L2 Lightning: high-dynamic laser cutting machine. Faster, more accurate, more beautiful.
The Salvagnini L2 is a 2D laser cutting system that offers excellent work dynamics and unparalleled productivity. The L2 uses Rofin SLAB series laser technology. The high quality laser beam delivered by these sources attains faster cutting speeds than conventional sources with the same power.

The X, Y and Z axes integrate linear motors, a solution that offers unrivalled speed and acceleration as well as increased positioning accuracy, by eliminating the transmission organs required by rotary motors. The L2 features an airplane-type structure with load-bearing beam, designed and patented by Salvagnini. This guarantees an extremely rigid structure, fast and accurate positioning, reduced width and easy access to both workpiece and machine components. The Salvagnini SiX proprietary control system perfectly synchronizes the axis movements, the beam focal position and the source and assist gas command parameters, as well as offering automation functions and dedicated functions for unmanned operation, such as remote operator calls and automatic restart and shutdown. The swift pallet changeover design features simultaneous movement of two tables, allowing sheets to be swapped rapidly while the machine is cutting, and is thus capable of delivering virtually continuous part processing.

High technology and industrial styling

Salvagnini is well known as the ideal partner for hi-tech sheet metal processing solutions. As such, we provide the market with a technological benchmark for high-dynamic laser cutting: the L2 system. The Salvagnini L2 has been developed to take maximum advantage of the enhanced cutting speeds attainable with the latest generation of laser sources. This has led to the decision to use linear motors and up-to-the-minute integrated design techniques, including industrial styling.

Styling means continuous innovation in terms of both technology and the symbolism that gives a product its identity. Salvagnini has welcomed this trend by involving a well-known independent styling center in the development process. The result of this exclusive collaboration is the L2, a new-generation machine tool featuring advanced engineering and technology together with incisive styling.

Exceptional speed and accuracy

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The laser source used is produced by Rofin, a company which has exclusively developed an industrial product based on a diffusion-cooled generator: the SLAB DC series CO$_2$ laser source.

Its most important features are:
- high-quality beam with Gaussian power density distribution (k>0.9, plexiglass burn)
- high-speed cutting even with limited power
- no turbine for reduced maintenance
- low laser gas consumption and no laser gas supply circuits (one small internal canister will last for more than a year)
- reduced start-up time (ready to cut in less than a minute)
- compact design

SLAB source: top quality, high speed, low maintenance
The exclusive programming
Straight from

METALStudio

Powerful software platform specifically designed to create sheet metal objects using a specially engineered solid modeler and user interface. Allows 2D and 3D drawings to be imported and exported to and from other CAD units. The 2D plan of the solid model can also be used to automatically generate punching and shearing programs. Punching, bending and laser cutting technology is optimized because the study of the part and the techniques for producing it (punching, shearing, laser cutting and bending) can be developed in a single integrated software environment.

CAMLaser

Allows individual parts, previously designed and elaborated, to be filed and later retrieved. Automatically and intelligently selects the most suitable machining tools for the active geometries. Automatically nests the single parts using innovative algorithms. Guarantees flexibility by offering the possibility of combining manual and automatic nesting. Automatically calculates and optimizes the cutting sequences between the parts, the cutting directions and the fast movements. Determines the final cut for recovering the unused portion of the blank. Also allows the destruction of the skeletal scrap through optimized break-up sequences. Can simulate the work sequence in slow motion, showing the head movements in 3D and providing status information about tool, type of lead-in, process parameters and length of movement.
suite.
CAD to PART

ToolsManager

The L2 system features an extensive collection of process parameters and predefined virtual tools suitable for different types of profile and cutting geometry. The laser power can be modulated according to the updated instantaneous cutting speed in order to obtain the best results at corners and fine details. The data archive contains the piercing and cutting parameters for numerous thicknesses and for the most commonly used materials such as steel, stainless steel (with or without protective film), galvanized steel, aluminium, brass and so on, as well as parameters for laser etching. The parameter library is powerful but easy to use. Customers can easily expand and customize the library by modifying the existing conditions and/or adding data for newly defined materials and thicknesses.

