

The tool replacement system, which allows changing from cutting to welding in fast and rapid way, and the new welding tools HOW (Hands Off Welding), with nozzle and with Wire Feeder, permit to satisfy at best any specific application. The protection cabin of Rapido Evoluzione, characterized by innovative design, completely encloses the machine, also the upper part, for absolute safety and perfectly efficient fume suction.

The working volume is, anyway, fully accessible and allows moving around the pieces comfortably and their easy support/handling.

The automatic doors of the cabin are programmable with different opening/closing modalities to optimize loading/unloading times.

The Safe Impact Protection System (SIPS), with full detachment of the head in the event of accidental impact, prevents possible damages to the machine, parts and equipment and assures the immediate production restarting. Rapido Evoluzione is equipped with the latest generation PRIMACH-20L control for high performances, advanced control algorithms, digital drives, on-board technological tables, HMI with Web technology, 15" touch-screen and trackball. The new handbox, of intuitive use, is fitted out with graphic interface and joystick.

Added value

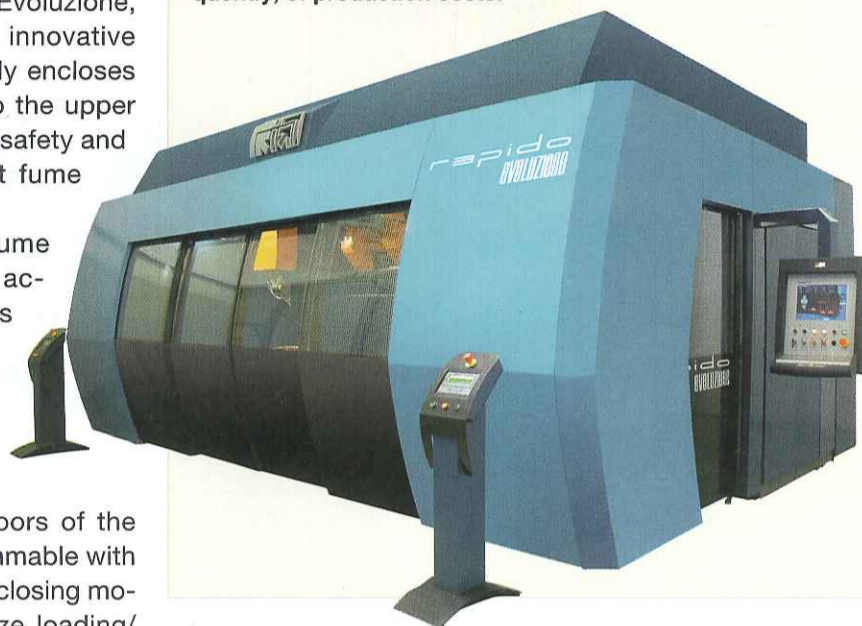
The first intuitive added value provided by the laser technology lies in the fact that the cost-effective machining of high tensile steels is not possible with any other process. Laser allows carrying out all kinds of machining on a structural component such as B-pillar in few dozens of seconds, giving the piece all those precision and tolerance requisites that will make it suitable for the successive assembly phases.

The contribution given by the laser machine will be even more important and determining if, with an appropriate productivity study, the right synchronization with the forming press will be achieved. As a matter of fact, laser cutting times will be always longer than thermoforming times. A

Rapido Evoluzione

The latest three-dimensional laser cutting system presented by Prima Industrie, Rapido Evoluzione, has been used for the B-Pillar trimming cut.

If compared with the first Rapido, launched in 1992, Rapido Evoluzione stands out for faster linear axes, direct-drive head with highly dynamic operation (1.5 rpm, acceleration 60 rad/s²), new C-axis with ± 10 mm stroke and record-breaking acceleration of 4 g. The result is a drastic reduction of times and, consequently, of production costs.

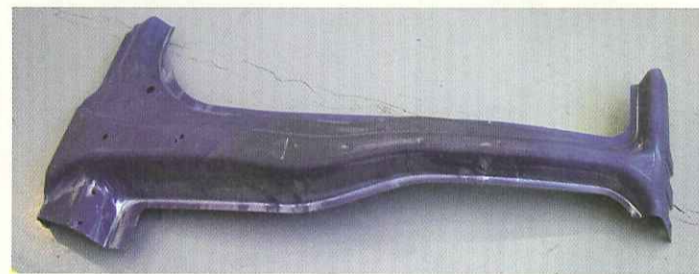


Added value

- Laser allows carrying out all kinds of machining on a structural component such as B-pillar in few dozens of seconds, giving the piece all those precision and tolerance requisites that will make it suitable for the successive assembly phases.

- A modern plant, conceived to assure the best productivity, will consist of a thermoforming line completed by three-four laser machines. In this way the thermoforming output will be always got through according to a "just in time" logic that will not create dead times in the production cycle.

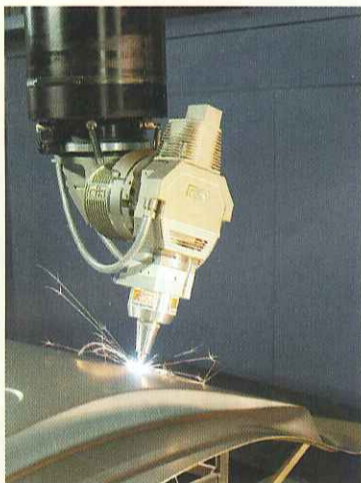
- Rapido Evoluzione, with its three linear axes and two rotary axes, the adaptive axis and the fully NC-programmable logic, enables the operator to set new cutting parameters quickly, also in order to cope with those changeovers that are so frequent in the present industrial world.



Machining cycle

First of all, the B-Pillar is hot-formed with a process consisting in the coil blanking, the successive heating in furnace, the forming and the cooling. Now the formed rough piece will be cut and trimmed to reach dimensions and tolerances consistent with the successive body assembly.

In the trimming phase Rapido Evoluzione goes on stage, cuts the four contours in 25 seconds and performs a series of holes of different dimensions in 21.5 seconds. The laser source exploits 4,000 W power at a frequency of 1,000 Hz in presence of nitrogen as assistance gas.



Cutting parameters

| | |
|----------------|----------------|
| Maximum power | 4000 W |
| Frequency | 1000 Hz |
| Duty cycle | 95% |
| Assistance gas | N ₂ |

Machining cycle

| | |
|---------------------------------------|-----------|
| Cutting of six holes of various sizes | 21.5 sec. |
| Cutting of the four contours | 25.0 sec |
| Total time | 46.5 sec |

The machine

The Fast Approach and LPM functions, which minimize approach and drilling times, further increase productivity. Rapido Evoluzione has longer

strokes (4080 x 1530 x 765 mm), with 60% increase of the working area, widening then the sizes and the types of components that can be processed.