CP TECHNOLOGY

MOULDS, CAROUSELS AND ROBOTICS FOR TUNNELING


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CP TECHNOLOGY
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CP Technology: Innovation, Automation, and Reliability for the Infrastructure of the Future

In the field of large-scale infrastructure projects, innovation is not an option—it is a necessity. CP Technology stands at the forefront of this transformation, bringing a revolutionary approach to the tunneling and infrastructure sectors through the integration of automation and robotics.

With over thirty years of experience, CP Technology has established itself as a leader in designing and manufacturing segment molds for TBM, carousel plants, and specialized equipment for tunneling. What sets the company apart is its hands-on approach, which starts directly at the construction site: by maintaining constant communication with industry professionals, CP Technology identifies critical challenges and real needs, turning them into innovative and efficient solutions.

By developing advanced technologies, CP Technology provides its clients with cutting-edge tools that optimize production processes, enhance workplace safety, and reduce construction times. The flexibility of our solutions allows us to adapt to the specific requirements of each project, offering tailor-made services that ensure quality and reliability on a global scale.

Our extensive experience in high-profile projects across Europe and overseas is a testament to our commitment to building modern, safe, and sustainable infrastructure. We are more than just a supplier—we are a strategic partner, guiding our clients through every phase of their project, from conception to completion, with the ultimate goal of shaping the future of large-scale construction.

Trust CP Technology: technology, innovation, and expertise at the service of tomorrow's infrastructure.

Giorgio Klaus Pini

MOULDS

In the **tunneling industry**, the production of TBM segments requires extremely tight tolerances, within the range of tenths of a millimeter. For this reason, segment **moulds** are highly sensitive equipment, where construction precision is essential to ensure the final quality of the precast segments.

CP Technology designs and manufactures its moulds in-house, leveraging extensive industry experience and maintaining strict control over the entire production process. Every stage of construction is meticulously monitored to guarantee not only compliance with geometric specifications but also long-term **reliability** and **efficiency**, ensuring seamless and precise operation in all conditions. The construction tolerances of CP Technology's segment moulds strictly follow the guidelines set by the International Tunneling and Underground Space Association (ITA), ensuring compliance with industry standards.

For stationary production or carousel

When moulds are designed for a carousel plant, they can be effectively optimized with a universal lid, hydraulic opening, electrical vibration, and special bolts for robotic handling.

Moulds can be **custom-designed** based on Client's preferences and on production requirements:

Mechanical or Hydraulic

A hydraulic opening minimizes the risk of injuries and provides a better lock for the moulds before pouring.

Pneumatic or Electrical vibrators

While a compressed air system can be easily implemented at a precast site, electrical vibration allows for the setting of vibration recipes, controlling both the duration and frequency of vibration for each installed vibrator.

Fixed lids or Universal removable lid

Fixed lids are spring-operated, designed to be lightweight and easily lifted by two people.
A universal lid has a geometry that fits all mould types within the same ring and is the preferred option in a carousel plant.

With integrated or removable trolley

A removable trolley allows different moulds to be used within the same carousel plant simultaneously, enabling the production of various tunnel projects.
This is what we call Universal Carousel.

