

MECHATRONICS AND ROBOTIC CELLS

Robotics solutions that empower productivity, safety, and efficiency through seamless human-machine collaboration



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COMPANY OVERVIEW

About Polytec

Polytec is an Italian company, part of BM Group, with decades of experience in engineering **electrical and automation systems**.

With over **200 employees** and offices in Italy, USA, Mexico, Brazil, and South Korea, Polytec provides **turnkey systems** and **custom technologies** for manufacturing, process industries, and infrastructure, combining electrical design, control systems, robotics, and industrial software.

Thanks to a **multidisciplinary approach** and in-house expertise, Polytec supports customers throughout the entire lifecycle of an automation project: from consulting and design to installation, commissioning, and after-sales service.



MISSION

Polytec designs and produces unique solutions through **innovation** and **technology**. Its **people**, with their ideas, skills, and passions, support customers and their needs. The company aims to be a global and responsible organization, with solid roots in our local community and in the values it represents: sustainability, environment, and ethics.

Thinking about the future is human and gives meaning to our lives. Developing technologies or methodologies for human-machine collaboration is our way of approaching the future in a new paradigm that places **quality of life** and environmental **sustainability** at the centre of industrial processes.

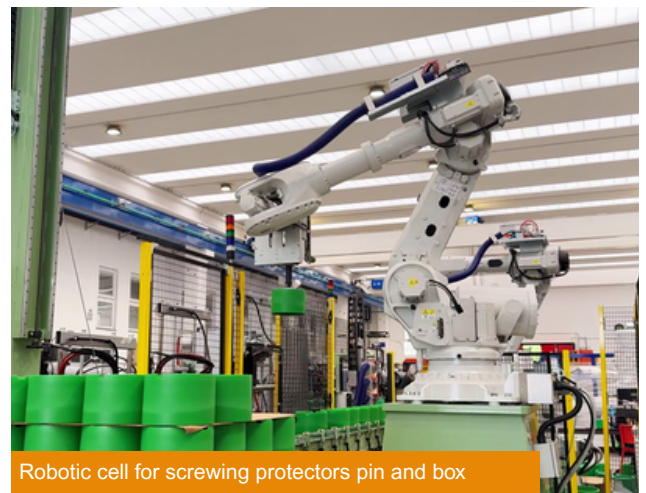
VISION

OUR EXPERTISE

Polytec believes that the future of industrial production lies in the perfect balance between **human** intelligence and **robotic** precision. Its robotic systems are designed to enhance **performance**, reduce risks, and optimize workflows across a wide range of industries, with a strong focus on steel, aluminum, and other **heavy-duty applications**.

Polytec integrates in-house skills across:

- Robotics & mechatronics integration
- Turnkey solutions
- Electrical engineering
- Industrial automation
- Industrial control software
- Revamping & retrofit



Robotic cell for screwing protectors pin and box



Commissioning of a robotic cell



Electrical and automation equipment

CERTIFICATIONS

ISO 9001/14001
ISO 50001 Energy
ISO 45001 Safety
UL 508A/CSA 22.2

FROM CONCEPT TO COMMISSIONING

Polytec robotic systems are designed and developed based on **customer-specific requirements**. Every application starts with a feasibility study, supported by 3D laser scanning to accurately map the operating environment and ensure a perfect fit.

Through these advanced simulation tools, we model robotic cells and virtually test operations to:

- Emulate real-life conditions
- **Optimize** motion planning
- Debug robotic programming
- Validate **performance** before installation



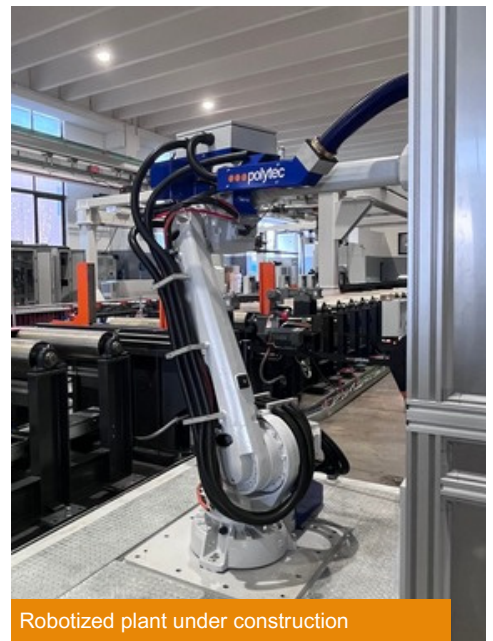
A reliable technological partner

This **simulation-first approach** saves time and cost, while increasing confidence and transparency. The development of robotic and mechatronic systems is not just about delivering technology it's about designing solutions that perfectly **align** with customer goals.

