like to share with you some of the changes and improvements that have been taking place at Acceleron.

Despite the current economic times, Acceleron continues to develop new techniques and processes to better serve our customers. In this edition, we will be sharing with you some of our exciting new developments and accomplishments. We are also pleased to announce that we have sold our first Plasma Arc Window to an R & D Group. See this article on page 4.

In addition, our technical staff is currently in the process of compiling a technical reference library. This information center is designed to better educate our customers, as well as the general public, on Acceleron's various technologies. This library will be available on our Web site by the end of the year.

I hope that you enjoy our latest edition of *Acceleron Beams into the future* and, as always, please feel free to contact me should you have any questions.

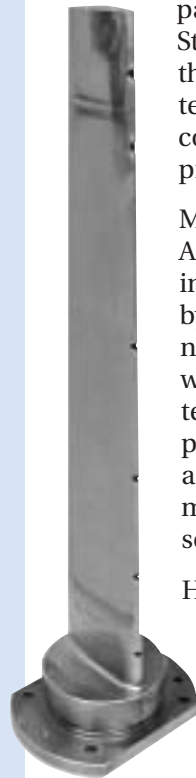
Sincerely,

Rory Montano, President

## "Two-Tier EB Weld Process" Made Possible at Acceleron

For more than 28 years, H & B Tool and Engineering Company has depended on Acceleron for its electron beam welding needs. H & B Tool, a probe and instrumentation manufacturer for the aerospace and ground turbine industries, is located in South Windsor, Connecticut.

H & B Tool recently faced a unique welding challenge that was presented to Acceleron and its R & D group. This particular application is a Station 2 well probe for the Joint Strike Fighter test engine, an important component that senses pressure and temperature within the engine.

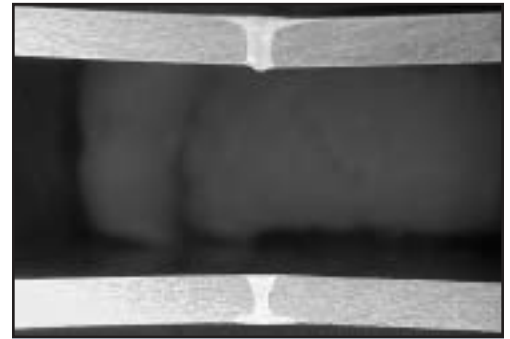


Mike Giannelli, H & B Tool's Chairman, was confident that Acceleron could devise a solution for the welding of this air foil instrument. "For this component, we used to weld part A to part B by sliding a beam blocker inside of it," Giannelli said. "Due to the new design, there was no longer space for a beam blocker, so the weld would have been impossible without coming up with a new technique." Acceleron's President, Rory Montano, came up with a possible welding solution for the 2' long, complex-shaped tapered air foil, which also consists of an end cap and base to be welded. "In my opinion, the two-tier weld process was the best possible solution," Montano said.

H & B Tool was very reluctant to attempt conventional welding methods with this new design. "The part had to meet stringent PWA requirements and maintain straightness over 2 feet, which was a critical element for its success," said Mike Dowd, Acceleron's Project Manager.

Following Montano's suggestion, Dowd and Acceleron's R & D Group developed a two-tier weld process utilizing a single weld pass, where the electron beam penetrates through the top weld joint, passes through the back side of the piece and then penetrates the second weld joint from the inside out – completing two welds in a single pass.

See "New Technique Developed" on page 2.



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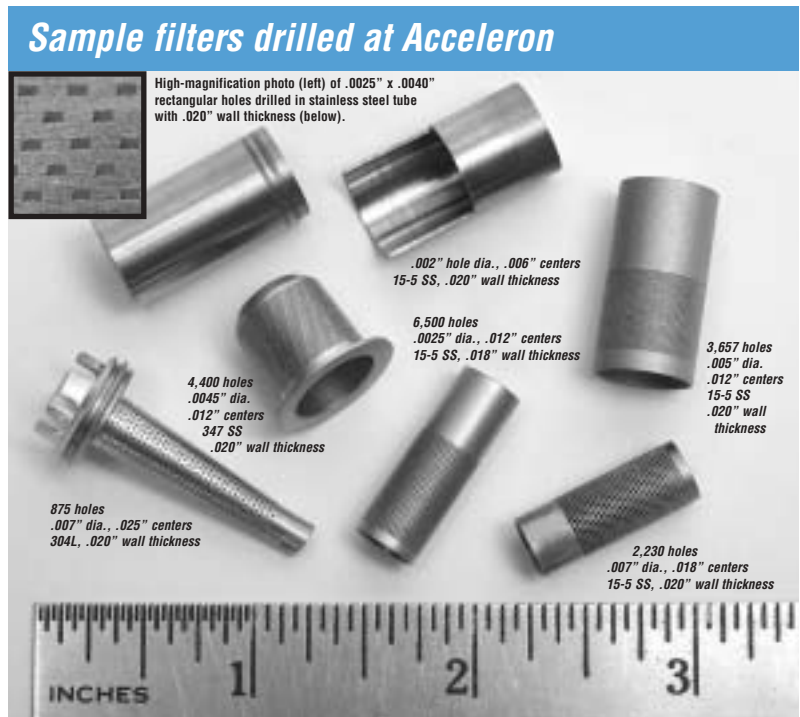
# Acceleron Focuses on Small Hole Drilling...