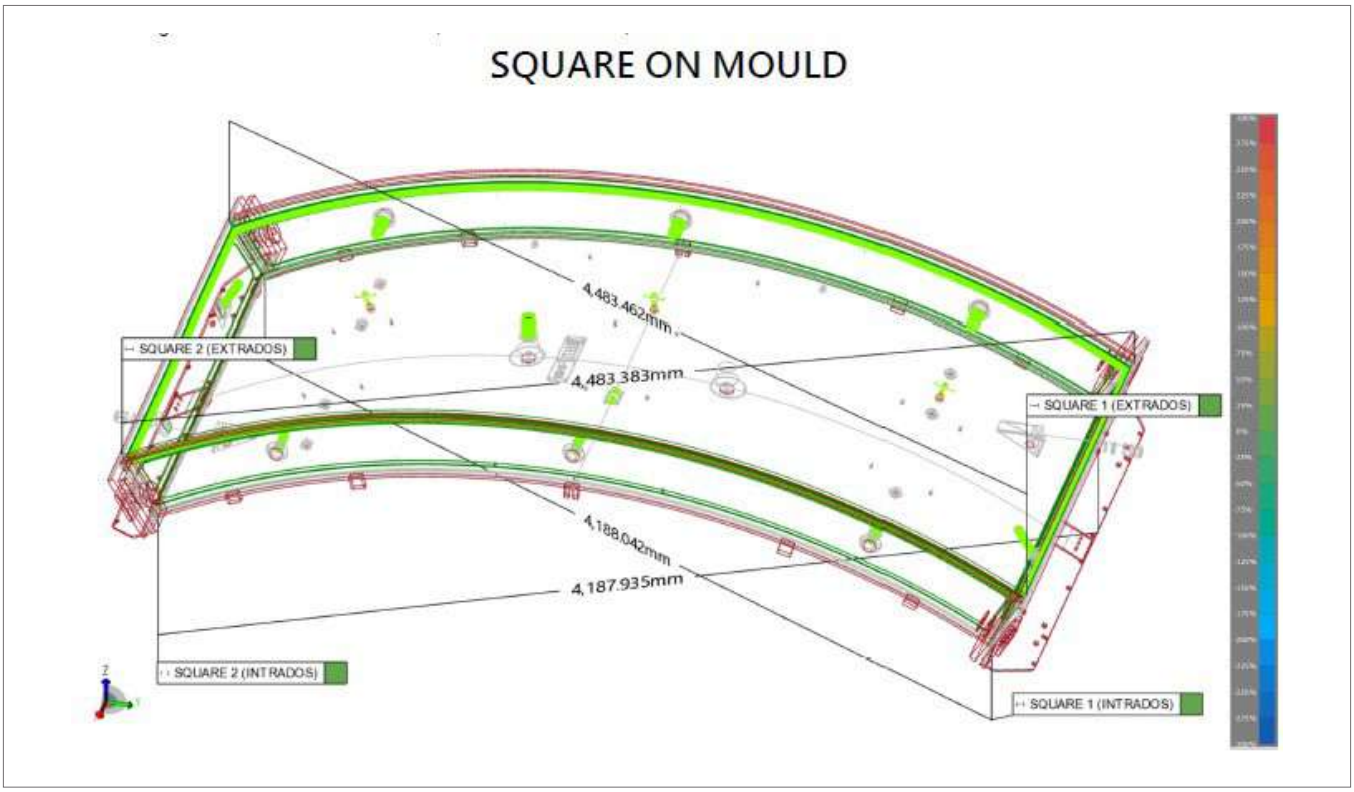
MOULD SURVEY

A fundamental step in ensuring the perfect construction of a segment mould is the Factory Acceptance Test (FAT), which is carried out directly in the workshop before delivery. During this phase, CP Technology uses advanced **measurement tools**, including a 3D laser scanner, to verify with maximum precision the geometric conformity of the mould.

The **3D laser scanning** analysis allows for extremely accurate checks on the flatness of the internal faces of the mould, as well as precise measurements of angles, diagonals, and lengths. This process ensures that the mould perfectly matches the original design specifications and complies with the required project tolerances.

At the end of the measurement process, CP Technology provides the customer with a detailed **report** containing all dimensional data, ensuring transparency and traceability of the construction process. Additionally, a technical documentation package is provided, including instructions for maintenance and periodic checks of the mould during the production cycle, ensuring consistent performance and long-term operational reliability.

To guarantee the highest level of accuracy, CP Technology relies on highly **specialized technicians**, experts in the use of cutting-edge measuring instruments and data analysis. This activity can be performed both at CP Technology's facilities and directly on-site at construction sites or third-party plants, providing flexibility and a tailored service based on the client's needs.



Measurement tests are also performed on the **trial ring** before starting the actual production of the segments. CP Technology technicians assist the Client in these activities, providing all the necessary accessories and tools for the pouring and assembly of the master ring.

This process can be carried out either in our workshop or on-site. Once cast, the master ring can also be compared to the **virtual ring** obtained through mould measurements.

CAROUSEL

The increase in labor costs and the growing difficulty in finding skilled workers are driving the tunneling sector towards an increasingly advanced industrialization process. In this context, the **carousel precast plant** represents the most efficient solution for the production of segments for medium-length tunnels, ensuring an automated, repeatable, and highly productive process.

