

A New Industrial Revolution

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Spend any amount of time nearly anywhere in Pennsylvania, and you'll hear it time and time again: Shale gas production is fueling an American industrial revival. With a rich energy history—the first oil well was drilled in Pennsylvania—the state is now experiencing a “new industrial revolution” thanks to North America’s largest natural gas reserve. Engulfing roughly 75 percent of the state is what the Pennsylvania Department of Community and Economic Development calls the key to the future of the energy industry in Pennsylvania—and one that has already created thousands of jobs. Today, 240,000 Pennsylvanians are employed by the oil and gas industries, both at the drill site and beyond. And the Pittsburgh region is at the center of the story, with established energy companies, advanced manufacturing facilities, and some of the nation’s leading academic institutions coming together to create an economy that has outperformed the national average, in terms of unemployment, for over five years. This revolution has propelled Pennsylvania forward as a net exporter of natural gas when only five years earlier it was importing 75 percent of its natural gas needs.

Pittsburgh region manufacturers are rising to meet the needs of a new and rapidly expanding shale industry, many of whom are hiring and expanding as a direct result of the Marcellus Shale boom:

- Aggressive Grinding Service has put its business model of being constantly overstaffed and over-equipped to work and underwent a \$4 million expansion in the last year as 50 percent of its business grew to be tied to shale.
- Elliott Group has embraced its union and management partnership and looks forward to the challenge of facing capacity constraints as it continues to find opportunities in the shale industry, even as the past year saw the company usher in a new \$17 million manufacturing and service facility.
- After cutting its staff by 30 percent in 2007, Dura-Bond Coating recently opened a brand new facility and added 65 jobs as a direct result of the Marcellus Shale Boom.
- Aquatech utilized its over 25 years of experience in treating industrial wastewater to expand into a company that manufactures mobile units for treating all aspects of shale gas application wastewater at the drill site.

These companies have all directly benefitted from Marcellus Shale—and are helping to create a state that is distinguishing itself as a global innovation and skilled workforce leader.

A Unique Business Model: Aggressive Grinding

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Aggressive Grinding offers a precision grinding service to the oil and gas industry, with tolerances measured in millionths of an inch on materials such as carbide and ceramics used in high-wear oil and gas applications, including drill bits, bushings, and nozzles. It credits a unique business model for allowing it to be able to deliver to such a fast growing and unpredictable industry.

“I have a philosophy of being overstaffed and over-equipped,” explains Lester Sutton, founder, president, and CEO of Aggressive Grinding Service. “It goes against all accounting practices,” he admits, but he stresses the necessity of such an against-the-grain business practice when working in an industry that he says is among the worst at predicting its demand. With approximately 50 percent of Aggressive Grinding’s business recently growing to be tied to the shale industry, the company had to be able to deliver. “It is very much a flash industry,” with “extreme” sporadic demand throughout the year, he says.

The company’s distinctive way of doing business has brought it to the forefront for an industry where downtime while waiting for a critical replacement wear part that can shut down a drilling head can cost up to \$200,000 an hour in lost productivity, Sutton says. “That’s really where we’ve separated ourselves from the rest of the people in our industry—being able to meet those demands.” As the manufacturing industry looks to Lean more and more to reduce inventory and reduce costs, this grinding service company has positioned itself to respond to manufacturing demands as quickly as possible. While energy companies are flying in to receive a critical part, Sutton’s company is ready to receive any specialty item that the oil and gas industry needs and says the company is fortunate in the sense that it is somewhat protected, and can have the opportunity to prepare for a quick turnaround. “It generally takes a minimum of three days to manufacture a piece of carbide. We may be able to grind it in an hour.”

Sutton’s business model, though unique, has proven advantageous for his business. “Every accountant would tell me that I’m doing the wrong things. My pocketbook tells me that I’m doing all the right things. My customers tell me that I’m doing all the right things.”

The way I run my business isn’t in any way by the rule book.”

Union And Management, Working Together: Elliott

Slated for shutdown five short years ago, Elliott, a 100-year-old maker of advanced centrifugal compressors and steam turbines, has transformed itself into a world class organization—one that is expanding to meet the demands of a growing oil and gas industry. “We are expanding our manufacturing capabilities, but more importantly we’re continuing to expand our people,” says Art Titus, chief operating officer. “From an operations perspective, [the growing demand] puts additional pressure on trying to find a workforce that works as we’re expanding into these new opportunities.” He adds, “One of the things that we’ve focused a lot on is the fact that our power is in our people.”

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One of the places where Titus thinks the company has really benefitted from its renewed focus in its people is in how it's created an invaluable labor-management partnership. "I think our union saw management as the enemy," Titus explains, "and it's pretty clear when you look at industry, where companies go that see each other as enemies.

"We consider them our partners," Titus says now of the United Steelworkers that design, manufacture, and service the turbo-machinery that are used in oil and gas, refining, and other power applications at the Jeannette, PA facility. And Alan Rudick, USW local 1145 unit president, agrees: "This is the American dream, right here."

When customers ask why they should work with Elliott versus a company in Europe or China, Titus says, "Maybe you want to talk with somebody that actually understands how to listen and how to work together."