## *New techniques offer exciting, cost-effective filtering possibilities*

Acceleron has been developing new proprietary techniques for small hole drilling over the past year. Our objective has been to develop various methods for cost-efficient drilling of small holes for those industries that require filters that are stronger than wire mesh and porous materials.

We are now drilling filters that are more durable for harsh environments and have greater filtering capabilities. The filters we drill have a direct cost savings to the end user due to their longevity and infrequent filter changes. They sell in the same price range as a multilayered, welded and stiffened wire mesh assembly. Depending on the design, these filters can be more cost effective than the standard filters used today. Materials used are typically 304, 316, 17-4 and 15-5, with hole sizes ranging from .002" and up. Most filters are generally a one-piece construction machined from a solid bar. Acceleron can drill your supplied component blanks or manufacture the complete assembly.

Please contact Acceleron today to learn more about the cost efficiencies and design advantages of these drilled metal filters versus wire mesh and porous metals.



**Visit our Web site to learn how Acceleron does it all – under one roof!**

**[www.acceleron-enbeam.com](http://www.acceleron-enbeam.com)**

**Coming soon: Complete technical information library!**

## **New Technique Developed for “Two-Tier EB Weld”**

*(continued from page 1)*

The Acceleron team was able to refine the process and avoid potential pitfalls of the operation, which could leave holes in the component or result in too little penetration on the exit side. The process was developed for repeatability, with a high rate of welding speed and minimum weld width to decrease heat input and distortion. Acceleron was successful in achieving all the goals required for this job.

“With this unconventional process, we didn't have to rotate the piece and do multiple welds,” Dowd said. “It allowed us to drastically minimize the movement of the component during the weld operation.” As a result of this repeatable weld process, Acceleron experienced 100% acceptance, with zero defects and no rework, out of a group of 48 pieces subjected to x-ray and FPI inspection. Acceleron and H & B Tool were very pleased with the outcome.

H & B Tool and Acceleron have had a strong working relationship for nearly three decades, where innovative collaborations such as this are frequent. “Acceleron has been very dependable over the years,” Giannelli said. “Every time we have an EB welding job, we know exactly who to turn to.”

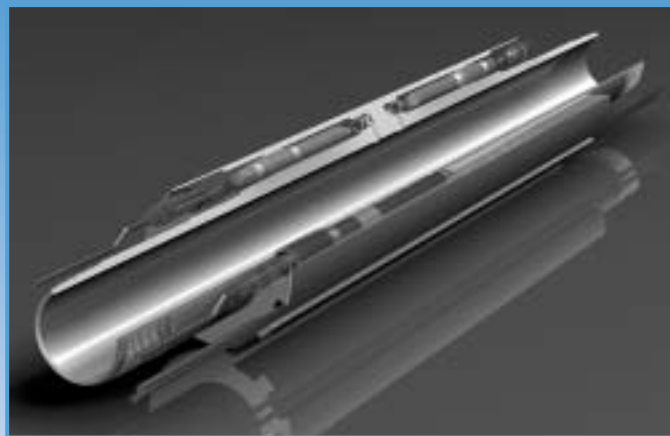
# Acceleron Contributes to Innovative New Deep Sea Monitoring System

WellDynamics, the market leader in intelligent completion technology, chose Acceleron to perform the welding on a new and innovative monitoring system.

The system is a Permanent Down-Hole Gauge (PDG), which is a device used to collect real-time data from the zones of a well, and as such contains electronics and other temperature-sensitive components. WellDynamics has traditionally used a TIG weld process on this type of system, but decided to use an electron beam weld on their new PDG prototype. The EB weld method was chosen over the TIG weld, since the new prototype PDG has some very small, critical welds which require the control and precision offered by the electron beam weld operation.

These PDG tools have been used in the Gulf of Mexico, where their use allows operators to monitor reservoir conditions. This critical data is then used in conjunction with remotely operated flow control devices to optimize well performance.

