



CASTELLINI SOLUTION

LASER PROCESSING TECHNOLOGIES



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01

70 YEARS OF EXPERIENCE AND PASSION

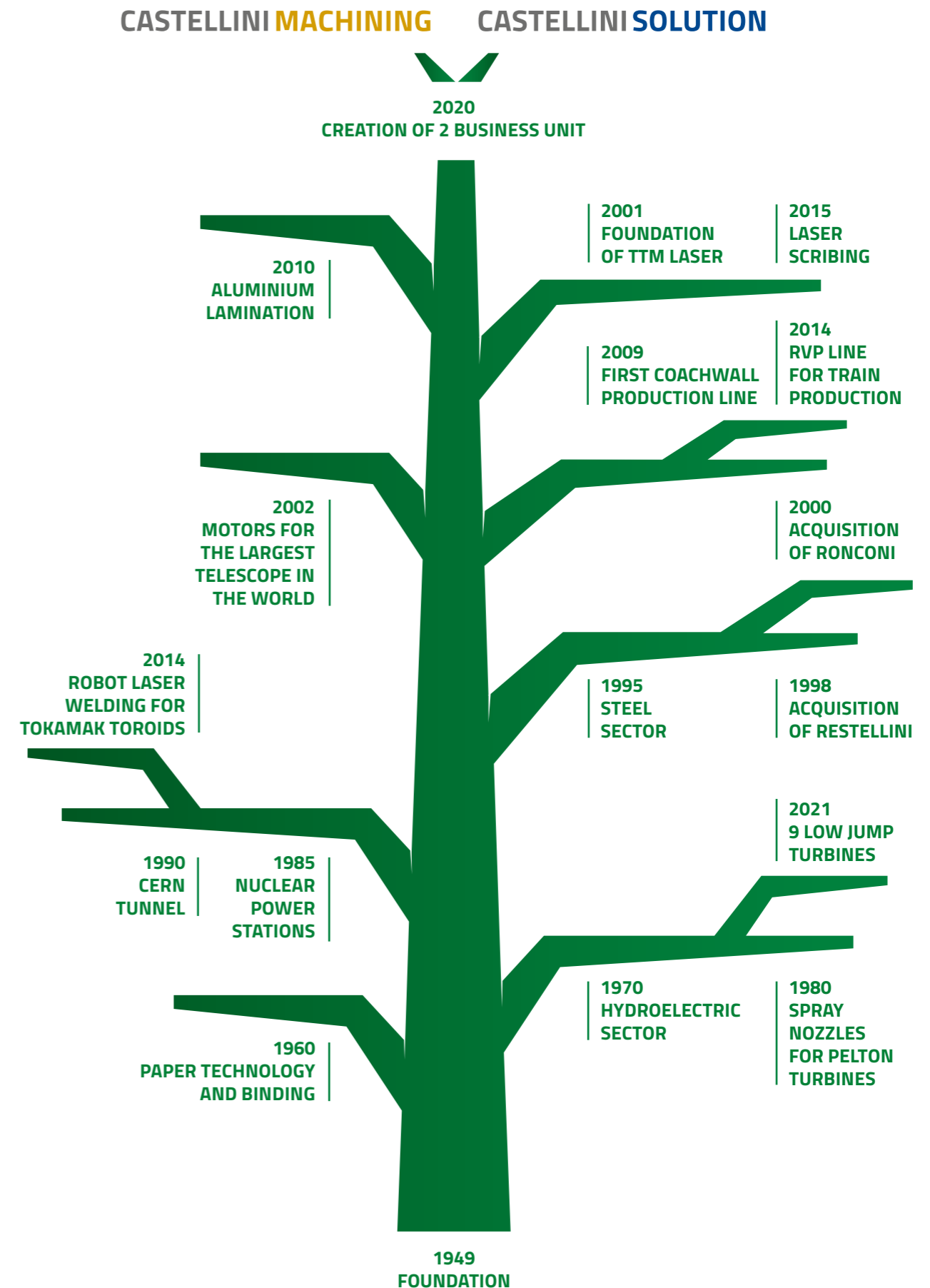
Castellini has many years of experience in the development and implementation of customized processing solutions, in particular by applying the most innovative laser technologies to complex production processes.

Founded in **1949** by **Giuseppe Castellini** as a mechanical workshop for the reconversion of war remnants for industrial use, over the years it has undergone several transformations in accordance with the industrial and market opportunities. Thanks to its continuous investments in **human capital, production plants, research and development activities** and a **targeted company policy**, Castellini has become a structured company with a qualified team in design and in production, a modern mechanical workshop and a cutting-edge assembly department. Since **2020** the company is structured in 2 business units: **Castellini Machining**, specialized in the production of equipment and components, and **Castellini Solution**, dedicated to the experimentation and design of innovative technological solutions. Castellini is today a **partner of steel producers** and of the **main suppliers of steel plants**.



Fiorenzo Castellini
CEO

CASTELLINI IS BASED ON THE PERSONAL NEED TO CONTINUOUSLY CHALLENGE MYSELF BY ACCEPTING ALWAYS MORE ARDUOUS AND STIMULATING CHALLENGES. CASTELLINI SOLUTION FOCUSES THIS NATURE ON THE TECHNOLOGICAL DEVELOPMENT.





PASSIONED BY THE RESEARCH OF TECHNOLOGICAL INNOVATION

02

CASTELLINI SOLUTION

20 YEARS OF EXPERIMENTATION
IN LASER APPLICATIONS

MISSION

To provide the industry with cutting-edge technological solutions for improving product quality and optimizing production processes.