Polytec solutions are designed to adapt to **complex and demanding production environments**, integrating seamlessly with existing infrastructure and evolving toward Industry 5.0. This new paradigm emphasizes not only efficiency and digitalization, but also the **enhancement of human well-being**, promoting collaboration between people and machines in a safe, ergonomic, and smart workspace.



Multi-robot tube bending cell



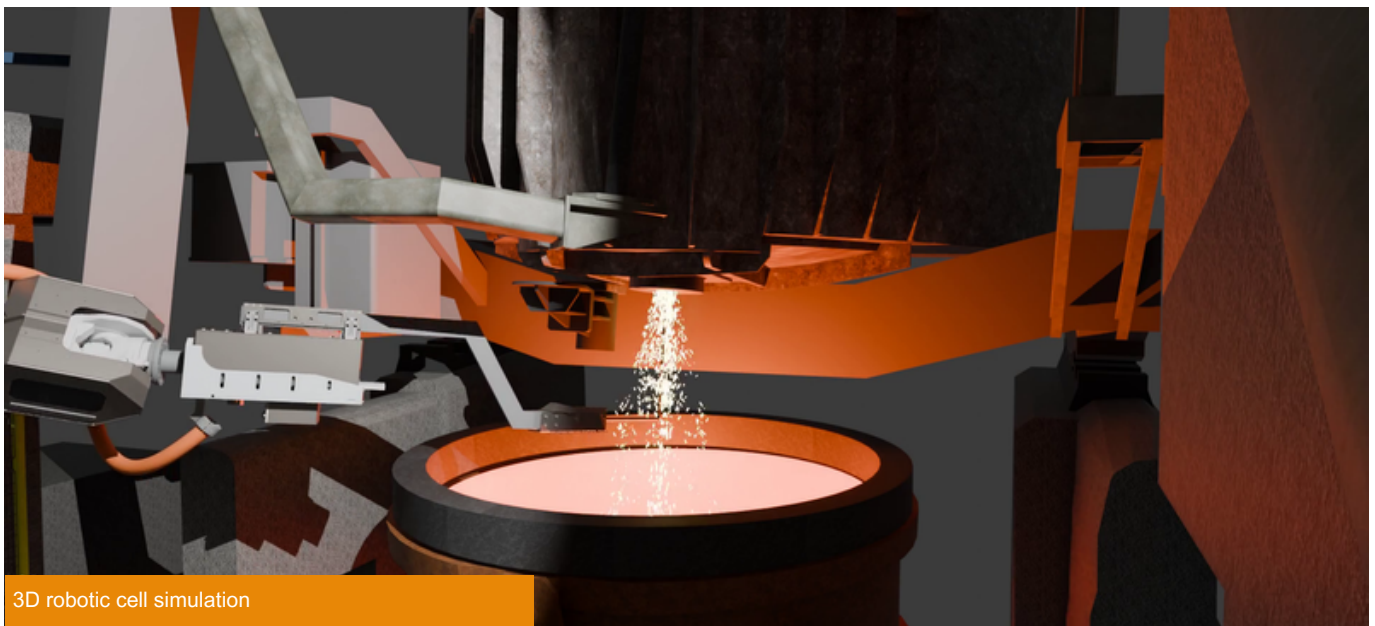
Robotized plant under construction

Assessment-driven design

Polytec's business strategy is rooted in **customer satisfaction**. Every robotic solution begins with a detailed assessment phase, which includes:

- 3D spatial data acquisition using laser scanning
- On-site evaluation of constraints, environment, and layout
- Identification of potential impacts and integration needs

This approach allows our **engineering** teams to anticipate challenges, **tailor** the design, and make strategic decisions early ensuring the best outcome in terms of performance, reliability, and ROI.



