Pipe dreams become a reality

Engineers often find themselves held back by standard steel products and face the expensive and time-consuming process of making adjustments themselves. However, there is another way, explains Jason Martineau of **Penn Stainless**.

Working within the limits of standard lengths, diameters and grades of steel can be a major challenge for metal buyers, where the process of adapting materials to meet the demands of a design can be a waste of time and money. In many cases, it would be better to have a piece custom-fabricated, but engineers are often unaware that this is possible.

The difficulty is that many suppliers local to a project do not stock specialised grades of steel or have the tools to make the best use of their inventory. One answer is to look further afield to source metals, but this can bring drawbacks in terms of increased lead times. In the oil and gas industry, the need for high quality piping only compounds these problems.

Jason Martineau, national sales manager of Penn Stainless, understands the challenges engineers face, but believes they should be bolder about seeking suppliers that can fulfil the needs of complex projects. By viewing steel sourcing as a partnership rather than a transaction, they will open up possibilities.

"We go out and connect with people," he says. "We tell them: 'You know that crazy idea that all your normal material suppliers are saying is not doable? There might be a way to make that happen'."

Sources of high-quality piping are a necessity for the oil and gas industry.

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Firm requirements

Working on a creative solution from the outset avoids ad-hoc fixes that introduce delays and higher costs into a project. Martineau clearly has a passion for steel and, with an air of disbelief, rattles off examples of fudges used across the industry.

"I can't tell you how often I receive an order asking for three or four pieces of 24in-diameter 20ft random length," he says. "Because I have the plate inventory I can control the length of the product, and I tell engineers that if they want two pieces at 20ft and one that's 12ft, order them that way."

His advice is clear: "Don't get stuck in this mindset that everything you order has to be 20ft long or that every piece of plate you buy has to be 96x240in. Metal buyers make the assumption that only certain products are available, and that's simply not the case."

Despite this knowledge gap, Martineau is optimistic about what can be achieved and he takes great pleasure in explaining how Penn has been able to fulfil customers' more unusual requirements.

"We recently had a request for seamless square tubing," he says. "The customer had called everybody. It's a strange order: normally you cannot get it made that way, but I offered them a quote and we will get them the product."

The key is good communication with buyers, according to Martineau: "When Penn Stainless has an opportunity to sit down in front of customers and work out what their true needs are, most of the time we can reduce the amount of material that's needed and offer some design efficiencies."

Bespoke orders

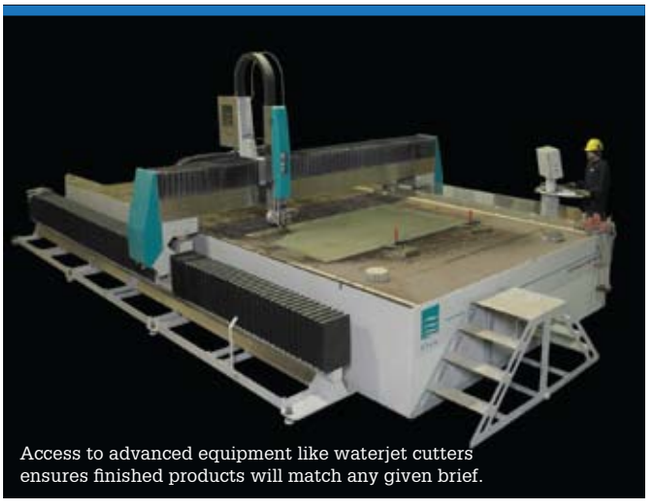
Steel processing technology is advancing and, as new production capability comes online, what were once difficult problems are becoming easier to solve. For example, making a beam before the introduction of laser fusing was particularly challenging.

"Five years ago, the term 'laser-fused structural' did not exist," Martineau explains. "Now it's possible to buy a laser-fused beam up to 36in. The product used to be manufactured by taking four pieces of plate and hand-welding each one individually. It was a difficult process: there were straightness issues and the welding was tough. Today these products can be developed and shipped within nine weeks."

While this brings benefits, the burden on engineers to be fully aware of their options is always increasing. "Innovation is taking place and it needs time to get down into everyone's hands and be fully understood," says Martineau.

Penn Stainless is one of only a handful of steel service centres in the US with the resources and facilities to offer this kind of bespoke

Manufacturing products like steel beams has become much easier using laser fusing.



Access to advanced equipment like waterjet cutters ensures finished products will match any given brief.

service, but Martineau argues that the company has an additional advantage because it controls the base material.

In any pipe or tubing product, the plate from which it is made represents the majority of a job's value. Specialised pipe mills can source plate themselves, but often lack inventory capacity or familiarity with more unusual types of steel. In contrast, Penn stocks 25 grades including rarer offerings such as duplex, 321H and 304H.

From this starting point, Penn can control the length and exact specifications of a finished product. With access to advanced processing equipment such as waterjet and laser cutters the company can meet almost any brief.

Facility expansion

Penn is currently adding 75,000ft² to its existing 120,000ft² facility in Quakertown, near Philadelphia, US. This extra space is the latest round of expansion for the company, which traces its origins back to 1949, and will see it operating more processing machinery and maintaining larger inventories. In addition to processing, the facility is equipped to carry out post-production quality analysis using ultrasonic and X-ray testing. This is vital in the safety critical environment in which pipes are used by the oil and gas industry.

While the company's in-house capabilities are impressive, it draws strength from an extended web of suppliers and partners. Martineau gives an example of a customer who needed 1.5in diameter tubing within five weeks. Most mills would require 13 weeks to manufacture the product, but by making it from scratch and having elements processed in Ohio and rolled in Tennessee, Penn was able to deliver it in five weeks. For jobs where the need to meet deadlines outweighs cost – for example, the replacement of a crucial part – this network and Penn's imaginative approach allows it to react quickly. In this case, the final product only required half of a 10,000lb coil. For a smaller producer this would have been a major burden, but Penn could absorb it into its stock.

"We leverage both our inventory capabilities and our relationship with vendors to improve a delivery," Martineau says. "Traditionally, for a lot of these products there are waiting times of up to 16 weeks but we can have a piece of pipe custom made in two or three days."

This distribution network is also being used to provide rapid delivery across the US. Penn has depot locations in major cities including Houston, Los Angeles and Seattle. Internationally, Penn products have been put to use in Venezuela and Chile, and the company had exports totalling $3 million last year.

Martineau argues that without any one of these pieces Penn's offering would be less attractive. "Everything has to come together," he says. "Our customers need the material, the processing equipment, the technical expertise and the partners to deliver the final product. We have all of that."

Penn Stainless's focus is on providing a complete service for metal buyers by offering the best solution to a problem while balancing cost, speed and quality. By forging strong partnerships with steel suppliers, engineers stand to gain access to their wealth of knowledge and technical ability, and can fully realise the vision for a design. ■

Client case study

The requirement

Eight pieces Sch40S pipe, 20inx34ft long, with 18 holes 3inx8in cut into the pipe to allow gas to escape. Delivery within four weeks.

The problem

Eight 20ft long pipes are girth-welded to eight pipes cut to 14ft to produce 34ft pipes. Next, 18 holes, 3inx10in, were hand plasma-cut into the pipes. This produced 48ft of scrap with poorly finished holes. A girth weld is not desirable.

The solution

Level 3/8 in plate coil and lasercut plates to 55.69x34ft with 18 holes pre-cut 3inx10in. The plate was roll-welded into the pipe, reducing 48ft of scrap and eliminating girth weld. Delivery was on time and under budget.

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