One of CP Technology's key strengths is its ability to develop **highly customized** carousel plants, designed in close collaboration with the client. Each facility is meticulously studied, analyzing the specific needs of the project and optimizing the layout to **maximize production efficiency** and **logistics**. The plant configuration is adapted based on the factory's dimensions, the required number of moulds, and the production workflow, with the goal of reducing time and material handling inefficiencies, **improving product quality**, and **lowering operational costs**.

Over the years, CP Technology has supplied numerous carousel plants in Italy and worldwide, developing tailored solutions that maximize productivity and ensure a smooth and efficient operation. The company's extensive experience and use of **cutting-edge technologies** enable it to address the increasingly complex challenges of the industry by offering flexible and scalable solutions that adapt to diverse production needs.

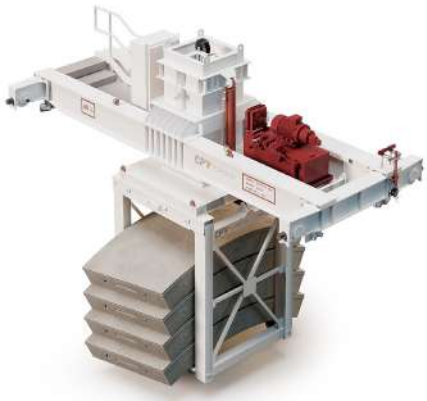
A carousel plant consists of several key components that enable the automated and efficient management of all production phases:

PRESTORAGE CAROUSEL

Automated feeding systems that ensure precise and controlled distribution of concrete into the moulds, optimizing the filling process and minimizing material waste.

CURING SYSTEM

Equipment designed to maintain optimal temperature and humidity conditions, ensuring uniform and controlled curing of the segments in compliance with required quality standards.



SEGMENT HANDLING MACHINES

Automated systems for the internal transportation of segments, reducing manual handling needs while improving safety and production efficiency.

WASHING STATIONS

Dedicated areas for mould cleaning and preparation, ensuring high-quality finished segments and extending mold lifespan.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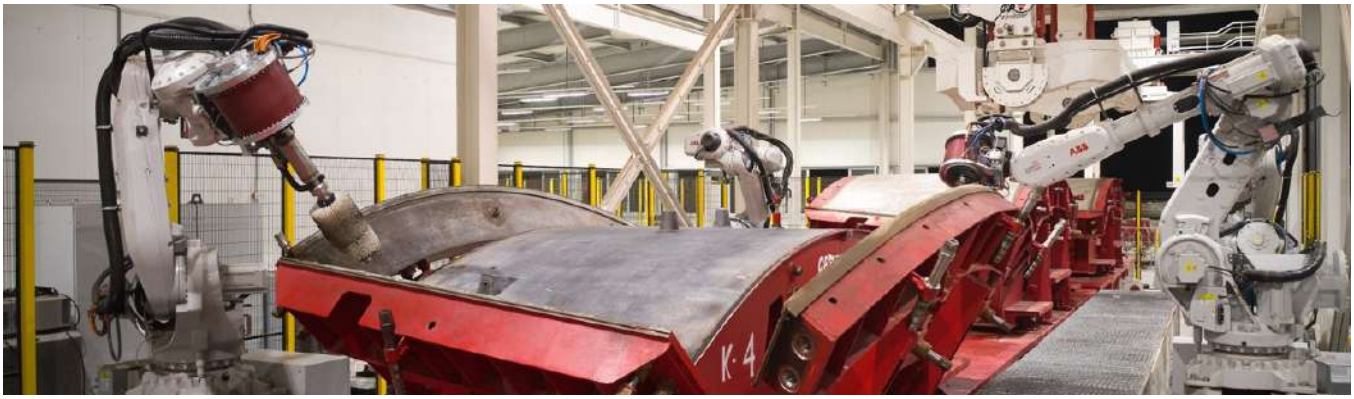
ROBOFACTORY

RoboFactory represents a new concept of carousel precast plant, where the integration of robots and digital systems supports workers in production activities, redefining the way tunnel segments are manufactured. This innovative approach allows robots to handle the most strenuous and physically demanding tasks, improving workplace ergonomics and enhancing overall production efficiency.

