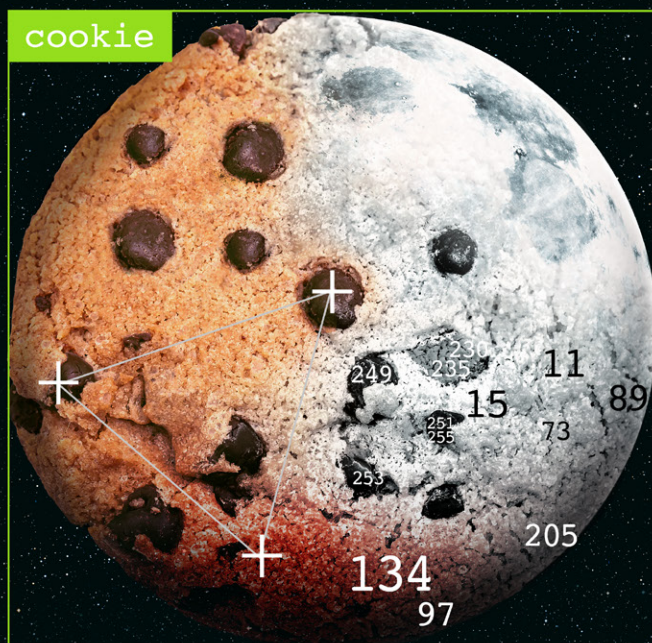
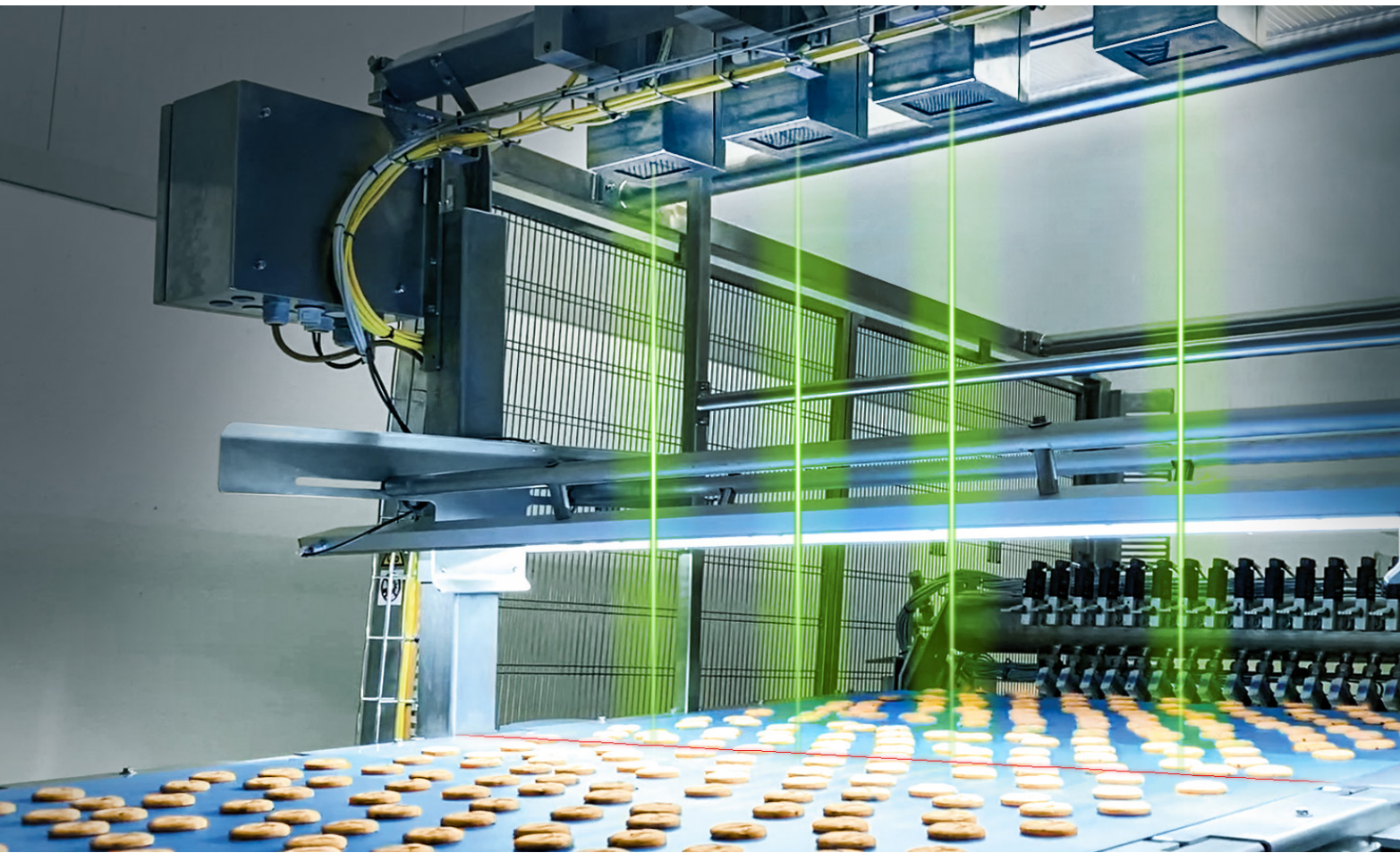


