



# hephaestus

Highly automatEd PHysical Achievements and PerformancES  
using cable roboTs Unique Systems

## ABOUT HEPHAESTUS

The HEPHAESTUS project explores the **innovative use of robots and autonomous systems in construction**, a field where the incidence of such technologies is minor to non-existent. The project aims to increase market readiness and acceptance of key developments in cable robots and curtain walls.

Over the project lifetime it shall produce fundamental **technical validation outside the lab**, and deliver significant results such as:

- a prototype **cable robot**, designed to build, repair and maintain a building façade;
- a **prototype curtain wall** system, suitable for robot assembly; and
- a **business plan** for wide-spread commercial adoption.

The main objective of HEPHAESTUS is to develop and test implementations and applications for cable driven robots in the outdoor built environment.

## CHALLENGES

The main challenge to be addressed along the HEPHAESTUS project is to **enable the installation and maintenance of Curtain Wall Modules by means of Cable Robots** able to operate autonomously across large vertical workspaces (up to buildings with 30-40 floors), in an outdoor environment and with active devices on-board the robot end-effector(s).

HEPHAESTUS project wants to develop a cost-effective, reliable, flexible, robust, efficient and ease of use highly automated industrial Cable Robot System equipped with a Modular End-Effector Kit with active devices onboard for outdoor built environment.



## CABLE ROBOTS

The **cable driven parallel robot (Cable Robot)** carries the **Modular End-Effector (MEE)** and the platform hosting the **MEE** to perform different tasks:

- Installation of the Curtain Wall Module
- Maintenance, cleaning and painting

In cable robots, flexible cables are used as actuators of parallel manipulators. One end of each cable is connected to a platform hosting the MEE, and the other end is reeled in or out by a motor-driven winch. The MEE is a specially designed mechatronic system, which moves to different floors of the building by the help of a cable robot. Briefly, a cable robot carries the MEE to the desired position and the MEE performs the rest of the tasks (e.g., drilling, placement of the curtain wall module, cleaning, etc.)



Conceptual view of a cable robot (orange) working on a building. The platform hosting the MEE is coloured red

## MAIN PROJECT DATA

Start: January 1, 2017  
Duration: 42 months

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## LEARN MORE

Join our stakeholder group to receive newsletters and periodic updates.  
Register at:

[www.hephaestus-project.eu](http://www.hephaestus-project.eu)

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