VISION

The best industry partners for the innovation of production processes that require the application of laser technology.

NUMBERS

20 | YEARS OF EXPERIMENTATION
IN LASER APPLICATIONS

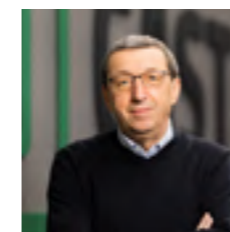
+14% | GROWTH CAGR

8% | R&D
INVESTMENTS

6% | INVESTMENTS IN
OPTIMIZATION
PRODUCTIVE

144 | CUSTOMERS

Data and statistics calculated on the average of the last few years



Marcello Filippini
Managing director

EACH PROJECT IS A JOURNEY THAT MUST BE FACED WITH THE PARTICIPATION OF THE WHOLE TEAM. ONLY BY WALKING TOGETHER, COMBINING EFFORTS AND ENERGIES, SHARING KNOWLEDGE AND THE DESIRE TO LEARN AND GETTING PERSONALLY AND DEEPLY INVOLVED, WE CAN ACHIEVE EXTRAORDINARY RESULTS.

03

ACTIVITY



CASTELLINI SOLUTION

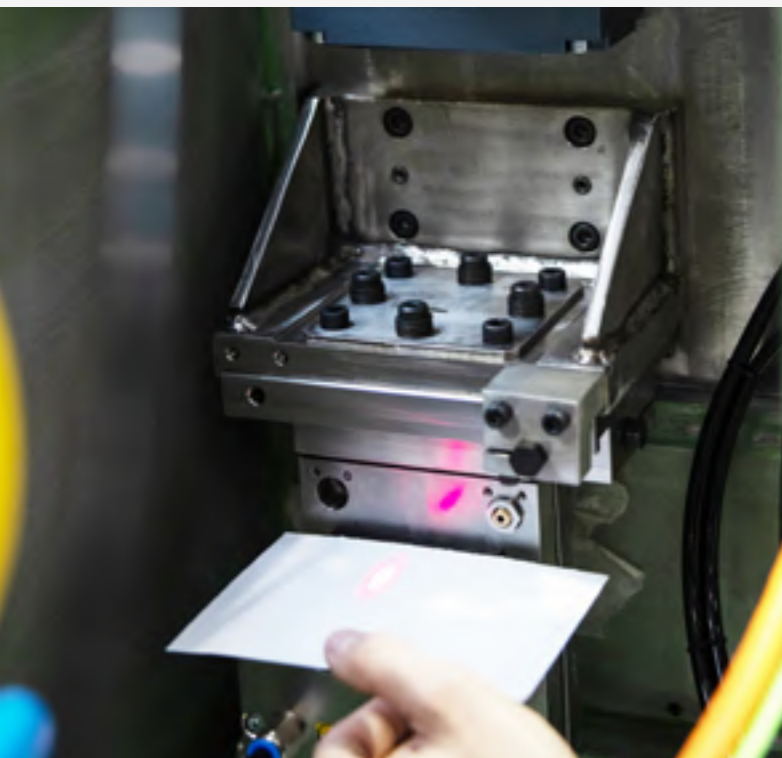
IDEAS, INNOVATION
AND LASER TECHNOLOGY

Castellini Solution is the Castellini business unit that focus on technological innovation. Driven by a deep passion

for technology and by the desire of excelling in the pursuit of innovation, Castellini Solution Team develops advanced and

customized technological solutions focused on the optimization of industrial processes. Technologies, machineries and complete

systems are developed for various applications mainly based on laser technology, but not only. Some already available solutions are listed below:



↑ Spot Laser during optical path's alignment



↑ Shape and size measurement of the laser spot at the working point

- LASER SCRIBING FOR GOES /
- COIL TO COIL LASER WELDERS /
- COMPLETE LINES FOR CUSTOMIZED PANEL PRODUCTION /
- SURFACE CLEANINGS & LASER TREATMENTS /
- CUSTOMIZED CUTTING AND WELDING SOLUTIONS /



Stefano Fois
Chief Operating Officer

ALWAYS LOOKING CAREFULLY AT THE DETAIL
WITHOUT LOSING THE TARGET OF QUALITY AND RELIABILITY
OF THE WHOLE PROJECT.

04

A DEEP TECHNOLOGICAL KNOW HOW AT CUSTOMER'S SERVICE

CASTELLINI SOLUTION'S APPROACH

A INTERDISCIPLINARY SPECIALIZED TEAM DEDICATED TO THE TECHNOLOGICAL DEVELOPMENT

Customer needs are the driving force behind Castellini Solution's activities. The proposed technologies are developed in the awareness that productivity and reliability are always the primary

requirements, reachable only through an interdisciplinary and profound scientific path. The investment in highly professionalized human capital thus becomes the foundation of every project.



↑ Automation is integral part of technology



↑ Dimensional verification of the laser working spot



01

ANALYSIS

Analysis of the needs and consequent research and definition of the most innovative technological solutions to satisfy customer expectations.



02

EXPERIMENTATION AND RESEARCH

Detailed and deep study of technological processes and execution of targeted experiments that make possible the implementation and application of the innovative technical solutions.



