

# Sustainability Report 2021



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# CHAPTER 1

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## OSAI GROUP

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# 1.0 OSAI A.S. S.P.A.

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OSAI Group is a leading international player in the **design and manufacture of machines and systems for the automation of industrial processes**, in particular in the assembly and testing of high-tech components for the semiconductor, automotive and electronic manufacturing and medical industries.













OSAI can boast a rich **portfolio of technology** and experience gained in **more than 30 years of operation**, enabling it to establish itself as a unique player in the domain of strategic and enabling technologies, capable of solving complex manufacturing problems, focused especially on assembly and testing processes through advanced measurement and control technologies and tools.

The reference markets in which the Group operates are crossed by positive long-term mega trends, linked to digitization, technological innovation and the Green and Circular Economy.








Left:

Top view of the historic Paper Mill in Parella (TO), now the headquarters of the Company

AREA	RESULTS	SDG
ECONOMICS AND GOVERNANCE	<b>+13.4%</b> - €38.8 mil. - Revenues 2021* <b>average annual revenue growth</b> CAGR 2007-2021	
ECONOMICS AND GOVERNANCE	<b>Ethics</b> Organization, Management and Control Model and Code of Ethics	
ECONOMICS AND GOVERNANCE	<b>Ethics</b> <b>Legality rating ★ ★ ★</b> maximum value	
ECONOMICS AND GOVERNANCE	<b>Environment Management</b> System certified and compliant with ISO 14001:2015 standard	
ECONOMICS AND GOVERNANCE	<b>Quality Management</b> System certified and compliant with ISO 9001:2015 standard	
ECONOMICS AND GOVERNANCE	<b>Research and development</b> <b>7.8%*</b> of revenues invested in R&D (2021) <b>Innovation &amp; Development Committee</b> to promote research activity in the company and support strategic decisions of the Board of Directors	
ENVIRONMENT	<b>100%</b> electricity from <b>renewable sources</b> (from 2019)	
ENVIRONMENT	<b>29.9%</b> total energy from <b>renewable sources</b> (2021)	
ENVIRONMENT	<b>+ 3.2%</b> <b>self-generated electricity</b> (2021-2020 comparison)	
ENVIRONMENT	<b>- 31.9%</b> <b>water consumption</b> per employee (comparison 2021 - 2020 - 2019)	
ENVIRONMENT	<b>0.83 kg</b> of waste generated per 1,000€ production value	
ENVIRONMENT	<b>96.3%</b> of waste sent for recycling (2021)	



AREA	RESULTS	SDG
ENVIRONMENT	<b>Zero CO<sub>2</sub> emissions</b> for electricity use (scope 2, 2021)	
ENVIRONMENT	<b>Less than 45.22 tons of CO<sub>2</sub> equivalent</b> emitted due to <b>reduction in</b> business travel, packaging, waste generated and water consumption (scope 3, from 2019)	
SOCIAL	<b>197 employees</b> <b>+13.9%</b> over 2019	
SOCIAL	<b>96.4%</b> employees hired on a <b>permanent basis</b>	
SOCIAL	<b>Continuing Education</b> <b>26.2</b> average hours/year per employee (2019-2020-2021)	
SOCIAL	<b>Zero occupational diseases</b> (2019-2020-2021)	
SOCIAL	<b>Work-life balance</b> agile work; flexitime; hour bank	
SOCIAL	<b>Corporate welfare plan</b> Applied to 11 areas** and expanded by supplementary health/social security insurance and subsidized loans	
SOCIAL	<b>Social and environmental criteria in supplier</b> selection and evaluation	
SOCIAL	<b>Customer satisfaction analysis</b> extended to <b>all</b> customers	
SOCIAL	Sustainability for the territory <b>4 projects in favor of socio-economic development of the community</b> Atlantide - social inclusion in business; ICONA - re-functionalization of Olivetti factories; Carlo Ferrero Onlus Association; Spazio Blu - day care center aimed at the world of autism	

\* Consolidated data of the Company OSAI A.S.

\*\*According to the PMI Welfare Index for SMEs, Osai, through its welfare policies, covers 11 of the 12 categories under the most comprehensive corporate welfare model.

**Usa**  
automation systems







# 1.1 HISTORY

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**Founded in 1991 by Carlo Ferrero**, OSAI A.S. operates in the field of industrial process automation.

Established as a sole proprietorship from the collaboration of a group of technicians with many years of experience in the electronic and mechanical fields, it offers itself to the industrial market as a partner of companies in the design, development and construction of automatic production systems with special focus in micro-machining, assembly and testing of small and medium-sized products built in large series and with high technological content.

Left:  
SVU Laser system production line for  
customer ROFIN, 2004



2009

The German branch is founded - **OSAI A.S. GmbH** - based in Munich



2013

The first **Neo Handler** system for handling and testing components for the growing semiconductor industry is introduced to the market

Chinese branch is opened - **OSAI A.S. (Dalian) Co., Ltd.** - based in Dalian



2015

Founder **Carlo Ferrero's** passing, sister Mirella takes over the leadership of the Company

The group takes part in the **ADIR** (Circular Economy) project that is part of the HORIZON 2020 call and coordinated by the prestigious Fraunhofer Institute





2019

Nov. 14, 2019, the Group received the **2019 OPEN INNOVATIVE SME** award.



2020

Nov. 3, 2020 start of trading of OSAI A.S. S.p.A ordinary shares and Warrants on AIM Italy of **Borsa Italiana**



2021

Oct. 26-29, 2021 at the Ecomondo (Rimini) trade fair - a reference in Europe for industrial and technological innovation in the Circular Economy - the innovative **Re4M** System, designed for the efficient recycling of electronic waste (WEEE) in the **Circular Economy** is presented





## 1994

After a start-up period, OSAI signs a partnership agreement with one of the world leaders in the field of Laser sources, creating a turning point in the Group's history. The combination of Laser technology with expertise in industrial process automation immediately enables rapid production development, with increased investment in innovation and the creation of new **standard solutions aimed at industrial Laser markets**.