3D robotic cell simulation



3D robotic cell simulation

●●● In-house engineering & assembly

All robotic systems are engineered, built, and assembled in-house at **Polytec's facilities**. During this phase, we:

- Recreate actual environmental conditions
- Conduct internal testing and full integration trials
- Perform Factory Acceptance Tests (FAT) with the customer on-site
- Fine-tune systems for real-plant readiness

We integrate solutions using leading industrial brands, including ABB and Fanuc, to ensure maximum reliability and performance. Customers are invited to **test and validate** their systems before delivery, ensuring full transparency and satisfaction.



Marking and punching robotized portal



Manual shroud manipulator testing



End-of-arm custom tool assembly

●●● On-site commissioning

Installation and start-up are directly supervised by Polytec under the guidance of an assigned Project Manager, who coordinates:

- System installation and integration
- Cold and hot commissioning
- On-site configuration and final testing
- Operator and maintenance team training
- Technical documentation and certifications

Thanks to plug-and-play logic, our robotic cells are quickly deployable in both new and existing lines, with minimal impact on production.



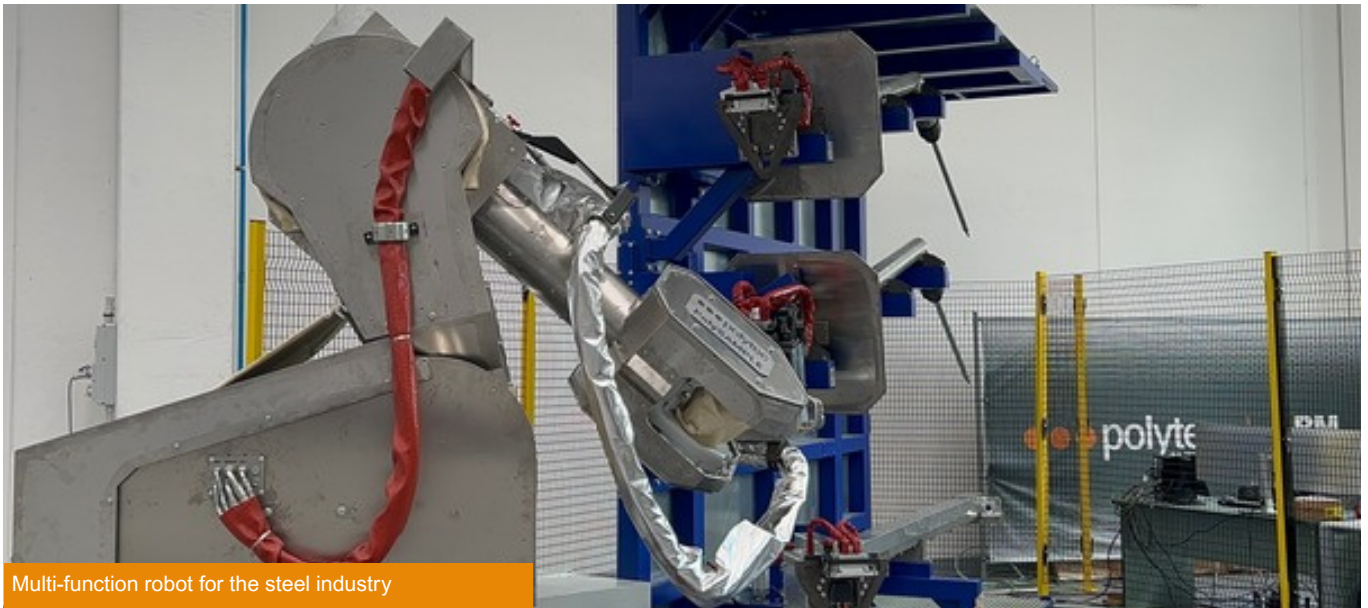
Solar pile production plant



Multi-robot tagging system by Polytec

●●● Lifetime support & continuous improvement

Polytec provides ongoing **technical support**, **remote assistance**, and **user training** as part of the commissioning and post-sales services. We believe that constant customer engagement leads to better systems and better results.



Multi-function robot for the steel industry

●●● Service department

Polytec Service ensures **smooth and reliable** operation of automation systems and industrial robots through efficient on-site and remote support. Thanks to a network of **local technicians worldwide**, assistance is always close at hand, guaranteeing prompt response and minimal downtime.



WHY CHOOSE POLYTEC AS YOUR EPC PARTNER?

