

A project for a stand-alone multifunctional robotic trolley for naval applications



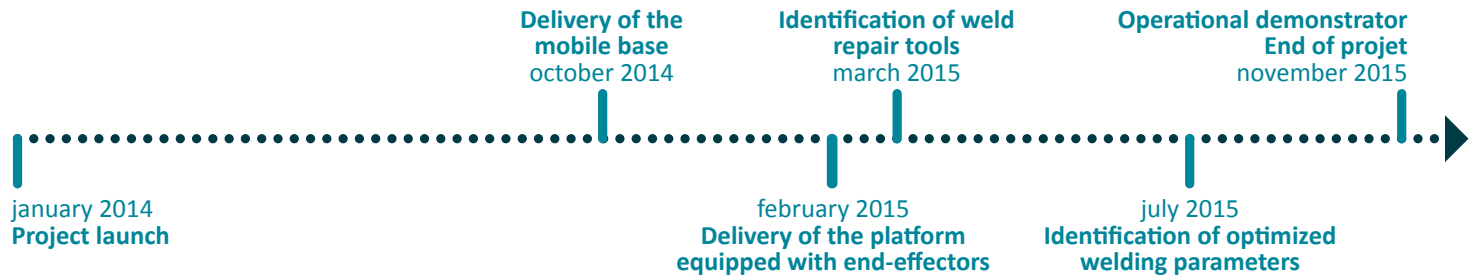
The purpose of the Charman (for CHariot Autonome Robotisé Multifonctions pour Applications Navales) project is to develop a stand-alone welding trolley with the capability to move and automatically adjust its path on vertical surfaces, and to correctly repair welding seams as a function of the section of the weld joint.

Technical and economic impacts

- ▶ No need for scaffolding for edge welding operations: €300,000 saved
- ▶ Improved weld reproducibility and quality
- ▶ Lower risk of accidents and better working conditions

Keywords

Robotics // Assembly
Performance // Flexibility
Self-adaptive welding



INDUSTRIAL CONTEXT

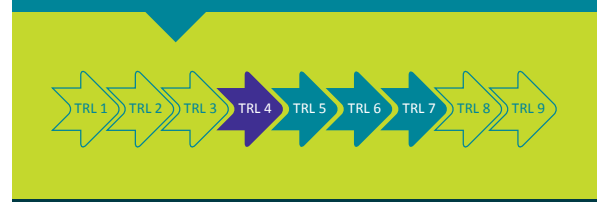
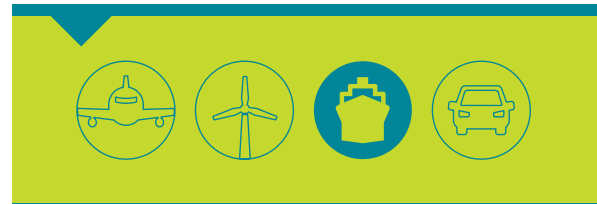
In the naval industry, ships are built by assembling prefabricated units, and this involves very long weld seams on vertical surfaces. Currently, the welding is done manually, requiring the installation of expensive scaffolding on which the operators must work under stress at great heights. The use of robotic trolleys will help to reduce cost by eliminating the need for scaffolding in the work zone covered, improve the weld reproducibility and quality, and make these operations safer.

INNOVATIVE FEATURES

- ▶ **The system supports self-adaptive welding:** it identifies the weld joint configuration (thickness and bevel groove to be filled, etc.) and automatically adapts the welding parameters and the distribution of weld passes.
- ▶ **The mobile base is multifunctional:** it is possible to integrate the tools needed to automate all the associated steps from unit assembly and cutting to the actual welding, weld repair and final weld inspection, as a function of the task to be performed.

INDUSTRIAL APPLICATIONS

The project results will be directly applicable, producing direct economic spin-offs for shipyards as well as improved safety conditions and quality. The combination of a stand-alone multifunctional mobile base with high-performance effectors could generate attractive industrial applications for work on oversized structures or in hard-to-reach areas.



Partners

- ▶ IRT JULES VERNE
- ▶ BUREAU VERITAS
- ▶ DCNS
- ▶ SERVISOUD
- ▶ STX FRANCE
- ▶ IRCCYN (UMR CNRS, ECN, EMN, UNIVERSITE NANTES)

Equipment

- ▶ Stand-alone mobile trolley

Budget

- ▶ 730 k€

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