## 2001

The **"Neo" platform** is created as a standard solution project aimed at the Electronics industry. Standard systems characterized by the possibility of customization and designed to provide the electronics industry with a wide range of systems that can improve efficiency in specific processes such as assembly, marking, and separation of electronic multiplates (PCBs).

## 2007

OSAI participates in European Community calls for proposals in the **ERA-Net** programs, obtaining awards and funding for innovative machines and processes, with particular reference to the semiconductor and nanotechnology sectors.

## 2009

OSAI establishes itself in the European market as a reliable player in the production of quality standard solutions for the electronic manufacturing sector, with **installations at multinational companies** and among leading global EMS (Electronic Manufacturing Services).

In the same year **the German branch was established - OSAI A.S. GmbH** - based in Munich.

## 2013

The Group, after several years of investment, offers its solutions (Test Handler) to the market for

handling and testing MEMS (Micro-Electro-Mechanical Systems) components for the growing semiconductor industry.

In the same year, the Chinese branch is **opened - OSAI A.S. (Dalian) Co., Ltd.** - based in Dalian to provide its customers with a greater presence in the Far East, particularly for after-sales services.

## 2014

The corporate form is changed and **OSAI becomes a Joint Stock Company** (S.p.A.), setting the stage for the listing path.

## 2015

Upon the untimely death of the Founder, his sister **Mirella Ferrero took over the leadership of the Group**, relying on the commitment and motivation of management.

In the same year, the Group takes part in the **ADIR (Circular Economy) project** that is part of the HORIZON 2020 call for proposals and coordinated by the prestigious Fraunhofer Institute, with the goal of creating an automated system aimed at recovering rare materials found in disused smartphones, tablets and other electronic equipment.

In the same year, the Group opened a new showroom in Zhuhai, China, and a branch office in Dallas in the United States-OSAI A.S. USA Corporation.

## 2016

On June 2, the Group obtained a public rating from **Cerved Rating Agency S.p.A. equivalent to B1.2** (Investment Grade) - renewed and confirmed during 2017 - and in December 2016 listed its first Minibond on ExtraMot.

## 2017

Another important public acknowledgement confirms the company's financial solidity and reliability towards its customers, partners and suppliers: the AGCM (Italian Competition and Market



Authority) recognizes OSAI with the **Rating of Legality ★++**, synthetic indicator that certifies compliance with high standards of legality by Italian companies. Rating renewed in 2021 with maximum expected value of ★★.

Also in **2017**, the Group listed its second and third Minibonds on the Italian Stock Exchange's ExtraMot.

## 2018

On **July 17, 2018**, the **patent "Testing Method and Unit for Micro -Electro-Mechanical Systems" (MEMS)** is recognized and registered by the U.S. Patent Office. The technology conceived and developed by founder Carlo Ferrero and Marco Guolo (CTO).

In the same year, the Company participated in the HERMES program as a partner in the design and definition of new standard protocols for machine-to-machine communication in SMT (Surface Mount Technology) assembly lines aimed at the electronics industry.

## 2019

Important business partnerships are formed in the Far East and North America in order to expand the presence in the respective markets.

In the same year, an important new patent was recognized and registered concerning the electromagnetic induction process for soldering components aimed at the world of power semiconductors (power modules).

On **November 14, 2019**, the Group received the **OPEN INNOVATIVE SME 2019** award, a prestigious recognition dedicated to innovative SMEs, conceived and organized by Bernoni Grant Thornton in collaboration with CNEL (National Council for Economy and Labor).

Continuous development of innovative solutions and attention to detail and design has enabled the Company to achieve strong growth and acquire increasingly demanding and prestigious customers worldwide, occupying a market niche that identifies it as a reliable solution provider, for

the design and construction of ad hoc solutions for process automation aimed at large-scale production of components in high-tech sectors.

OSAI A.S. has thus become a leading international operator, able to make available to its customers a complex portfolio of technology and expertise acquired over 30 years of history thanks to the excellence of its people, the continuous focus on innovation and applied research as well as the courage and determination of those who have led it by carrying forward the OSAI project to leave it to future generations.

## 2020

At the **end of February 2020**, in advance of subsequent government restrictions due to the pandemic, the Company introduced restrictive measures for its workers' access to the company, thus activating **agile work** for 130 employees out of a total of 180, **thanks to investments in the Information Technology structure made in previous years by the Company**.

Restrictions due to Covid-19 and the resulting **lockdown** imposed by the government force the Company to forcibly reduce production during the period between March 9 and May 4, 2020.

In March 2020, the Company decided to adopt virtuous social policies in favor and support of its staff, not using any social shock absorbers, such as the redundancy fund, the impact of which is estimated at about €0.8 million, and introducing solidarity plans, to ensure economic support for the families of employees, who are often struggling with the impacts caused by the Pandemic.

On **October 7, 2020**, the Company appoints the new Board of Directors who will serve until the approval of the financial statements as of December 31, 2022.

On **October 27, 2020**, OSAI A.S. S.p.A. submits an application to Borsa Italiana for admission to trading of its ordinary shares and **Market Warrants** on AIM Italia, a multilateral trading system organized and managed by Borsa Italiana and dedicated to small and medium-sized companies with high growth potential.







The issuance by Borsa Italiana of the notice of admission to trading on AIM Italy takes place on October 30, 2020, and the start of trading of the ordinary shares and Warrants on AIM Italy takes place on November 3, 2020.