03

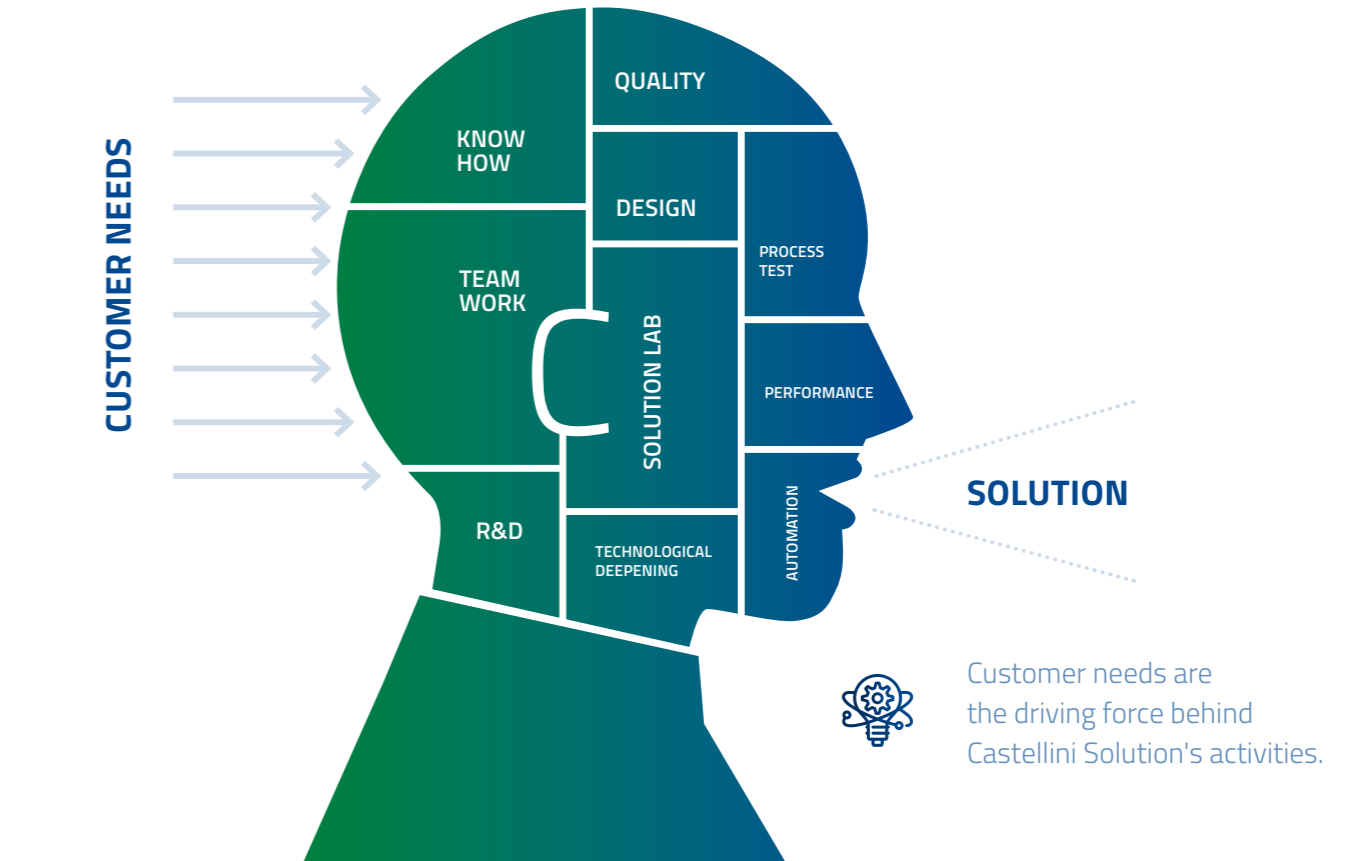
DESIGN

Development and industrialization of the technological solutions, exploiting the specialized interdisciplinary know how of the project team, up to the production of the processing units.



A TEAM WELL STIMULATED WITH A COMMON GOAL CAN ACHIEVE UNEXPECTED RESULTS. CASTELLINI SOLUTION BASES ALL PROJECTS ON THIS PRINCIPLE.

Luca Rossi
Project Manager



PARTNERSHIPS

Castellini Solution, driven by a strong passion for innovative technologies, collaborates with universities and research institutes, aware that the sharing of know how is the most important driving force for achieving successful innovations.



THE SHARING OF PERSONAL KNOWLEDGE IS THE BEST INCUBATOR OF TECHNOLOGICAL INNOVATION THAT EXISTS, BECAUSE IT FAVOURS INTUITION BEFORE IDEAS.

Simone Peli
Physicist / R&D Department

SOLUTION Lab

A LABORATORY
TO EXPERIMENT IDEAS
AND IMAGINE SOLUTIONS

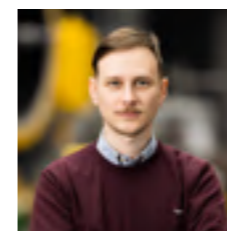


STAINLESS STEEL / MILD STEEL / HIGH RESISTANT STEEL /
GRAIN ORIENTED ELECTRICAL STEEL /
GRAIN NOT ORIENTED ELECTRICAL STEEL /
ALUMINIUM /

PAINT STRIPPING / COATING REMOVAL /
SURFACE TREATMENT / LASER CLEANING / LASER SCRIBING /
LASER CUTTING / LASER WELDING / LASER CLADDING /
SPECIAL LASER CUTTING /



SOLUTION Lab was designed to allow a wide range of laboratory tests exploiting latest generation laser equipment and testing platforms that best simulate real industrial applications.



