

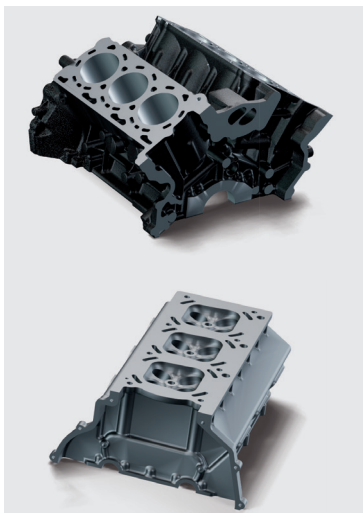
# Leak Test Solutions

Leak test solutions for Engine Blocks and Cylinder Heads



## Leak Test Solutions

We present our specialized solutions for leak testing in engine blocks and cylinder heads. Our testing machines are designed to ensure the integrity and quality of critical engine systems, detecting even the smallest leaks with high precision. We are certified to ISO 9001:2015 and ISO 14001:2015 standards.



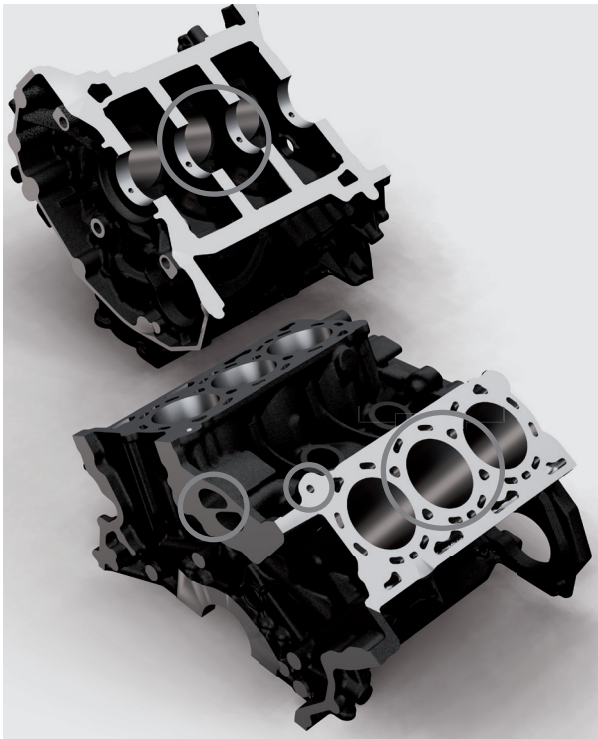
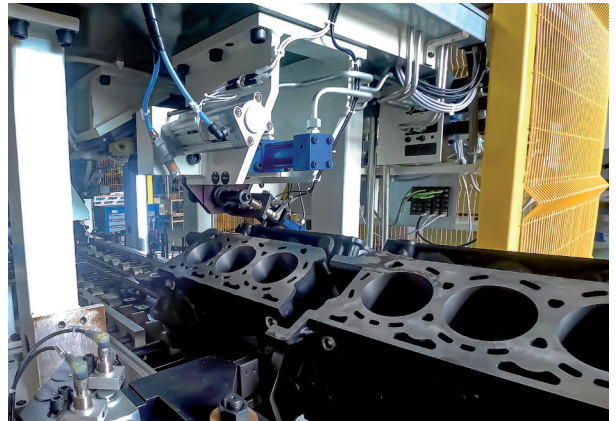
### Engine Blocks

Leak tests allow for the verification of the sealing of combustion chambers, oil galleries, and water passages, ensuring that the engine block meets quality standards according to customer specifications. These tests are conducted using pressurization and flow measurement methods to validate conformity.

### Cylinder Heads

Leak tests assess the integrity of combustion chambers, oil galleries, and water passages, which are essential for the efficient performance of the engine. The process pressurizes these cavities with air, using sensors to detect any pressure drops that indicate sealing failures.

Each of these solutions features state-of-the-art leak testing equipment (ATEQ, FROELICH, TEX, BAYER) and can be integrated directly into production lines or operate as standalone stations. The handling of parts is fully automated, from transportation and clamping to testing and final removal. Conveyor systems, robotic arms, and Data Bolt RFID / Data Matrix identification mechanisms ensure that each part goes through the correct steps, providing full control of the process and traceability of tested components.



