
Solutions for industrial automation
OVERTECH
ROBOTS
PLC
VISION SYSTEMS
INDUSTRY 4.0

TECHNOLOGICALLY ADVANCED SOLUTIONS

OVERTECH provides advanced solutions for industrial automation

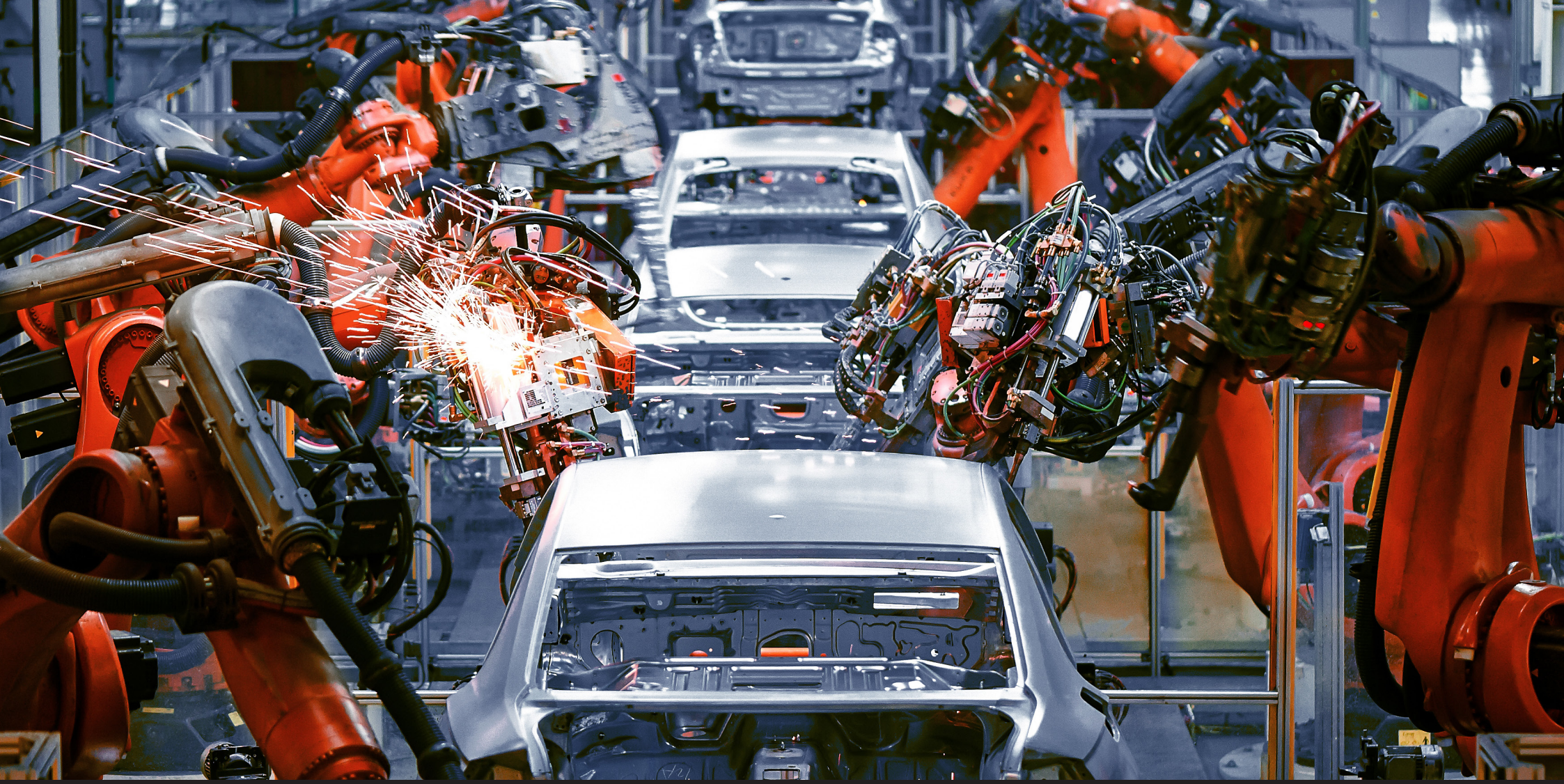
Our staff has over twenty years of experience in developing specialized software for industrial automation.

The development and on-site installation of specialized software, and after-sales support are our strengths.

Our knowledge in various sectors of industrial automation allows us to propose highly efficient technological solutions through the development of specialized software for Programmable Logic Controllers (PLC), Human Machine Interfaces (HMI), Supervisory Control and Data Acquisition (SCADA) environments, Robots, and Vision Systems for a single machine or entire production lines.

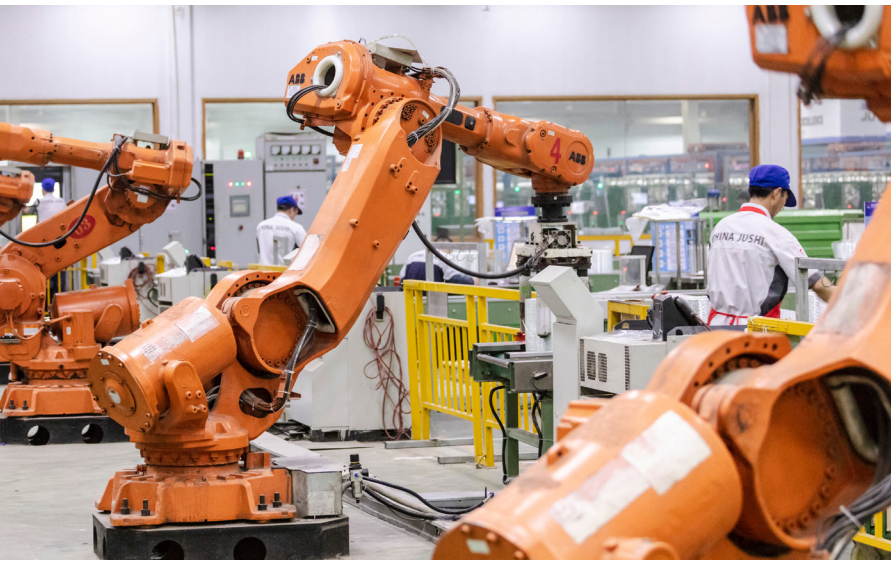
Our full-fledged expertise is foremost in the wide-ranging assistance we offer our clients: from advising on the choice of the most effective and efficient robot for their specific needs, working closely with them during the software design phase, and resolving any problems that may arise, to developing the final specialized software and **following it all up with extensive after-sales assistance that includes maintenance, spare parts, and on-site and/or remote technical support. In addition, 24 hour response contract packages are available for any software problems—either on site or by remote assistance.**