Acceleron performed the weld operation on a prototype, which was then subjected to a rigorous qualification program involving tests at high temperatures and pressures. The prototype PDG passed the qualification tests without any problems, and Acceleron was given the green light to weld production PDG tools. The electron beam weld process has provided many advantages over conventional techniques. One distinct advantage for this application is that the heat generated is very localized and is not transferred to other areas of the assembly.



*Acceleron performed several critical electron beam welds on WellDynamics' new Permanent Down-Hole Gauge (PDG) system.*

## Mike Dowd Establishes Himself in His Position as Project Manager

Mike Dowd replaced Bill Ross as Acceleron's new Project Manager following Bill's retirement. Mike has spent the last year growing into the position and ensuring that all of Acceleron's customers continue to have a dependable liaison to keep them updated on their jobs, from development to production.

Since joining Acceleron's staff, Mike has been involved with many new and interesting programs. One particular program that stands out involves a unique electron beam wire feed build-up process for the Multinational Joint Strike Fighter Program. "I have also been working with Brush Wellman and participating in the weld development of a material called AlBeMet," Mike said. "The base material is mainly comprised of beryllium and aluminum. This special material is extremely stable and very lightweight. It is used in aerospace, satellite and other applications."



*Mike Dowd, Acceleron's Project Manager*

"I enjoy being involved in such cutting-edge programs," Mike says. "These are very exotic, expensive materials with processes that haven't been either tried or successful in the past."

Mike enjoys working closely with Acceleron's customers, helping them with their projects and trying to get their parts back to them in the quickest way possible. "I am working hard to build customer confidence in myself, and maintain it for Acceleron," Mike says. "If you come to us with any project, big or small, I'll do everything I can to ensure that the program runs smoothly and efficiently. If there are any questions regarding component parts,

or in-process issues arise, I will notify you immediately to resolve them and still meet Acceleron's delivery commitment to you. I take every job as a challenge and attempt to make it my own as much as possible in order to avoid hang-ups and complications."

*See "New Project Manager" on page 4.*

## Update: Plasma Arc Window

For the past 23 months, Acceleron, Inc. and Brookhaven National Laboratory have been jointly developing and constructing a Plasma Arc Window. In January 2003, Acceleron successfully demonstrated the operation of the Plasma Arc Window to representatives of the DEP, DOE and Northeast Utilities, the groups that are funding this program. All parties were pleased and impressed with the progress and performance of the bench test results. Prior to installing the mechanism in our electron beam machine, we continued with further testing to collect additional data. Now that we have more information regarding how the plasma arc will react under numerous conditions, we have installed it in our electron beam machine.



In early August, we passed our first electron beam through the Plasma Arc and generated our first weld. It was a ceremonial event for all of us. In our next issue, we hope to show you weld cross sections of the Plasma Arc and how they compare to our current high-vacuum electron beam welds.

During our work with the Plasma Arc, we have developed a new invention. We are currently conducting a patent search; once this process is complete and the invention is patented, we will share this exciting innovation with you.

We are beginning to generate some interest in this new Plasma Arc technology. Acceleron has recently sold our first complete Plasma Arc unit to an R & D group that plans to use this apparatus to develop other applications outside of the welding and drilling industry. We have made significant progress since our last newsletter!

The Plasma Arc Window project has received some worldwide exposure. In January 2003, 14 months into the program, we were interviewed by Eugenie Samuel of *New Scientist* magazine. As a result of the great potential and interest in this program, *New Scientist* published this article as one of their feature stories in their April edition. You can read the article in their online archive at [www.newscientist.com](http://www.newscientist.com).

## New Project Manager Continues Superior Service

*(continued from page 3)*

Mike previously served as president of Jadco Corp., a family-owned company that specialized in customer machine building and tooling for 25 years. While at Jadco, Mike often worked with Acceleron to find solutions through designing and building specialized tooling.

Mike lives in East Longmeadow, Massachusetts with his wife, Kerry, and two sons, Patrick and Connor. In his spare time, he enjoys working on cars and anything that has a high-performance engine and travels at high speeds. Mike has rebuilt several Corvettes over the years and is especially proud of a 1983 DeLorean that he performed a full frame-off restoration on and still drives occasionally to this day.

*All of Acceleron is deeply saddened by the recent loss of David Baker, who passed away on Oct 4, 2003. David was employed for over three years in*



*Acceleron's Laser Department. He was an avid bowler, enjoyed fishing, boating, golfing and gardening, and was a NASCAR race fan. David will be missed greatly by his family and the many friends he made over the years, in both his personal and professional lives.*

*David Baker*

**ACCELERON INC.**

*Acceleron, Inc. specializes in Electron Beam Welding, Electron Beam Drilling, Laser Welding and Laser Cutting.*

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