## Engine Block Leak Test

The leak test machine is specifically developed for engine block leak testing. It can be equipped with one or more independent test stations, according to the customer's process, providing comprehensive tests for oil and water galleries, as well as the crankcase area.

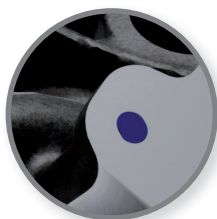
### Application

The machine is designed to test critical compartments in engine blocks, ensuring the sealing of high and low-pressure oil galleries, water galleries, and the crankcase area.

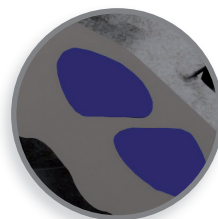
- Testing of high and low-pressure oil galleries and water galleries, with specialized sealing systems for each component.



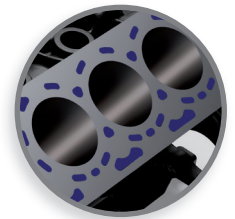
Low Pressure Oil Gallery



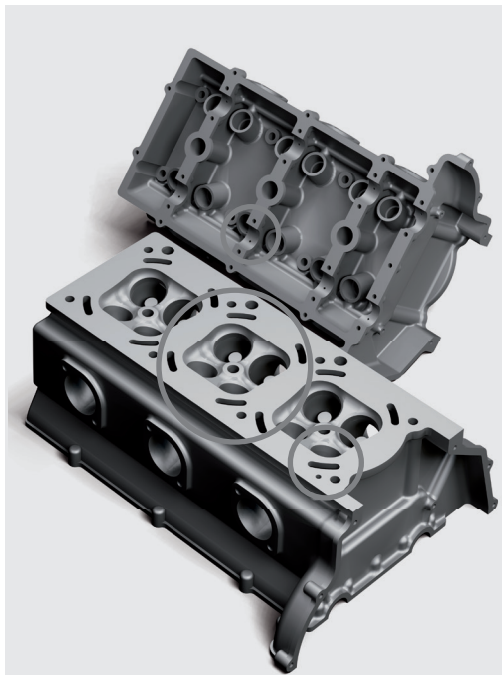
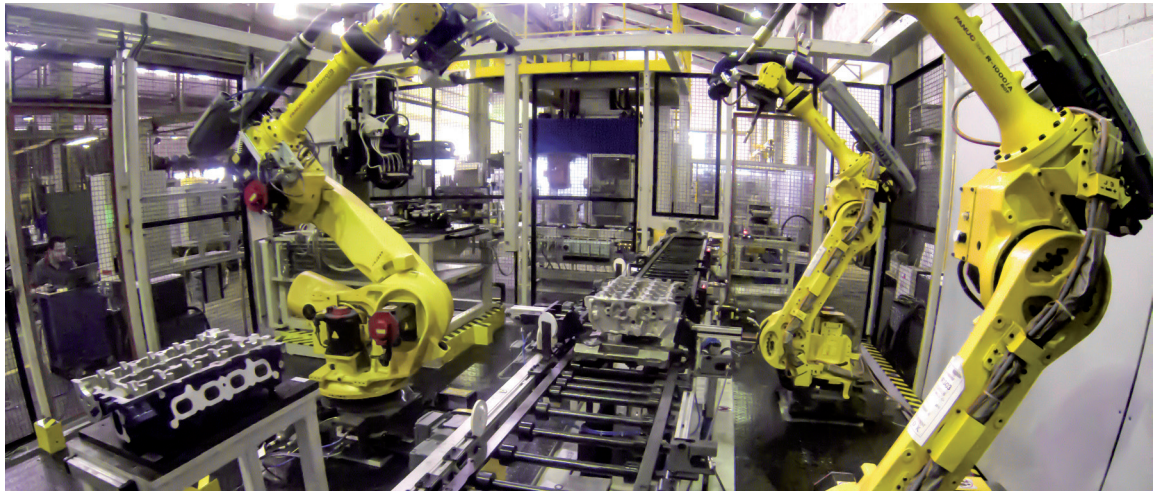
High Pressure Oil Gallery



Water galleries



Water galleries

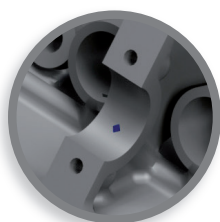


## Cylinder Head Leak Test

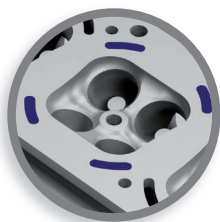
Designed to verify the integrity of combustion chambers, oil galleries, and water passages. Equipped with advanced technology, these machines provide precise results, detecting minimal leaks to ensure the functionality of the cylinder head according to specifications.