THE AUTOMATION IS MORE AND MORE AN INTEGRAL PART OF THE PROCESS TECHNOLOGY. SOLUTION LAB HAS BEEN OPTIMIZED TO PUSH PROCESS TECHNOLOGY TO ITS LIMIT ALSO FROM THE SOFTWARE POINT OF VIEW.

Claudio Lunati
Software Development Manager

↑ The operator panel of one of the SOLUTION Lab machines ↑ Active quality control technologies in the testing phase

THE WORKSHOP CASTELLINI

8,000 SQM INTENDED
FOR ASSEMBLY AND TESTING
OF TECHNOLOGICAL SOLUTIONS

Castellini Solution assembles and tests the new technological solutions in a dedicated area of over 8,000 square meters.

The Castellini Solution assembly and testing team is composed of highly qualified and experienced personnel with years of experience.



The workshop has been designed to guarantee flexibility and adequate spaces for the production

of the most complex process lines considering the most varied customer needs.



Daniele Renaldini
Supply chain - Mechanical specialist

THE SECRET TO GUARANTEE THE SUCCESS OF A PROJECT IS TO ADOPT AN OPTIMIZED AND CONSTANT MANAGEMENT FROM THE FIRST REVIEW OF BASIC ENGINEERING UNTIL THE FINAL COMMISSIONING.



07

SYNERGY BETWEEN RESEARCH AND PRODUCTION

An integrated structure that combines a unique technological know how with the high quality manufacturing. A synergy that allows to push research up to the realization of advanced technological solutions.

A workshop specifically designed for the construction, assembly and testing of complex solutions of considerable size.

INDUSTRIAL SITE
64.000 SQM

MAXIMUM LINEAR DEVELOPMENT
INSTALLABLE IN THE WORKSHOP
120 MT

MAXIMUM INSTALLABLE WIDTH
20 MT

MAXIMUM OVER HEAD CRAIN HEIGHT
17 MT

MAXIMUM OVER HEAD CRAIN CAPACITY
250 TONS

LASER SCRIBING

DEDICATED TO GOES

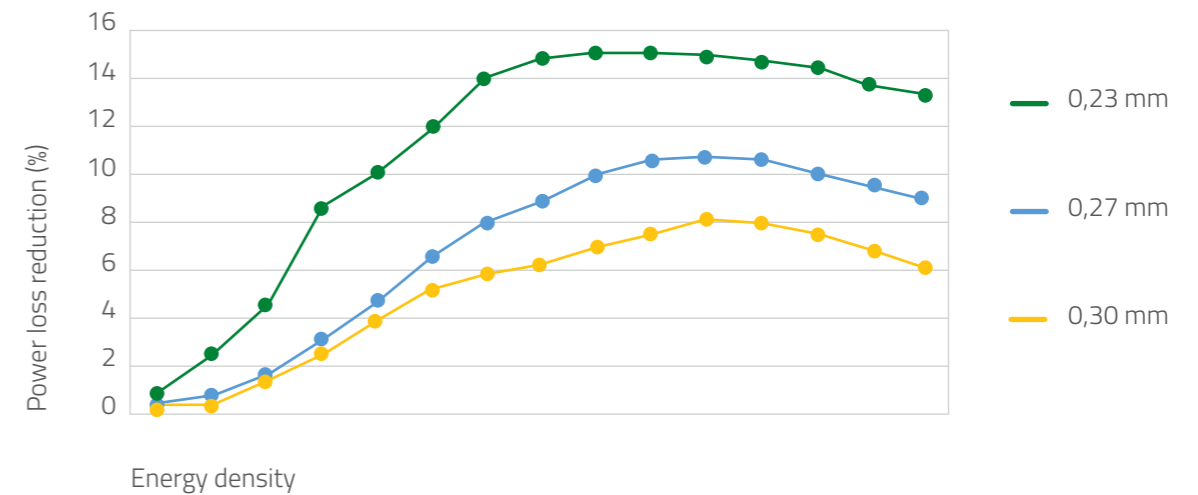
The Laser Scribing is the latest treatment in grain oriented electric steel (GOES) production. The GOES is the most performing material for the transport of magnetic fields, thus finding a wide use in the construction of transformer cores where the minimization of power losses is one of the most important aspects.



TECHNICAL AND PROCESS FEATURES

- Continuous Scribing
- Scribing width 60/100 micron
- Strip speed: adaptable to the line
- Adjustable lines pitch (3- 10 mm)
- Servo controlled focalising roll position
- Scanner real-time management system
- Minimal maintenance
- Smart design for quick installation
- Pressurized optical path
- Dedicated pressurized and climatized room
- Coating Integrity Monitor (optional)
- Core Loss Measurement System (optional)
- Strip waviness detection (optional)

POWER LOSS REDUCTION (%) / ENERGY DENSITY

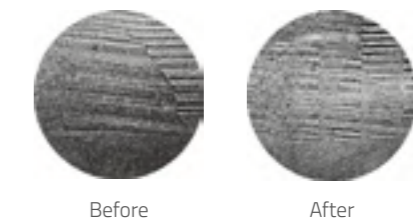


Thanks to the long test campaign carried out in the **SOLUTION Lab** facility and the extensive experience acquired during the projects implementation, the process parameters of the scribing technology have been deeply optimized:

- laser power
- energy density (see graph)
- spot shape (width and length)
- line distance (patterns)
- coil speed
- spot speed
- focus position

LASER MAGNETIC DOMAIN REFINEMENT

The laser scribing process is the irradiation of invisible lines, perpendicular to the rolling direction, that grants a sensible reduction of the magnetic domains dimensions. This effect is called *laser magnetic domain refinement*. The net result is the lowering of the anomalous eddy currents, generated in the steel crossed by a variable magnetic field, and the consequent reduction of the total power loss.

