

## **Automated robotic system for laser deburring of complex 3D shape parts**

IK4  TEKNIKER  
Research Alliance

**IDELT** INGENIERÍA DE DESARROLLO  
DE PROTOTIPOS



Unification of the coordinates systems

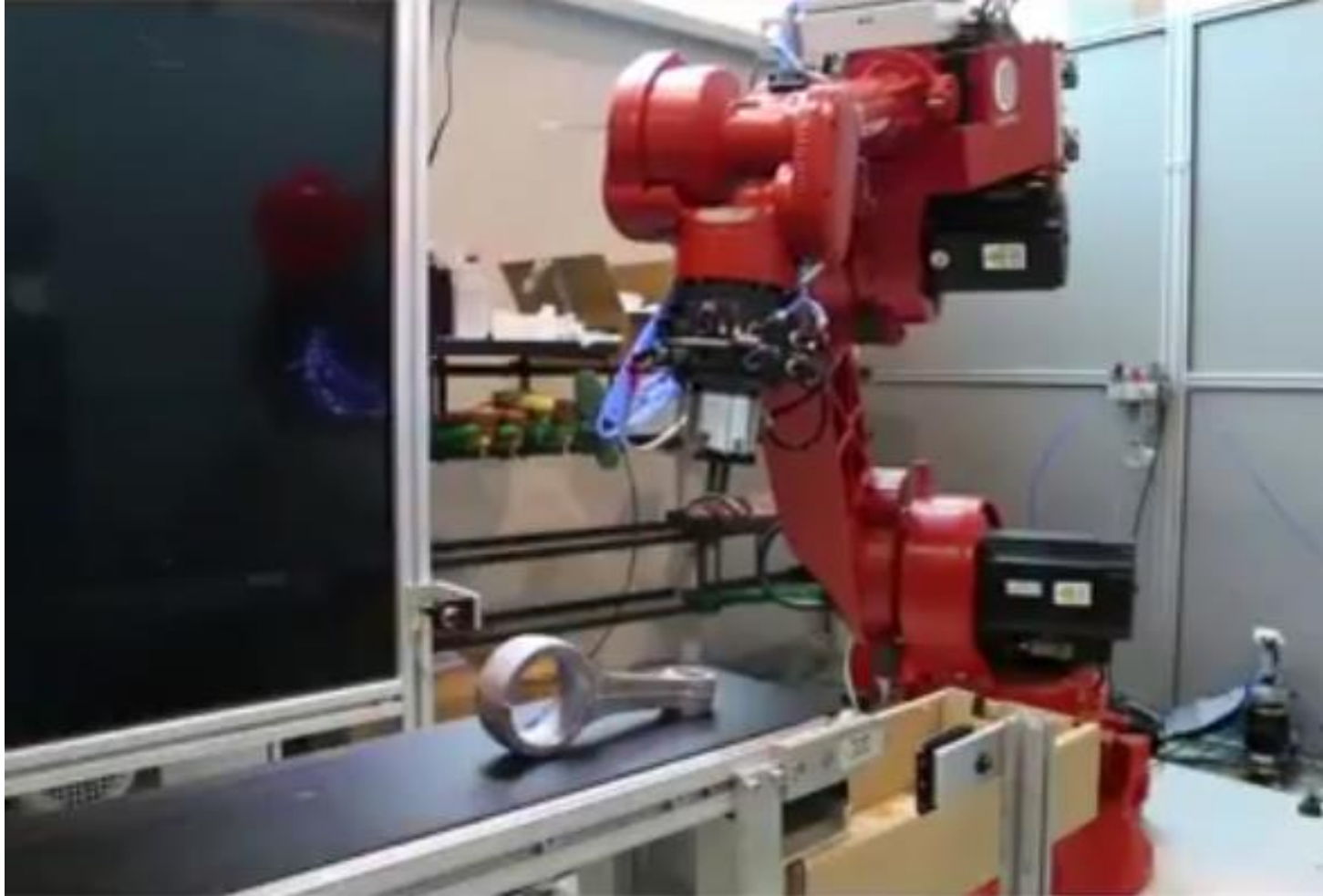
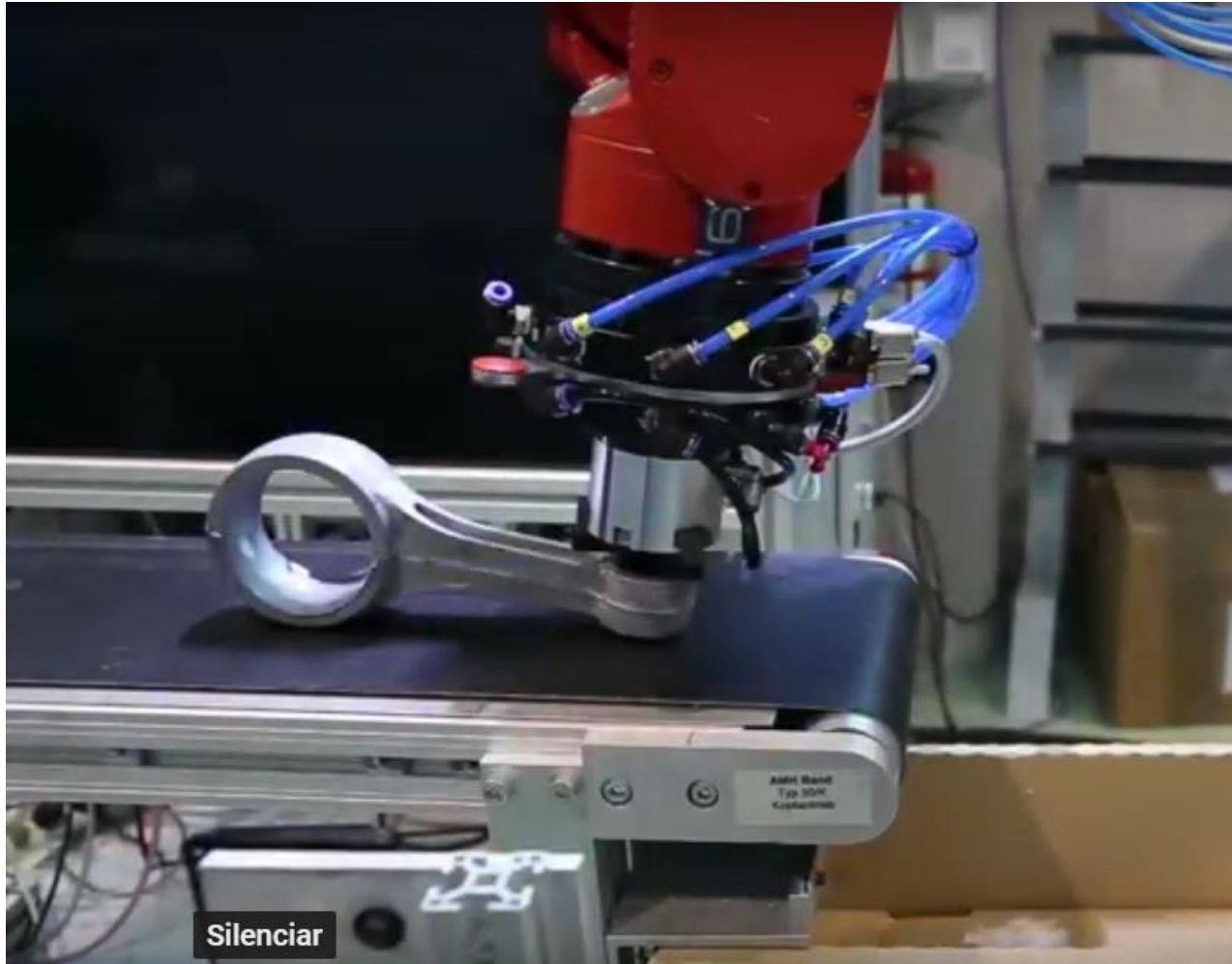