### Application

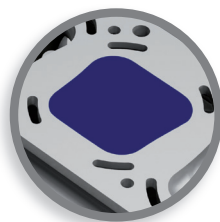
Guarantees comprehensive verification of internal passages and oil galleries, essential for the proper functioning of the engine. High-precision testing capabilities make these machines indispensable for the automotive industry.



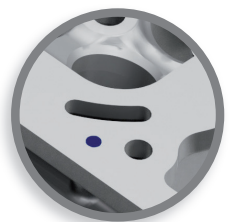
Oil galleries



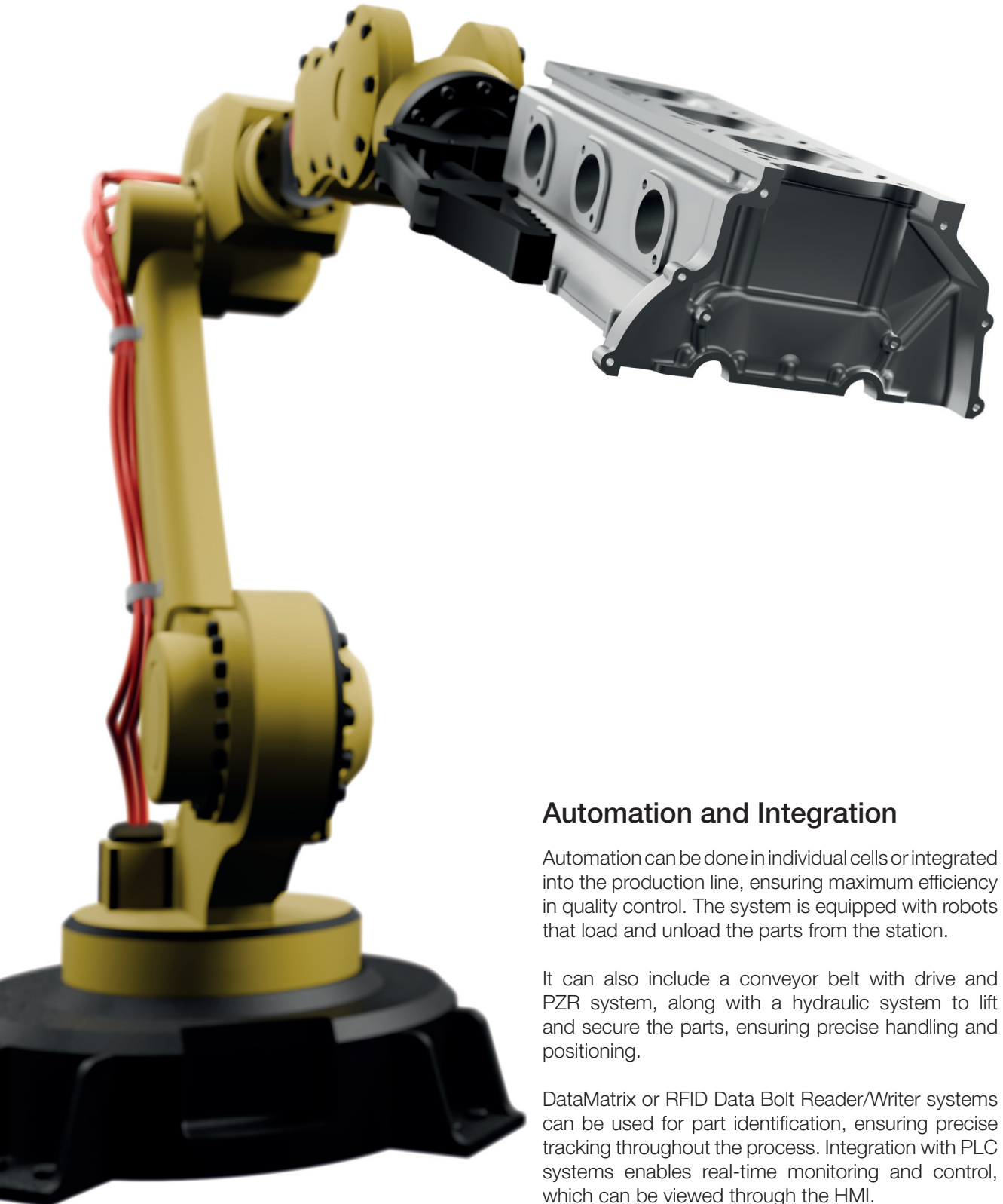
Water galleries



Combustion chamber