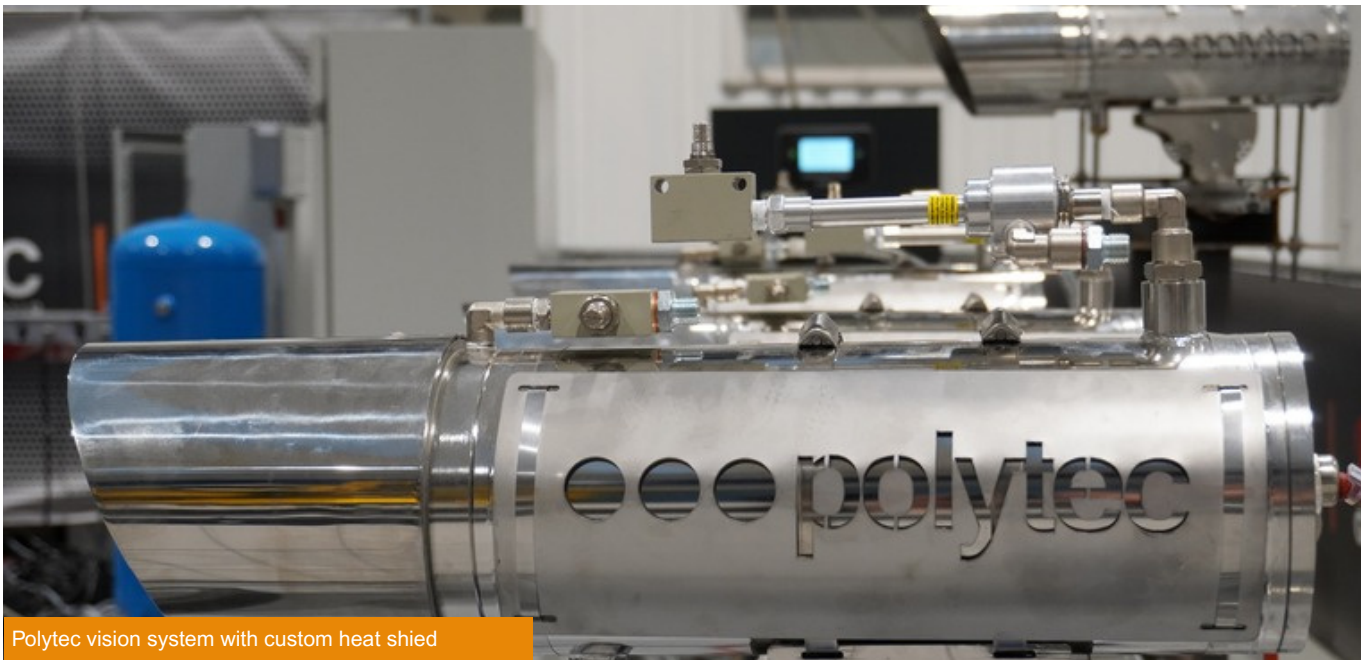
- One-stop **partner** for full automation scope
- **Cross-sector experience** in critical production environments
- **In-house** engineering, software, and field support
- Focus on **safety, efficiency, and sustainability**
- Proven **track record** in delivering on time and on budget

AI & INDUSTRIAL VISION

Counting on a dedicated AI and Machine vision systems department, Polytec is advancing robotics through **AI-driven systems** and **computer vision**, enabling:

- Real-time defect detection
- Automatic quality assessment
- Self-adjusting robotic behavior
- Full traceability through data capture

These innovations are supported by secure data processing platforms and IIoT architecture designed to help customers compete globally and transition toward Industry 5.0.