VISION SYSTEM WITH ARTIFICIAL INTELLIGENCE
FOR THE QUALITY CONTROL OF BAKERY PRODUCTS





WHICH ARE THE **MAIN BENEFITS** THAT CAN BE OBTAINED USING A **VISION SYSTEM** FOR **QUALITY CONTROL**?

+ **HIGHER PRODUCTIVITY AND LINE EFFICIENCY**

The analysis of product data allows to maintain the entire process under control.

+ **IMMEDIATE SAVINGS**

Reduction in labor costs and operating expenses.

+ **HIGH BRAND REPUTATION**

Less complaints from Customers due to higher product quality.

+ **REDUCED DOWNTIME**

The removal of non-compliant products guarantees continuous operation of the line.

+ **TOTAL CONTROL OF PRODUCTION**

Process repeatability and no product contamination.

+ **RELIABLE, REPEATABLE AND ACCURATE MEASUREMENTS**

Quality standards are also ensured even with different operators of the line.

+ **MAXIMUM LINE SPEED**

Possibility of carrying out measurements not visible to the human eye at high speed.

+ **CONTINUOUS IMPROVEMENT PROCESS**

Product data can be used to support a continuous improvement process.



SENSURE 1 N N O V A 7 I O N I N C O M P U T 3 R V I 5 I O N

SENSURE has been designing and developing, since 2007, **vision systems** with **artificial intelligence** which work in **self-learning**.

Thanks to the **SENSURE SYNAPSE technology** it is possible to:

- Automate the process for **quality control** (identification and rejection of non-compliant products).
- Optimize **Pick & Place** (product flow management).

The **SENSURE SYNAPSE technology** is used on **highly variable products**, such as:

- **Baked goods** (biscuits, crackers, snacks, rusks, cakes, pizzas, bread, baguettes, focaccia, tortillas, muffins, croissants, etc.).
- **Other products** (poultry and meat, pet food kibbles, candies and sweets, fruit and vegetable, wood, ceramic, etc.).

SENSURE also produces **optical instruments** for **particle size distribution (granulometry)** and for **dots analysis** in different sectors (food, agriculture, coffee, mining, etc.).

SENSURE Care

Always at your side

We advise and follow the Customer from the initial quotation and throughout the life of our systems with our Service (Helpdesk, Remote and Onsite Assistance and Spare Parts Management).

150+ systems
installed

Experience and Competence

The over ten years of experience acquired on different types of highly variable products, has allowed us to develop the best quality control features using 2D and 3D vision technologies.

4.0 ready

Industry 4.0

The features of the SENSURE SYNAPSE vision system meet the requirements for Industry 4.0.

