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by DARIO AMADORI

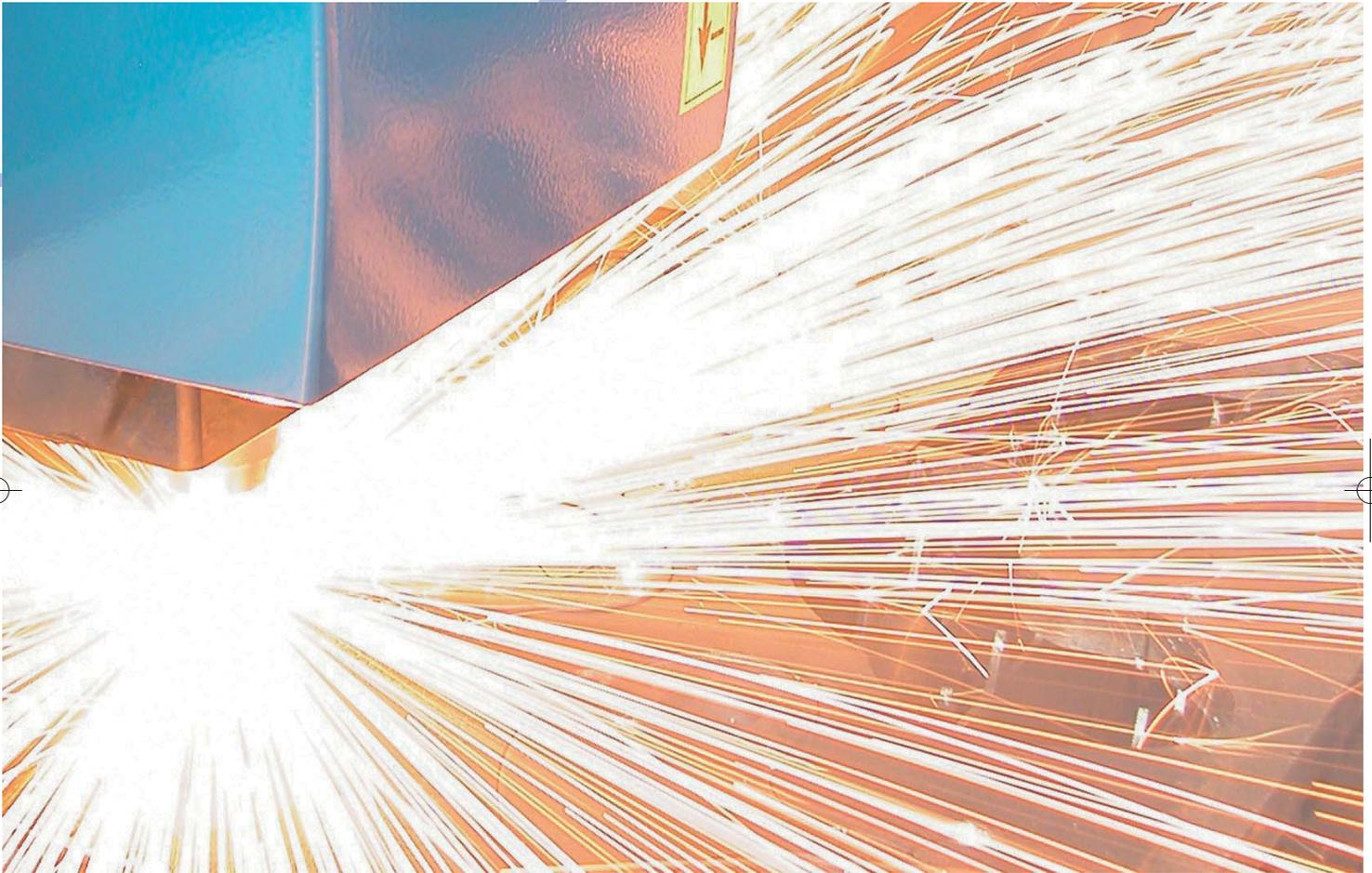
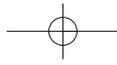
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# SETTING SIGHTS ON LASER

**Impea, a company specialised in the cold moulding and assembly of metal plates for the metal-mechanical structural work sector, has adopted Prima Industrie solutions for 2D and 3D laser cutting, which allowed it to achieve excellent results in terms of performance and cost reduction**