ABB COGNEX COMAU FANUC Ignition! 8.1 KUKA OMRON SIEMENS STÄUBLI



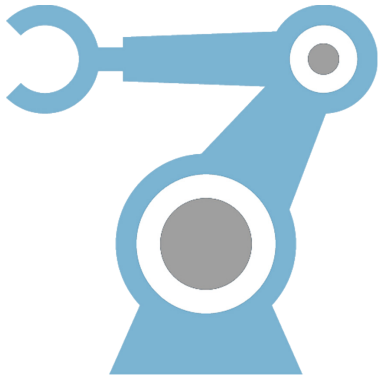
ROBOTS

Flexable and intergrated systems



Benefits

Anthropomorphic robots are ideal for achieving a highly flexible level of automation because they are versatile and easy to install and repurpose. Their numerous arms and joints ensure the coverage of work areas that cannot be reached with other types of machines. Due to their compact structure, high levels of precision (up to 0.1 mm) can be obtained, even during high-speed travel operations. The use of anthropomorphic robots in the integrated automation sector significantly reduces processing times, which consequently, increases the company's productivity.



Internal logistics

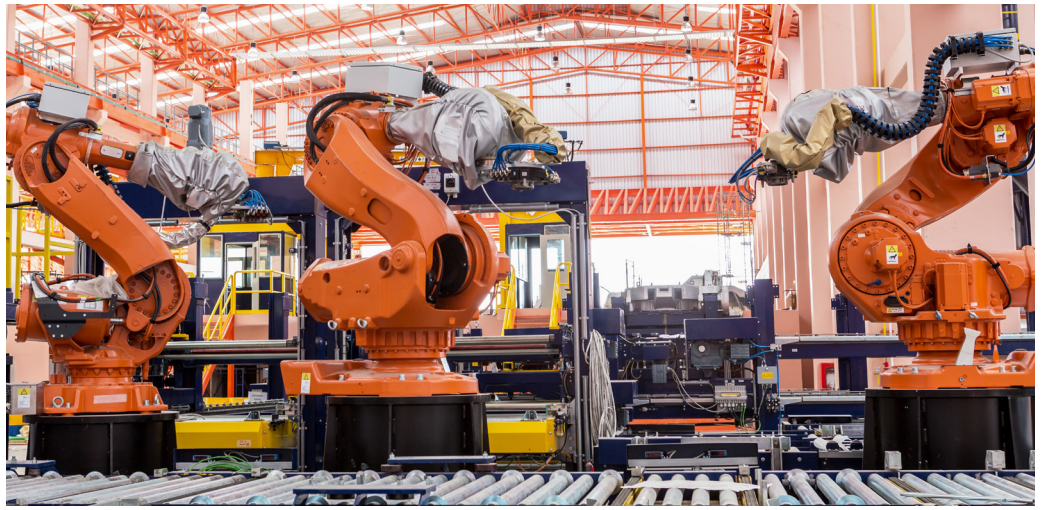
Robot movements are based on complex kinematic algorithms that are controlled by a central electronic system, which is generally robust enough to allow it to function properly in the harshest industrial environments.

Robot motion control is managed by a structured programming language that governs the entire automatic cycle of the robot, archives its production data, or modifies its parameters (anomalies, start-up, stop, etc.

