

Matrix Metals' Global

Matrix Metals, a constituent of Sanmar Engineering Technologies Limited, provides foundry solutions in steel castings, machining and many other value-added services to a variety of markets including Valves, Construction and Mining, Locomotive, Transit, Automotive, Oil field, Pumps and Military.

A multinational organization with manufacturing locations in Mexico and India, Matrix Metals is well known and respected for their high ethical standards and commitment to excellence. Through the combined global efforts of their foundries, the company has the capacity to annually produce 32,000 tons of high quality steel castings, on time and at competitive prices.

Valve World Americas had the opportunity to speak with Matrix Metals Vice President of Sales & Marketing, Chandra Raj, to discuss the advantages of having global manufacturing facilities, the importance of a diversified product portfolio, and the future of Matrix Metals.



By Jody Hewitt & Sarah Bradley

Complexity, Lead-time and Price: The Global Manufacturing Advantage

Matrix Metals consists of the Acerlan Foundry in San Juan del Rio, Mexico, Sanmar Foundries Limited (SFL) in Trichy, India and Nepco International in Richmond, TX which includes a 64,500-square foot warehouse and corporate head office from where all sales and marketing for North America, Europe and Asia is coordinated.

Each foundry can produce a wide range of valve castings, from only a few ounces to 17,000 pounds, using a variety of different materials and metal grades including carbon steel, low alloy, duplex stainless and nickel-based alloys in commercial as well as upgrade requirements.

Like identical twins, both foundries are similar yet different; equally capable but with their own special niche. Between both the facilities, Matrix Metals offers Sand, Shell and Investment castings with machined and assembled valve capabilities.

With the largest commercial X-ray facility in Mexico, 3D molding capabilities and four induction furnaces, Acerlan facility is well-equipped to handle orders requiring short lead times, "onesies-twosies" (orders of five pieces or less), high alloys and nickel-based metal grades.

However, it is the location of the Acerlan foundry that is one of the company's greatest assets. "Our true advantage is that, for our customers in North America, we can offer the benefit of Mexico pricing and the benefit of domestic lead times. Our lead times in Mexico are the same as any other foundry in the US, so our customers get a more competitive price, same lead time and equal or better quality," says Matrix Metals Vice President of Sales & Marketing, Chandra Raj.

And while lead times for the foundry in India are longer, the customer can enjoy even better pricing as well as take advantage of the stocking program offered by NEPCO. NEPCO manages the logistics from SFL to NEPCO with castings shipped every other day from SFL in fully stuffed containers and the customers are billed only when the product is shipped from the warehouse in Texas. Therefore, the customers do not have to worry about the hassles related to import paper work or inventory liabilities. The customers also get better credit terms than they would when they import directly from a foundry overseas.

SFL is truly a unique steel foundry in India with a state of the art thermal reclamation plant, Heat Treatment furnaces running on LPG to reduce emission levels and separate power feeder besides 35 wind mills as power back up. It is truly a state of the art valve foundry

which has the capability to pour more than 100 material grades with in-house upgrade and valve machining/assembly capabilities.

So how do they decide whether an order will be produced in Mexico or in India?

"When a customer says they need a casting quoted, we ask them a series of questions. What is the annual volume? What kind of lead time do you need? Who do you compete with in your product line? If the customer is coming out of China or India and the order is repetitive, then we'll go to India. We have seen that we can compete with China from India with our value proposition. However, if they say that they need the casting in 6-8 weeks, it means we go to Mexico.