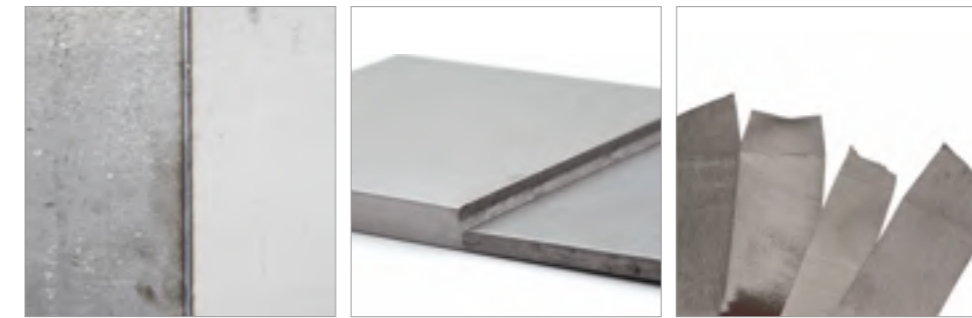
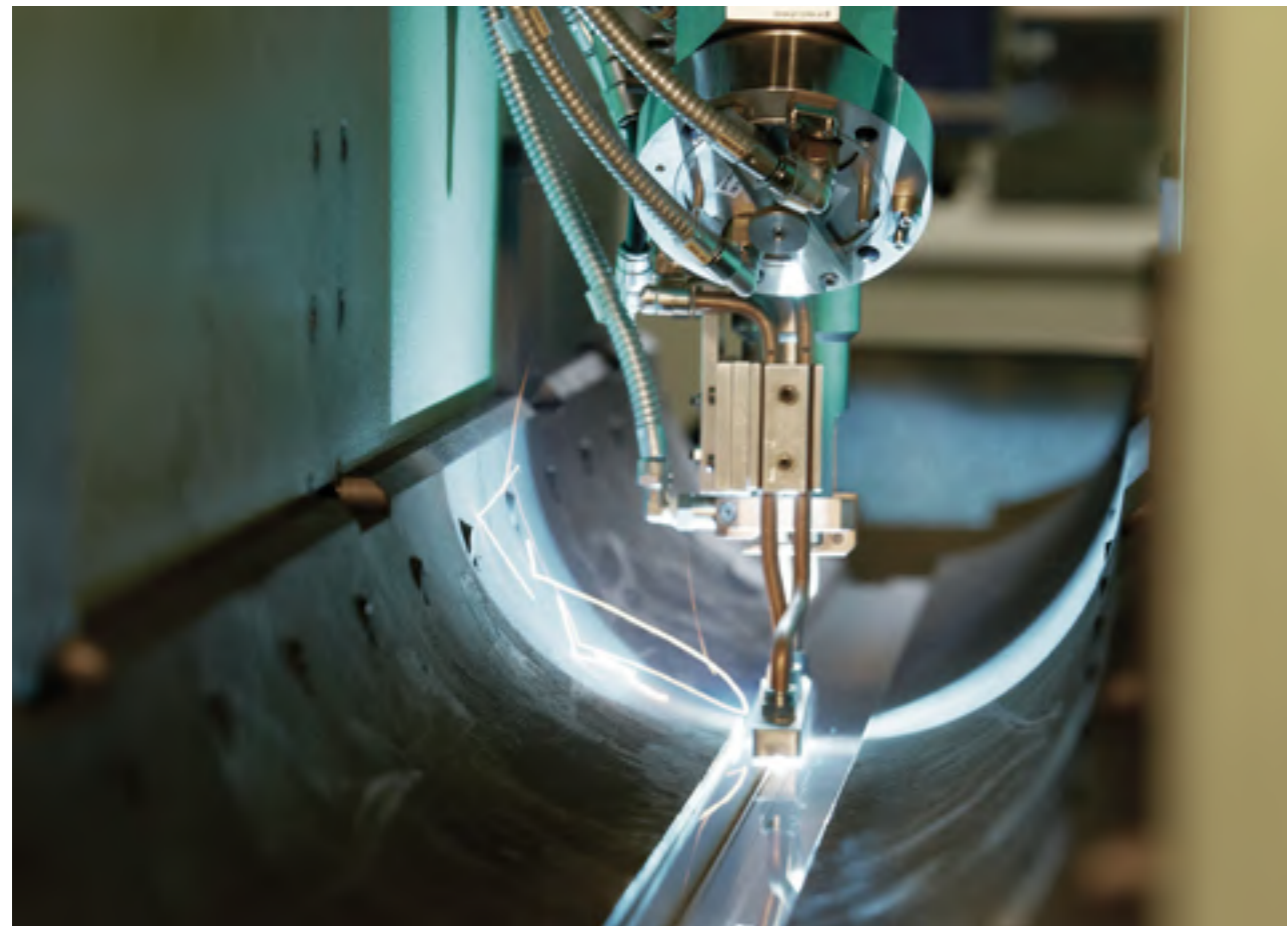