Image taken by a 2D camera

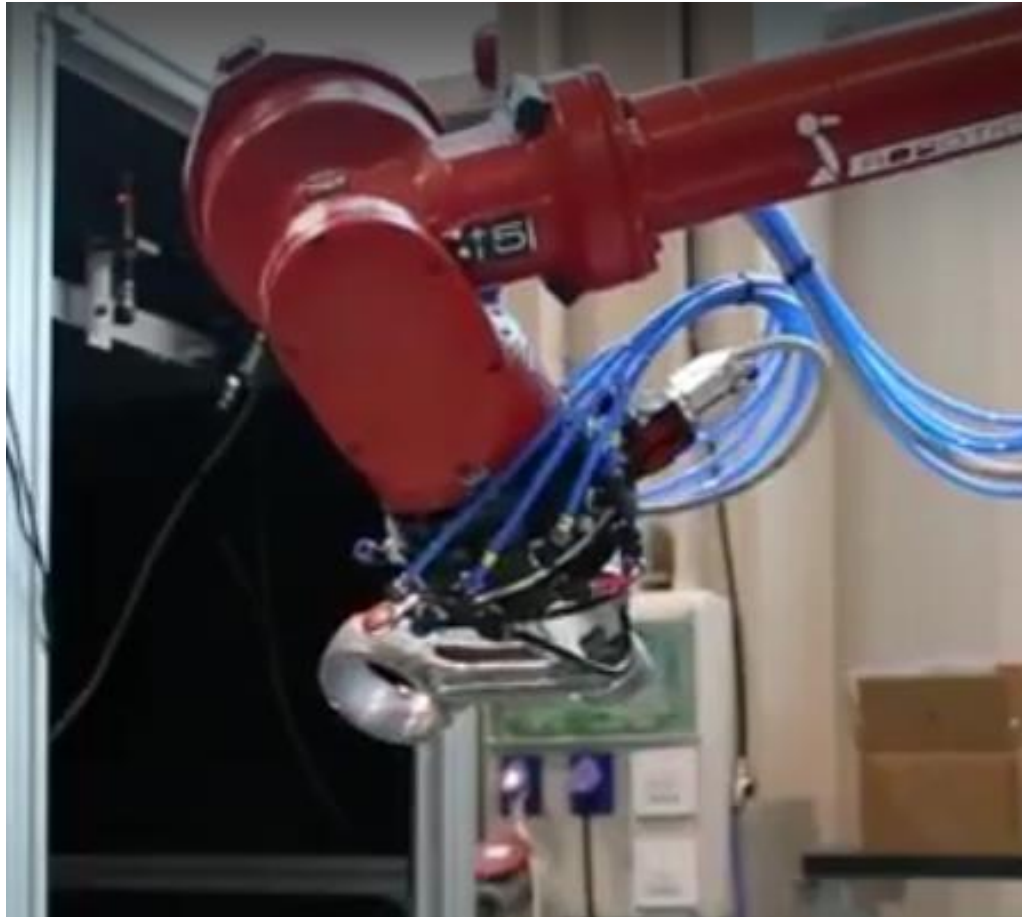


3D pose estimation from the 2D image