The Shares close the opening session registering a performance of 25.3 percent over the Offer price.

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OSAI A.S. has thus become a primary operator at the international level, able to make available to its customers a complex portfolio of technology and expertise, acquired over 30 years of history thanks to the excellence of its people, the continuous focus on innovation and applied research, as well as the courage and determination of those who led it by continuing the OSAI project to leave it to future generations.

#### SIGNIFICANT EVENTS OF 2021

On **April 22, 2021** - OSAI A.S. S.p.A. hosts a visit by **ITALVOLT** founder and CEO Lars Carlstrom, accompanied by Patrizia Paglia, president of Confindustria Canavese, at its facilities in Parella.

The visit is part of Confindustria Canavese's survey of the most interesting companies in the area that are proposed to carry out collaborations with ITALVOLT's Giga-Factory project. The site, which will be built in the former Olivetti area in 2024, will be dedicated to the production and storage of lithium-ion batteries for electric vehicles, and will have an estimated initial production capacity of 45 GWh, which could reach 70 GWh; it is planned to be built in a 300,000 square meter area within the Scarmagno industrial site.

On **September 30, 2021** - OSAI A.S. S.p.A. publishes its first **Sustainability Report**, covering the year 2020. This is a historic moment for the Company, following a path already started in 2018 when the Group had embarked on a concrete path, clearly indicating within the "Quality and Sustainability Policy" the actions to be promoted in different areas of interest such as environment, governance and social.

The Sustainability Report 2020, which has been audited by the auditing firm BDO Italia S.p.A., has been prepared in accordance with the Global Reporting Initiative's GRI Standards, and also includes reporting of UN SDGs - Sustainable Development Goals, to identify how, through its activities, the Company can contribute to the achievement of the 2030 Agenda Goals.

On **September 8, 2021**, OSAI A.S. S.p.A. delivers to the market, for a customer active in the production of semiconductor devices, the first fully automated system dedicated to an important and critical phase of the production of **Silicon Carbide** crystals, a key material for energy management in E-mobility<sup>1</sup>.

On **October 25, 2021**, OSAI A.S. S.p.A. takes part as an exhibitor in the ECOMONDO fair in Rimini, Europe's leading event for ecological transition and the circular and regenerative economy. The Company illustrates to the recycling industry its technological approach to urban mining represented by the **"Re4M" project**, the system designed for the efficient recycling of electronic waste (WEEE) and its transformation into new raw material<sup>2</sup>.

Left:

**Visit to Osai by Lars Carlstrom, CEO of ITALVOLT, 2021**

**Osai's booth at Ecomondo (Rimini), 2021**

1-2) See Research and Development chapter on pg. 51 for more details.

# OSAI A.S. MARKET SHARE





# 1.2 PRESENCE IN THE WORLD



The OSAI A.S. S.p.A. Company is headquartered in Italy and can count on three subsidiaries in China, the U.S. and Germany, as well as an extensive global network of distributors and several **manufacturing and commercial partnerships with leading Italian and international operators** that enable widespread coverage of the main geographical areas of interest.

The Company's Headquarters is located in Parella (TO) inside an old paper mill, a structure that boasts a centuries-old architectural history and on which, in addition to several buildings,

two industrial plants stand a few meters away from the old plant for a total area of more than 6,500 square meters. **All production takes place in Italy**, at the historical headquarters in Parella, from where the Company directly coordinates all the commercial activity of the parent company and subsidiaries. OSAI is able to support its customers worldwide even in the phases following the delivery and installation of its products, quickly providing on-site or remote technical assistance through after-sales services, ensuring maintenance of the installed fleet or upgrades on the Systems.



## Cina

Osai Automation System (Dalian) Co., Ltd.  
Dalian, Provincia di Liaoning, Cina



## Germania

Osai Automation System G.m.b.H.  
Monaco, Germania



## USA

Osai Automation System USA Corporation  
Dallas, Texas, USA



## HEADQUARTER

Osai Automation System S.p.A.  
Parella (TO), Italia











## 1.3 VISION AND MISSION

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OSAI believes in a business model that is always able to enhance the creativity and excellence of the People who work there, that can combine both tradition and modernity, inspired by the centuries-old tradition of Italian ingenuity, able to interpret difficulties as challenges, and translate ideas into innovative and sustainable technology.

**The OSAI A.S. S.p.A. Company mission is to consolidate its leading position in the world market of custom-made solutions for the automation of industrial processes, making available to Customers the entire portfolio of technology and experience enriched in more than 30 years of activity.**

The solutions offered by OSAI are aimed at the semiconductor industry, automotive, general electronic component manufacturing, and in the medical field. Each system is customized or created ad hoc according to the customers' needs, and is equipped with the latest technologies, such as Laser systems and artificial intelligence systems.





# 1.4 PHILOSOPHY AND VALUES

"Let us behave in the interest of the Company as if it were our own interest because OSAI belongs to everyone who works there. We work every day with respect for who we are and what we do with passion and dedication, never neglecting details, quality and the pleasure of what is beautiful as well as functional."

"Let us remember that knowledge, experience and skills are personal and corporate assets, and that greater goals are achieved when working together with others in a constructive and collaborative way."

**"[...] Quality, passion, dedication and ambition to achieve increasingly challenging goals are our way of doing "business"**

(taken from the CODE OF ETHICS of OSAI A.S. S.p.A.)

OSAI believes in the importance of communication to people and among people, and in direct and transparent discussion, as innovative ideas and solutions can arise from different positions. The Company is committed to maintaining a climate of trust internally because it is on how it does business that its reputation and that of all those who work there depends.