COIL TO COIL WELDING LINE

SIMPLY PERFORMING

The Coil to Coil welding unit designed by Castellini Solution aims to break the mold and offer the customer a simply performing and strongly reliable solution. The Laser technology, applied in the unit, allows a wide range of advantages, including:

- the possibility of joining two coils of different quality
- obtain a high quality and fully laminable resistance weld (no over-thickness)
- the possibility of welding in Pure Laser or Laser Cold Wire
- no contact with the coil, no maintenance and plant shutdown for the replacement of knife

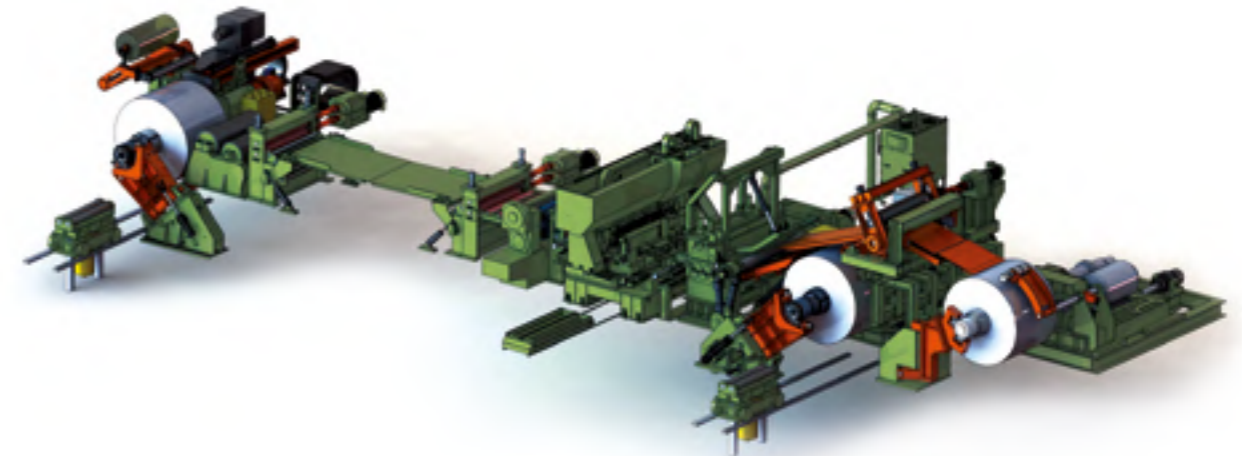


✓ WELD OF DIFFERENT MATERIAL
 WELD OF DIFFERENT THICKNESS
 STRIP BROKEN AWAY FROM THE WELD DURING A TENSILE STRENGTH TEST

COIL TO COIL WELDING LINE

The complete Coil to Tail welding line significantly reduce the overall process time and the scrap cost especially when the coil material is of noble grades (stainless steel, silicon steel, ...). Being an independent line, the unit is

deeply optimized to the joining of material with different characteristics. The use of a Full Laser Welding unit integrated in the line, grant the user a very reliable process and strong and rollable weld.



TECHNICAL AND PROCESS FEATURES

- Entry group with two uncoiling mandrels, respectively dedicated to the Coil to be processed and the low cost steel coil
- Quick and easy managing of the Coil replacing
- Easy feeding and recoling of the low cost steel
- Automatic Laser trimming and welding unit allowing a superior reliability and strenght of the weld

Features of the Laser welding unit:

- Low seam volume: no over thickness
- No wear, no maintenance and downtime for knife replacing
- Joint of different steel grade (tail to coil welding)
- Pure Laser or Laser Cold Wire Welding Technology
- Laser type: fiber
- Welding Tech: Laser Zero Gap



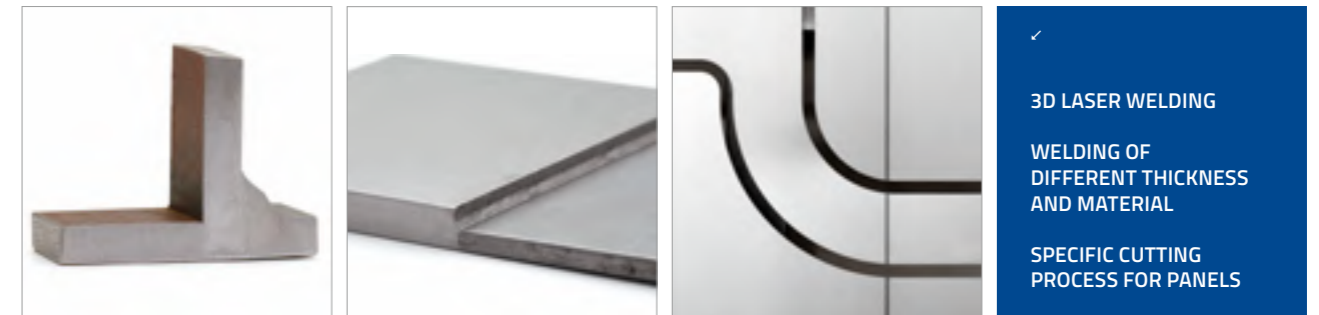
TAILOR BLANK & PANEL LINES

Castellini has developed a deep experience and ability in developing customized solutions for the production of Tailored Welded Blanks and Panels. Thanks to the optimization of laser technologies, the possibilities multiply according to the customer's needs. The Castellini lines can weld, machine, cut and finish different gradations and thicknesses of materials (Carbon Steel, Stainless Steel, HSS, Docol, Domex, Hardox...), in full automatic mode and without specific panel size limits.