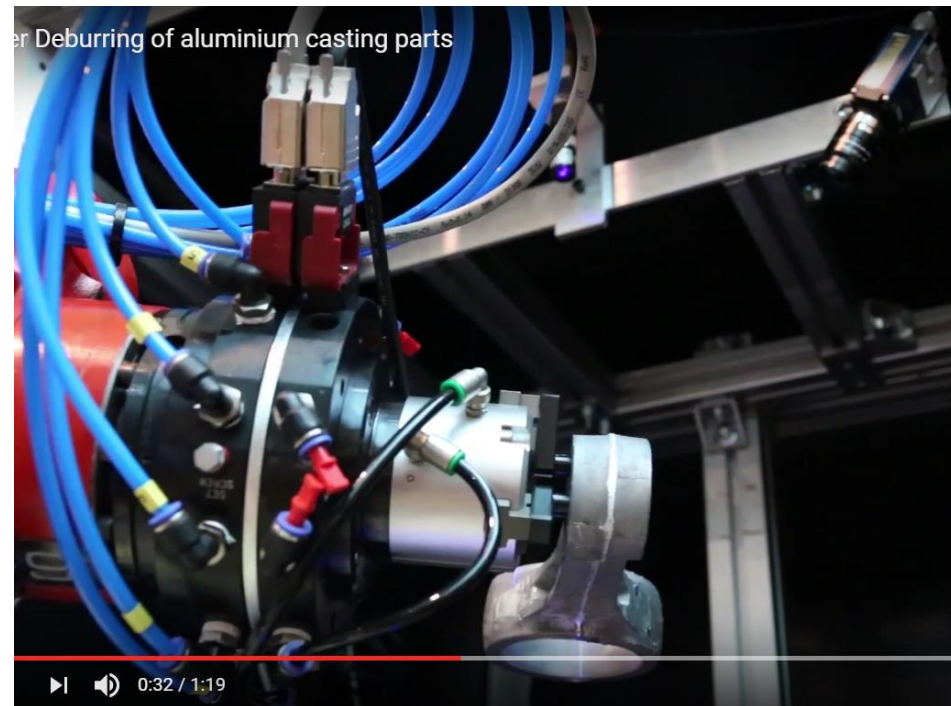
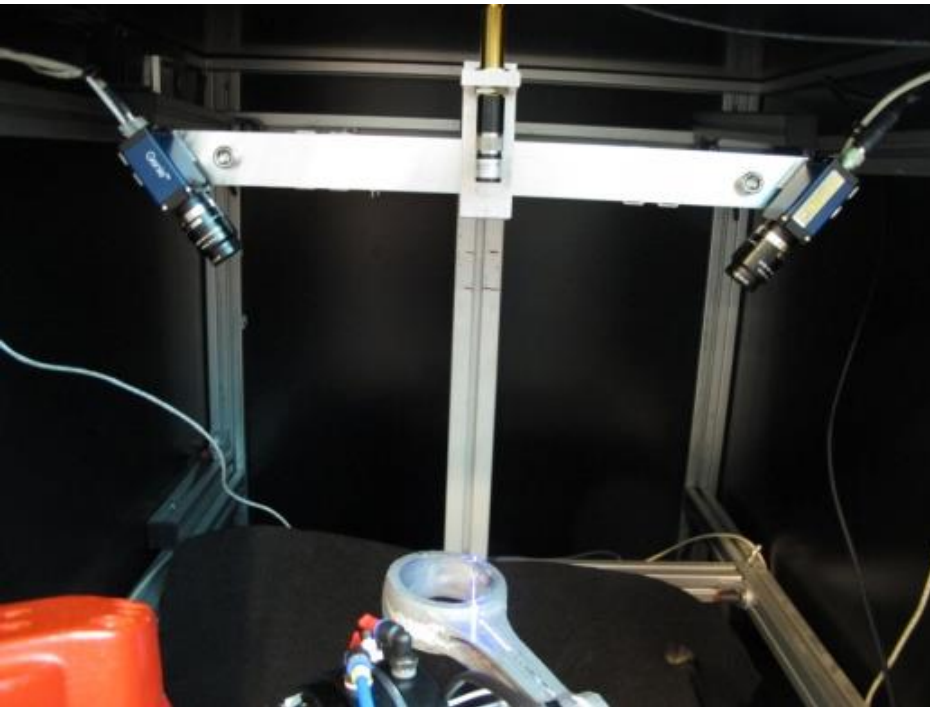