Polytec vision system with custom heat shield

Functionality

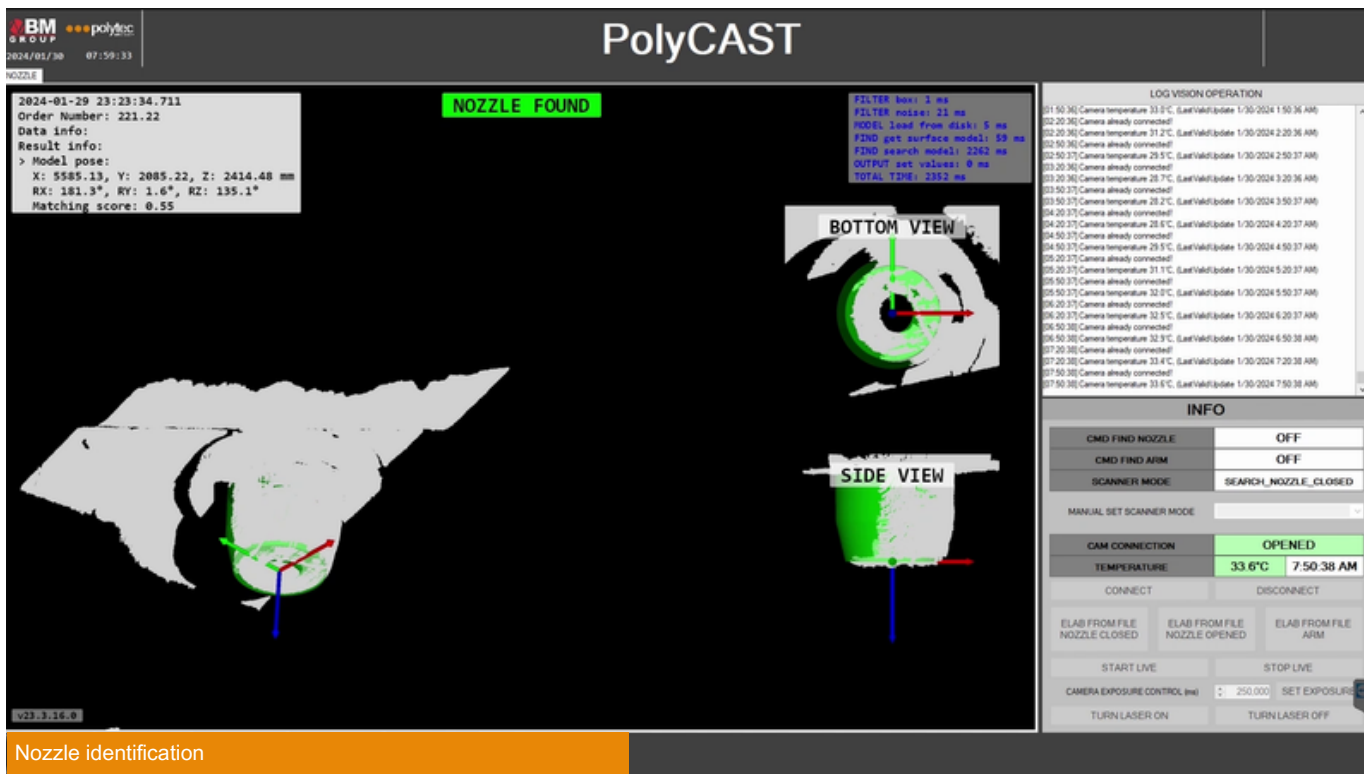
- 2D/3D vision for **object detection**, positioning, and dimensional measurement
- AI-based image processing for **defect detection**, pattern recognition, and classification
- Laser profiling for **shape and surface analysis** in dynamic environments
- Real-time **feedback** to robotic controllers for adaptive path correction and precision handling

Applications

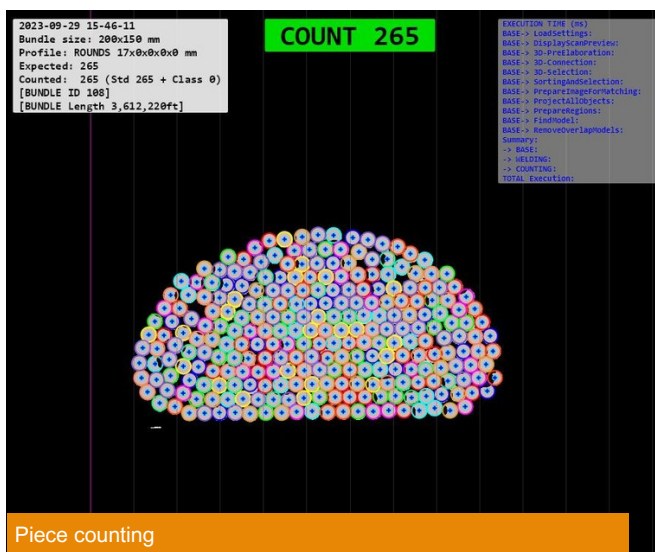
- Component localization and orientation for **pick & place**
- **Quality inspection** (e.g., cracks, deformation, surface defects)
- **Barcode and label reading**, verification, and tracking
- Adaptive robotic **welding, assembly, and marking**
- **Measurement and sorting** in harsh environments