TECHNICAL AND PROCESS FEATURES

- No limitation in dimensions
- The welding process can be designed to be transversal or longitudinal respect to the flow of material
- The line can be equipped with:
 - One side Laser welding
 - Cutting Laser head
 - Stiffeners Laser Welding unit
 - Finishing 3D robot Welding
- Joining of different steel grades and different thicknesses
- Pure Laser, Laser Cold Wire Welding, Tandem MIG/MAG or Hybrid Welding Technology
- Laser type: fiber
- Welding Tech: Laser Zero Gap
- Preheating and post heating inductors integration
- Software for automation and supervisory control with Level 2 and Customers' Manufacturing Execution System integration (optional)



3D LASER WELDING
WELDING OF
DIFFERENT THICKNESS
AND MATERIAL
SPECIFIC CUTTING
PROCESS FOR PANELS

APPLICATIONS OF CASTELLINI SOLUTION LINES

The applications of Castellini Solution lines range from the naval sector, where the optimization of the production processes of large panels is a priority, to the railway sector, for which the strong global increase in the use of public transport has raised the demand for new train and wagon manufacturers are obliged to optimize their production processes, from the steel industry, historical application of Castellini equipment, to that of service centres, for which various solutions are already available.

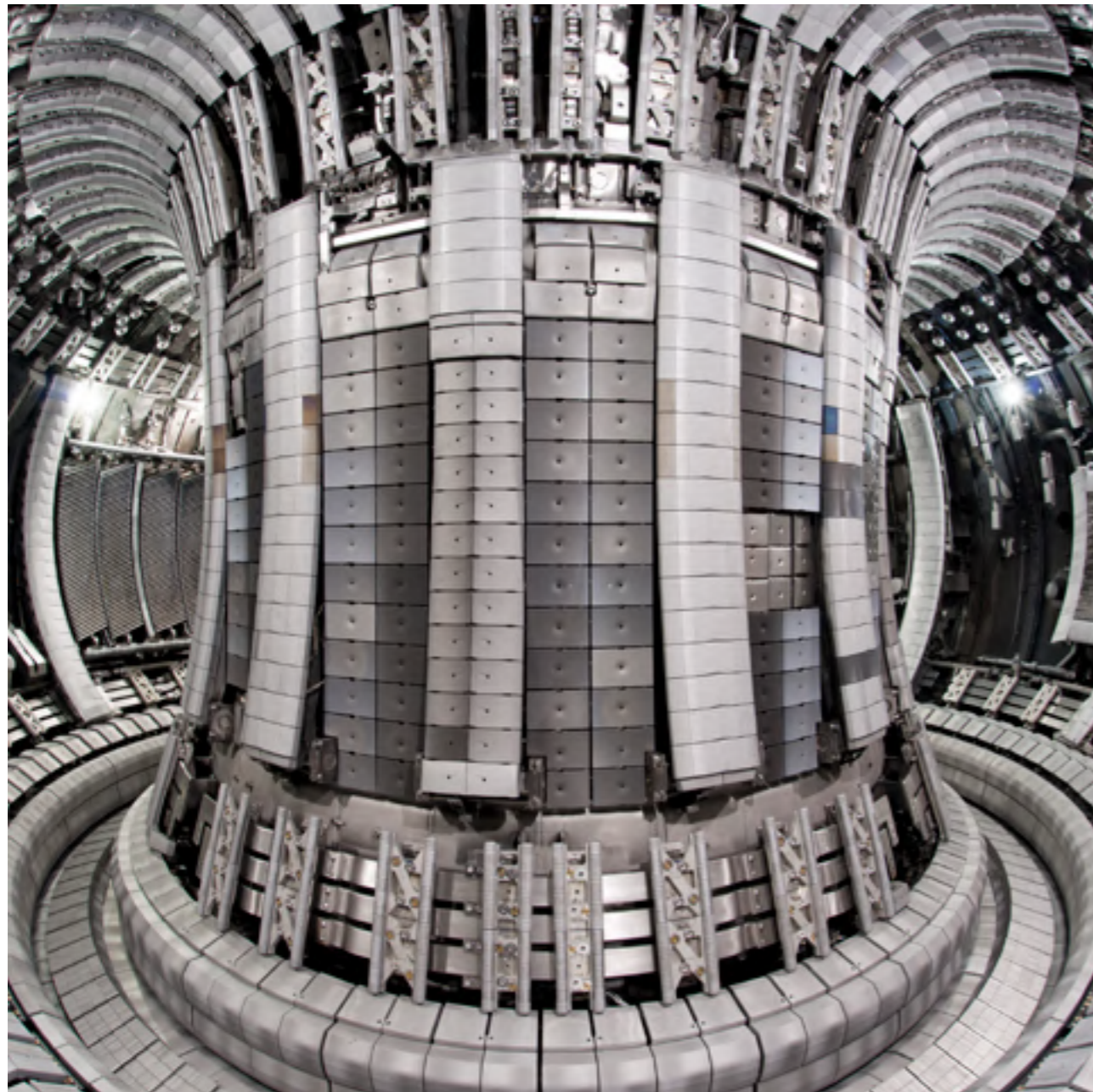


FULLY CUSTOMIZED SOLUTIONS

Customization by nature

The nature of Castellini Solution is to push technologies and their optimization to their maximum, even exceeding the customer's expectations if possible. Laser technology applied to the steel and heavy industry offers daily possibilities of development, which only need to be taken and optimized.