PRODviewer

Produces a report giving production times and costs for each part or batch. The costs, both fixed and variable, are calculated using typical parameters provided by Salvagnini and completed as necessary by the customer. The parameters set by Salvagnini include the unitary consumption of energy, laser gas, assist gas and consumables; labour, maintenance and other costs are defined by the customer.
Single focusing head and motorized lens

The design and operation of the focusing head make it extremely competitive. First and foremost, it will accept both 5” and 7.5” lenses. It features two identical interchangeable lens housings for fast, easy and accurate lens changing without dismantling the head. The lens is cooled by air using a new system which acts on the surface, rather than the edges, of the lens, for more uniform cooling and a longer lens life. The balanced lens axis reduces cycle times while increasing cutting quality. The lens is housed in a special support inside the head, which is equally pressurized by the assist gas. The balanced pressure of the gas on the lens means that the focus can be adjusted during cutting, using a low-power motor; this shortens the cycle time as there is no need to stop cutting in order to adjust the focus. The balanced lens axis also significantly increases the cutting quality, as the focal position can be adjusted over the entire work area of the L2. The assist gas path has been enhanced to limit pressure drops; the result is improved flow, reduced gas consumption and increased cutting speed.
Driven entirely by linear motors, the L2 is the jewel in the crown of Salvagnini’s laser range. This machine brings together winning features in terms of performance, technology, design and productivity.

The combination of speed (300 m/min) and accelerations (3g) reached by the machine, along with the performance and reliability of the systems for pallet changing (15 sec) and loading/unloading (store towers, robots, feeders), make it possible to obtain peerless levels of quality and productivity. The Salvagnini L2 also permits lights-out night-time production with automatic management of the finished parts.

The L2’s mechanical structure with a central “airplane-type” beam has been patented by Salvagnini and offers the rigidity needed to support high accelerations.

The focusing head is moved by linear motors, which guarantee speeds and accelerations difficult to achieve with rotary motors.

The absence of traditional transmission organs guarantees high-precision trajectories that can be measured on the final part.
laser cutting accuracy? see the speed

- The L2 has flying optics and only two mirrors in its optical path. The capacity sensor and the numerically controlled movement of the lens ensure that the focal point is always positioned correctly.
- The SiX controller also offers special functions such as automatic restarting after collisions with scrap, complete cutting of the skeleton and accurate identification of the edge of the blank.
- Cleaning and calibration of the nozzle and alignment of the blank are all performed automatically.
- The acceleration that can be achieved allows the cutting speed to remain constant even for complex paths and very small holes.
- Non-stop piercing and synchronized head movements all help to reduce the processing time.
- Two specific assist lines for nitrogen and oxygen allow a wide range of materials and thicknesses to be processed; a third line can be used for compressed air or other types of gas.
- Two identical interchangeable lens housings for fast, easy and accurate lens changing.
Intelligent integrated systems

Salvagnini has a long tradition of integrating sheet metal processing systems with high-throughput handling devices. This allows us to offer customized configurations for laser cutting solutions too, with a view to creating a completely autonomous workshop.

High-quality, accurate and repeatable cut parts are the direct consequence of the architecture of the L2 and of the design, production and testing methods we use to continuously improve customer satisfaction.

Lean manufacturing with automatic unloading of single parts

In general, cut parts are separated manually, thus drastically limiting the overall productivity of laser-cutting systems.

Salvagnini has solved this problem with the MCL automated device which features up to two Cartesian manipulators capable of working either in synchrony or independently. The gripper consists of suction cups which are configured automatically. Programming is performed off-line, without stopping production.

