



Photo by Sumedha Mahorey

EXHIBITING EXCELLENCE IN CUTTING-EDGE TECHNOLOGIES

As a giant industry, aerospace manufacturing requires many components whose critical functioning defines the reputation of global industry bigwigs. One of these components which finds its application in most of the major industries and is specifically critical for aerospace is sheet metal. Providing the aerospace industry with an experience rich in innovation and technological know-how, Prima Industries has become an undisputed leader in 5-axis laser machines for the processing of sheet metal. A first hand account of its manufacturing shop floor from its facility at Turin, Italy...

■ SUMEDHA MAHOREY

What do HAL, Audi, Volkswagen, TATA and FIAT have in common? Any guesses? Well, apart from being world-class in their verticals globally, these companies share a unique similarity, a similarity, which has been a critical enabler in maintaining their leadership position. Around 60-80 per cent of any aircraft and 50-60 per cent of any automotive is made up of this unique, yet similar, component. Does that make up for a good clue? I guess so...

Sheet metal, an integral part of any aircraft or automotive, needs precision cutting and acute craftsmanship to withstand the immense expectations, style and performance demands, that the customer has from these most desired machines of

speed. Providing the aerospace and automotive industry with a rich inheritance of innovation and technological know-how is Prima Industries, Italy, a world leader in sheet metal cutting machinery manufacturing. A leading specialist in machines and systems for sheet metal working, the company's offerings in aerospace and automotives is one of the widest and covers all applications, from laser processing, punching, shearing, bending to automation.

MANUFACTURING MIGHT

The company is an undisputed leader in 3D laser machines, which are widely used in the automotive, aerospace & energy, white and yellow goods sectors. In the 2D laser sector, the company is among the major world players and offers highly advanced and top

performances machines, which are used in a wide variety of fields. The company's customer-oriented approach is clearly visible in the automation offered; extremely wide and modular right from the automated loading/unloading/stacking phases to the most sophisticated Flexible Manufacturing Systems (FMS), which typically automates the whole process of fabricating blank sheets into ready-bent components.

With a wide variety of product range including product lines for punching, 2D & 3D laser cutting, welding and drilling, integrated punching/shearing & punching/laser, bending, automation and software, the company has its manufacturing facility in Italy, Finland, the US and China, from where machines and systems are delivered all over the world. With the service network active

in over 60 countries, the present installed base count of the company is more than 10,000 systems.

Elaborating on the company's market standing, Roberto Constantino, Country Manager – Overseas Sales, Asia & Pacific, Prima Industries SpA, avers, "We are on the top of the list of sheet metal machinery manufacturers today. We are absolute leaders in 3D laser technology for automotive, aerospace and energy applications." He adds, "We have a plant in Finland, which is twice the size of the plant in Turin. Putting the two units together makes Prima the No. 2 sheet metal manufacturer in the world. There are only 2-3 companies who are our close competitors, the rest are all followers."

MARKET STANDING

Prima's machines have a wide variety of applications as these deal in everything related to sheet metal. Constantino asserts, "Our machines are found in many manufacturing processes where a sheet is involved. Our applications vary from ducting

CLAIM TO FAME

Profile: A world leader in sheet metal cutting machinery manufacturing with offerings in aerospace and automotives. It covers all applications, from laser processing, punching, shearing, bending to automation.

Expansion plans: Will establish a technical centre, probably in Pune, to service the huge number of machines already present in the Indian market.

USP: The company boasts of the biggest and largest casting moulds ever made for the body frame weighing around 12 tonne. Additionally, the company is the only manufacturer who can make machines using three different laser sources purely decided by the application.

Innovation: An important characteristic of Prima's systems is that the complete body frame is made of granite instead of steel. A granite frame is ideal for hot and humid climate, like India, as it does not get rusted and does not get deformed due to the temperature. Moreover, this machine is very stable and absorbs the vibrations.