OSAI also encourages its employees to take a **forward-looking view**, to prepare for tomorrow on time, as **today's choices directly affect the future continuity of the business**.

## CENTRALITY OF THE PERSON

OSAI is committed to valuing the person so that he or she can have the right serenity to express themselves to the fullest. The human and family dimension of the Company, attentive to the necessities of the individual and their needs, aims to **generate a sense of belonging and responsibility in behavior**.

OSAI wishes to give, through work, the opportunity for everyone to **realize dreams, personal and professional aspirations to build their own future**.

To make this philosophy a reality in daily life, OSAI is committed to protecting the mental and physical well-being of its people by valuing quality of life and the right balance between work and private life demands. The Company pays special attention to the organization of work with corporate welfare plans to ensure an adequate, safe and positive work environment with **programs that foster both professional and human growth**.

## INNOVATION AND DEVELOPMENT

OSAI regards innovation as a strategic and indispensable aspect of the Company's future; **ideas and their management are crucial to the long-term success of the company**.

In this regard, OSAI carries out strong internal awareness and promotion activities to encourage, including through incentive mechanisms and targeted communication campaigns, the proliferation, collection and management of initiatives on specific projects of strategic or broad interest, as well as initiatives aimed at research, innovation, product or process improvement and development.

## CUSTOMER FOCUS

Relations with customers are marked by the full satisfaction of their needs and the maintenance of the highest quality standards, with the **aim of creating a solid and lasting relationship inspired by the values of fairness, honesty, integrity, professionalism, transparency, legality and impartiality**. Support in the design phase, innovation in the proposed solutions, and

attention to detail and design are the promises with which the Company presents itself to its customers as a solution provider.

**OSAI aspires to exceed customers' expectations wherever possible**, to become not only a supplier but a reliable and key partner with whom to start their businesses. Therefore, it is committed to **maintaining an open and proactive attitude** through continuous support and listening to requests and reports.

Thanks to this approach, OSAI is able to distinguish itself in its target markets by garnering the favor of its customers, who appreciate the professionalism, expertise of its staff and innovative content of the proposed solutions.

#### PRODUCT SAFETY

OSAI believes that the safety of its products is not only a mandatory requirement to be met, but represents first and foremost **a value to be vigorously pursued so that the products designed and manufactured encapsulate the highest** possible level of safety for the end user.

With this in mind, the company dedicates specifically trained, qualified and experienced in-house personnel, as well as the necessary economic resources to ensure the desired levels of safety.

Every product that leaves OSAI's factories is CE certified according to the Machinery Directive or according to the regulations in force in the destination countries with special attention to requirements for electrical systems (UL/CSA), or other specific certifications, and is the result of a careful process of specific risk assessment.

#### ENVIRONMENTAL PROTECTION

OSAI wants to relate to the Community in which it operates by demonstrating the highest level of responsibility towards the health and safety of local communities, respecting the environment, paying attention to energy resources and preserving natural resources.

Therefore, OSAI is committed to identifying and

keeping under control the impact, real and potential, of its products, processes and activities on society in general and the Community in particular in order to be considered one of the components that bring wealth and value to the area.

For this reason, it invests in environmental protection by promoting the use of renewable energy, improving plant efficiency and paying close attention to research on environmentally friendly technologies.

#### SUSTAINABLE AND SUPPORTIVE DEVELOPMENT

With this philosophy, the OSAI Group sees itself not only as a company that, responding to market laws, maximizes profits and private gain, but as a civil society subject occupying an important role in the community and taking on economic, social and cultural responsibilities.

The OSAI Group believes that promoting sustainable development and a socially-conscious business idea guarantees both greater global competitiveness and the long-term stability of its business.



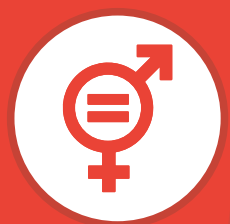




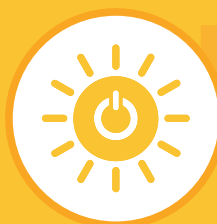
HEALTH AND WELL-BEING



QUALITY EDUCATION



GENDER EQUALITY



CLEAN AND AFFORDABLE  
ENERGY



DECENT WORK AND  
ECONOMIC GROWTH



ENTERPRISES, INNOVATION  
AND INFRASTRUCTURE



REDUCE INEQUALITIES



RESPONSIBLE CONSUMPTION  
AND PRODUCTION

# IMPRESE VINCENTI


III Edizione

INTESA  SANPAOLO

In collaborazione con

BAIN & COMPANY 

 Cerved

 Circularity



GAMBERO ROSSO 

 Microsoft

NATIVA 



# 1.5 AWARDS AND RECOGNITIONS

During 2021, OSAI had the honor of receiving major national awards. It is an honor for management and the entire staff to be able to say that they are part of such a positively recognized entity nationwide and beyond; each of these awards marks an important milestone and is an incentive to maintain and improve each of the aspects covered, which deeply encapsulate the values that the Company has always conveyed inside and outside its plants.

**Imprese Vincenti 2021 - Supply Chain and Territory:** is the project carried out by Intesa Sanpaolo for the enhancement of small and medium-sized Italian companies focused in 2021 on the centrality of the business system "as the engine of the restart" of the country after the long and difficult months of the pandemic; Osai's

strong connection to its territory led the Company to stand out among more than 3500 candidate companies.

**Women Value Company:** the Award, initiated by Intesa Sanpaolo in collaboration with the Belisario Foundation, was dedicated to small and medium-sized public and private companies that distinguish themselves in managing gender diversity with innovative and inclusive development policies.

