

Highly automatEd PHysical Achievements and performancES using cable roboTs Unique Systems

AMBITION

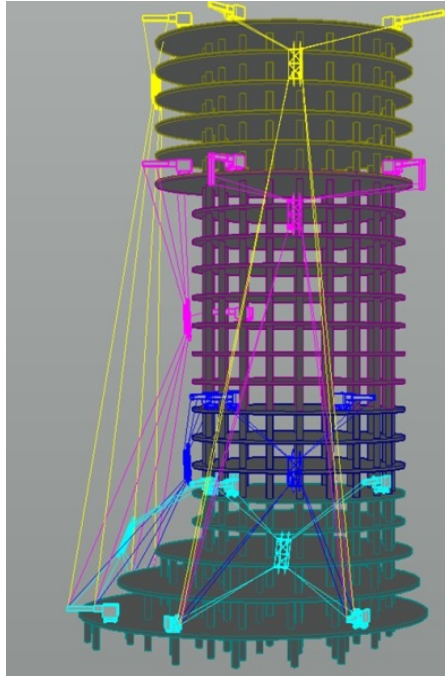


- **Hephaestus** project addresses novel concepts to introduce Robotics and Autonomous Systems use in the **Construction Sector** where the presence of this type of products is minor or almost non-existent.
- It focuses to give novel solutions to one of the most important fields in Construction, the field related to the **facades** and the works that need to be done when this part of a building is built or need maintenance.
- **Hephaestus** proposes a new automatized ways to install these products, providing a whole solution not only highly industrialized in production but also in installation and maintenance.

Scheme of use of Hephaestus solution

Image: Iturralde, Linner and Bock, Chair for Building
Realization and Robotics, Technische Universität
München

APPROACH

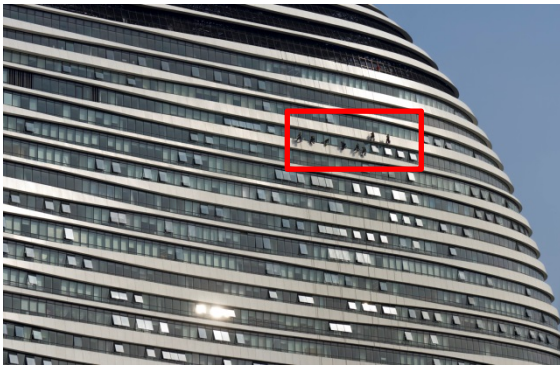


- **Hephaestus** is mainly based on a cable-driven robot that integrates several technologies for creating a multiple job performer.
- **Hephaestus** has been conceived as a solution for accomplishing multiple tasks on vertical or inclined planes of the built and outdoor environment.
- **Hephaestus** will be equipped with a modular end-effector kit to host several tools:
 - All the processes to install the façade on the building
 - All the accessory devices necessary for the sensing and controlling system
- The research will focus on the installation of curtain walls (some modification to these systems will be necessary)
- **Robot Oriented Design** criteria will be applied.

Scheme of use of Hephaestus solution during the construction of a complex Building facade.
Image: Iturralde, Linner and Bock, Chair for Building Realization and Robotics, Technische Universität München

IMPACT

- **Hephaestus** aims at automating the On-site Execution or Installation process for empowering and strengthening the Construction Sector in Europe and for positioning the European Robotic Industry as leader and reference in the huge and new growing market for the robotics.
- **Hephaestus** solution would allow reducing up to 90% the number of work accidents during façade installation and cleaning processes.
- **Hephaestus** can reduce around 20% of installation cost and around 44% of the annual maintenance and cleaning costs.
- The target market for the solution, the **Curtain wall sector**, currently accounts for an annual market of €30,000 million in Europe.
- The solution can be easily adapted to other tasks in the construction sector.



Workers cleaning a glass façade by climbing