Technical benefits of vision systems

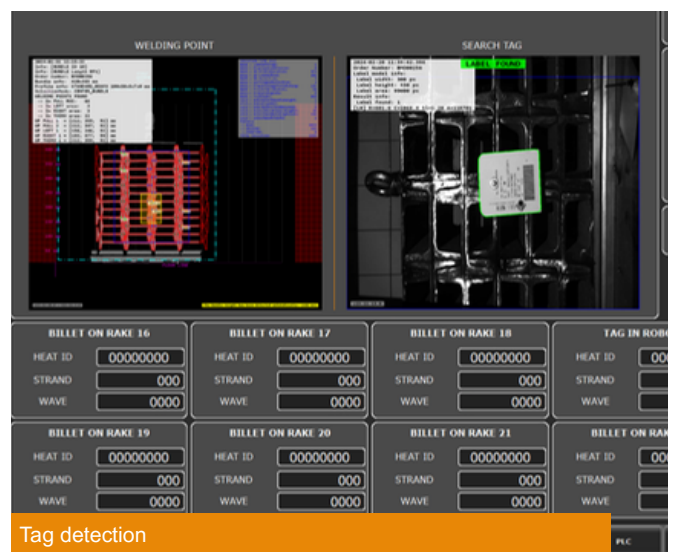
- Increased automation **flexibility** in unstructured environments
- Reduced need for mechanical positioning systems
- Higher **repeatability** and accuracy in task execution
- **Seamless integration** with PLCs, SCADA, and MES systems
- Support for data collection and IIoT analytics



