



# INDUSTRY CASE

## #08\_LEGO\_C

### Dynamic gripper design

#### Context

At the LEGO group, our bricks are primarily created through the process of injection moulding. This ensures a precise and clean product after just one process. However, some of our elements require a post processing procedure, like printing, to ensure the highest level of quality and detail. To enable the printing process, it is crucial to constrain the elements in custom jigs, to guarantee that the prints are correctly aligned and printed. This process of constraining the elements is very challenging as almost all elements are produced and stored in large disorderly quantities in containers.

A large part of constraining the elements is handling them with a gripper.

Handling is all the technology related to picking and placing the elements from our vibration tables to custom made jigs to ready the elements for processing. Specifically, the technologies related to the design of the grippers and jigs. The jigs which the elements are placing in, are also made specifically for each type of element, and only supports one orientation. A hard requirement for any gripper/jig, is that it cannot induce any unnecessary stress on the elements, nor can it scratch or deform them.

#### Challenge

Develop a(multiple) gripper design(s) for a specific set of elements.

The gripper design(s) should be able to handle as many elements as possible to reduce the need for changeover. When the elements are picked, they should be correctly placed in jigs with the same correct orientation. It is allowed to create more than one design.

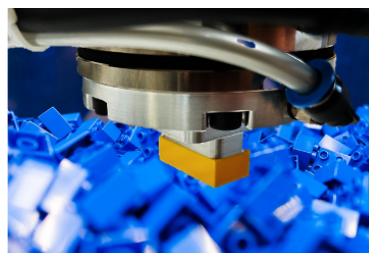
It is not a hard requirement that the design(s) are/is produced. However, if possible, consider doing so to verify that the design(s) work in practice. The gripper should be designed for a 4 DoF SCARA robot.

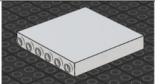




#### Tools, methods and materials

- Documentation of all the equipment
- CAD files for relevant equipment and elements

#### Ideal outcome for the company

A new gripper concept and hopefully a dynamic design process which we can replicate to develop more designs in the future.



Name	Picture	ID
Wall element Color: White Transparent blue		4504228
Shell Color: Black		6408177
Roof tile Color: Black		6475203
Satellite dish Color: Silver		6497515
Flat tile Color: White, black, transparent		306801



We are the company behind the bricks and have been sparking children's imaginations since 1932. Today, we transform our factories through Automation and Robotics, delivering productivity and an exiting workplace, where skilled colleagues play key roles as problem solvers and innovators. We ensure LEGO manufacturing equipment has the latest Operational Technology and Robotic features and through AI/ML/Simulation enabling a cyber secure, efficient production with reduced lead-time and cost savings.