For each nest, the CAD/CAM automatically generates the unloading modes and sequence for the cut parts and the operation of the gripping devices. The L2 can also be integrated with the ADL loading/unloading connection, which consists of a sheet pick-up surface and a rake-type device for unloading scrap and processed material that is not sorted automatically. The VisualStacker graphics application manages the unloading areas simply and effectively. Parts can be stacked on wooden pallets or transferred to other machines.
Quality, accuracy, repeatability, safety and reliability

The dynamic production process analyser in the command console and the interactive multimedia machine diagnostics (EasyData software package) are excellent supports created by Salvagnini for a production site that is easy to use and highly competitive. With the EasyData software, sensors, actuators, numerical axes and components are easily traced through the wiring and hydraulic diagrams and images that the operator can browse through on the machine.

The MaintenanceManager software package allows routine maintenance on the L2 laser to be managed effectively using up-to-the-minute methods for even greater reliability. The Salvagnini SiX controller warns the operator and guides him through the required maintenance and/or inspection procedures, recording the results. The maintenance manual charts are displayed on-screen. The user can also add any personalized events he considers it important to keep under control. The production data is structured and recorded so as to provide feedback (STAT Laser software package) such as tracking of the parts produced and workload over a given period (day, shift or week). High-quality, accurate cut parts are the direct consequence of the combination of know-how and professionalism that is represented by the Salvagnini L2 laser system.
### Machine data

#### Working area

- Worktable X Y (mm): 3048 x 1524
- Z axis stroke (mm): 100

#### Technical specifications

- Maximum acceleration X-Y axes (g): 3
- Maximum positioning speed X-Y axes (m/s): 5 (300 m/min)
- Positioning tolerance (mm): ± 0.05
- Focusing lens: 5” and 7.5” with autofocus
- Assist gases: nitrogen, oxygen and auxiliary
- Maximum pressure at the nozzle (bar): 20

<table>
<thead>
<tr>
<th>Laser source ¹</th>
<th>ROFIN DC025 compact</th>
<th>ROFIN DC030 compact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of source</td>
<td>CO₂ SLAB</td>
<td></td>
</tr>
<tr>
<td>Method of excitation</td>
<td>radio frequency</td>
<td></td>
</tr>
<tr>
<td>Maximum power (W)</td>
<td>2500</td>
<td>3000</td>
</tr>
<tr>
<td>Power regulation (W)</td>
<td>250 - 2500</td>
<td>300 - 3000</td>
</tr>
<tr>
<td>Quality factor (W)</td>
<td>K &gt; 0.9</td>
<td></td>
</tr>
<tr>
<td>Consumption of premixed laser gas (Nl/h)</td>
<td>&lt; 0.13 (&lt;10000 h, work/canister)</td>
<td>&lt; 0.17 (&lt;9500 h, work/canister)</td>
</tr>
</tbody>
</table>

#### Cutting capacity ² (thicknesses)

<table>
<thead>
<tr>
<th>Material</th>
<th>ROFIN DC025 compact</th>
<th>ROFIN DC030 compact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel (mm)</td>
<td>0.5 - 18</td>
<td>0.5 - 20</td>
</tr>
<tr>
<td>Stainless steel, with or without protective film (mm)</td>
<td>0.5 - 8</td>
<td>0.5 - 10</td>
</tr>
<tr>
<td>Aluminium (mm)</td>
<td>0.5 - 5</td>
<td>0.5 - 6</td>
</tr>
</tbody>
</table>

¹ Other types of sources – 1500 and 2000 watt – are available
² The cutting quality on the thinnest and thickest material will depend on the geometry required, the quality of the material and the operating conditions of the system

Salvagnini reserves the right to modify this data without warning
AJS® Automated Job Shop

MV
INTEGRATED LOGISTICS

P4 PERFORMER+
PANEL FORMING

S2 S4
PUNCHING - SHEARING

L1.it L2
LASER CUTTING

ROBOFORMER G2
ROBOTIC BENDING