By automating repetitive and labor-intensive processes, operators can focus on higher-value tasks, reducing the reliance on manual work and optimizing the entire workflow. Robots ensure that each operation is performed with precision and consistency, guaranteeing high-quality finished products and minimizing defects in the segments.

CP Technology's **RoboFactory introduces a new era of industrial precasting**, delivering significant benefits in terms of productivity, safety, and quality:

- **Reduction in labor requirements** – Automation optimizes workforce utilization, reducing dependence on skilled labor, which is becoming increasingly scarce.
- **Lower risk of workplace injuries** – By assigning physically demanding and repetitive tasks to robots, worker safety is significantly improved, minimizing the risk of injuries.
- **Increased production capacity** – The integration of robots accelerates production cycles, enhancing operational continuity and reducing downtime.
- **Fewer defects in concrete segments** – The precision and repeatability of robotic operations ensure uniform production quality, eliminating errors caused by human variability.
- **Reduced maintenance needs** – Automation decreases wear and tear on traditional equipment, optimizing maintenance schedules and extending the overall lifespan of the plant.



Proven production:

- 134 segments on 2 x 8hrs shift
- 170 segments on 3 x 8hrs shift

ROBO FACTORY FOR TUNNEL

HS2 – Northolt Tunnel East and Euston Tunnels

TELT – Lot 2 CO6/7

Naples-Bari – Hirpinia – Orsara – Bovino Lots

Sicily – Messina Catania Railway

AFTER-SALES

After delivering an equipment, the most critical phase is ensuring comprehensive **support** for the customer, so that the integration of the provided solutions occurs smoothly and without disruptions to production processes. CP Technology considers this phase essential and is committed to assisting its clients through dedicated **training programs** for operational staff and prompt intervention in the event of malfunctions or technical issues.

To ensure top-level **technical support**, the company has a team of 15 highly **skilled technicians**, capable of working directly on-site for installation, routine maintenance, and extraordinary repairs. With advanced expertise in mechanics, hydraulics, and industrial automation, these professionals can quickly diagnose and resolve technical issues, restoring full machine functionality in the shortest possible time. For projects located far from Italy, CP Technology has established a network of **specialized partners**, ensuring that technical support is always within close reach of the construction site.

Supporting this service, CP Technology also maintains a fully stocked **spare parts warehouse**, enabling the company to minimize machine downtime. The ability to deliver urgent components swiftly and efficiently is a key factor in ensuring continuous production and maximizing the reliability of the equipment supplied.

Thanks to this organizational structure, CP Technology stands out as a leading partner in the sector, offering not only cutting-edge solutions but also comprehensive and highly specialized after-sales support.