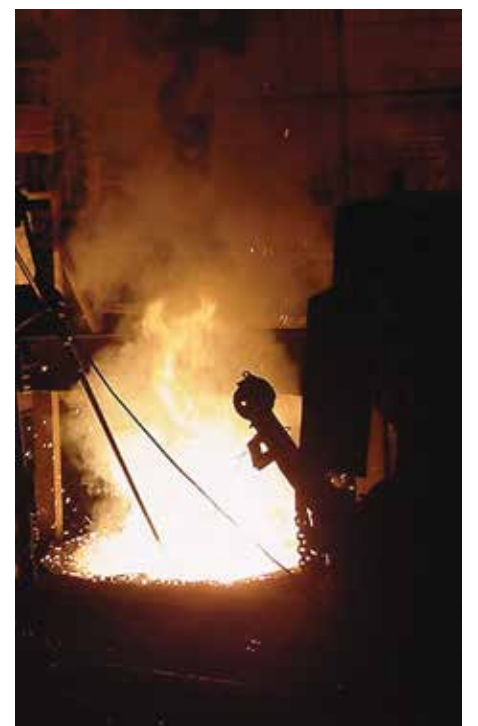
Taking advantage of our global footprint, we have been able to offer a blended approach by which our customers invest in tooling in both the foundries and we offer a lower median cost without any risk associated with offshore sourcing. We have participated in several project orders in which we would start the supplies from Acerlan and the back end of the project is supplied from SFL. The overall median cost is therefore less for the customer but without any compromise on lead time. NEPCO manages the whole process. This is truly our competitive advantage and our customers are really taking advantage of this offer."

Asking the customer direct questions to determine their needs allows Matrix Metals to determine the best foundry to produce the order, and the customer is able to choose from a wide range of options based on their needs: product, lead-time and price.

Investing in Growth: Diversifying for Long-term Health

In the turbulent new landscape of industrial manufacture, diversification is becoming increasingly important. According to Chandra, "everybody is hoping for a market where everything is up,

"Taking advantage of our global footprint, we have been able to offer a blended approach by which our customers invest in tooling in both the foundries and we offer a lower median cost without any supply chain risk associated with offshore sourcing. We have been able to win and execute several project orders in which we would start the initial supplies from Acerlan and the back end of the project is supplied from SFL. The overall median cost is therefore less but without any compromise on lead times. NEPCO manages the whole process. This has been our competitive advantage."



Manufacturing Advantage



■ ACERLAN FOUNDRY AT A GLANCE

CAPABILITIES

- 680,000-square foot foundry
- Installed Capacity: 12,000 Tons per Annum
- Shell and No bake molding
- Casting weight range 1 – 16,500 lbs
- NDE capabilities including:
 - Radiographic separate containment
 - 2 MeV linear accelerator
 - 100-curie cobalt source
- Magnetic particle
- Dye penetrant inspection
- Dimension inspection (layout)
- Mechanical and ultrasonic testing
- Technical engineering
- Magma 5.2 Simulation
- SolidWorks 3D molding

MATERIALS

- Carbon steel
- Low alloy steel
- Martensitic stainless steel
- Duplex stainless steel
- Hastelloys
- Austenitic stainless steel
- Ferritic stainless steel
- Monels
- Nickel based alloy steel

CERTIFICATIONS

- ISO 9001:2008 registered
- Pressure Equipment Directive (PED)
- Indian Boiler Regulation (IBR)

like we had in the past, but you can't depend on it. What we are seeing is upturns in certain markets, downturns in others, and they are always fluctuating up and down. All you can do is position yourself to be healthy, to survive, and to continue to invest in your facilities when business is good or bad."

Customers at every stage of the process are thinking more about cost-efficiency, lead times, quality and traceability than ever before. Competition is fierce. For Matrix Metals, the answer was to expand on their capabilities in both locations. From what metal grades they could offer to what they could produce, they invested in a diversification strategy in order to serve more markets in the specialty steel casting industry.

But diversifying is neither easy nor cheap. At SFL, more than 500 employees are required to run a full-service machine shop, sand foundry and investment casting foundry capable of producing both high batch sizes as well as onesies and upgrades. SFL recently invested in a large injection press at the investment foundry increasing the weight range to 120 lbs. A new 3 Ton Electric Tempering Furnace was added in the Sand Foundry. An Argon Oxygen Decarburization (AOD) furnace at an approximate cost of 0.75 US\$ Million is being planned for commissioning before end of the year. At Acerlan, the company invested in a 350 Kg Induction furnace so we can do smaller batches of higher alloys and nickel based metal grade orders. 0.50 US\$ Million dollars was invested into a brand new, state-of-the-art linear accelerator in order to support the company's nondestructive evaluation (NDE) services as well as 3D modeling software which, according to Chandra, will be the way of the future for low volume short lead time needs.