Prima Industrie Photo



Among the green stretches of the Padana plain, more precisely in Piadena, a small municipality of Lombardy between Cremona and Mantova, we find the factory of Impea, a company that operated for over 40 years in the metal plate cold moulding and assembly sector. A leading figure in the supply of bonnets, fenders, tanks, platforms, cabins and pannelling to Italian and international companies that operate in the sector of agricultural mechanisation and earth-moving machines, this Cremona business boasts a remarkable specialisation in the production of bodywork and light structural steel work. Before carrying out the 'reconnaissance tour' in discovery of the Impea productive activity, we exchange a few words with the

engineer Emiliano Bosisio, sole administrator, to find out about the fascinating history of the company.

In the first half of the 1960s, at the beginning of the "economic boom", the automobile sector underwent a strong expansion and both the productive sector and the spare parts sector offered excellent development opportunities to companies equipped for supplying moulded car parts, for example. Pietro Bosisio, in collaboration with his wife, Maria Maietti, decided to start up on his own in 1963, producing bumpers for cars.





**Emiliano  
Bosisio,  
sole adminis-  
trator of Impea**

The activity was then diversified over time and came to include tractor structural steel works, to the point of creating more complex components such as assembled and mounted cabins and platforms for tractors.

“Our production starts with processing the sheet of plate metal by means of a press to then move on to the cutting and welding operations. We deal, therefore, in the cold deformation of the metal plate – Bosisio points out–”. The particular aspect of Impea lies entirely in its specialisation.

“We are specialised in a well-defined segment of the market, characterised by rather low production lots, 3,000 or 4,000 pieces per year – confirms Bosisio. This is our strength, our company policy. We have never feared competition in our corner of the market”.

Impea draws its strength from the family management, and from the skill of its valued collaborators and employees, today numbering around 60. Since 1992, the company has decided to bring about significant improvements in its quality management

system, going on to be awarded certification in accordance with the UNI EN ISO 9002 regulations. Today, Impea s.r.l. is one of the most important companies in the metal-mechanical structural steel work sector. The large premises in Piadena cover 28,000 m<sup>2</sup>, of which 14,000 feature production sheds, warehouses, logistics areas and two buildings that house the technical, administrative, management and board offices. The productive sector avails of mechanical and hydraulic presses, with up to 1,200 t power, robotised cutting systems, welding systems, machines for electrical spot welding, bending machines, slitting machines and more.

## THE RIGHT INVESTMENTS

The company managed to win a considerable slice of the market thanks to a well-defined customer loyalty strategy. “Over the years, the production lots have decreased in size and at times the client requirements were 300-400 pieces per year - Bosisio explains -.

These small quantities accommodated the large investments in equipment and moulds necessary for obtaining a piece of finished bodywork.

To resolve this situation we placed our trust in technological innovation, especially three-dimensional metal plate cutting. The operation costs a little more, but the client no longer needs to invest huge amounts to produce a few pieces. We began with plasma cutters, but were not satisfied with the quality, so we then changed to laser cutting, placing our trust in Prima Industrie - and with excellent results”. The rigid structure and increased reliability of the Prima Industrie solutions, when compared to the anthropoid robots, grant greater production

## THE EVOLUTION OF THE SPECIES

Since its introduction, in 1992, Rapido has always been at the cutting edge of three-dimensional laser work.