Oil galleries

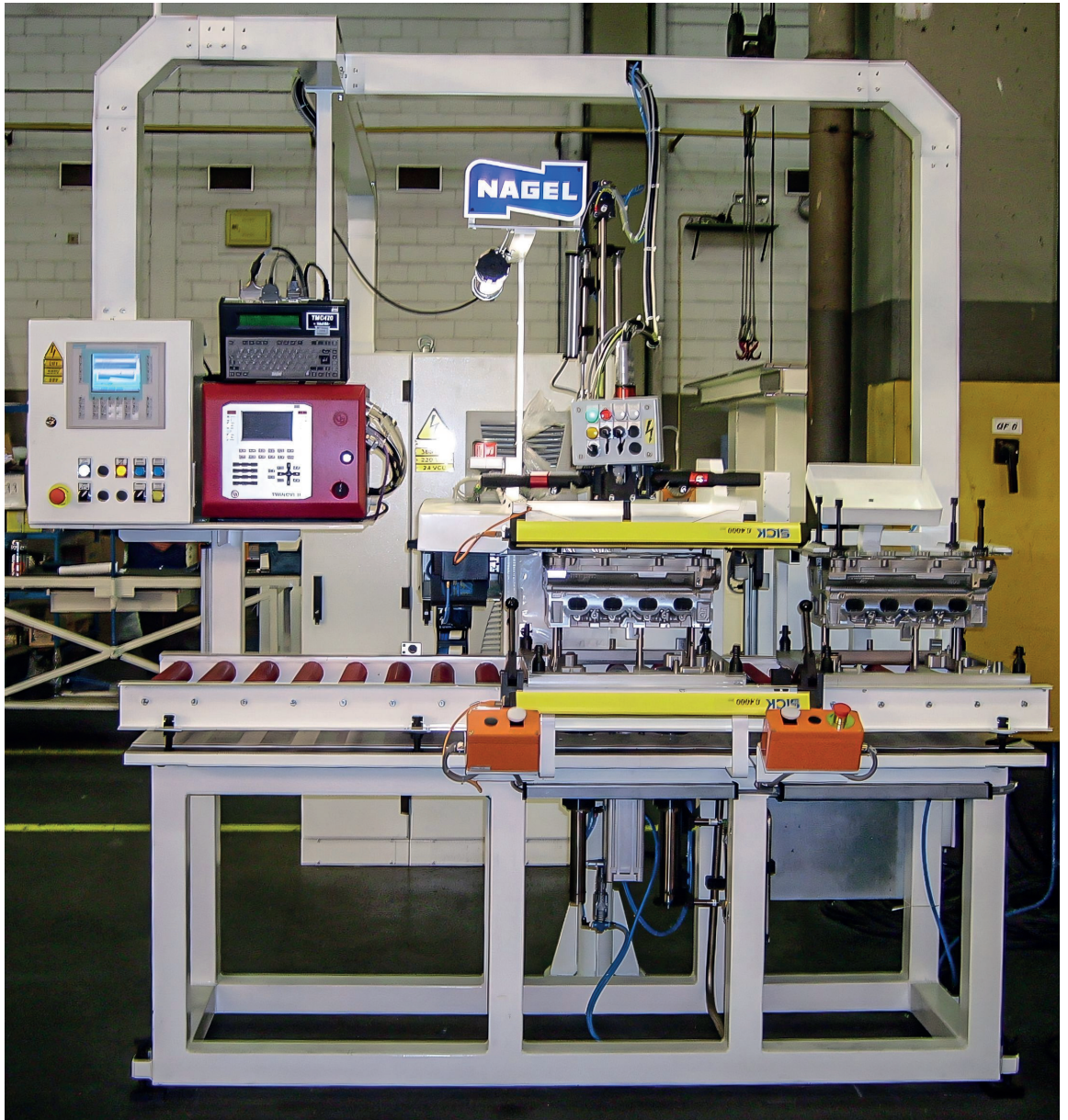


## Automation and Integration

Automation can be done in individual cells or integrated into the production line, ensuring maximum efficiency in quality control. The system is equipped with robots that load and unload the parts from the station.

It can also include a conveyor belt with drive and PZR system, along with a hydraulic system to lift and secure the parts, ensuring precise handling and positioning.

