



Alliance for IoT
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Innovation

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**APICUS® a Human mimic robotic quality inspection
solution for manufacturing sector**

VIDEO SYSTEMS

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Background and Aims

In the manufacturing sectors, many quality inspection tasks are still performed by operators and this approach:

1. Does not guarantee high standards in quality control
2. Incurs significant costs
3. Leads to occupational diseases (as shown by Eurostat statistics)



Challenges

The challenge was to create a system capable of handling quality control on production batches that are constantly changing in shape, product type, and type of control, as is happening today in a market with increasingly agile production.

Robotic solutions are usually designed for repetitive but always the same work. Something was needed that would make the task more agile and reduce machine setup time.

Solution or methods

APICUS® is a software platform that can handle any type of robot, thanks to a Digital Twin system and a tool for defining controls, the system uses the 3D cad file of the product to be controlled to generate in a fully automatic way the work cycle adapted to the sensors (cameras, lasers, etc.) dedicated to quality inspection.



The disruptiveness of APICUS platform lies in the fact that it is not a product-specific solution, since its features enable it to generalize a problem, thus being agile in performing dynamic quality control tasks on any complex element, relying on AI and machine learning

APICUS innovatively combines key cutting-edge technologies: robot mimicking human capability of manipulating objects in front of cameras:

1. Artificial intelligence (AI)
2. Hyperspectral imaging/artificial vision (AV)
3. Industrial Internet of Things (IoT)

The platform combines the flexibility of a human in analysing every single part of the element and any shape, with the accuracy and enduring effectiveness over time of a machine (which is not subject to attention and precision decay).

When APICUS is installed in a production line, the robot grabs and handles objects in a human-like way, granting a fast training phase, as it learns by doing, thanks to AI. AV

Benefits or results

Nowadays we have applied Apicus to a number of pilot projects in different manufacturing sectors, such as:

1. hollow glass,
2. recycling,
3. mechanical engineering,
4. pharmaceuticals
5. aerospace

KPIs indicate:

- reduction of **80%** the time for setup machines,
- reduction of **20%** of false positives and
- increase of **30%** on the capability of identification of defects on the goods before introducing them on the market.



Conclusions

With a view to sustainability, reduction of occupational diseases, extension of manufacturing to the paradigms of Industry 5.0



we believe Apicus® will be able to make its contribution and find more and more new spaces of use in manufacturing, helping the European manufacturing fabric to be competitive and sustainable.

Thank you

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