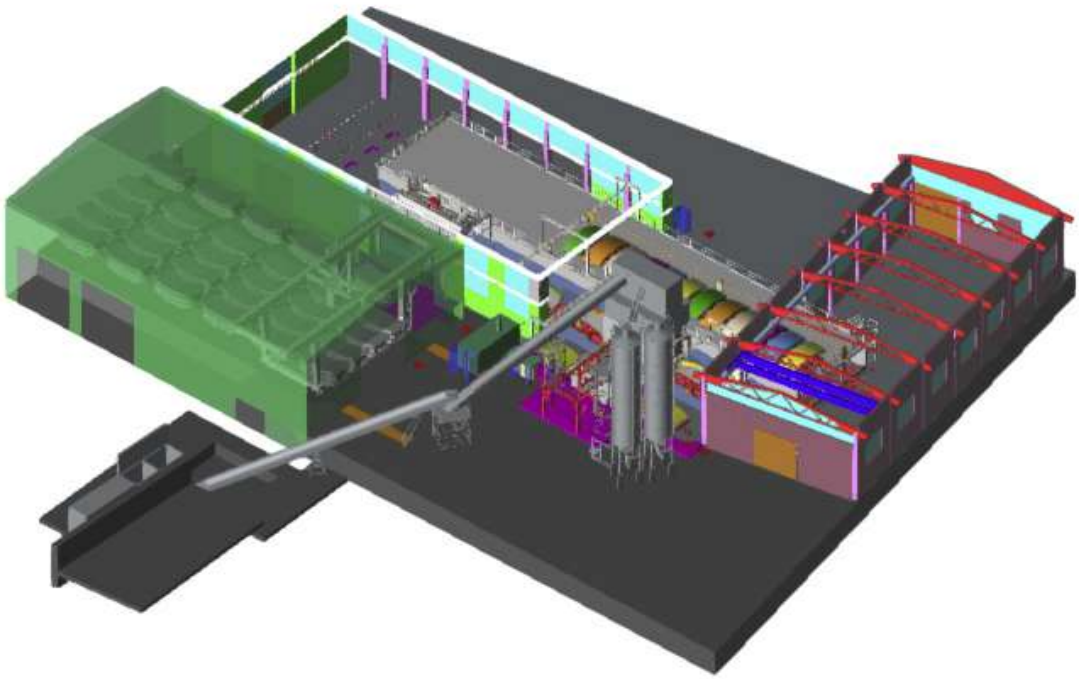
DESIGN AND CONSULTANCY

CP Technology is a leading partner in the development of complete segment factories, thanks to its extensive experience in the sector and a comprehensive understanding of the entire production process. Every project is unique and requires an integrated approach, where design, operational efficiency, and quality must be perfectly balanced.

With years of expertise, CP Technology can support clients at every stage of development, offering tailored solutions and technical and strategic guidance to optimize the project in all its aspects.

Our support includes:

- **Factory design** – Planning and developing the production layout to ensure an optimized and efficient workflow.
- **Warehouse and building design** – Defining the dimensions and structural characteristics of the facility to best accommodate the production process.
- **Labor analysis and optimization** – Studying the required workforce to balance automation and manual labor, reducing operational costs and improving efficiency.
- **Support in communication with the project owner** – Assisting in discussions with the project owner to ensure the factory meets technical and economic requirements.
- **Support in quality management through digital solutions** – Implementing advanced systems for monitoring and tracking production, enhancing quality control.
- **Consultation with industry experts** – Providing access to a network of professionals and specialists to develop cutting-edge solutions aligned with industry best practices.



CPT GROUP

In delivery of modern infrastructure projects, there is an increasing focus on quality, process traceability, and digitalization of information. These elements not only enhance efficiency and operational safety but also meet the growing requirements for monitoring and certification in large-scale construction projects. The production of TBM segments is also evolving in this direction, with greater emphasis on digital management and real-time monitoring of manufacturing activities.

To address these needs, CP Technology, through its group company Digitalnology, offers KYP, an advanced software solution designed to manage and optimize the entire precast production cycle. With an intuitive interface and seamless integration with production equipment, KYP ensures real-time monitoring of all manufacturing phases, providing complete control and full traceability.

The key features of KYP include:

- **Production management and optimization** – Planning and streamlining production phases to maximize efficiency and minimize waste.
- **Raw material traceability** – Comprehensive monitoring of materials such as steel, concrete, and fibers used in segment production, ensuring quality and compliance with industry standards.
- **Raw material reordering management** – Automated inventory tracking and purchase order generation to prevent production delays.
- **Logistics optimization** – Advanced management of segment flow within the factory and transportation to the construction site, reducing handling times and increasing overall productivity.
- **Digitalization of quality control processes** – Eliminating paper-based records and implementing digital systems to log, verify, and certify each step of the production process.
- **Complete segment traceability via barcode or RFID** – Unique identification of each segment, facilitating tracking throughout production, storage, and delivery, improving supply management on-site.

GREEN SPACERS

From waste to reuse

- Dunnage and **spacers** for precast segments made of **recycled plastic**.
- **Increased durability** and **reduced weight** for a better working environnement and circular economy.

WEIGHT	WEIGHT
3,6 KG	**3,9 KG**
TOTAL STACK	TOTAL STACK
120 TONs	**160 TONs**
SIZE H 170x150x500	**SIZE H 150x150x600**

TBM TECHNOLOGY

- Sales and Aftersales service for **New DaFang** MultiService Vehicles
- Sales and Aftersales service for **CRCHI** TBMs
- Sales of TBM **Cutters**
- **TBM** and **MSV** spare parts express management

FACILITIES

CP Technology's headquarters are in Nova Milanese, Italy, where 50 professionals, including designers, technicians, and engineers, work together to develop innovative solutions. This is also where the pre-assembly of machines takes place, ensuring rigorous quality control before delivery to clients.