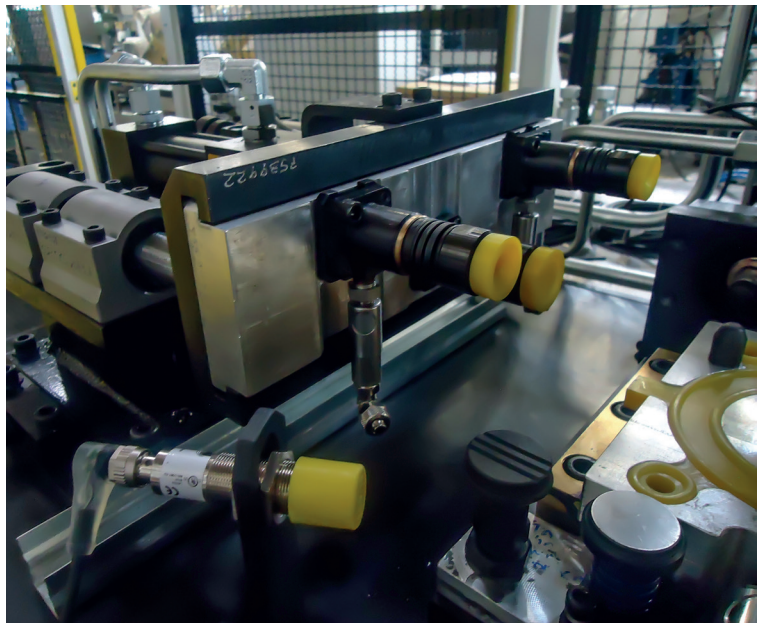
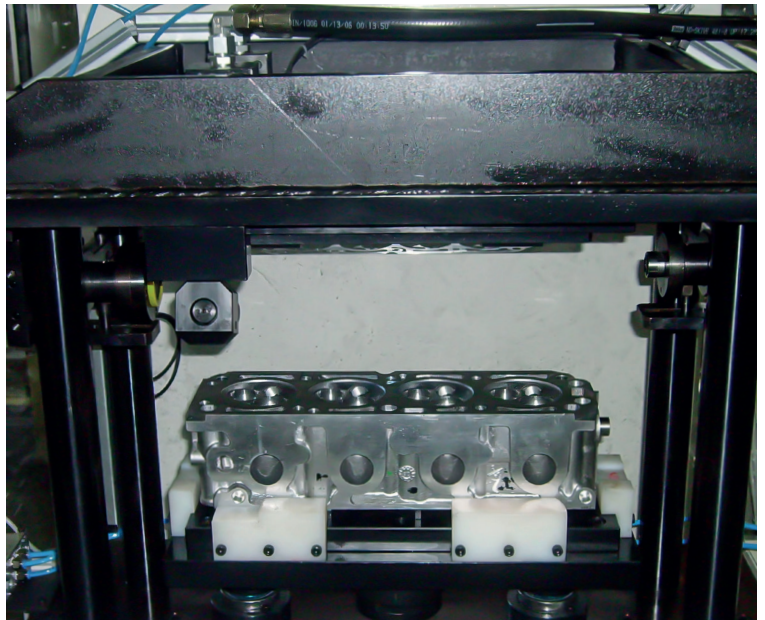
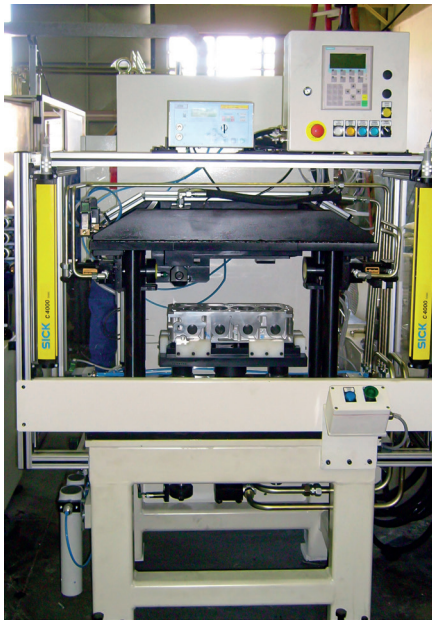
DataMatrix or RFID Data Bolt Reader/Writer systems can be used for part identification, ensuring precise tracking throughout the process. Integration with PLC systems enables real-time monitoring and control, which can be viewed through the HMI.