Nozzle identification

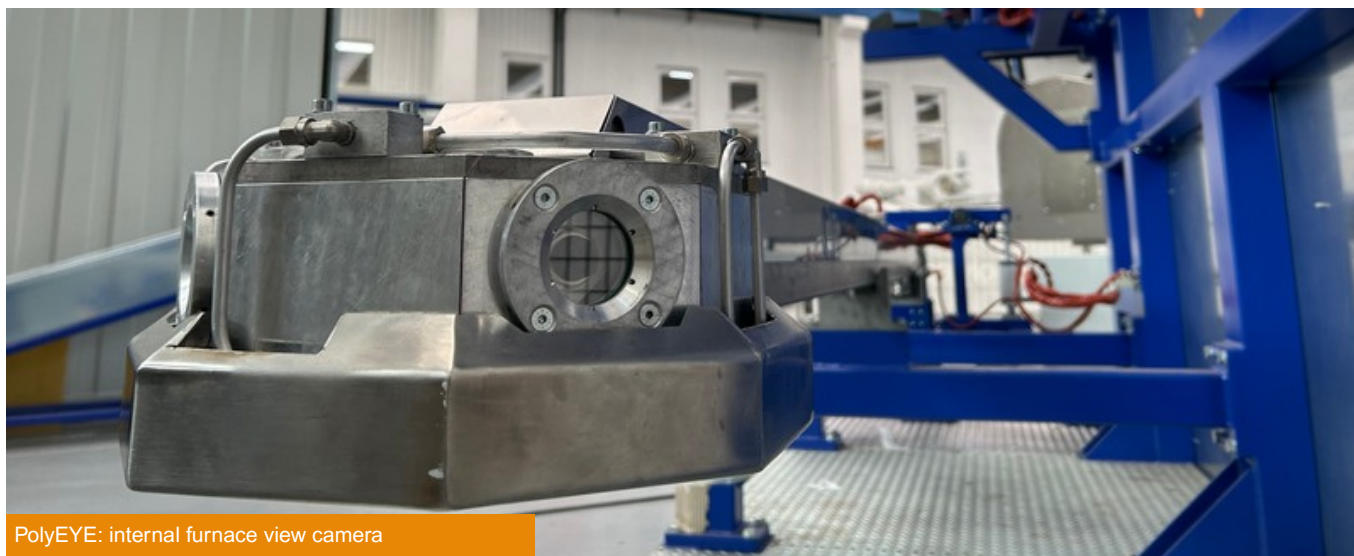


Piece counting

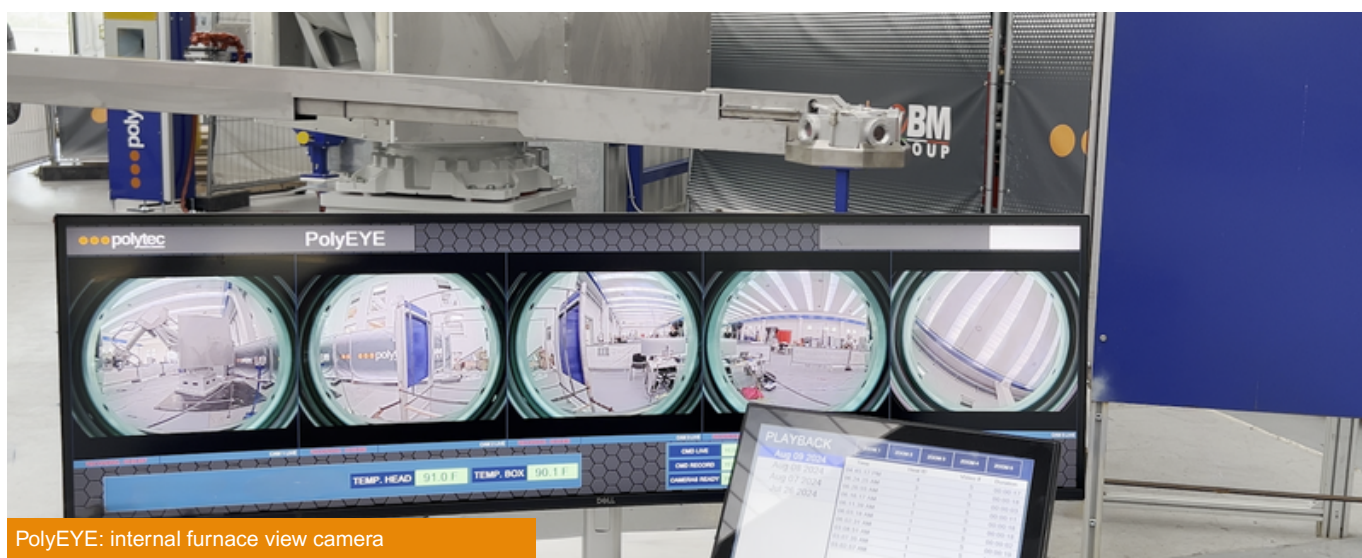


Tag detection

PolyEYE/BEESAFE® is an advanced vision system developed by Polytec and Tenova, designed to operate inside furnaces at **extremely high temperatures**, with powerful image processing to deliver precise and accurate data.