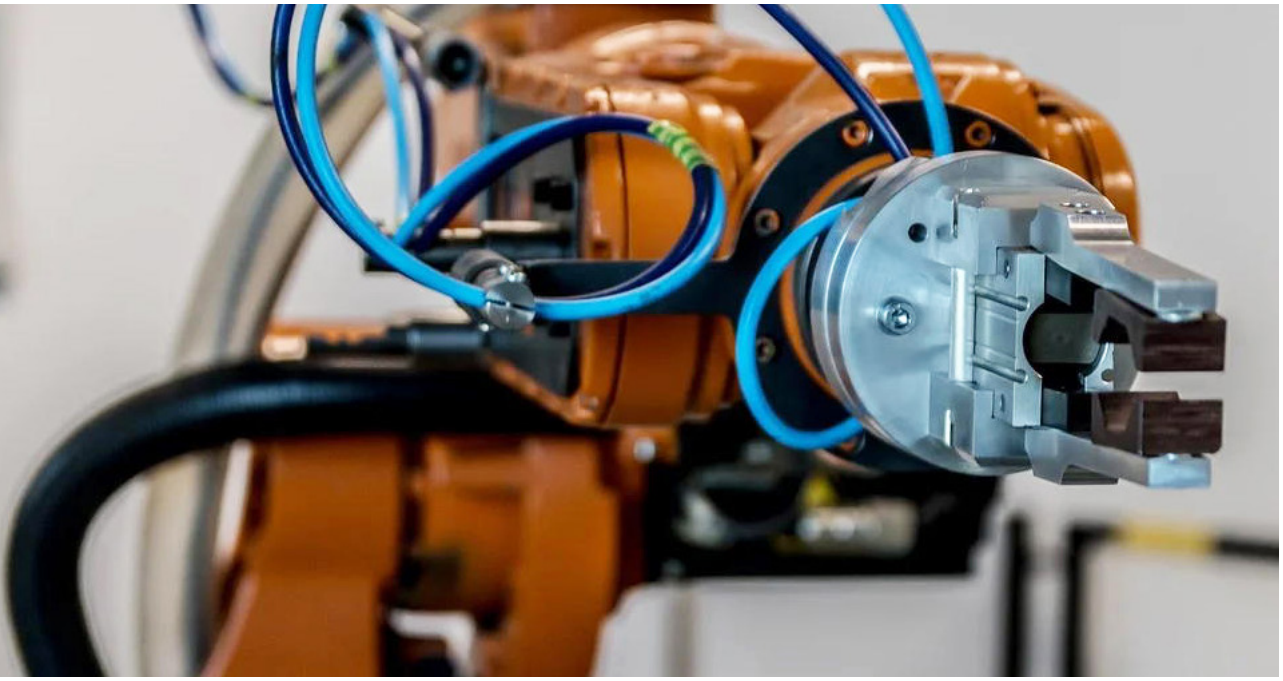
Management and accuracy

OVERTECH specializes in programming industrial robots, their interface with the plant (communication with sensors, PLC), and their integration with identification systems.

We can entirely develop new specialized software or modify the existing program already installed in the plant.



SPEED AND SAFETY FOR AUTOMATION STRATEGIES



Wide-ranging customer assistance

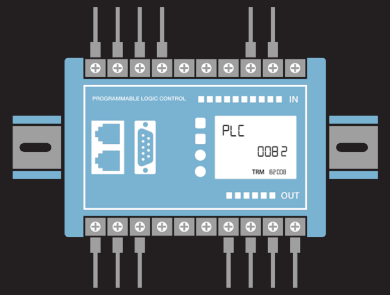
OVERTECH develops methods that permit an operator to program robot motion paths without the use of teach pendant devices or knowledge of a programming language—simply through the use of 3D acquisition systems such as laser scanners or MicroScribe digitizers.

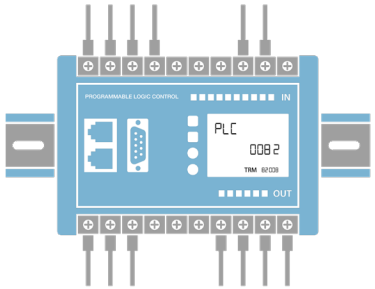
First, we make a careful analysis of the client's needs, then we proceed to the actual design and simulation phase. When this is complete, we proceed with the installation of the system and staff training.

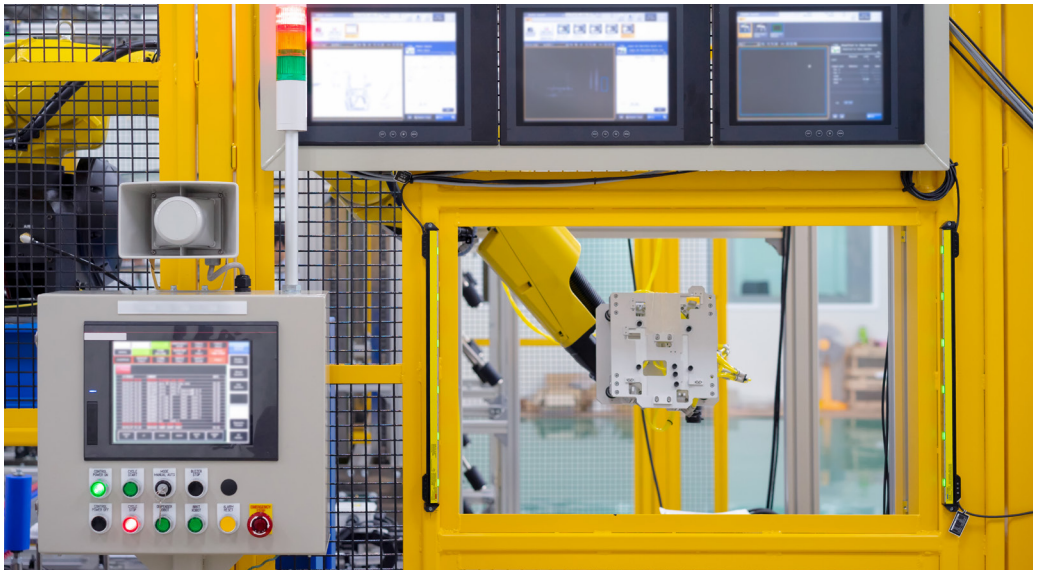
We follow the client in every phase of the project and guarantee technical assistance specific to each plant so that the client's specific needs are met.