## Customization

The machine can be designed to accommodate different models of engine blocks/cylinder heads in various configurations, such as transfer lines, standalone stations, or robotic cells.

Each machine is customized according to the customer's technical specifications and production line cycle time.



## Support and Technical Assistance

Nagel offers specialized technical support for the machines, including operator training, preventive and corrective maintenance, and the continuous supply of spare parts. Our highly qualified technicians ensure maximum equipment efficiency.



10/2024 Version 0. Illustrative images, machines and equipments may change by customer needs or development process.

**ALEMANHA**  
**NAGEL Maschinen- und  
Werkzeugfabrik GmbH**  
Oberboihinger Straße 60  
72622 Nürtingen  
P: +49 (0) 7022 6050  
F: +49 (0) 7022 605250  
info@nagel.com  
www.nagel.com

**BRASIL**  
**NAGEL do Brasil**  
**Máquinas e Ferramentas Ltda.**  
Av. Brasília, 125  
13.327.100 Salto-SP  
P: +55 (0) 11 4028 9700  
info@nagel.com.br  
www.nagel.com.br

**CHINA**  
**NAGEL Machinery Trading (Beijing)  
Co., Ltd.**  
Rm. 2810, Jing Guang Center  
Hu Jia Lou, Chao Yang District  
100020 Beijing  
P: +86 (0) 10 6597 8589  
F: +86 (0) 10 6597 8569  
info@nagel-tbt.com.cn  
www.nagel-tbt.com.cn

**GRÃ-BRETANHA**  
**PERMAT Machines Ltd.**  
Station Road  
Coleshill-Birmingham  
B 46 1JG  
P: +44 (0) 1675 463351  
F: +44 (0) 1675 465816  
info@permat.com  
www.permat.com

**ÍNDIA**  
**NAGEL Special Machines Pvt. Ltd.**  
70/1 Mission Road  
Bangalore 560027  
P: +91 (0) 80 2227 2781  
F: +91 (0) 80 2227 6324  
info@nagelindia.in  
www.nagelindia.in

**JAPÃO**  
**NAGEL-AOBA Precision Co., Ltd.**  
2-6-16 Senjuazuma  
Adachi-ku  
120-0025 Tokyo  
P: +81 (0) 3 3881 1271  
F: +81 (0) 3 3881 8132  
info@nagel-aoba.jp  
www.nagel-aoba.jp

**MÉXICO**  
**NAGEL Precision de Mexico**  
Blvd. Jaime Benavides # 210  
Fracc. Molinos Del Rey C.P. 25903  
Ramos Arizpe, Coahuila Mexico  
P: +52 (844) 416 8049  
F: +52 (844) 416 7672  
office.mexico@nagelusa.com  
www.nagelusa.com

**EUA**  
**NAGEL Precision Inc.**  
288 Dino Drive  
Ann Arbor  
MI 48103  
P: +1 (0) 734 4265 650  
F: +1 (0) 734 4265 649  
info@nagelusa.com  
www.nagelusa.com