Grasping of the part

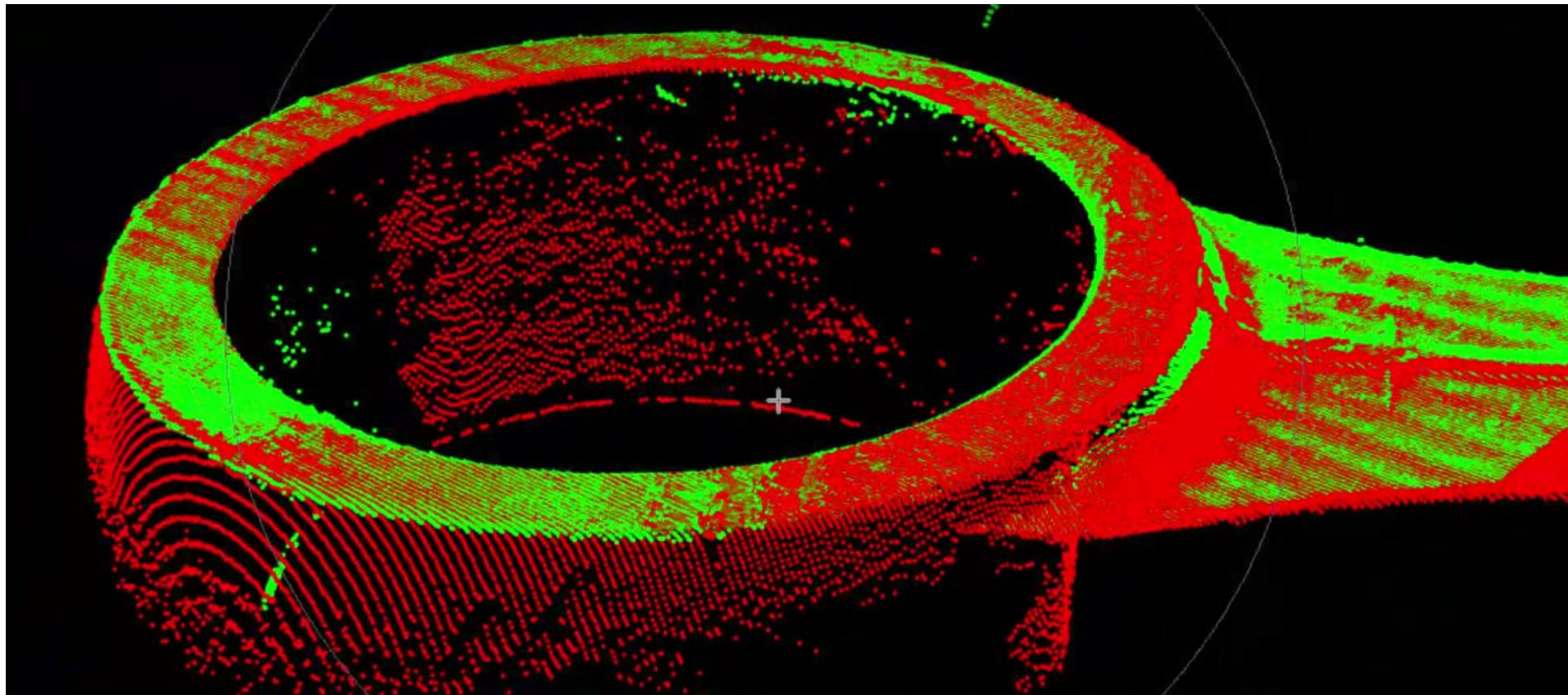




Positioning the part on the 3D station

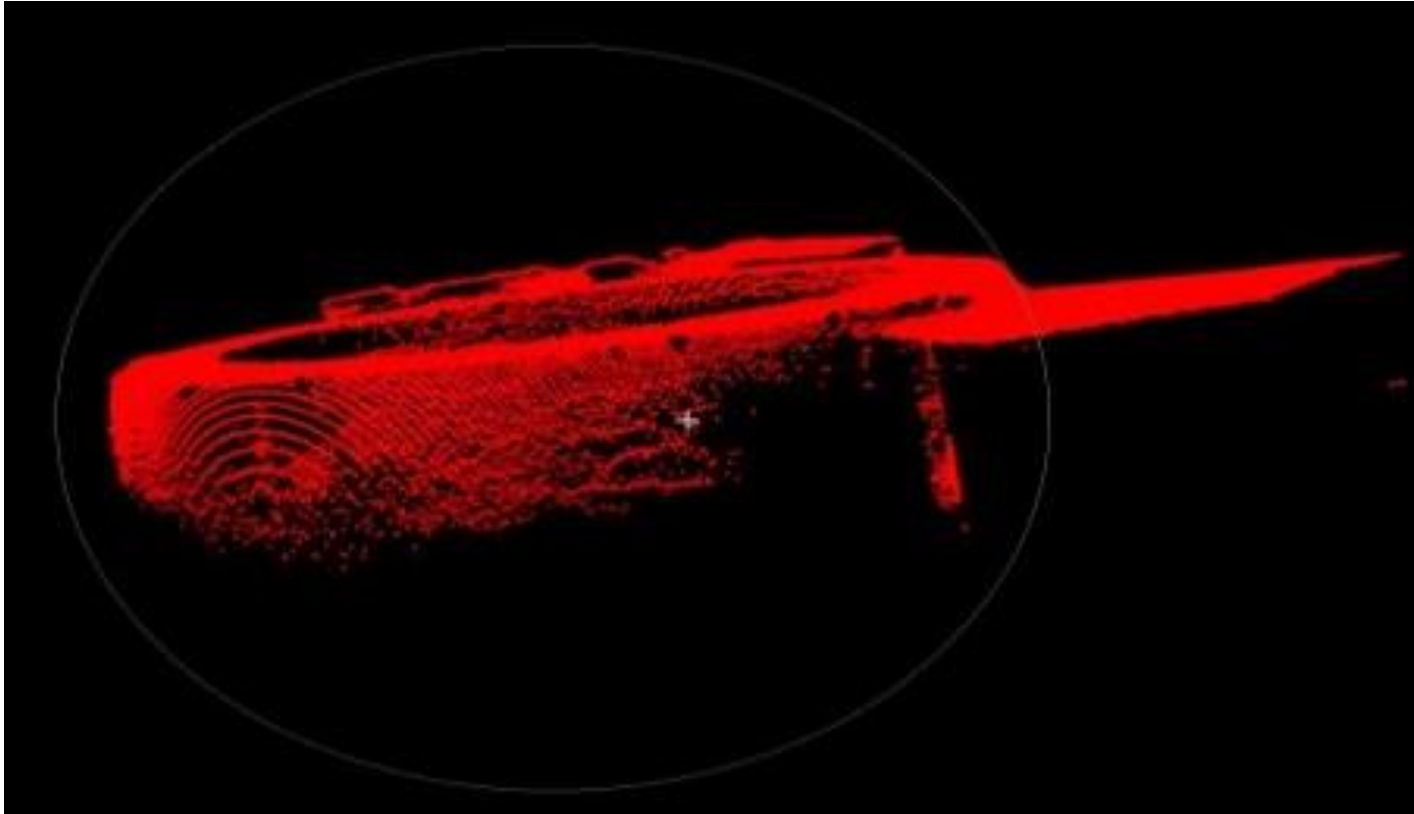