"Typical valve customers could have thousands of patterns that they own, but maybe only ten or twenty percent of those have regular activity. These patterns get old over time and they need to be maintained; they need to be kept at the current revision levels, they need to be stored and they are typically large and take up a lot of space. It is very costly to store a pattern for years and years waiting for a one or two-piece order. We have many customers who are considering scrapping hundreds of patterns and just ordering 3D molds when they are required."

Of course, expanding the capabilities of multiple foundries around the world is much more complicated than simply investing in capital. It involves getting necessary qualifications, establishing procedures for new processes, obtaining certifications and providing traceability information for each and every casting that is produced, in some cases even traceable back to the weld rod that was used to weld the casting.

"A new customer had had an experience in China where the castings turned out not to be the metal grade they had ordered; the chemistry was not to their specification. They approached me about bringing Matrix Metals on board – but first, they asked us to send a test



bar in each of the metal grades they use. They wanted to test the samples to make sure that we were able to determine the chemistry, and that our equipment was capable of testing it properly."

Now, while fifty percent of their business still comes from supplying to valve manufacturers, Matrix Metals also supplies to the Mining and Construction, Locomotive, Military, Pumps and Oil field industries. In doing so, they have ensured that they are not one hundred percent dependent on any one business and are well-positioned to survive any fluctuations in the market.

Equal Opportunity: Adopting the Right Mindset for Growth

We asked Chandra what he saw for the future of the industry; we were shocked to hear that some large valve manufacturers order *five pieces or less eighty percent of the time*.

Moreover, these "onesie-tuosies" are often for specialty valves, in high grade metal alloys, and need to be made to a certain specification – in as little as six weeks. Beyond the substantial investment required to be able to produce one-off castings as well as bulk production orders, Chandra says that it is also important to have the right mindset.

"Foundries that do not want this type of work, they are gone. They are not here. The mindset can't be 'I only want to make fifty of something and I only want to make it in the United States.' You need to have the ability to process, and have the processing techniques in place, to produce one piece and get it out of the shop on time. It is also important to price it appropriately, or ultimately, you will go out of business."

We make valve castings for not only the largest valve manufacturers in the world, but we are also just as willing to produce castings for the smallest valve companies in the world. High volume or low volume, large corporations or small, it does not matter – we want to make valve castings."

For Matrix Metals, according to Chandra, "growth is the future."

■ SANMAR FOUNDRIES LIMITED AT A GLANCE

CAPABILITIES

- Sand foundry 400,000-square foot
- Installed Capacity: 20,000 Tons per Annum
 - Pepset, Isocure Process
 - Casting weight range 1 – 13,000 lbs
- Investment foundry 35,000-square foot
 - casting weight range 1 – 120 lbs.
 - 90% Valve castings
- Machine shop
 - 22 CNC Machines (HMC, VTL, HTC, VTC)
- Hydro Testing
- CMM Inspection
- NDE capabilities including:
 - Cobalt 60, Ir-192 X Ray Source
- Magnetic particle
- Dye penetrant inspection
- Dimension inspection (layout)
- Mechanical and ultrasonic testing
- Technical engineering
- Magma 5.2 Simulation
- SolidWorks 3D molding

MATERIALS

- Carbon steel
- Low alloy steel
- Martensitic stainless steel
- Duplex stainless steel
- Hastelloys
- Austenitic stainless steel
- Ferritic stainless steel
- Monels
- Nickel based alloy steel

CERTIFICATIONS

- ISO 9001:2008 registered
- Indian Boiler Regulation (IBR)

The views and opinions expressed in this article are those of the profiled company and do not reflect the position of Valve World Americas.