

PROBLEM/ISSUE ADDRESSED

Critical industrial components need to be inspected to guaranty there is no remaining critical defects after assembly.

In this project, we studied 2 types of applications from :



Robotization of a production line is costly and complex. There is a need for a flexible and quick to deploy solution.

SOLUTION

The integration of 2 new technologies is realized: the use of phased-array sensors and the automation of the inspection

WHY IT IS IMPORTANT FOR SOCIETY

Being able to guarantee that the parts produced are defect-free is essential in many fields of activity: aeronautics, energy (decarbonized) and others. But this is costly and 80% of inspections are still done manually by specialists with a big impact on delays and costs of final parts.

We propose a new integrated system, safe for the employees, easy to deploy and teach, able to guarantee quality and reproducibility of non-destructive inspections at a reduced cost.

“ Thanks to EIT we were able to integrate new ultrasonic inspection techniques and a original collaborative robot to improve the quality and speed of regulatory inspections ”



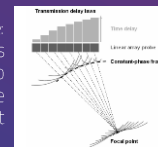
the cobot allows to move precisely and quickly the sensor on the surface of the part

MAIN RESULTS & INSIGHTS

- The use of phased-array sensors allows a large area of the part to be inspected in a single pass; the quality of the inspection is improved
- In some cases, it is possible to automate the control by means of controlled mechanical devices or collaborative robot arms. This allows a gain in productivity ranging from 5 to more than 10, in an easy to deploy and very reproducible way
- For aeronautical parts, the cobot brings speed and ease of use. The control of welds benefits most from the phased-array technology. A new product could be proposed



Phased-array principle: acoustic beam is electronically deviated to explore the whole volume of the part



GWENAELOU TOULLELAN
Manager of NDT Projects at CEA-List

MAIN PRODUCT
FlexiNDT project
AIM: Accelerating the digitalisation of plastic manufacturing industries through new technologies