PLC Programmable Logic Control

Safe and reliable systems
at the heart of industrial automation







Technology and work

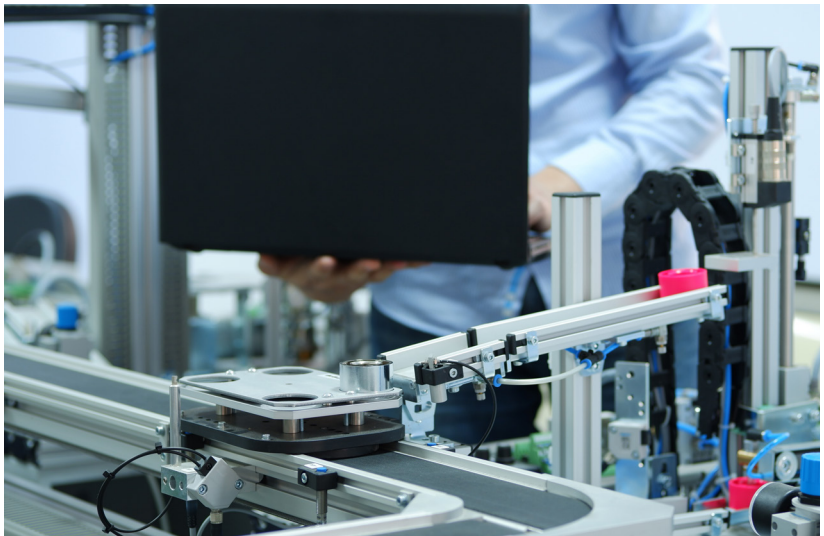
OVERTECH uses in-house resources to perform off-line simulations, programming, and the launch of robotic systems.

Our company distinguishes itself by continuously updating and training our staff regarding innovations in robotics, which, in turn, expands **OVER**TECH's expertise of a wide range of various software and hardware platforms.

Design phase

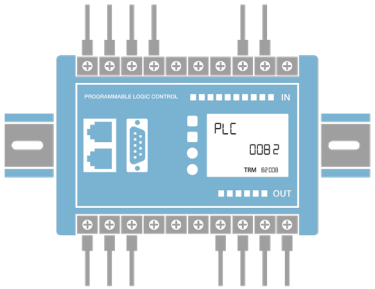
The goal is to provide technical services for industrial automation, specifically:

- ✓ development of technical specifications;
- ✓ software development;
- ✓ machine logic testing;
- ✓ installation and set-up at the end client;
- ✓ assistance and modifications to plc and industrial pcs for already existing systems;
- ✓ remote assistance for new or existing systems.

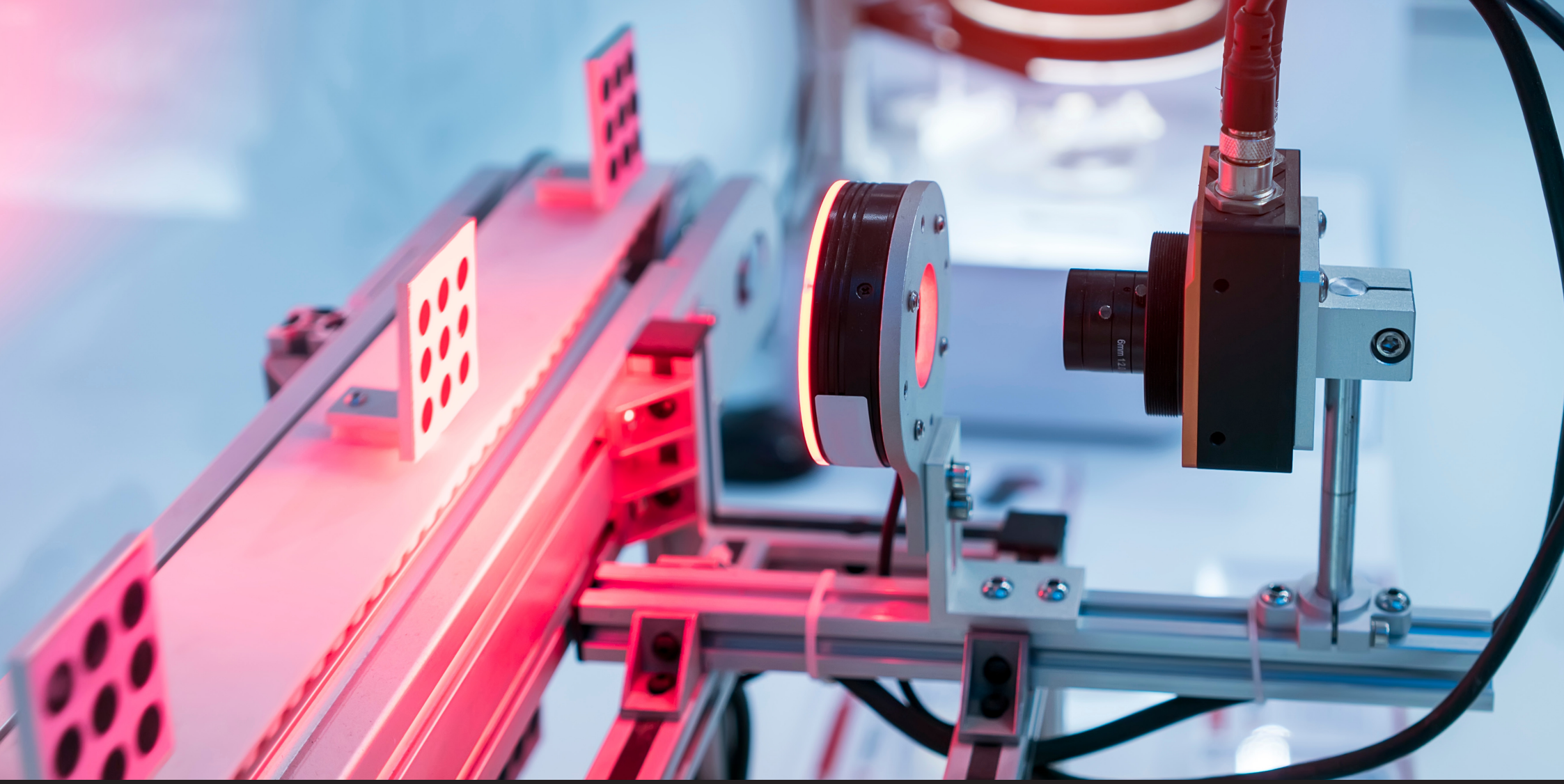


Business skills

Our expertise ranges from outdated systems— such as Siemens S5— to the latest robotic technologies, including all aspects related to motion control management of axes and motors.