PolyEYE: internal furnace view camera



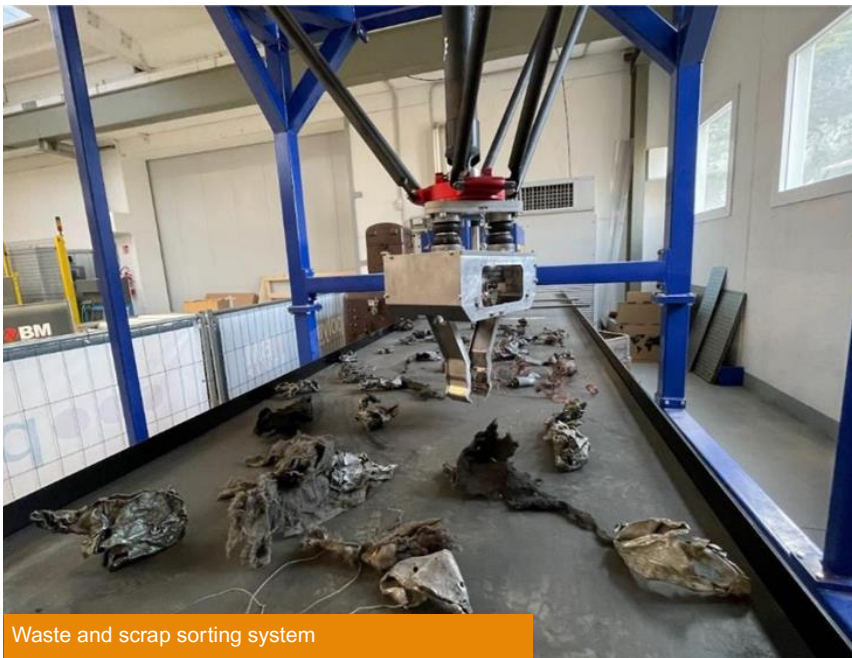
PolyEYE: internal furnace view camera



PolyEYE: internal furnace view camera on site

POLYTEC'S R&D DEPARTMENT

Polytec continuously invests in **research and development**, in close cooperation with leading universities and research centers, to deliver industrial solutions that are not only cutting-edge, but deeply aligned with the needs of tomorrow's factories.



Waste and scrap sorting system



R&D projects



Oxygen lancing system - patented

MARKETS WE SERVE

Polytec offers a comprehensive range of automation solutions tailored for critical sectors such as **steel and non ferrous, ceramics, paper, automotive, marine**, each engineered to perform reliably in high-temperature, high-dust, and high-risk industrial environments, where robust design meets smart control.

●●● Steel industry and molten metal

- Temperature and sampling
- Quality control
- Skimming and cleaning
- Marking and tagging
- Handling and palletizing
- Bending
- Welding
- Tailor made mechatronic projects



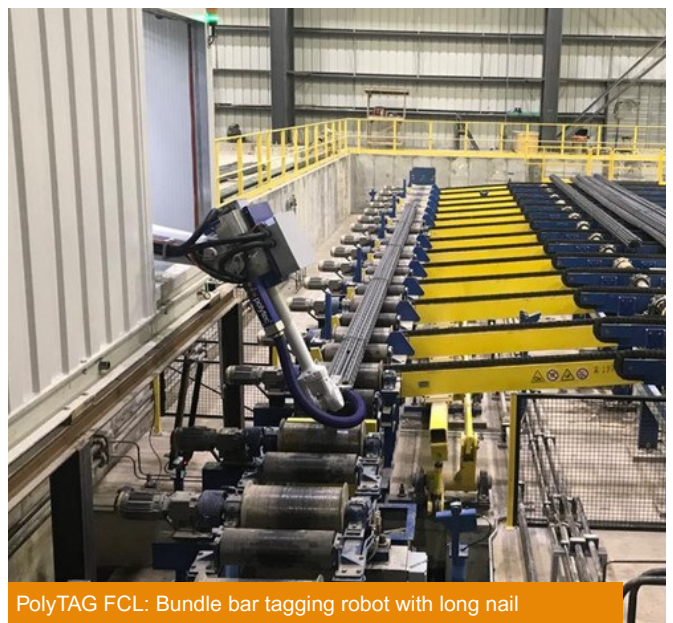
PolySAMPLE: Sampling robotic solution for foundries



PolyCAST: Multitool robotic solution for caster operations



PolyTAG BLE: Robotic cell for automatic hot billet tagging



PolyTAG FCL: Bundle bar tagging robot with long nail

●●● Steel tube and pipe production lines

- Tube marking
- Bundle tagging
- Protective cap application



PolyMARK T: Tube tagging robot



PolyPRO: Robotic cell for screwing protectors pin

●●● Aluminium and copper

- Maintenance and filter replacement
- Handling and palletizing
- Automated bar loading
- Scrap and waste removal
- Tagging and marking
- Bundling and strap removal



PolyTITAN: Robotic cell for removing coil waste from the rolling mill unwinder



PolyFILTER: Plate removal and replacement in the CFF robotic cell

●●● Ceramics and stone

- Bin picking solutions
- Palletizing and depalletizing robots
- Handling and bundling robotic systems



PolyMOVE Robotic cell for ceramic slab picking



PolyMOVE Robotic cell for ceramic tile handling

●●● Marine and naval

- Robotized welding and assembly solutions
- Handling systems



Robotized welding portal

Chemical

- Robotic cells for cylinders handling



PolyMOVE: Robotic cell for gas cylinder handling

Pulp and paper

- Robotic cells for dewiring



PolyDEWIRING: Cellulose bale dewiring robot

Plastics and rubber

- Palletizing and depalletizing robots
- Handling and bundling robotic systems



PolyMOVE: Robotic cell for box palletizing



PolyMOVE: Robotic cell for tube bundle handling

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**FUTURE
INSIDE**



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