Always particularly dedicated to the attentions given to its employees, OSAI has decided to emphasize an issue strongly discussed at the national level; gender equality, in fact, is not only composed of numerical balance between women and men, but also passes through concrete actions in the direction of the enhancement of excellence, inclusion, and work-life balance. The award received confirms and further enhances the Company's commitment in this direction.

**Campioni dell'Export 2022:** Promoted and produced by Statista and Il Sole 24 Ore, the Export Champions 2022 ranking was created to tell the stories of innovation, doggedness, sustainability, and resilience of national companies that represent stories of excellence in the world.

The statistic considers Italian manufacturing companies that export their goods abroad, with a turnover between €1.5 million and €500 million in 2020, headquartered in Italy, founded in 2018 or earlier, with production hub in Italy, producing and exporting physical goods, and meeting ex legem reputation requirements.

The recognition has included Osai A.S. S.p.A in 46th place in the ranking of the 200 domestic companies with the highest level of exports of Italian products (84.16 percent).







# 1.6 THE BUSINESS MODEL

OSAI is recognized in the market as a solution provider capable of designing and manufacturing product lines for customers operating primarily in high technology content manufacturing sectors.

The co-development activity between OSAI and the customer enables the design and manufacture of advanced components that in terms of performance result in consistent competitive advantages in cost, reliability and flexibility of manufacture.

OSAI oversees the entire value chain and outsources certain low-value-added processes in order to increase operational flexibility. This ensures the Company to:

- focus on the development stages of technologies and their applications;
- strengthen its role as a globally active player, capable of providing support to its customers along all stages of the production process: order customization, analysis of problems and needs expressed by customers, design and development of turn-key solutions through in-house mechanical, electronic and electro-pneumatic design resources, software analysis and development, assembly, installation, on-site testing, and after-sales support and services.

## TECHNOLOGY AND SKILLS










OSAI has a portfolio of expertise that enables it to be a unique player in the domain of strategic technologies capable of solving complex manufacturing problems related to assembly processes and measurement and control technologies. The following are the operational functions performed by automation systems within the production cycle.