Customer base: HAL, Audi, Volkswagen, TATA Motors and FIAT

Elaborating on the company's positioning in the Indian aerospace market, he adds, "In aerospace, our clients include Tata Advanced Materials and HAL. In aerospace, we are No. 1 globally as we are the first manufacturers

component sourcing process, Constantino says, "In the assembly line of 5-axis laser machinery for cutting sheet metal, most of the components are sourced from our local suppliers. The laser beam device – fast-flow lasers – are generated from our sister company, Convergent at Massachusetts, US. The IPG fibre comes from Germany and the body frames are sourced from Tricks, the world leader in manufacturing casting moulds and synthetic granites from Germany. We took over this company in 2003. They manufacture laser sources as per our specifications."

The assembly process begins with the base frame and then, the components are placed on the top of each frame. Each frame weighs around 12 tonne. The body boasts of the biggest and the largest casting moulds ever made. According to Constantino, no other manufacturer in the world produces technology of this size. These body frames weigh about 12 tonne; but the structure is still very compact. The generator, electric cabinet and other fittings are then mounted inside the body to make the machine more compact and easily accessible for the customer's benefit. Explaining the same, Constantino says, "For our 5-axis machine, the sequence of loading of equipment follows the following sequence – the base, X-axis, Y-axis, Z-axis, and then, the A&B axis, including the laser source. The whole machine is then compartmentalised. Some parts of the machines like the laser arm/moving arm are supplied by another sub assembly operating in a separate building adjacent to this plant. In this second building,



The laser head being assembled in a specialised assembly.

to heat exchangers, aerospace, solar panels, electric cabinets, furniture and white goods to automotives. As the variety of use is wide, we have many competitors worldwide, but, in Italy, ours is the biggest company in this sector. Our customers include Audi, Volkswagen, FIAT, Tata Motors, HAL, etc. Tata has five of these systems that are used in the production process at its plant at Jamshedpur, Pune and Bengaluru."

of 5-axis machine for sheet metal cutting. In fact, we introduced the first 5-axis machine in the market in the 1970s."

SOURCING AND THE MANUFACTURING PROCESS

The company's present manufacturing capacity at its facility located at Turin, Italy, is approximately 300 machines per year. Explaining the company's complex

we have the demo centre and the sub assembly of the carriages of the machine, which requires a different level of expertise.”

The manufacturing of moving carriages, which are normally made of aluminium, requires specialised engineers for mounting of delicate components, pneumatic and electric components and manual testing. After the sub assembly is complete, the head is mounted over the body and the final assembly is done with special care being taken while handling the component. After the process is complete, the components are tested by making them run

“We are not planning any kind of local manufacturing because this kind of technology does not allow us to benefit out of that. We could change the way we are represented in India. But this would be based on the results – it could be a direct presence or a joint venture. We are open to all ideas and any possibilities.”

ROBERTO CONSTANTINO,
Country Manager – Overseas Sales, Asia & Pacific, Prima Industries SpA

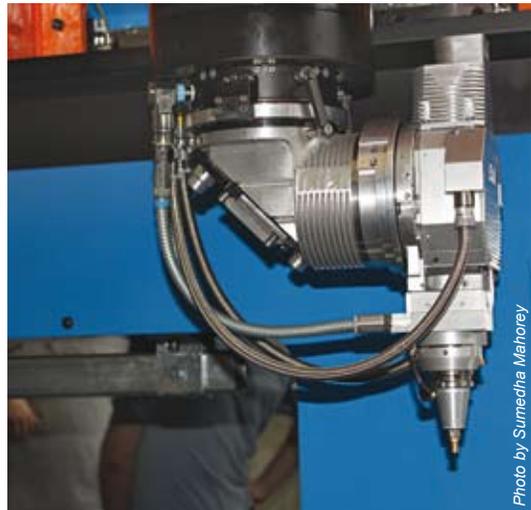
for an hour on cycles to make sure that everything works in a manufacturing environment. As per Constantino, it takes about 2-3 weeks to build one machine.

USP: An important characteristic of Prima’s systems is that the complete body frame is made of granite instead of steel. A granite frame is ideal for hot and humid climate, like India, as it does not get rusted and does not get deformed due to the temperature. Moreover, this machine is very stable and absorbs the vibrations.

Another important fact about the machinery is that even the numerical controls and servo drives are made in-house in a sister company called Prima Electro, which takes care of loader requirements, CNC controls and the servo drives. The company is the only manufacturer who can make machines using three different laser sources purely decided by the application.