"THERE IS REAL PROGRESS ONLY WHEN THE ADVANTAGES OF A NEW TECHNOLOGY BECOME FOR EVERYONE".
HENRY FORD



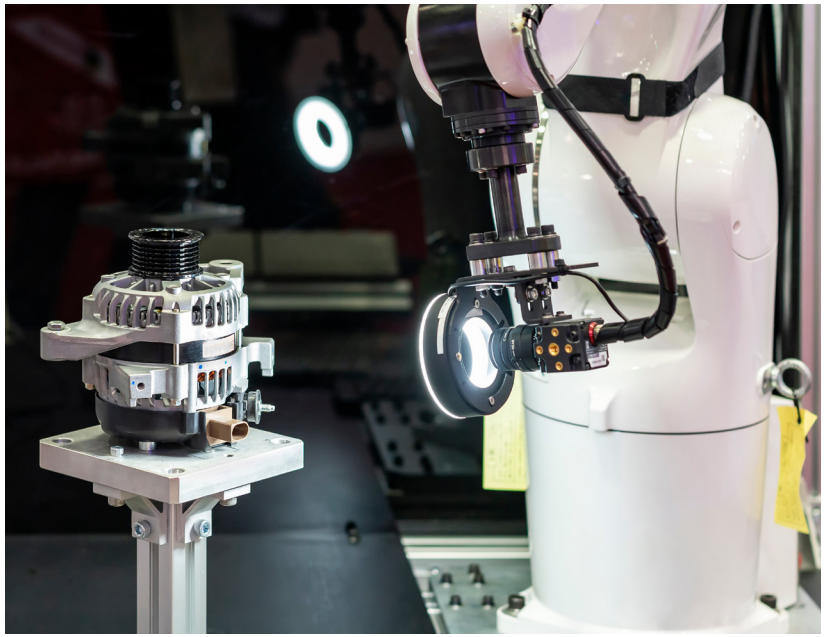
VISION SYSTEMS

direct and progressive impact

Integration and control

Industrial efficiency can be greatly enhanced through image processing. Vision systems replace a large number of sensors and are the basis for maximizing the automation of numerous processes.

Barcode reading, dimension capture, quality control, parts tracking and identification, and production line monitoring are just some of the possible applications. Automation and optimization result in greater efficiency, higher productivity and better quality, fewer revisions, and improved customer satisfaction.



A SIMPLIFIED BUT EFFECTIVE PLAN

An easy-to-integrate solution

The pervasive use of robots at an industrial level in many diverse sectors—from mechanics to electronics, and food to medicine—encourages the application of robots for a variety of purposes that often require specialized tools and technologies.

The artificial vision system is among the increasingly requested tools and is found in two versions: 2D and 3D—each with its own pros and cons.