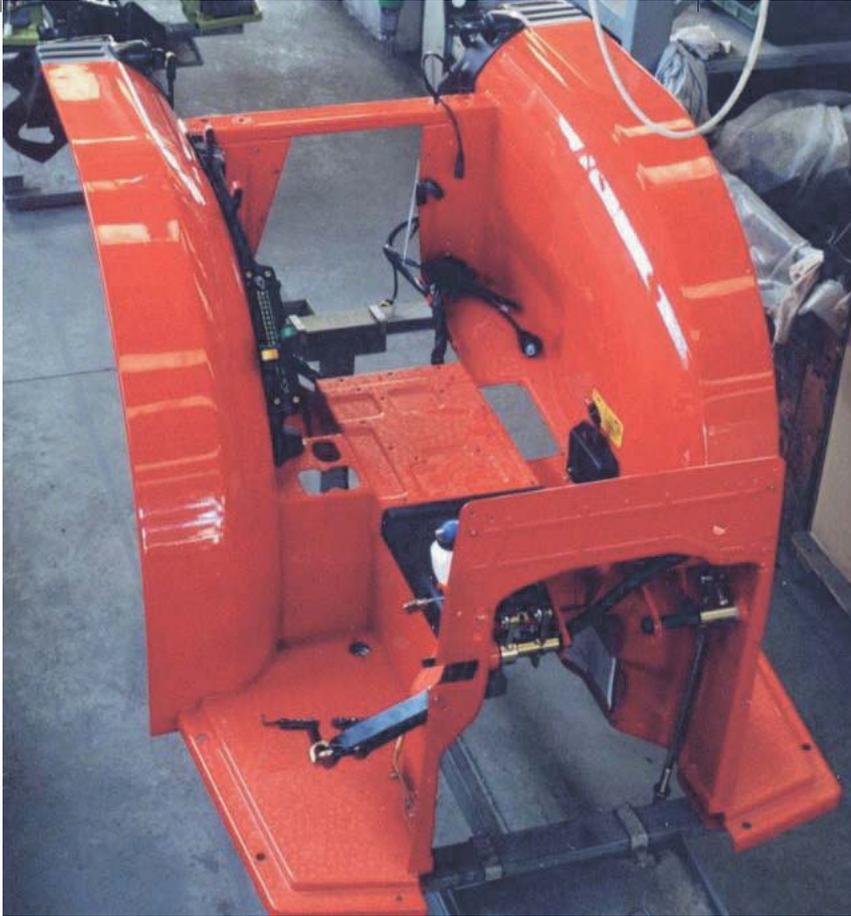
With the passing of the years, Prima Industrie introduced new versions, to meet and, often, anticipate the sector needs, to the point of establishing new frontiers with the model Rapido Evoluzione: faster linear axis (acceleration up to 1.2 g), direct engine head with very high dynamics (1.5 revs/s, acceleration from 60 rad/s<sup>2</sup>), a new C axis with ±10 mm stroke and acceleration record of 4 g. The result is a drastic reduction in time and, consequently, production costs. Rapido Evoluzione has increased strokes (4,080 x 1,530 x 765 mm), which in turn leads to an increase in the sizes and type of components that can be processed. The well experimented system of utensil replacement allows a very simple and rapid transition from cutting to welding.

The SIPS - Safe Impact Protection System with a completely detachable head in the event of accidental knocks, prevents damage to the machine, pieces and equipment, and ensures an immediate return to production.



Head detail  
of the innovative  
Rapido Evoluzione





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For over 40 years Impea has worked in the sector of cold moulding and assembly of metal plate, supplier of bonnets, fenders, tanks, platforms, cabins and pannelling to companies that operate in the agricultural mechanisation and earth moving machine sector

flexibility. Moreover, laser cutting has provided greater production speed and reduced costs, as simply using laser technology is enough and it is no longer necessary to produce moulds to finish the product. Prima Industrie, a world leader in the sector of high power laser machines for industrial applications, has supplied Impea with two vitally important machines to perform 2D and 3D laser cutting. We are talking about the Platino (2D cutting) and Rapido (3D cutting) machines.

## LASER TECHNOLOGY

Today, laser cutting is one of the most widespread techniques for processing materials, and metallic plates in particular, in flat sheets (2D) or bent and moulded plates (3D).

Compared to working with mechanical utensils - blanking, perforating, milling, etc. laser grants maximum flexibility of use: you can work practically any material (any type of steel, aluminium and its alloys, titanium and many other metals, but also most plastic materials). Furthermore, there are no limits to the shapes: any trajectory can be obtained, even the most intricate, and the points are more acute, thanks to the point-like laser utensil. Precision is extremely high and the piece is not distorted through heating and mechanical strains induced by the utensils which, in turn, are not consumed.