EXPANSION PLANS IN THE OFFING

Nowadays, the centre of gravity of production for most of the industries is shifting towards Asia. Highlighting this, Constantino avers, “Our focus is concentrated



The laser beam device manufactured by Convergent.

Photo by Sumedha Mahorey

on Asia, typically India. In India, this year we have plans to establish a technical centre, probably in Pune, to service the huge number of machines already present in the market. The present dealers and distributors are not aptly equipped to service the present customers. In China, we have dealers & distributors, a branch and a joint venture. Everything is in place. With the help of the joint venture, we have already sold more than 300 machines last year. But for certain niche sectors like aerospace and automobiles, our direct presence is required to make the customers feel confident and satisfied. Our expansions are mainly focussed on these two countries, as the world is dependent on what will happen in the near future in India and China.”

NEW TECHNOLOGIES

For every company, technological competence is a must to survive in this global market. Emphasizing on this, Constantino says, “We are planning the continuous improvement of the fibre technology, which is giving a lot of unexpected results. We have been investigating in that direction as to what could be done to improve the performance of the machine and the welding application. Ours is a company that never stops. Once you are in this hi-tech field, you have to invest around 10 per cent of the outcome every year in R&D to survive.”

GREEN MANAGEMENT PRACTICES

Over the years, Prima has been focussing on greater flexibility and operating economy



The final assembly of the 5-axis laser machine.

Photo by Sumedha Mahorey



Photo by Sumedha Mahorey

The laser being tested.

through versatility, high automation level and low energy and maintenance cost. Also, since long, the company has included the ecological aspects in the design criteria. This translates into technology and know-how, which meet the requirements of both, productivity and more sustainable manufacturing.

In as early as 1988, the company had emphasised on

how the absence of hydraulic oil, a small power connection and low energy consumption have ecological as well as economical significance. Similar initiatives include the use of fibre lasers, which save energy. Integrated right-angle shearing saves material like zero-defect solutions developed for bending and laser cutting. Some of the other initiatives include compact automation, which raises the productivity, with only a modest increase in floor space and elimination of the in-factory logistics. For the manufacturing world, the company believes in providing technology, which raises both, the productivity of the customers' operation as well as meets the modern expectations of their customers, employees and operating environment.

MANUFACTURING COLLABORATIONS FOR THE OVERSEAS MARKET

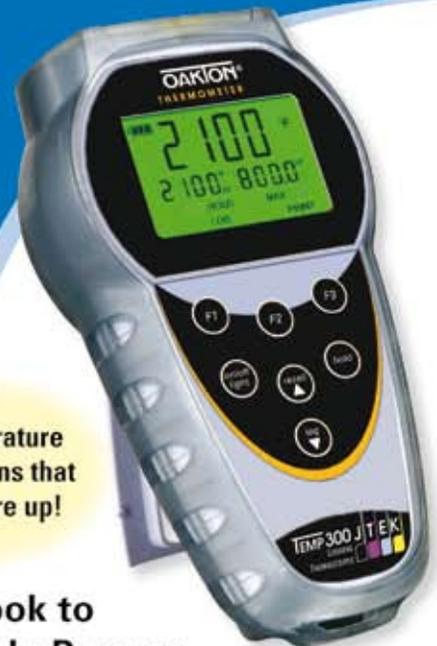
With many companies looking forward to overseas collaboration as a competitive benefit, Prima has a different viewpoint. Constantino informs, "We are not planning any kind of local manufacturing because this kind of technology does not allow us to benefit out of that. Unfortunately, the environment that is required to do this kind of work cannot be found today in a developing country. So, we will continue to manufacture machines here. We could change the way we are represented in India. But this would be based on the results – it could be a direct presence or a joint venture. We are open to all ideas and any possibilities."

MESSAGE TO INDIAN AEROSPACE MANUFACTURERS

A company as big as Prima Industries can present many opportunities for existing as well as upcoming Indian manufacturers. Giving out a message to Indian companies, Constantino says, "Most big companies working in aerospace know us well. They know that there are very few quality alternatives. Thus, normally we are contacted directly when there is a specific need. Our message to other Indian manufacturers would be that we are getting stronger than ever, and so, we are ready to take on any kind of challenge put forth by the market." ■

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