

# HIGH PAYLOAD COLLABORATIVE ROBOTS (LMS)

A high-payload robot, empowered by AI, is used in shipyards for the picking, positioning, and welding of heavy metal parts. Precise parts positioning is supported by manual guidance while welding path teaching is supported by intuitive AR programming interfaces. Safety systems are properly integrated for Speed and Separation Monitoring HRC.

## Involved partners



## Technology

The proposed solution combines several technologies: Speed and Separation Monitoring HRC, direct and indirect human-robot interaction for parts positioning and AR-assisted welding path teaching, advanced perception for bin picking operations, multilayer safety system, and a multimodal gripper (with magnets for picking tasks, welding torch for welding, F/T and vision sensors).

## Applications

High payload robots are being utilised in shipbuilding to enhance productivity and working conditions. They handle strenuous tasks like manipulating heavy parts, while human operators guide them. The tools developed offer adjustability and ease of use for non-expert users. AI-enhanced machine vision and AR technology support operators in detecting and manipulating parts, programming robot paths, and ensuring safety through a multilayer safety system.

