HANDLING & POSITIONING OF HEAVY PARTS FOR ASSEMBLY - PART 2

HAPPY 2 PROJECT

HAPPY 2 follows on from the HAPPY project and aims to optimise the control settings developed to compensate for the flexibility of parts and tools in continuous servo processes and to test them in more complex scenarios of aeronautical use, but also in defence situations for the navy.

TECHNICAL AND ECONOMIC IMPACTS

- Flexibility in relation to product variants and output
- Reduction of non-recurring costs
- Easy workshop reconfiguration

PARTNERS

IRT JULES VERNE, AIRBUS, NAVAL GROUP, CNRS (LS2N), INRIA

BUDGET

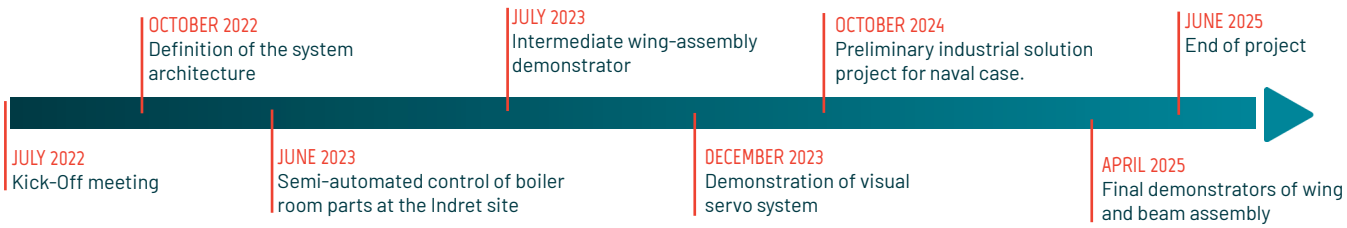
€2,699k

KEYWORDS

Robotics - Flexibility - Assembly - Reference control sensors Measurement

RESEARCH THEMES AND EXPERTISES

Assembly processes
Flexibility in production
Mobility within the manufacturing area
Robotics, cobotics and augmented reality



INDUSTRIAL CONTEXT

The previous HAPPY project (07/2018 - 11/2022) validated for two situations of aeronautical usage the development of a control setting able to compensate for the flexibility of parts and tooling based on continuous local measurements. This makes it possible to envisage aeronautical assembly lines capable of:

- flexibility in terms of output and product variants,
- working without intensive use of overhead cranes, since such operations currently create bottlenecks in aeronautical assembly workshops,
- working without use of tools anchored to the floor.

On the Naval Group side, the developments concerning continuous servo assembly offer an excellent opportunity to standardise production methods and to validate the referencing of two large submarine parts horizontally, and to eliminate turning operations after initial positioning.

INNOVATIVE FEATURES

- Taking into consideration the stresses on and deformation of the parts, in order to optimise controls or to measure stress and deformation at output
- Simultaneous servo systems for several interfaces
- Combined use of various sensors (profilometers, vision, eddy current, etc.)
- Removal of markers on parts, detection of smaller bores or other notable geometric features on individual parts

INDUSTRIAL APPLICATIONS

Regarding naval applications, the expected results are the dimensioning and costing of a (semi-)automated assembly solution in partnership with an integrator to prepare the transfer of developments to the Indret site.
Regarding aeronautical applications, the solutions developed may eventually be used for assembly of the wing on the central wing box and, in the longer term, for assembly of the ventral beam on the central fuselage for future programmes to reduce production times.

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