Here are some examples of laser applications already deeply customized according to the customer's needs.



The customized solutions that Castellini Solution offers can be applied in different fields:

NUCLEAR / STEEL / AUTOMOTIVE / NAVAL / RAILWAY

TECHNOLOGICAL SOLUTIONS FOR THE CUSTOMER'S SPECIFIC NEEDS

Castellini Solution designs ad hoc the specific machine, plant, technology or process.

The multidisciplinary team of Castellini Solution develops deeply innovative solutions that perfectly meet the customers' needs. The development process starts from the technological deepening analysis carried out in the laboratory, even exploiting customized set-ups, and is only completed with full satisfaction of the customer.



↑ In the above pictures some examples of customized solutions: robotic welding plant for tokamak toroids and high tech processing plant for automatic coach wall production.

THE PRESENCE IN THE INTERNATIONAL MARKET

More than 70% of Castellini turnover comes from international markets. Castellini products are installed in production plants located all over the world.

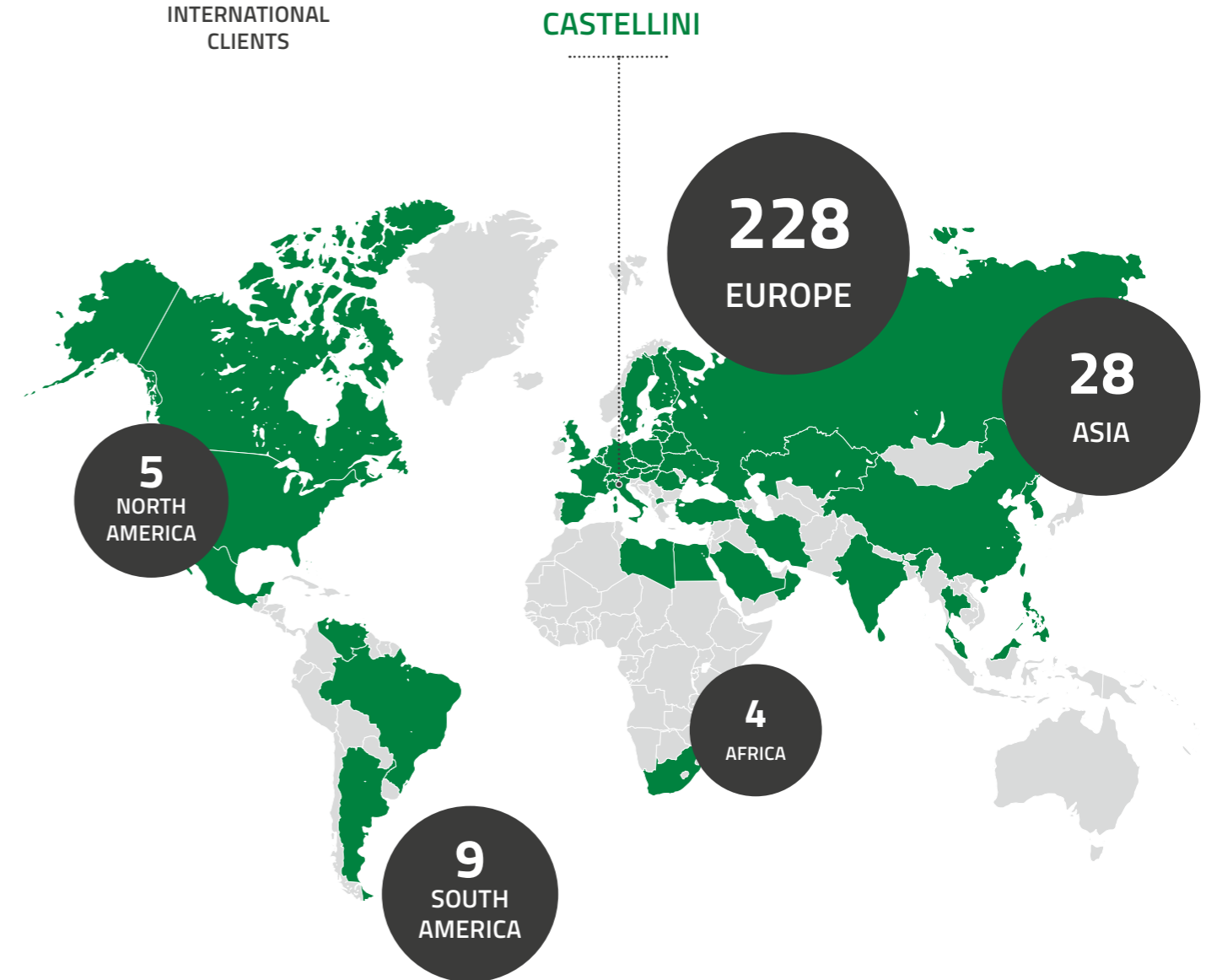
Castellini guarantee assistance to customers, who are spread all over the world, both through the sales staff and a capillary network of qualified agents with whom the company has established partnerships consolidated over the years.

Castellini Officine Meccaniche has its headquarter in Cazzago San Martino (Brescia), in the Lombardy Region. The company's geographical location facilitates the transport of goods and people. The company is an integral part of a solid industrial ecosystem.

With its 100.000 companies, 250 billion euros of turnover, 60 billion euros of added value, and around one million employees, the Lombardy manufacturing sector is actually the first in terms of the number of companies and the fourth by number of employees at the European level.



INTERNATIONAL CLIENTS



Proud to be a partner of:



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