Cable-driven parallel robots

CAROCA project

Using methods like modelling, identification, simulation and prototyping, the project aims at identifying the industrial operations that can be handled by cable-driven parallel robots. This involves assessing the capabilities of cable-driven parallel robots to carry out different industrial operations, such as painting, shot blasting, part assembly, measurements and inspection of oversized parts.

Technical and economic impacts

- Easy access to large structures
- Improved safety
- Optimized robot multi-tasking through reconfigurations

Keywords

Robotics // Cable-driven parallel robots
Reconfigurability
Large Volumes

Modelling and simulation december 2014
Robot reconfigurations tool june 2015
Experimental validations june 2016

january 2014 **Project launch**
january 2015 **Installation of a 1:50 scale demonstrator**
january 2016 **Installation of a 1:5 scale demonstrator**
january 2017 **End of project**

INDUSTRIAL CONTEXT

The processes considered thus far require moving operators or effectors over large distances in cluttered environments. The constraints for these heterogeneous processes are quite different in terms of robot accuracy, external wrenches and mass in motion. Therefore, there is a need, to develop robotic solutions to make these operations safer, less arduous and more efficient.

INNOVATIVE FEATURES

- Development of cable robots for shot-blasting and painting operations on offshore wind turbine jackets
- Development of a robotic system for moving and assembling heavy oversized parts
- Ideas: cable robots carrying another active system; reconfigurable cable robots
- Fast and accurate robotic systems covering a large workspace
- Robot reconfigurability for work/operations in congested areas

INDUSTRIAL APPLICATIONS

Optimizing the reconfiguration should make it possible to move the tools around oversized parts in order to perform a wide range of operations. This could be of interest to a number of industries.

Partners

- IRT JULES VERNE
- AIRBUS
- DCNS
- STX FRANCE
- CNRS (IRCCYN & LIRMM)

Equipment

- Two cable-driven parallel robots: the first 1 is one meter high, the second one is 5 meters high

Budget

- 605 k€

Sales contact
business@irt-jules-verne.fr

Press contact
communication@irt-jules-verne.fr

www.irt-jules-verne.fr