## Burrs location and measurement

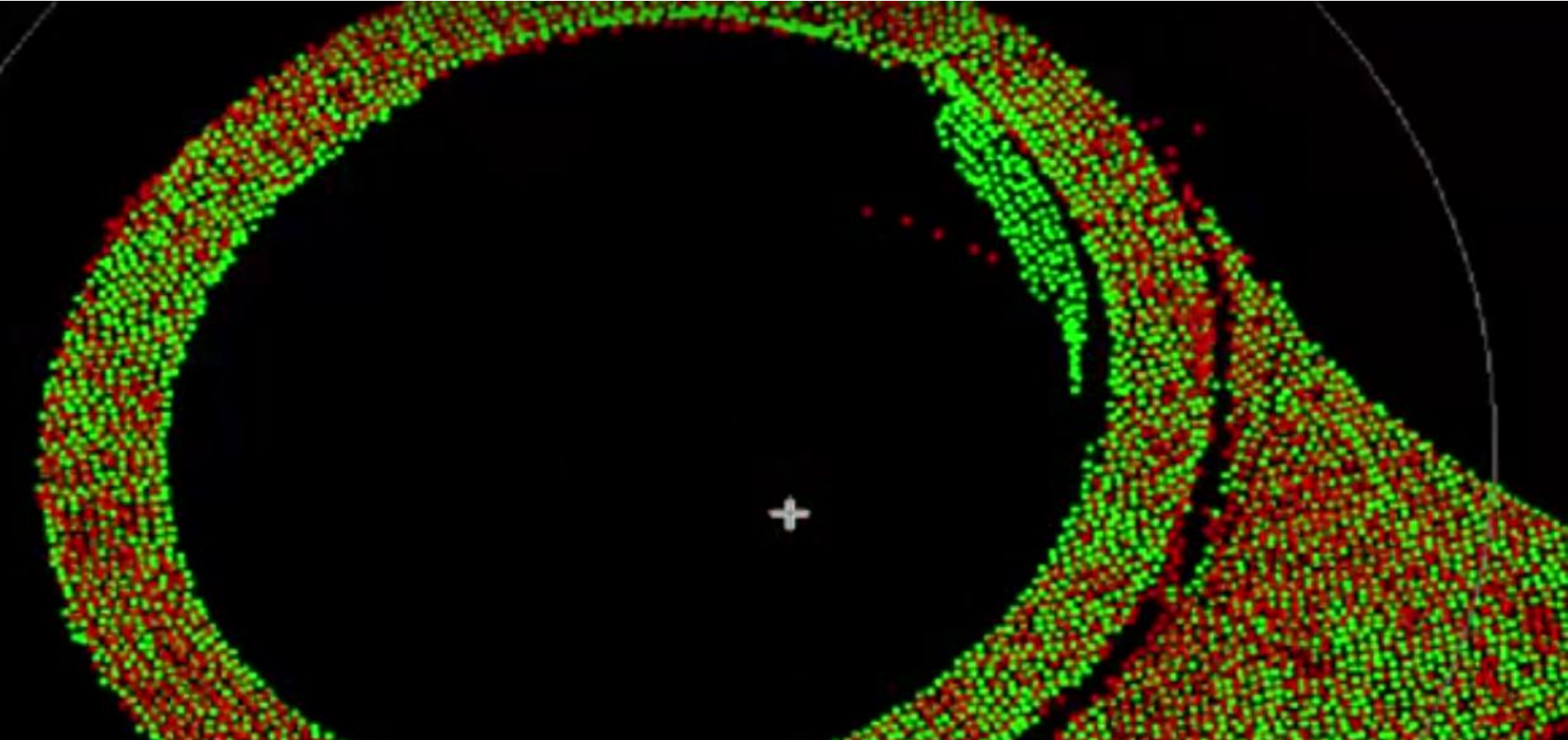


Registration of both partial reconstructions by matching points clouds (red and green)