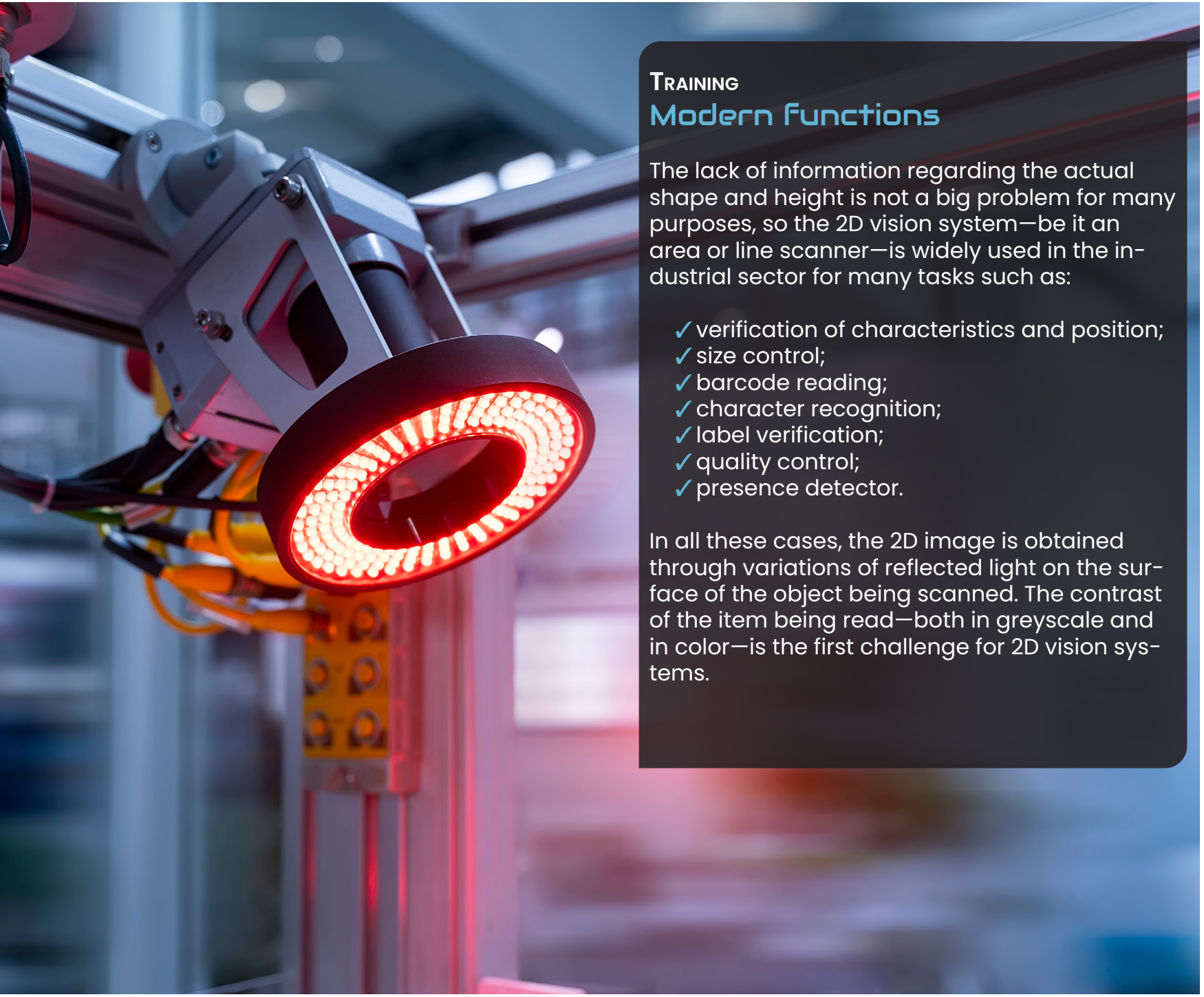

OVERTECH
assists its clients
in choosing the
correct vision
technology and
manages the
configuration and
fine-tuning.
We also offer advice and
assistance on vision systems
already being used by the client.

TWO-DIMENSIONAL ARTIFICIAL VISION

OBSERVATION

Enter the era of automation

In the case of 2D vision systems, the captured image of the target object is actually flat and only has two dimensions. The image does not provide any information relating to the height: there are data for the X and Y axes but not for the Z (depth). The actual image is an outline of a 3D object seen from a specific vantage point. Different observation points and different objects create completely different outlines, which makes the use of a 2D system very limited for functions where information regarding the shape is essential for performing an operation.



Training

Modern Functions

The lack of information regarding the actual shape and height is not a big problem for many purposes, so the 2D vision system—be it an area or line scanner—is widely used in the industrial sector for many tasks such as:

- ✓ verification of characteristics and position;
- ✓ size control;
- ✓ barcode reading;
- ✓ character recognition;
- ✓ label verification;
- ✓ quality control;
- ✓ presence detector.

In all these cases, the 2D image is obtained through variations of reflected light on the surface of the object being scanned. The contrast of the item being read—both in greyscale and in color—is the first challenge for 2D vision systems.

LIMITATIONS

2D vision systems limitations

Light sensitivity: since the image of the object being scanned is obtained from light reflecting from it, ambient light variations can have a negative impact in terms of accuracy. Too much light, too little light, or shadows from the work environment can negatively affect the clarity of the edges and features that appear in the 2D image.

Absence of contrast: given that the 2D vision system depends on the contrast as defined on the surface of the object, the difficulty in reading very light or very dark objects must be taken into account.

Height-related errors: since no information on height is available, errors can occur due to the movement of the object on the Z-axis of the plane. If an object is always stationary on a perfectly flat surface, at a precise focal distance from the image sensor, image capture errors will be significantly reduced.

In all of the following situations, 2D vision systems fail to recognize the shape and perform the operation:

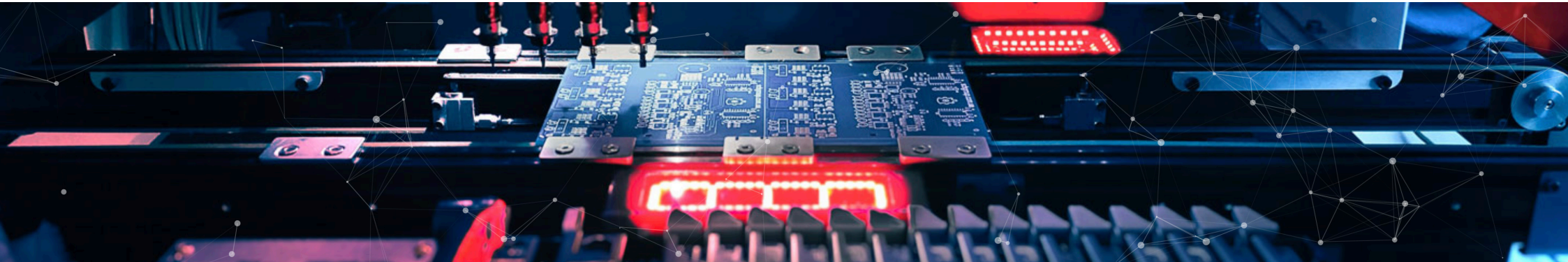
- ✓ with complex or assembled parts, where dimensions must be measured beyond the X and Y planes;
- ✓
- ✓ when determining the volume of the object;
- ✓ when an object needs to be picked up and moved precisely.

THREE-DIMENSIONAL ARTIFICIAL VISION

Development

Three-dimensionality

With a 3D vision system, the target object is no longer a flat figure, but a three-dimensional item composed of precise coordinates. The position of each pixel in the space is known, and simultaneously provides data for the X, Y, and Z axes.