In addition to the main office, the company operates two production facilities in Northern Italy, where a highly skilled team of 30 mechanical technicians and welders is dedicated to manufacturing equipment with expertise and precision. Thanks to this organizational structure, CP Technology guarantees efficiency, flexibility, and quality at every stage of production.

HQ - NOVA MILANESE (MB)

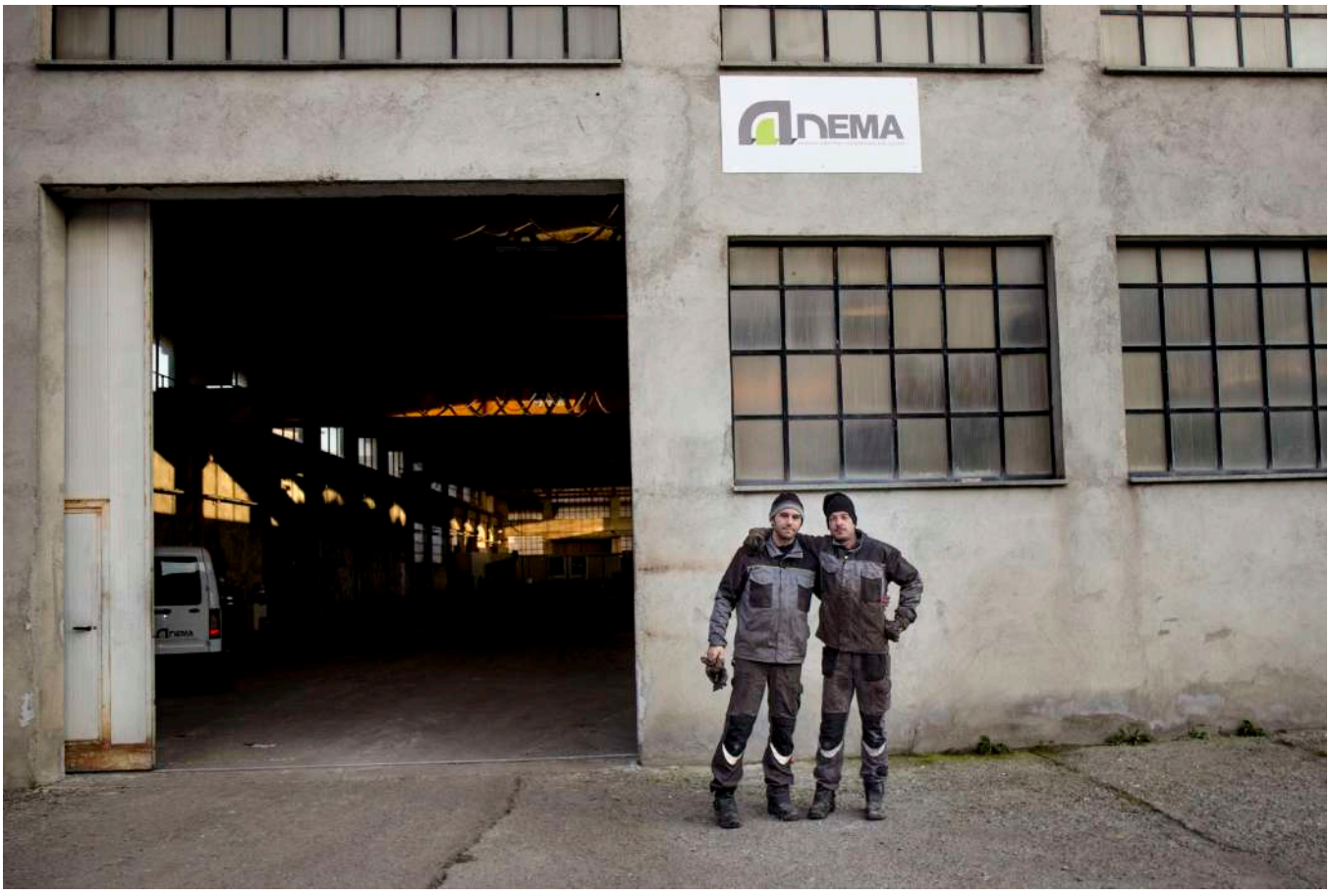
- Design and engineering department
- Workshop for equipment preassembly
- Robotic and automation workshop
- Spare parts warehouse