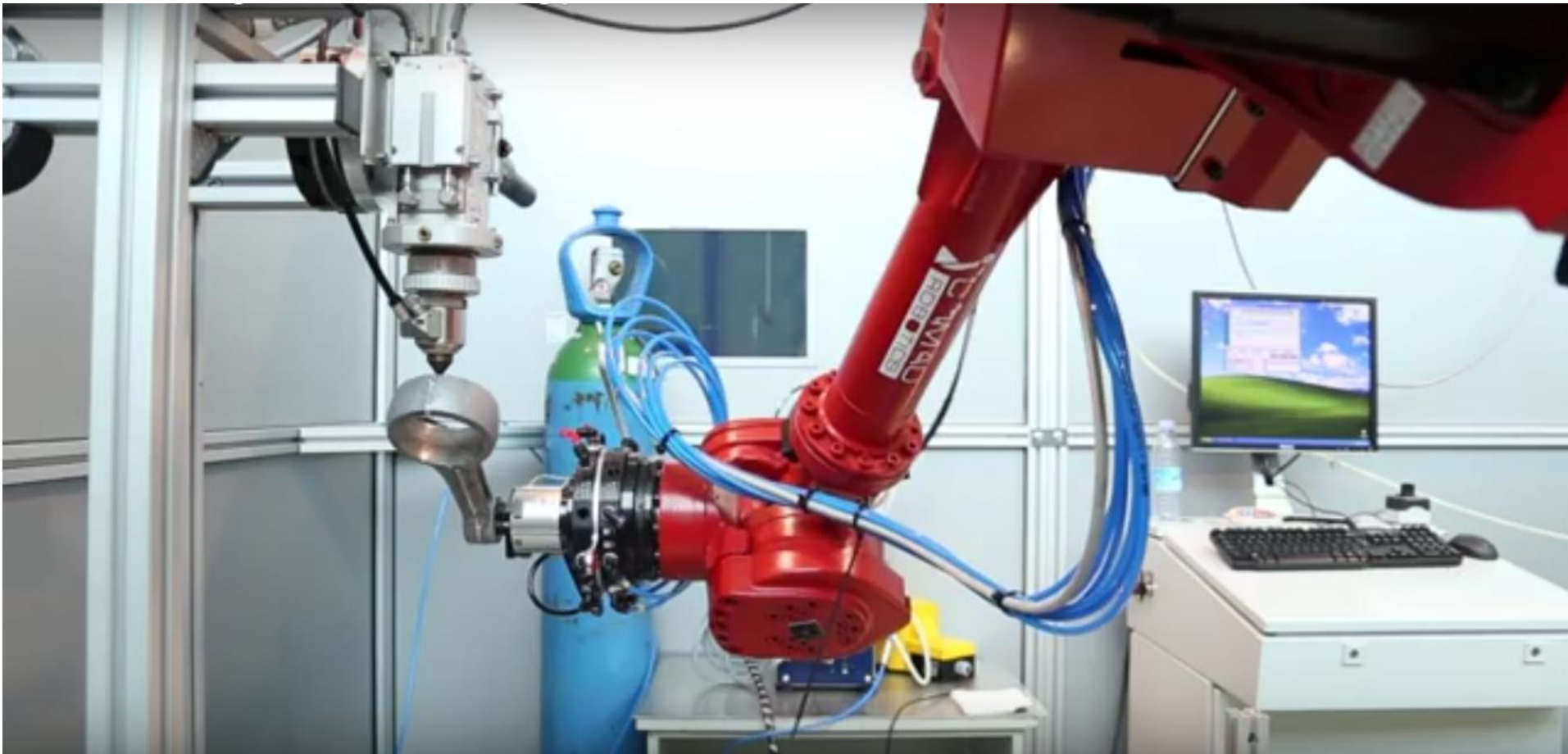




Points cloud outlier removal, down-sampling and smoothing

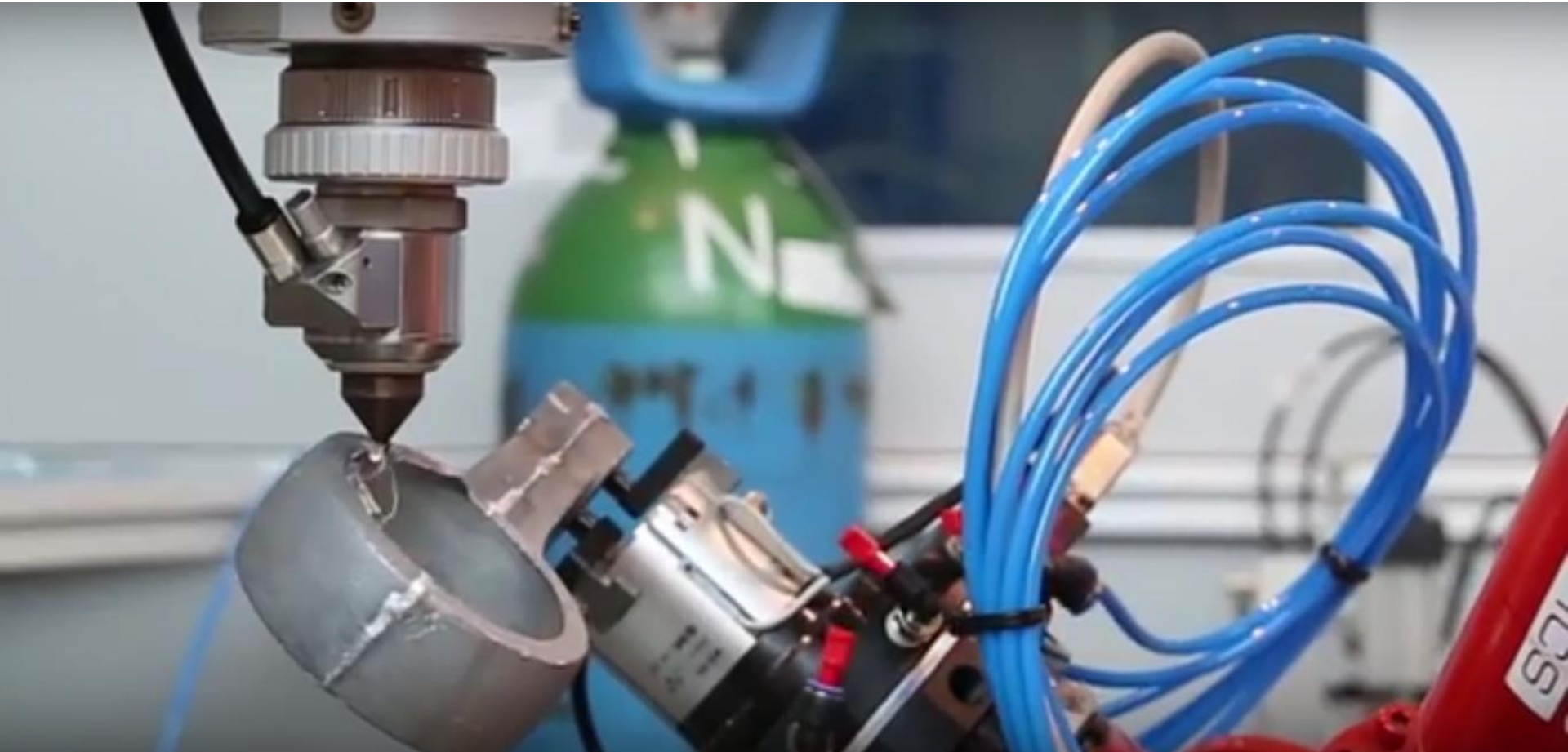


Overlapping between the reference (red) and the measured parts (green)



Positioning the part on the laser deburring station





Laser deburring operation



**Story-Board**

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1

**Grasping Station**



Unification of the coordinates systems

2

**Grasping Station**



Image taken by a 2D camera

3

**Grasping Station**



3D pose estimation from the 2D image

4

**Grasping Station**



Grasping of the part

5

**3D Station**



Positioning the part on the 3D station

6

**3D Station**



Burrs location and measurement

7

**3D Station**



Registration of both partial reconstructions by matching points clouds (red and green)

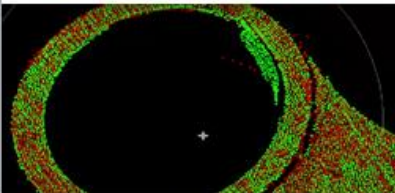
8

**3D Station**



Points cloud outlier removal, down-sampling and smoothing

**3D Station**



Overlapping between the reference (red) and the measured parts (green)

**Laser Station**



Positioning the part on the laser deburring station

**Laser Station**



Laser deburring operation