Left:  
**Welding of lithium-ion battery packs**



## TECHNOLOGY AND SKILLS

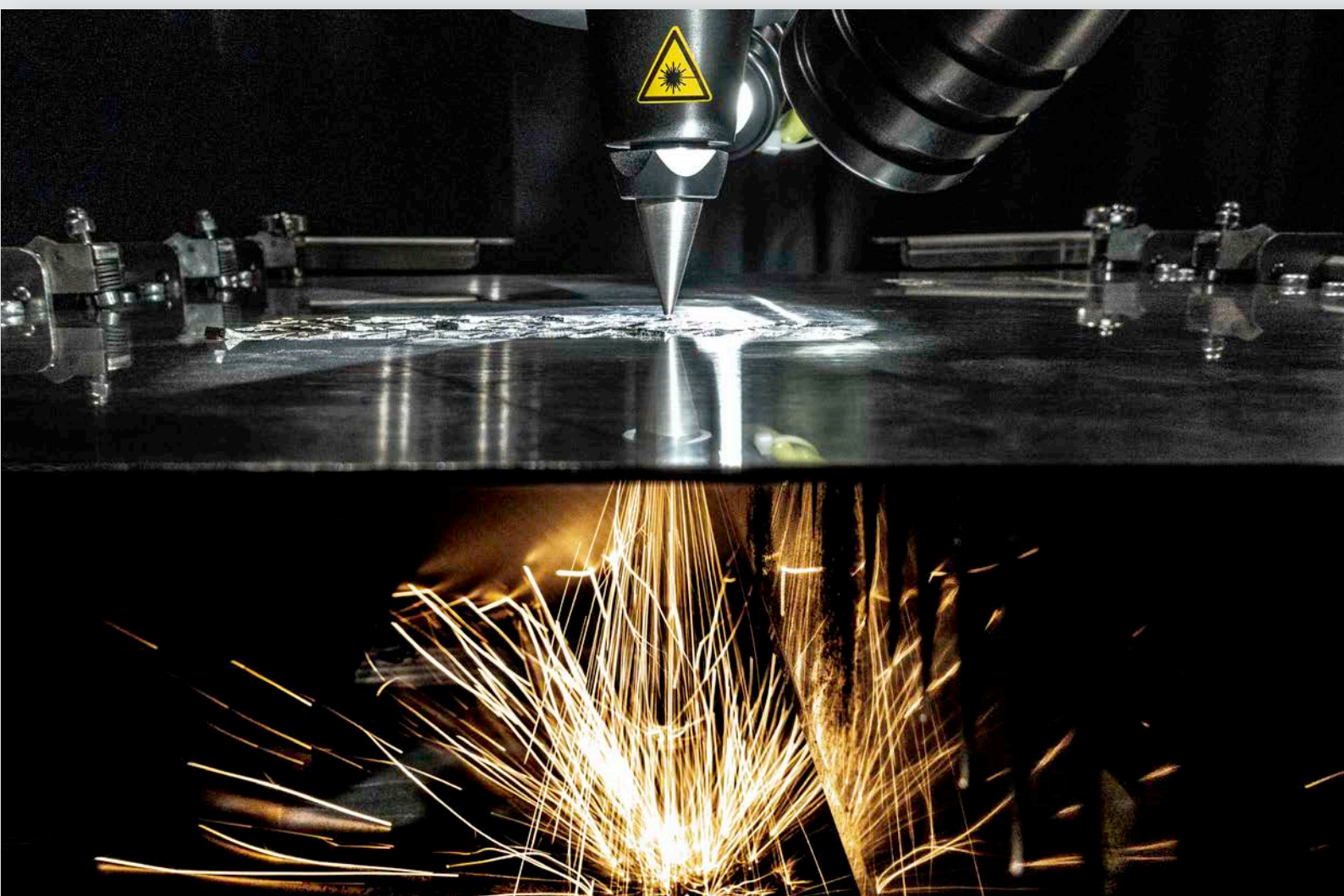
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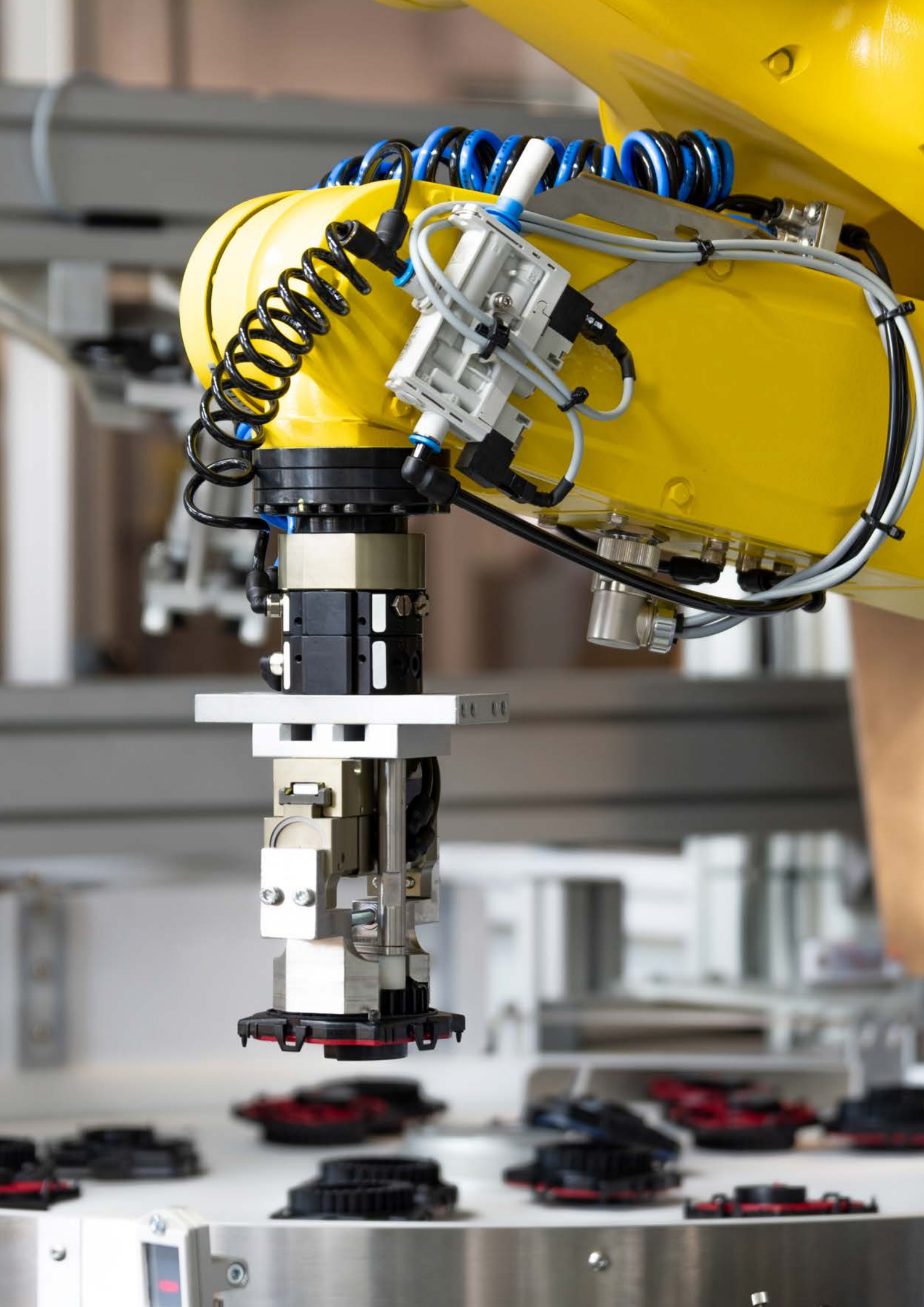
es and measurement and control technologies. The following are the operational functions performed by automation systems within the production cycle.

TECHNOLOGICAL SKILLS		DESCRIPTION
(Micro) Installation / (Micro) Assembly		Techniques to assemble and test components and systems of varying sizes, including small ones
Laser Marking		Techniques used to permanently mark a component in order to ensure traceability in the production process steps
Laser Cutting		Set of techniques for precisely cutting different types of materials (metal, plastic, etc.).
Router / Laser depaneling		Set of techniques that allow for mechanical or Laser separation of even flexible printed circuit board (PCB) panels
Soldering / Selective Laser Welding		Soldering technique used to join different components on a single integrated circuit
Laser trimming		Removal, using Laser technology, of residual materials on integrated circuits/electronic boards and for calibration
Movement and (micro) handling / Handling		Ability to handle small and medium-sized components and systems on production lines quickly and highly accurately, even with automatic vertical feeding systems
Stimulation and testing (also burn-in)		Techniques by which different stimuli (signal, power, temperature, pressure etc.) are transferred to condition a given sensor, mainly for the purpose of determining its reactions in a testing environment, including developing complex lines for testing "power modules"
Software		Interface design and complete software architecture for managing the individual machine or lines



TECHNOLOGICAL SKILLS	DESCRIPTION
<b>Stimulation and testing (also burn-in)</b> 	Techniques by which different stimuli (signal, power, temperature, pressure etc.) are transferred to condition a given sensor, mainly for the purpose of determining its reactions in a testing environment, including developing complex lines for testing "power modules"
<b>Artificial Vision Systems (O.I.S. - Osai Inspection System)</b> 	Custom-made development of optical-mechanical assemblies and vision software recipes for the purpose of integrating on OSAI Systems of component verification stations for the electronics, automotive and medical sectors. This is possible through the use of optics, cameras and illuminators specifically chosen and configured to give adequate and stable emphasis to the details of the particular items to be processed. An additional plus is Osai's proprietary software, which ensures that full intervention is possible both in case of reliability problems and new implementations in case of product change.