He adds that this new way of doing business has been tremendous for the company. Once a strong candidate for closure by its parent company Ebara, based in Japan, the Elliott Pennsylvania facility decided to invest in the rundown plant, to hire and train a growing workforce, and to adapt a new business model in the face of a booming shale industry. The shale boom in North America caused a reemphasis of North American based equipment that Elliott has been able to respond to after watching its North American parts organization decline for years.

"We're continuing to invest in expanding our capability so that we're staying ahead of the curve. Part of it is capital," Titus says, "and we're actually hiring people in advance of our needs. What was kind of a Rust Belt plant is all of a sudden world-class competitive again," he explains. Companies now want to convert their facilities to be able to use natural gas versus higher cost imported oil. And orders for new equipment are also on the rise, as Elliott sees more and more gas treatment plants emerge.

And the company is looking forward to more opportunities in Marcellus Shale: "We're not capacity constrained yet," he says, "we would like to have that challenge."

A Demonstration In Resilience: Dura-Bond

After cutting 30 percent of its staff in 2007, Dura-Bond Coating recently was able to expand—opening a brand new facility in Duquesne with more jobs—as a direct result of the Marcellus Shale Boom. Dura-Bond offers specialty coating for steel products, and as much as 80 percent is dedicated to the shale industry, much of it in Pennsylvania, says Michael Reeder, plant manager and 18 year veteran at Dura-Bond. "And I think that'll increase, too," he adds. "As far as our outlook—it's bright."

Fully operational in November 2012, the new plant will allow the coating division of the company to nearly double its output. New equipment is taking the heavy labor cost out of the equation, allowing an easy flow of 4,000 pound pipes through the facility. Now, the lifting and pulling is completely done by machine. "What we

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bought is what we didn't have before—speed,” says Reeder. “To get the efficiency and for this plant to move the pipe around and coat it this fast—you don't do it with people, you do it with money and you buy equipment that does it.”

The new, larger facility will allow the company to meet the constantly growing demand from the shale boom, which Reeder sees as not slowing anytime soon. With 65 jobs added at the new facility, the company is well underway. While the demand, and safer and less labor intensive equipment, are capable of allowing the company to immediately double its coating production, Reeder explains that when working with product that can be 40 feet long and 4,000 pounds, safe acclimation is key: “We're going to get these people acclimated slowly to these faster speeds. That pipe will kill you if people aren't used to it going fast.”

After maximizing capacity at Dura-Bond Coating's previous facility since March 2010, Reeder is looking forward to the new facility meeting ever growing demand, and for future expansion. The new facility was a direct result of the company's role in Marcellus Shale—coating pipes that are used in the region—and the expansion has created exciting times for the company, Reeder says. “We're going to be able to give these people good paying jobs for a long time to come. That is exciting.”

While the company is focusing on getting a new facility up and running, the old plant is not mothballed, Reeder stresses. “I hope we get so busy, we have to run both plants.

“But, we have to wait and see what business will let us do.”

Delivering Solutions: Aquatech

Strategically located in the Marcellus Shale region, Aquatech has utilized its 32 years of industrial wastewater treatment to offer a solution to the shale industry capable of meeting the needs of all facets of water treatment for natural gas companies. “Marcellus came to us, we didn't go to Marcellus,” says Devesh Mittal, head of Aquatech's shale gas division. The company is among the first in the area to create mobile purifying units that treat produced water at the drilling site. Already experienced in the water treatment industry, the company simply decided to “change the paradigm,” he says. Now, the shale industry has created a new division at the company, and facility and personnel expansion opportunities at Aquatech's Canonsburg, Pennsylvania headquarters. An additional 1,800 square feet of manufacturing space is in the works, which will include a new in-house training center.

“We have in-house manufacturing capabilities, which is very unique,” explains Mittal. “A lot of water treatment companies around the world do not do their own manufacturing.” All of the water treatment units that the company provides are designed and manufactured in-house, with the majority today going into the oil and gas industry in Pennsylvania. “Our mission in Marcellus is to bring a solution to the gas producer,” explains Mittal. The shale gas producers have huge costs associated with water, especially in trucking, he adds: “85 percent of their water management costs come from trucking. Our focus is to attack that cost and provide a solution.”

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Aquatech's mobile system of wastewater treatment solutions were created to eliminate transportation costs and enable the recycling and reuse of flowback waters at the wellhead, satellite, or central facility—reducing water required for the hydraulic fracturing process used in shale gas exploration. “We can manage water management costs, and reduce it,” Mittel says. He adds, “A lot of these projects have a lot of public relationship issues, and by maximizing reuse and safely treating the water and reducing the discharge, we can encourage positive public relations for the companies that we work for.”

He explains that Aquatech is able to offer clients “complete integrated water purification technology solutions,” which include raw water treatment, thermal or membrane desalination, and zero liquid discharge. “We are effectively minimizing the draw on the fresh water resources and reducing significantly the waste discharge in the shale market.”

With water a universal issue for the shale industry, he explains, “We are addressing the needs of a global workforce out of this facility.”

An Industrial Revival

Thanks to manufacturers like these, Pennsylvania is a growing energy leader in the United States, becoming a net exporter of natural gas in 2011. They have seized opportunities the Marcellus Shale boom has provided, and expanded into global leaders in natural gas—and are making the region known for its industrial innovation and talent, truly fueling a new industrial revolution.

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