STEEL WORKSHOP - CAIOLO (SO)

- 2-axis CNC vertical lathe served by robot and automatic warehouse
- Horizontal lathe
- 3-axis vertical mills
- Robotic welding

STEEL WORKSHOP - FUSINE (SO)

- Welding and assembling department
- Internal coating
- Welding test licences



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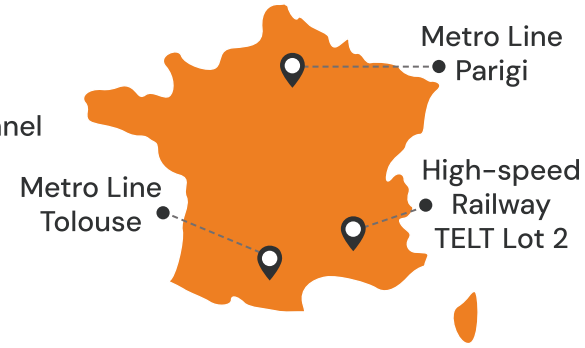
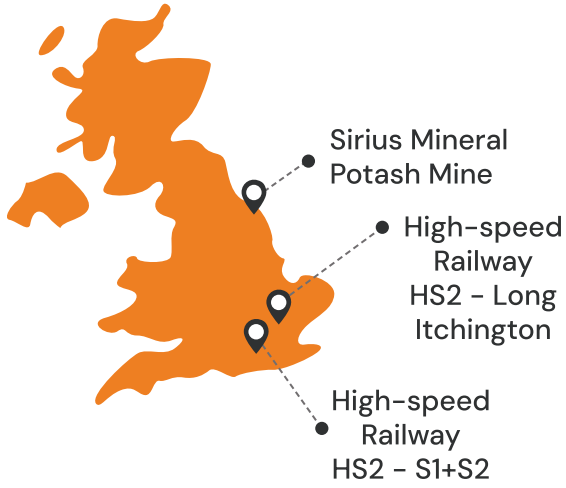
FRANCE