# PRODUCT DIVISION

## AUTOMATION & ROBOTICS

The division has been around since OSAI's inception and initially provided mainly customized lines for **assembly and testing in the automotive component industry**. Currently, the designed solutions are being used particularly in the advanced automotive sector, for the efficiency of existing production processes, thus reducing their costs and production time. The **focus is on Light Automation**, that is, automation of small and medium-sized components and systems where **OSAI has achieved a high level of specialization**. The "machine-types" produced by this division include, in particular, manual or automatic workbenches and units, tables combining different operations, complete semi-automatic lines, flexible modules and vertical warehouses.

### STANDARD AND CUSTOM PRODUCTS



Workbenches  
and work units



Complete assembly  
lines



Rotary tables

### TARGET CUSTOMERS

Manufacturers of high-tech components for the mobility industry

### MAJOR MARKETS



Automotive



Green  
Mobility



Medical









## PRODUCT DIVISION

### ELECTRONIC

The division was established in the early 2000s thanks to the capabilities developed by OSAI over time, which resulted in the **"Neo" platform**, the first assembly solution aimed at the electronics industry. "Neo" represents a standard product line with customization options and designed **to provide the electronics industry with a wide range of systems capable of improving the efficiency of certain processes** such as marking, assembly, and separation of electronic boards. The machines are primarily aimed at manufacturers of electronic boards and integrated circuits (stand-alone or integrated on proprietary solutions). The "type machines" produced by this division include, in particular, Laser marking machines, complete assembly systems, machines for mechanical and PCB (printed circuit board) panel separation, and Laser separation of PCB panels including flexible PCB panels.

#### STANDARD AND CUSTOM PRODUCTS



PCB Laser  
Marking



Assembly



Laser  
Depaneling



Router  
Depaneling

#### TARGET CUSTOMERS

Manufacturers of electronic boards  
and integrated circuits

#### MAJOR MARKETS



Telecommunications



Home  
consuming



Green  
Energy



Medical



Automotive







# PRODUCT DIVISION

## SEMICONDUCTOR

In 2011, thanks to the skills and successful experience gained in the automation and electronics industry, OSAI develops **new solutions dedicated to the semiconductor sector**, which is rapidly expanding thanks to the technological progress fostered by large multinationals that manifest the need to find partners in the market that can respond to their needs with flexibility and speed.

During 2013, the first machine of the "test handler" family is delivered. These solutions are for the handling and testing of MEMS (Micro Electro-Mechanical Systems) sensors through one or more stimuli (acoustic, movement, electrical contact, pressure, etc.) defined based on the specific application for which the sensors are needed. The different test handlers produced have a common platform at their base that allows different stimuli to be transferred depending on the type of sensor to be treated. Induced stimuli can be signal, power, temperature (e.g., multi-temperature calibration up to three different temperatures), pres-

sure etc. The realized solutions are mainly aimed at semiconductor and sensor manufacturers. The wide variety of multi-socket and multi-pick tools developed by OSAI over the years allows customers to manage different formats in one solution.

**The division has also developed complex custom-type lines for power module testing** (so-called "power modules"), composed of the integration of standard or customized systems belonging to other divisions, the result of the convergence in new and innovative products of experience and technologies gained in different contexts.

The "type machines" produced by this division include, in particular, machines for testing and calibration of MEMS sensors and power devices; machines for final testing and acceptance of power modules; burn-in-test automation systems with loading, unloading, pre-testing and visual inspection functions; systems for automatic assembly of power modules, including Laser marking; and compact conditioning chambers.