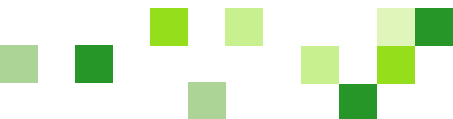


Video Bakery

SENSURE

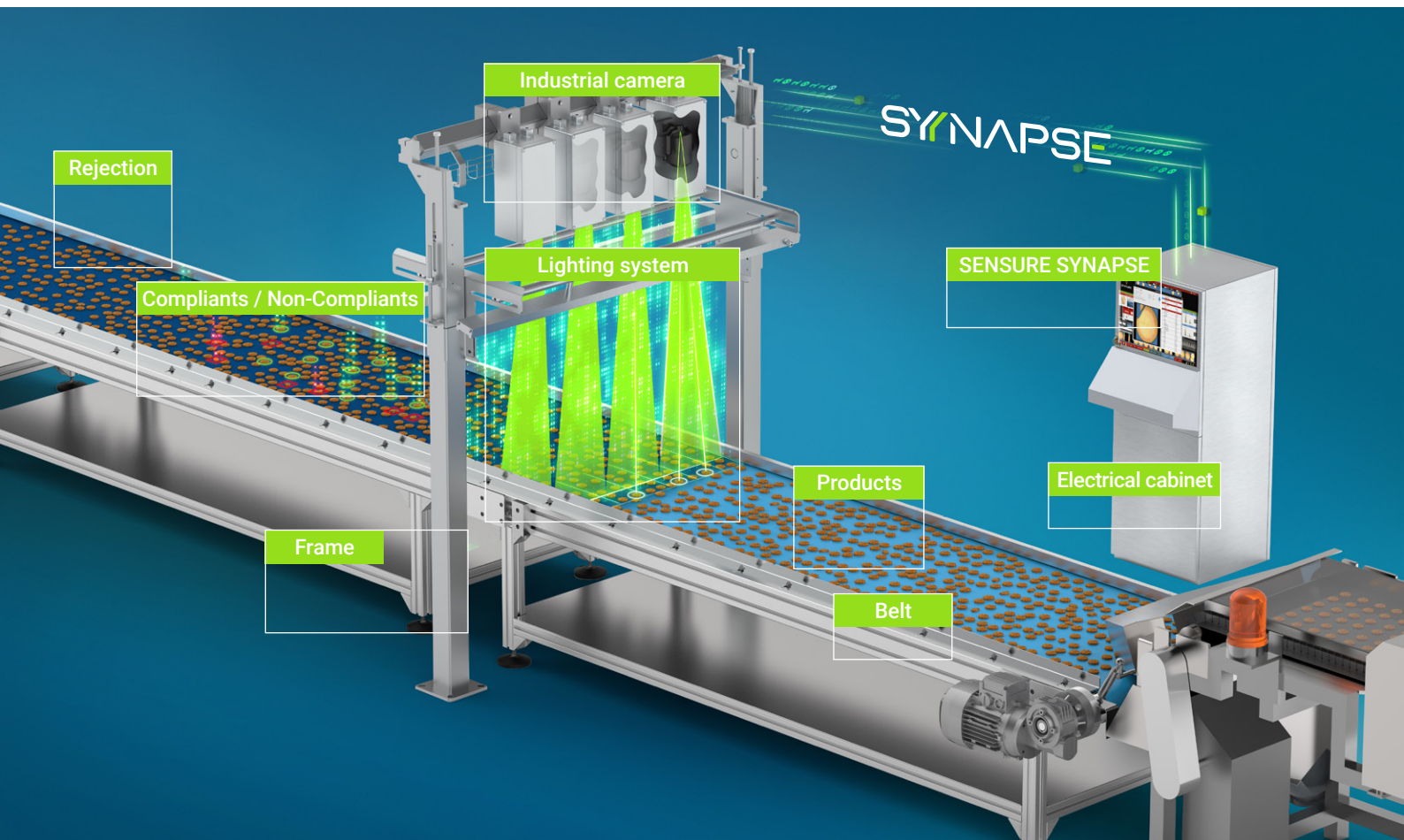
SYNAPSE
BAKERY

VISION SYSTEM WITH **ARTIFICIAL INTELLIGENCE** AND **SELF-LEARNING** TO MANAGE THE TYPICAL VARIABILITY OF **BAKERY PRODUCTS**



SENSURE SYNAPSE BAKERY controls the quality of biscuits of the most varied shapes (filled or not), crackers, snacks, rusks, cakes, pizzas, bread, baguettes, focaccia, tortillas, muffins, croissants and much more, **on different types of conveyors**. The system also provides all the information to PLC and Robot for the **automatic rejection of non-compliant products**.