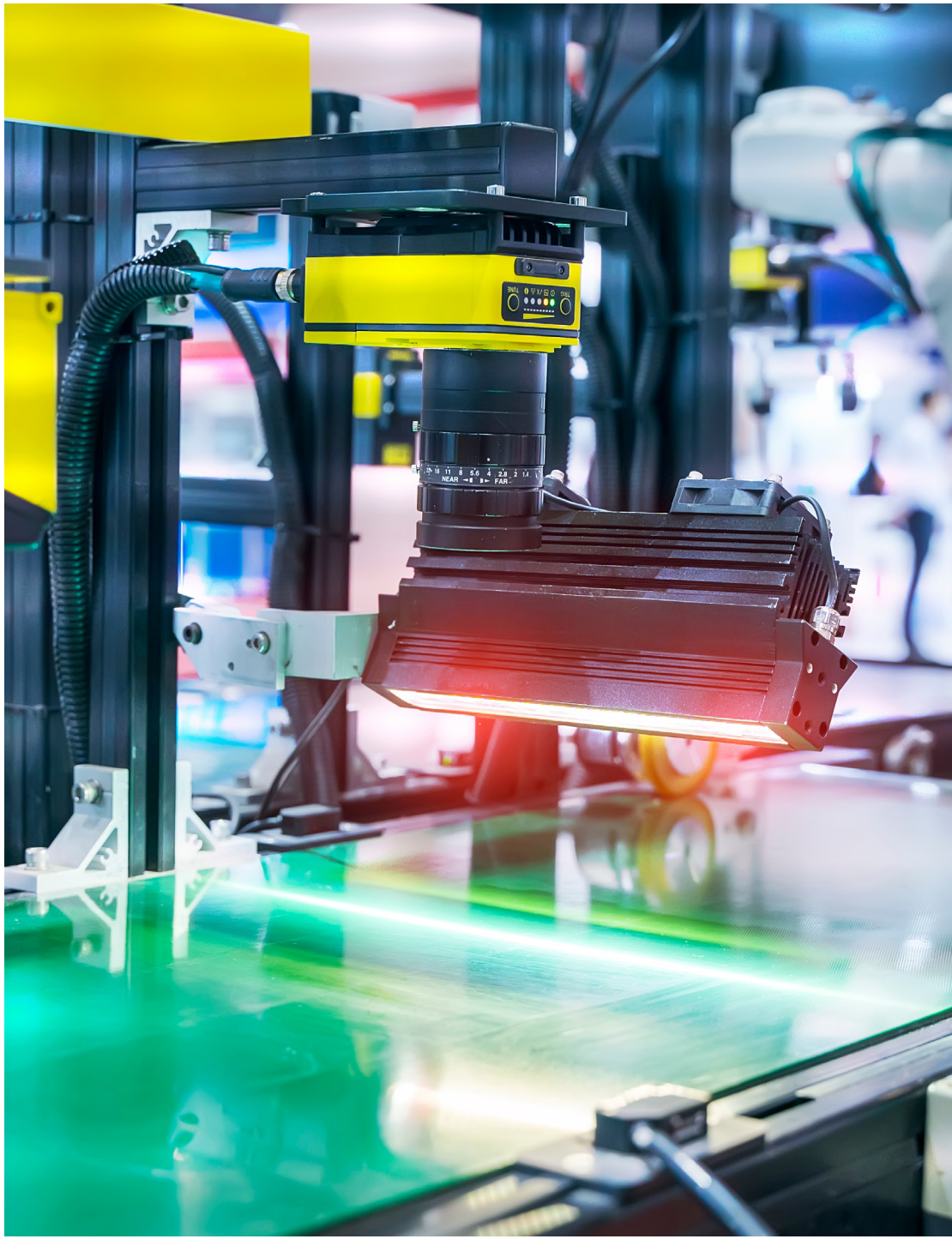
Programming

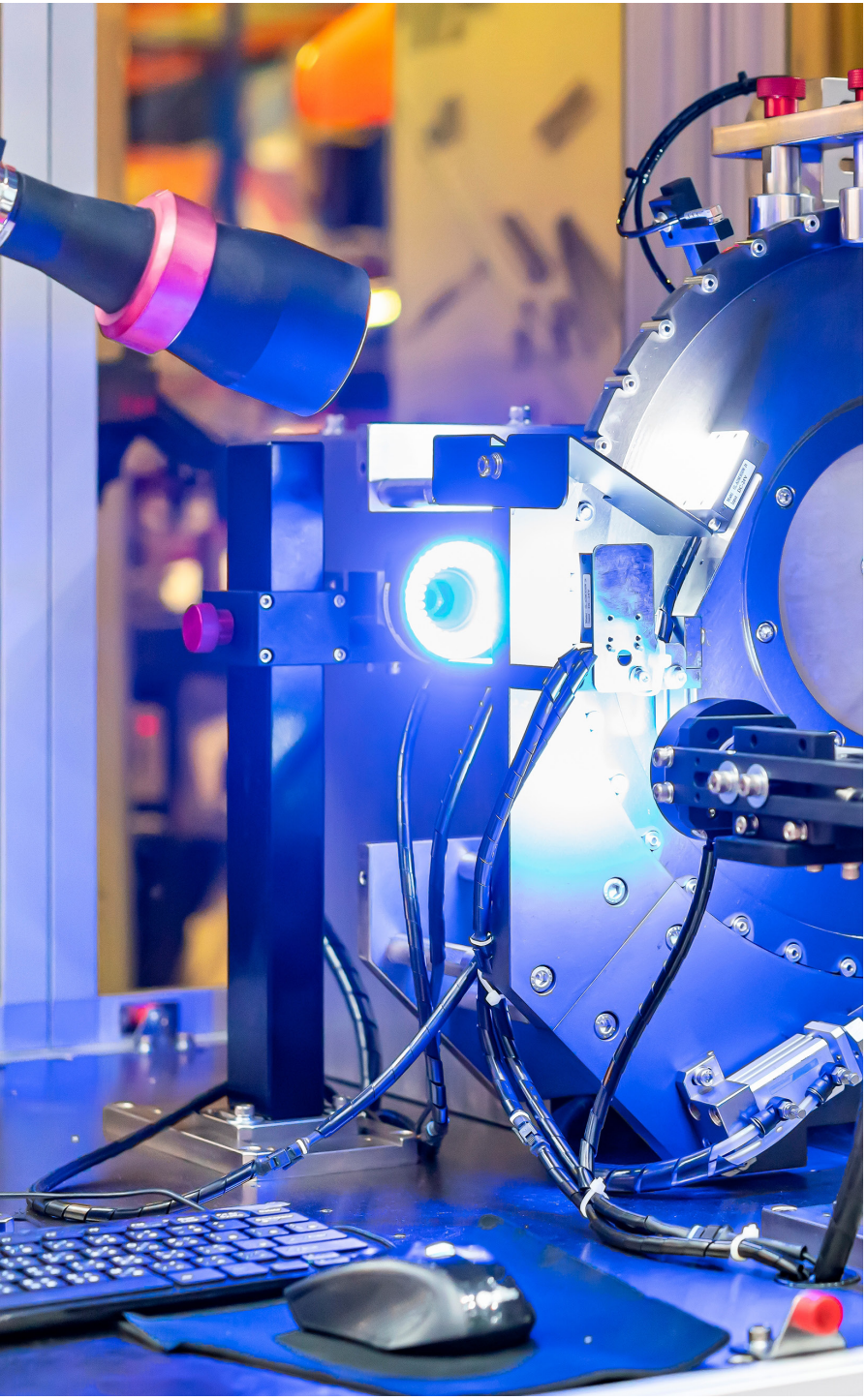
Comparative interventions

There are 4 techniques for making a 3D vision system:

- ✓ laser triangulation;
- ✓ stereoscopic vision;
- ✓ trajectory time;
- ✓ structured light.
- ✓ The Pick-it camera, for example, is based on stereoscopic vision.

Compared with two-dimensional image processing, the work in three dimensions requires more time and intense use of advanced processors and software—multi-core processors and 3D algorithms, for example—to manage the volume of a production line. However, by virtue of their ability to reliably capture the extra third dimension, 3D vision systems are not impacted by environmental factors that create difficulties for the 2D system. Aspects of brightness, contrast, and distance from the object are no longer a problem.





Implementation

Real-life applications

Since the three-dimensional digitized model of the target object is more accurate, the robots can manage both shape and position. In fact, they know the precise position of the object in space, its exact volume, the surface of the angles, and the degrees of flatness, regardless of the light conditions in the work environment or whether the object is partially shiny or light-absorbing black.

As a result of this additional capability, the 3D vision system can be applied to a wide spectrum of uses where the characteristics of the 2D system are not sufficient:

- ✓ measurement of thickness, height, and volume;
- ✓ sizing and space management;
- ✓ measurement of shape, holes, angles, and curves;
- ✓ surface detection or assembly defects;
- ✓ quality control and verification with respect to 3D CAD models;
- ✓ robot orientation and surface tracing (i.e., for welding, gluing deburring, and more);
- ✓ container gripping for moving, packing, or assembling;
- ✓ scanner and object digitization.

INDUSTRY 4.0

Projects tailored to each company's unique needs

4.0

Automation and Industry 4.0

In today's increasingly interconnected technological world, automation and Industry 4.0 are vital to providing smart solutions that can reinvent production environments and renew industries.

