

3
Countries

8
Partners

3,1
Million EUR
Funding

3,7
Million EUR
Project Budget

Discover more about

SPIRIT

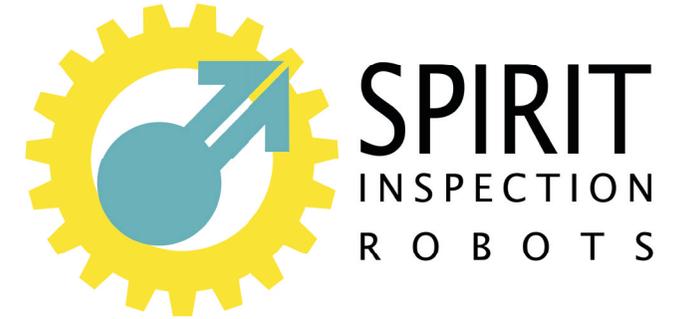
<http://spirit-h2020.eu/>

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A software framework
for the efficient setup
of industrial inspection
robots

What we do

The SPIRIT project will take the step from programming of robotic inspection tasks to configuring such tasks.

Who funds us

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 779431.



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ONE STEP AHEAD.

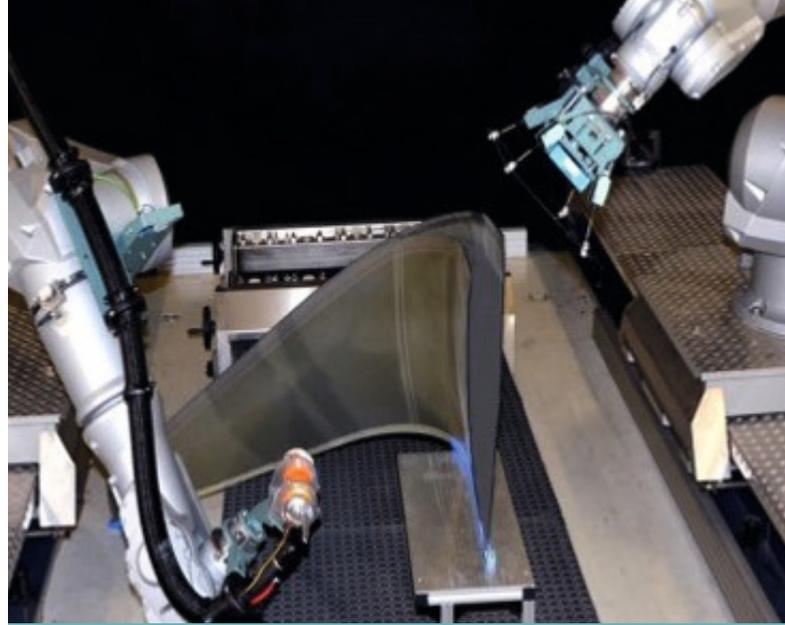
Objectives

The inspection of parts of complex shape requires robotic solutions to move a sensor system in such a way that the whole surface of the part is covered.

For this kind of inspection systems the SPIRIT project aims at the development of

- an offline software framework for the quick and easy setup of robotic inspection tasks using CAD models of the workcell and the part to be inspected.
- an inline framework for the execution of the inspection task on the robot, dealing e.g. with small deviations between the actual appearance of the part and its CAD model.

The resulting software modules will be designed to be flexible and cover any image-based inspection technology that allows continuous scanning of complex parts.



Examples

Inspection of assemblies

During the assembly of engines the presence and the correct type of several components needs to be verified, while the engine is slowly moving on a conveyor belt. A robotic system will adaptively position a 3D sensor to acquire point clouds and to detect and verify the components.

Inspection of composite parts

For structural aircraft components X-Ray inspection is used to check for any changes in the material. A full scan of the part is required and switching between different types of parts needs to be done quickly. Also, thermography as a secondary inspection method should be usable on the same robot with little additional effort.

Crack-detection on forged parts

A thermographic inspection process is used to detect cracks on forged parts. The robot will guide a laser and a thermo-camera across the whole surface to perform active thermography. The defects that have been identified will be forwarded to a follow-up grinding process to allow automatic grinding.

Impact

The software modules will provide a tested and robust framework for the implementation of inspection robots in industrial series production.

- SPIRIT will increase the market-readiness of robotic inspection system by developing a framework that has been tested and is proven outside the lab.
- It will provide a software framework for system integrators of inspection robots that substantially reduces the effort for setting up such systems for a particular application.
- The SPIRIT framework will simplify any changes that end-users need to make to robotic inspection systems such as changing parts or switching inspection technologies.

The technologies developed in the SPIRIT project will facilitate the automation of new robotic inspection tasks by lowering the economic barriers for their implementation.