ARTIFICIAL INTELLIGENCE AND SELF-LEARNING

The **numerous typical variables of a production line** (oven drifts, ambient light variation, different incoming raw materials, non-optimal product recipe, dirty conveyor belt, etc.) **make it difficult to find the right analysis thresholds**. With the use of **innovative artificial intelligence algorithms**, SENSURE SYNAPSE identifies the features

to be controlled by automatically adapting to different types of production and its intrinsic variability, **eliminating the complicated part of setup typical of traditional systems**. Thanks to the ability to work in self-learning, **SENSURE SYNAPSE presents a quick and easy installation and setup phase**.



LEARN

You choose the moment when the system has to adapt to production.

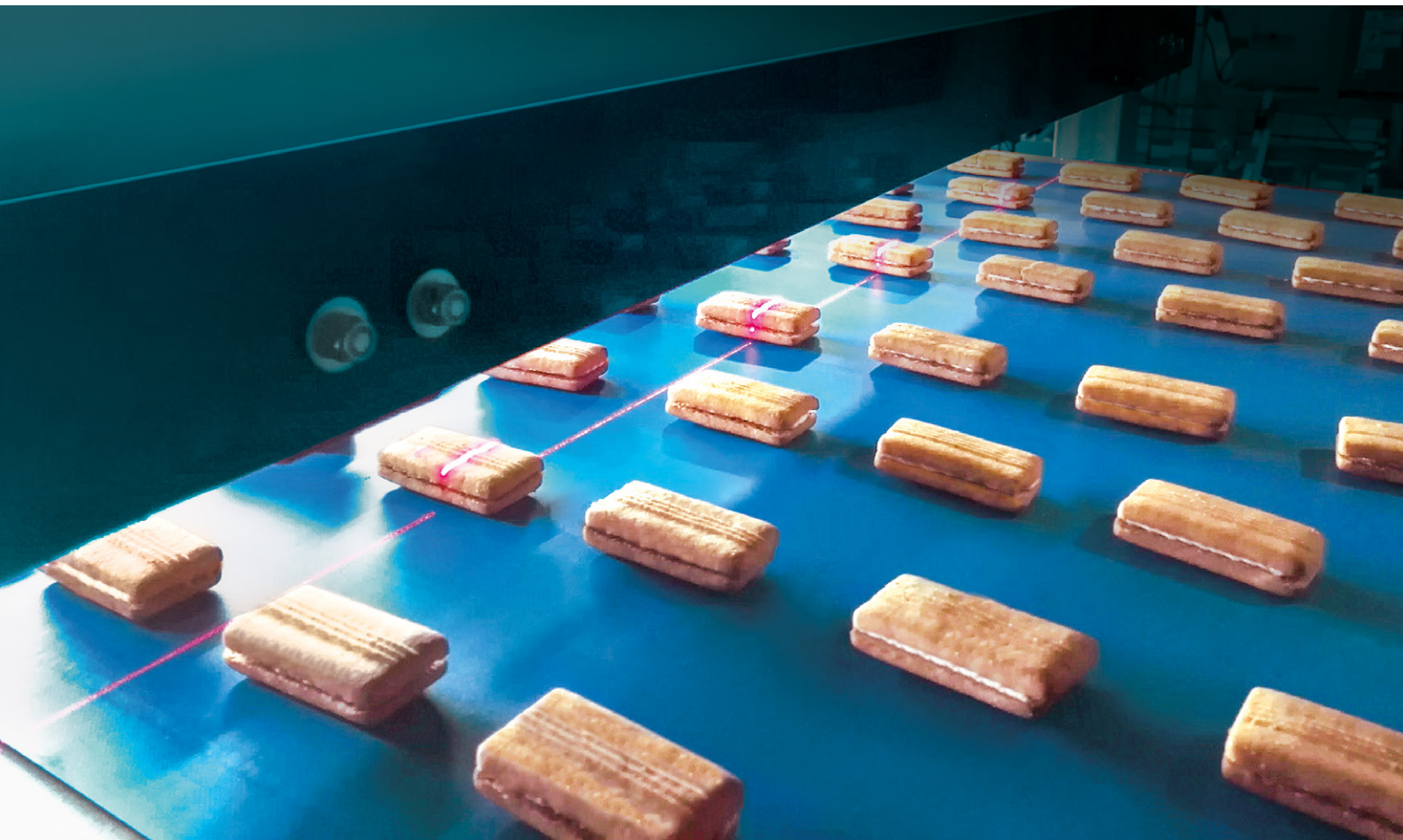
Thanks to the LEARN button on the intuitive graphic interface of SENSURE SYNAPSE, the line operator decides when to have the system adapted to continue to guarantee the best quality standards while respecting production volumes. **The system itself, thanks to its ability to work in self-learning, automatically proposes a quality recipe and tolerance thresholds** (without requiring samples for a manual classification of non-compliances), **allowing the operator to make subsequent modification**.