Flexibility is certainly the distinctive trait of Platino, a machine designed and developed specifically to meet the needs of the world of metal plate

working. It quickly and precisely cuts a wide range of materials and thicknesses without requiring manual adjustments. With zero set-up time, it also transfers to processing tubing. Available in two sizes (1530 and 2040) and with laser powers that vary from 2,500 to 4,000 W Platino is suitable for any application. This extremely reliable machine is the result of the experience and know-how of Prima Industrie and is ideal for both small lots and high production. The great accessibility of this model allows the system to expand depending on the production needs: from the simple changing of the pallet to the complete system of automatically moving and storing material. The Platino head grants enormous production flexibility and excellent cutting quality. The F axis is a CN axis that manages the movement of the lens, independently of the Z axis, allowing automatic and programmed regulation of the focal point. This enables various materials and thicknesses to be cut and perforated without interrupting the process and also optimises the quality of cutting in each point of the volume of work, keeping it constant. Thanks to the extremely quick lens change (5" and 7.5") with the distributor system, the head adjusts to each job in just a few seconds. Structure, laser, CNC and electromechanics are integrated in a single block easily transported and installed and does not require foundations.



The Impea productive department uses mechanical and hydraulic presses that initially "deform" the sheet of metal plate to then pass it to the cutting and welding processes

The base is made from synthetic granite which guarantees excellent vibration absorption and high thermal stability. The X, Y and Z carts are in fused aluminium: they guarantee solidity, high mechanical stability and contained weight. The sin/cos transducers and the digital drives guarantee high precision and quality of the movements. Depending on the application, Platino can be fitted with a CO<sub>2</sub> laser, with diverse characteristics and power levels: 2,500, 3,000, 3,500 and 4,000 W. All of the laser models available are mounted on the machine base, forming a stable part of its structure, and are characterised by high versatility and efficiency and reduced running costs. Finally, the

Laser Piercing Monitor (LPM) grants a notable reduction in the cycle time. By analysing the reflected radiation, the LPM option automatically calculates the best parameters to use for the drilling

Flexibility is certainly the distinctive trait of Platino, a machine designed and developed for the needs of the world of sheet metal work, quickly and precisely cutting a wide range of materials and thicknesses

process and immediately begins the cutting process as soon as the material has been drilled. The Plasma Monitoring detects the presence of plasma that can form during the cutting process. Thanks to this information, in applications where the formation of plasma is not desired, the Automatic Restart function interrupts cutting, automatically corrects the parameters and resumes cutting. The automatic switch-off system and the device for notifying of any machine halt, by means of SMS or email, are useful options in the case of unsupervised production. The open and accessible Platino structure allows easy integration with the automatic systems for moving pieces in work.

### 3D CUTTING

Rapido, the jewel of the machinery fleet adopted by Impea is the model for the 3D laser cutting. For years Rapido has been an ideal tool for the production of prototypes and small runs and has now been confirmed as the perfect solution for large scale production also. Rapido embossed architecture is compact,





Rapido Evoluzione has established new frontiers: linear axes with acceleration up to 1.2 g, direct drive head of 1.5 rps and acceleration of 60 rad/s<sup>2</sup>, new C axis with stroke of  $\pm 10$  mm and record acceleration of 4 g

Being monolithic, it integrates all the components – machine structure, laser, CNC and domestic appliance - in a single element. The cabin completely encloses the volume of work, in order to grant maximum safety and efficiency in the aspiration of fumes and dust. When opened, the door automatically slides away into the roof, leaving the space in front of the machine completely free and accessible from three sides.

Depending on the application, Rapido can be fitted with two families of CO<sub>2</sub> laser, with different power levels (fast axial laser of 2,500, 3,500 and 4,000 W; slab-diffusion cooled laser of 2,500 or 3,000 W). All lasers are characterised by high versatility and efficiency and reduced running costs. In series production, the Split Cabin is certainly a step above: the volume of the machine and the

cabin are divided into two halves and, while the machine works from one side, the pieces are moved from the other.

The Sliding Pallet option further extends the workable volume of each part. The Focal Position Control (FPC) guarantees the highest productivity and production flexibility, automatically manages the position of the focus based on the specific application and controls the process in the entire volume of work. There is no need to make any adjustment to alternate materials and thickness in production, and the cutting quality is high and even.

Prima Industrie has been a confirmed supplier of solutions for any specific need, affording Impea notable advantages in terms of speed, precision and quality of work.



The jewel of the Impea line is Rapido, the machine for 3D laser cutting by Prima Industrie.

The embossed architecture, compact and monolithic, integrates the structure of the machine, the laser, the CNC and the electromechanics in a single element.