### STANDARD AND CUSTOM PRODUCTS



MEMS Test Handler



Burn-In



Test handler for power modules



Power devices packaging

### TARGET CUSTOMERS

Semiconductor Manufacturers

### MAJOR MARKETS



Automotive



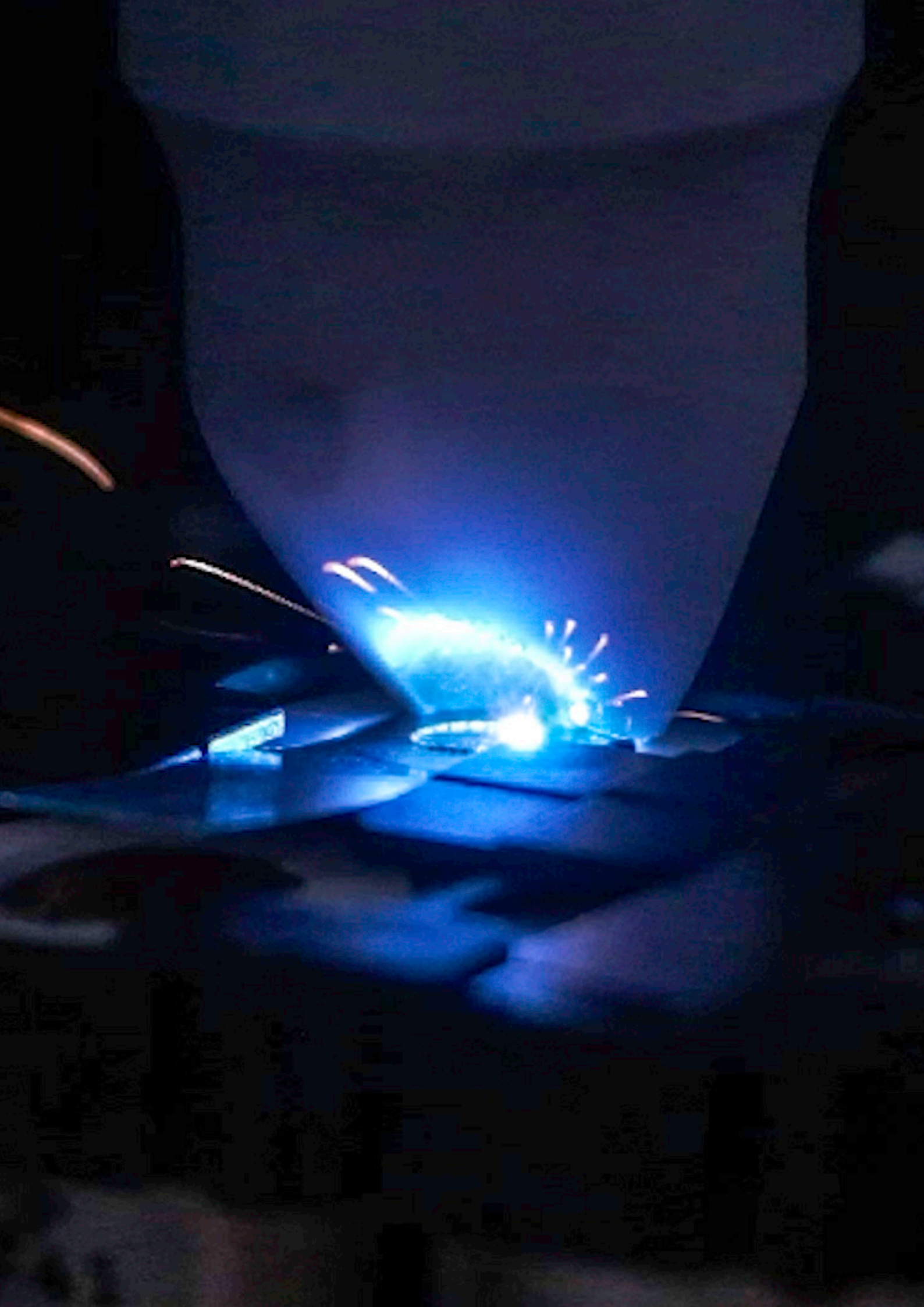
Green Mobility



Telecommunications



IoT





# PRODUCT DIVISION

## LASER MICROMACHINING

The division was established in the late 1990s with the purpose of **providing industrial Laser and micromechanics applications originally to the Automotive industry**. The solutions were developed from experience gained in industrial Laser applications especially in cutting, welding, drilling, and marking of small metal or plastic components that require extreme precision for processing the final product such as welding by Laser of pacemaker shells. To date, the production of standard and special solutions addresses a **multiplicity of sectors** (more than 500 applications have been made, especially in the medical field), which OSAI wants to reach and satisfy in order to offer its customers an even greater range of products, to be present across the market and achieve greater diversification. The "type machines" produced by this division include, in particular, machines for Laser marking, Laser cutting, and welding of different types of components (shapes and materials) even for large-scale production.

### STANDARD AND CUSTOM PRODUCTS



### TARGET CUSTOMERS

Manufacturers of micromachining, with a need for a high level of precision, even for small components

### MAJOR MARKETS



Jewelry and fashion



Medical





## AFTER SALES

The company offers its customers after-sales service for installed products. The Service division provides customers with a range of services including the sale of spare parts, technical support and repair of on-site systems, routine and extraordinary maintenance services, production consulting, and training. In addition, the Company, through a network of service providers, as well as personnel in its foreign branches, **provides comprehensive and global support.**

The use of new technologies and digitization makes access to the division's services simple and immediate.

The online service platform serves as a single, priority channel for all needs related to Osai's after-sales service and ensures a **quick and efficient response to customer inquiries.**

Thanks to a simple and intuitive interface, the customer accesses a restricted area, within which they have the possibility to request assistance, monitor the status of requests and access content or communications dedicated to them, made available by the OSAI After Sales staff.

The Portal Service for Osai A.S. S.p.A. enables effective management of service requests from the Parella (TO) Headquarters, but the Compa-

ny cannot do without a widespread presence of technicians in the area to ensure rapid response times in line with specific contractual agreements. The following table shows the consistency of Osai's technicians and partner companies for technical support at the installation site.

Additional and innovative tool available to OSAI and its Customers is Osai Augmented Support Technology, which is the set of technologies adopted and developed for effective remote support through AR (Augmented Reality), which is now possible through the use of:

- **Tablets, smartphones, and smart-glasses:** a new way of providing customer service and support through the use of devices that enable technical staff to operate autonomously.
- **Dedicated software and App:** OSAI technicians are able to guide the operator on site, thanks to projections and visual cues transmitted directly to the devices.
- **Osai Augmented Support:** field staff will have the ability to activate an audio/video streaming session and share their views with the operator remotely.

REGION	COUNTRY	RESIDENT ENGINEERS*	SERVICE PARTNER**
APAC	China	4	-
	Taiwan	-	1
	Philippines	-	1
	Thailand	1	-
EMEA	Malta	-	1
	Morocco	-	1
	United States	-	1
	Mexico	1	-

\* Technicians directly employed by OSAI A.S. S.p.A. and residents of the country indicated

\*\* Companies located in the indicated country with which contracts have been signed for assistance on behalf of OSAI A.S. S.p.A.