AUTOLEARN

It is the system itself that chooses the best moment to adapt to production changes.

Thanks to previous learned experience and data saved over time, **SENSURE SYNAPSE is able to adapt independently to further improve the efficiency of the line**. Any production drifts are identified and reported without compromising the correct functioning of the system.



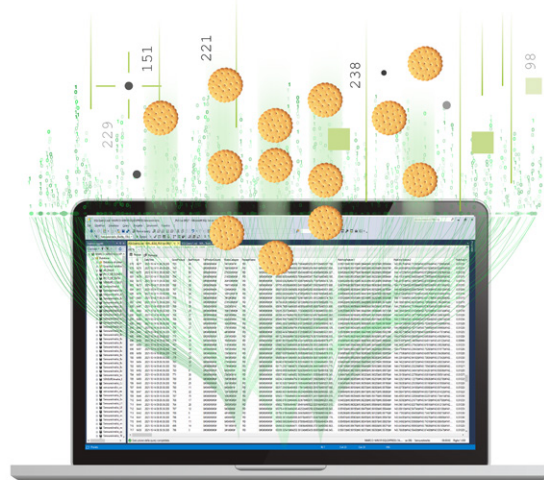
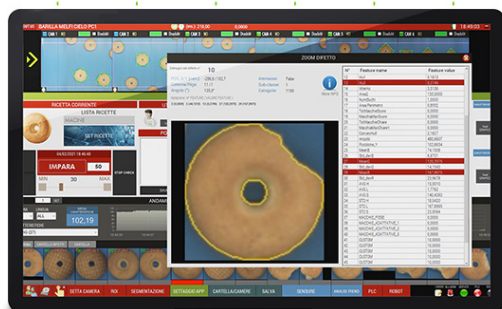
MEASUREMENT AND DEFECT DETECTION CAPABILITIES

The over ten-years experience acquired in different Industries has allowed SENSURE to developed the **best quality control features using 2D and 3D vision technologies**. SENSURE SYNAPSE solutions are able to measure and control **numerous product features** (a wide set is included in the system), such as **shape, size, color and surface pattern** using 2D technology (Industrial Camera) and perform a **full 3D product profile** using 3D technology (laser profilometer).

SENSURE SYNAPSE is a flexible system designed for the **development of any additional requests** that can still be implemented as an ad-hoc feature (after a feasibility analysis). It is also possible to **integrate our solutions with third party systems** such as metal detectors, checkweighers, moisture analyzers, etc.

THROUGH THE VISION SYSTEMS IT IS POSSIBLE TO MEASURE MULTIPLE QUALITY PARAMETERS (BOTH FOR THE UPPER AND BOTTOM PART), INCLUDING:

- **Shape and Size** (min/max/average diameter, perimeter, length, width, roundness, area, etc.)
- **Compactness**
- **Color** (under-over cooked)
- **Topping and seeding conformity** (quantity, distribution and color) and **spot detection**
- **Texture analysis**
- **Edge/Contour defects**
- **Cracks and holes** and their conformity
- **Foreign body detection** (identification is possible if the dimension and color differences of the inclusions are detectable in the camera)
- **Profile and height of the product** (minimum, average and maximum height)
- **Flatness, planarity and offset of upper shell** (when presents)



Up to
12.000 products
per minute

Total control of production

Automatic identification of all products (even if not ordered). High analysis speed thanks to complex controls in a few milliseconds and on conveyors up to 60 m/min (200 fpm), ensuring process repeatability, high performance, cost savings and no product contamination.