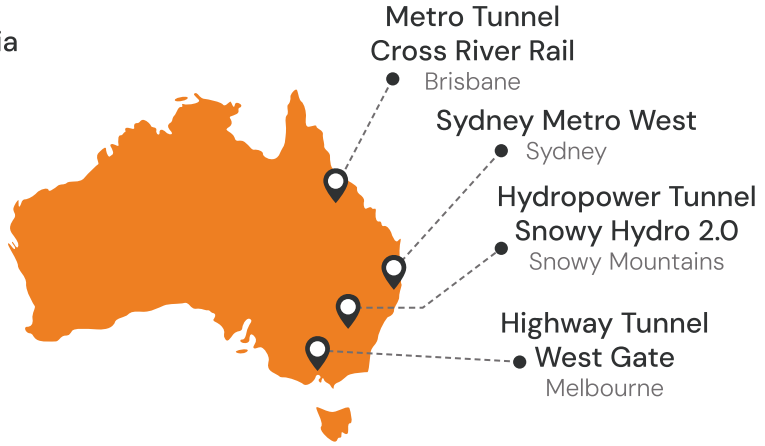


ENGLAND

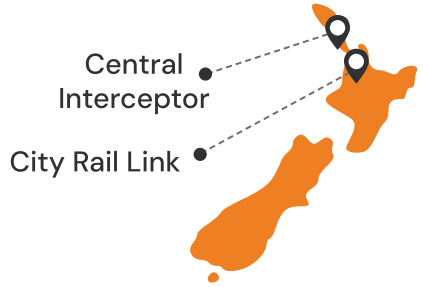


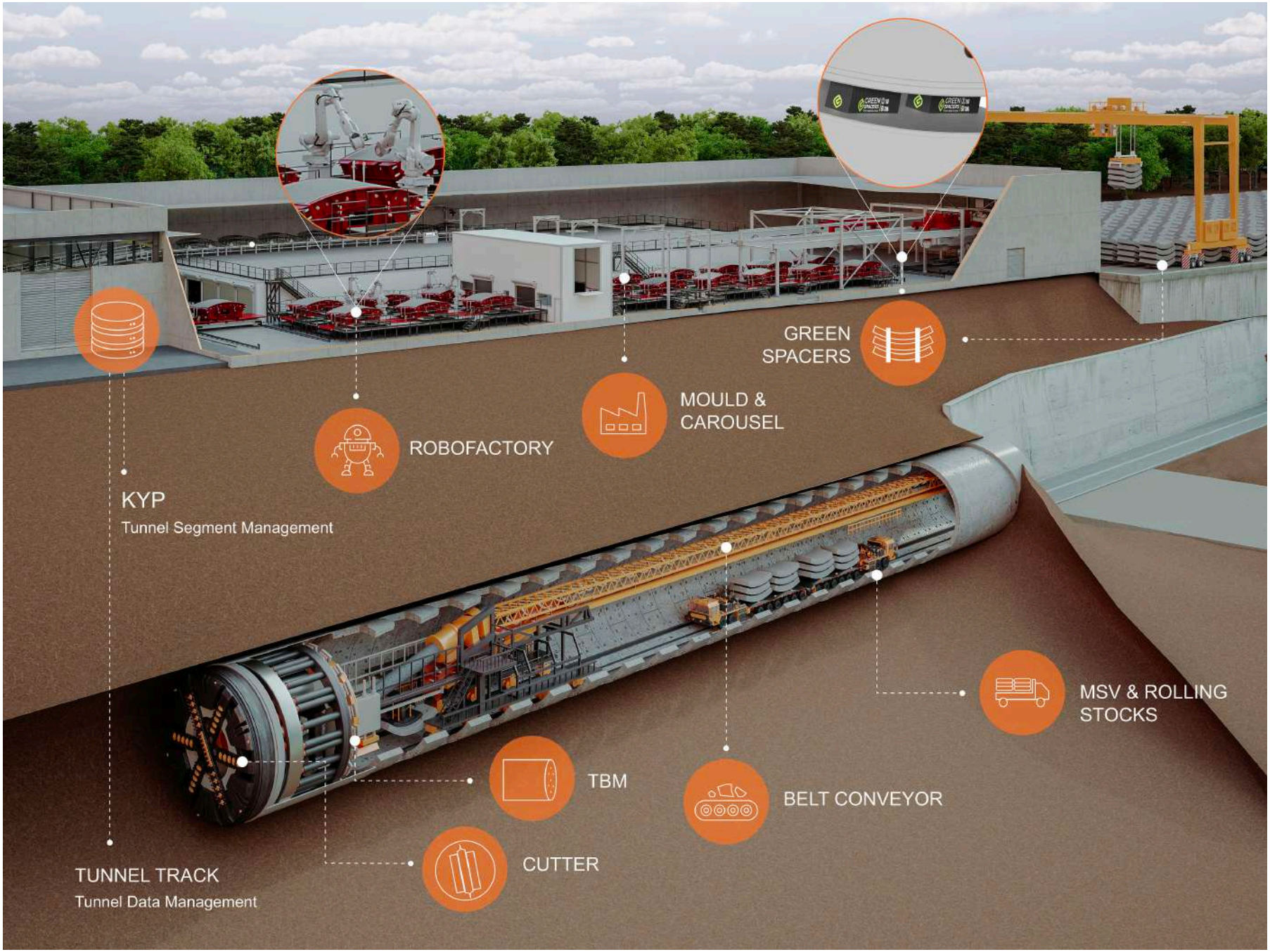
CANADA

AUSTRALIA



NEW ZEALAND




GREEN
SPACERS
MOULD &
CAROUSEL
ROBOFACTORY
KYP
Tunnel Segment Management
MSV & ROLLING
STOCKS
TBM
BELT CONVEYOR
CUTTER
TUNNEL TRACK
Tunnel Data Management

CP TECHNOLOGY

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