High-performance and specific technologies for industrial environments aid data analysis and communication between machinery and IT systems.

OVERTECH offers solutions specifically designed for automation and industry 4.0, that allow "smart" factories to be more flexible, performant, and reliable.

OVERTECH develops industry 4.0-compliant specialized management and monitoring software using the most common programming languages already familiar to the client.

Data analysis is valuable for:

- ✓ preventive maintenance;
- ✓ reduction of plant downtime;
- ✓ performance analysis;
- ✓ business process optimization.

SUPERVISORY CONTROL AND DATA ACQUISITION

4.0

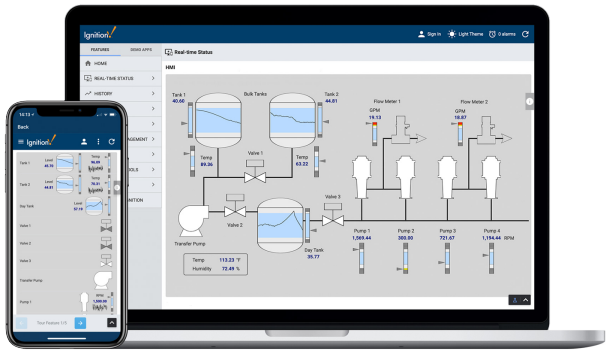
Operation

In addition to creating specialized software, **OVER**TECH offers Ignition by Inductive Automation, the most innovative supervision, control, and acquisition software platform currently on the market.

Ignition combines flexibility and functionality for the development of IIoT applications without the constraints of tags, clients, and projects.

Ignition 8.1 by inductive automation

inductive automation



Functionality

Ignition is among the most “disruptive” solutions in the current industrial software landscape. Its functionalities and its extraordinary flexibility of use make it a true connection hub for all applications in the industrial sector, not only at the SCADA-HMI level, but also MES, MOM, ERP, Cloud, and IIoT platforms of any type.

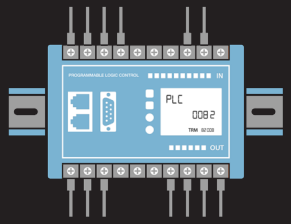
4.0

A platform without limits

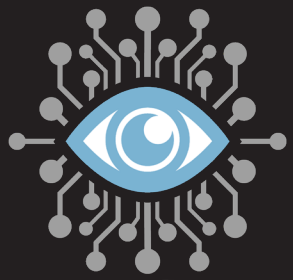
One of the strengths of Ignition is that it is a “limitless” platform. Ignition is completely open: accessible via any standard interface methodology like, for example, web browsers, compatible HTML5 systems, OPC UA communication, or SQL interchange tables.

Ignition’s architecture facilitates unlimited connections and data exchanges with any system and is free from any license constraint, which allows it to be used with any number of clients and project tags—from just a few to millions.

ROBOTS



PLC



VISION SYSTEMS

INDUSTRY 4.0

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