Sorting
AUTO

+ Custom Solutions

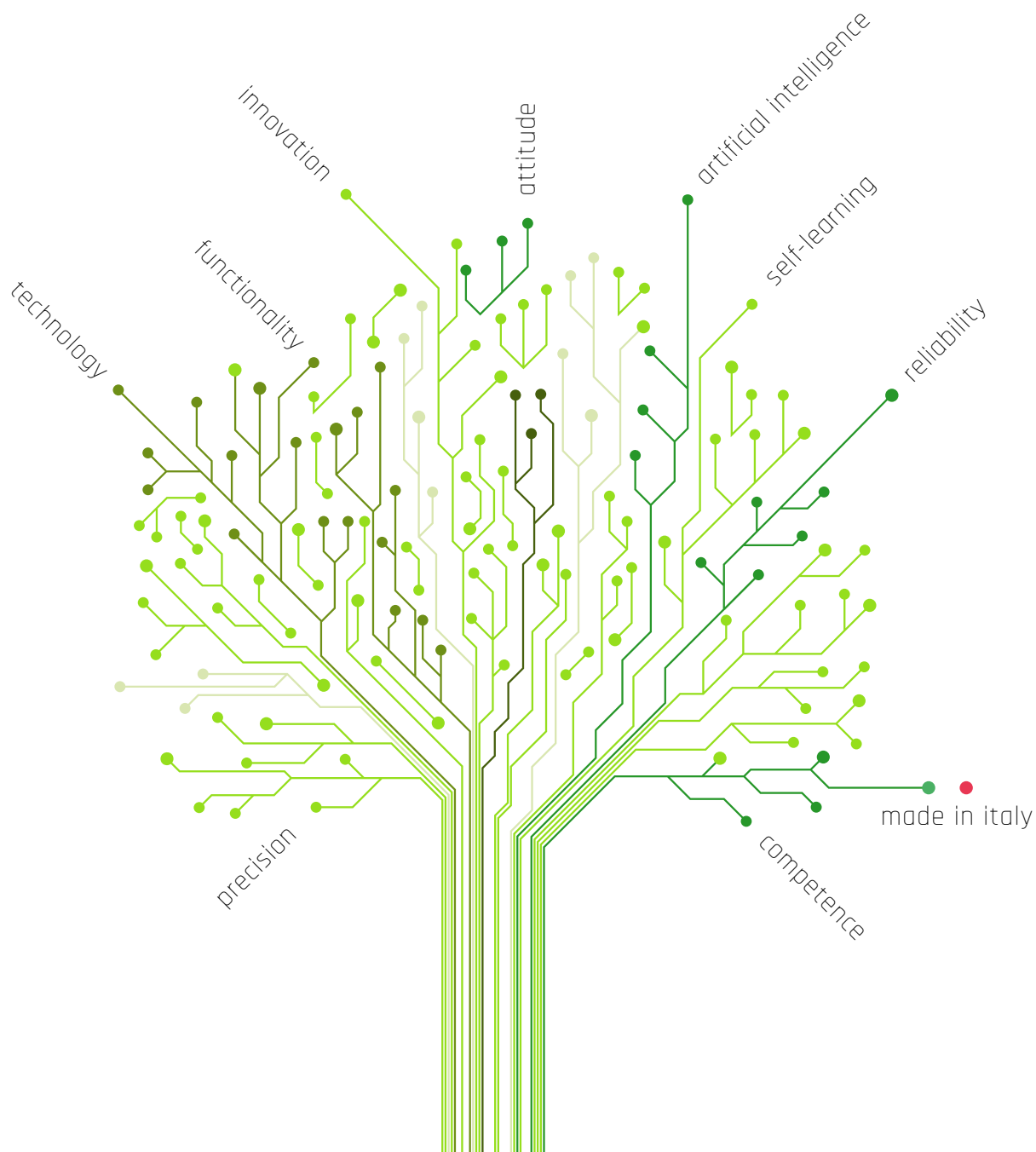
Management of automatic rejection through single and/or multiple rejects (air nozzles, traps, retractable belts, robots, etc.) through connection with PLC and Robot. Ease of integration on existing lines and possibility of developing complete customized turnkey solutions that comply with the food standards in use. Collaboration with machine manufacturers and integrators.

BIG
DATA available

Real-time display, data collection and reporting

The system allows real-time display and monitoring of measured values, results, etc. The system also collects and stores in a SQL database the data of the whole production (accessible also by third-party software). Possibility to carry out dedicated reports over long periods of time, supporting the continuous improvement activity.

NEVER STOP LEARNING

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