



## Introduction to the Multi Media Report (MMR)

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

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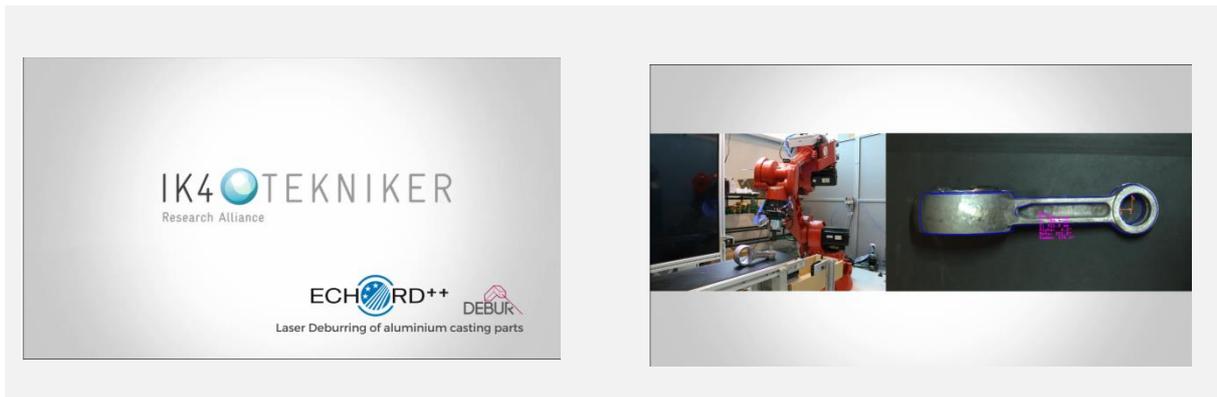
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## Introduction to the multimedia report content.

This is an introductory explanation on what it is shown on the Video Report.

The main purpose of this video is to show the progress obtained on the project focusing on its three main landmarks. These are the 2D, the 3D and the laser stations.

The first sequence, “**Grasping Based on a 2D Camera**”, starts showing the robot at the 2D station.

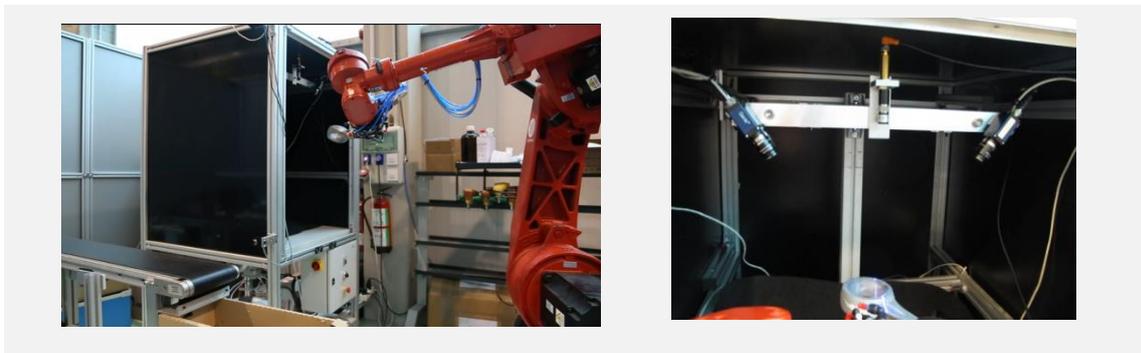


Grasping pose for rod

On it the system estimates the pose of the part by analysing a 2D image based in shape model recognition. It passes the result to the robot in order to grasp it. On the video, the image with the result representing the estimated pose of the part on the robots frame is shown. Afterwards, the robot can be seen grasping the part.

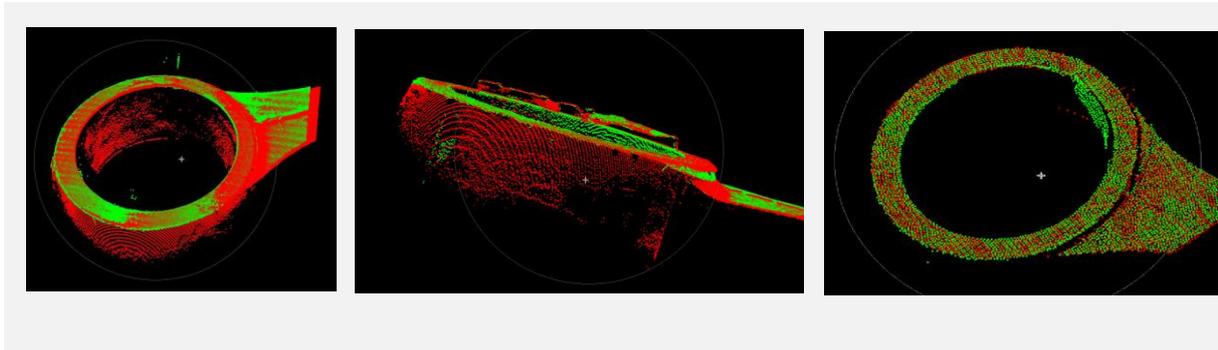
At this moment, the video shows a CAD of the part to clarify the part under analysis and that has been used on the project. At DEBUR the reference model is obtained from a reference part that is used as the model.

The second sequence, “**Bur Location by a 3D Vision System**”, shows more in detail the 3D station based on the sheet of light concept. It uses two standard cameras that, on the one hand serves to reduce occlusions, getting a more complete model of the part and, on the other hand, serves to highlight the potential low cost of the solution. On the video we can see the robot moving the part under the cameras.



Rod on 3D sheet of light based system.

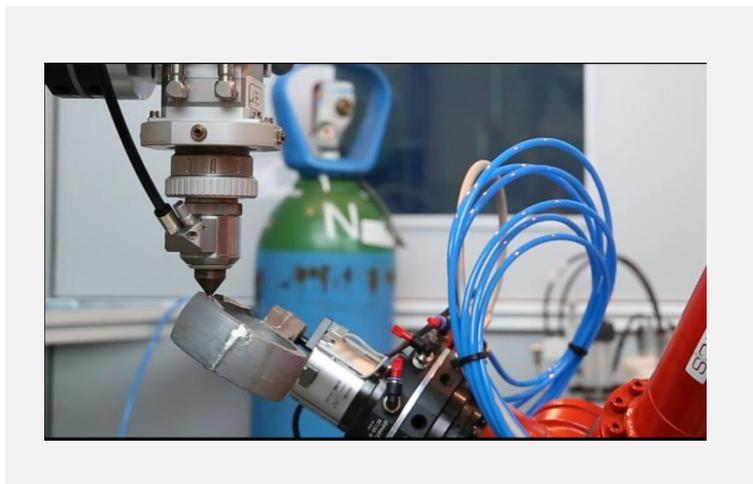
As the video goes on, the results of this operation are shown in three consecutive images.



The reference part, the analyzed part and the result after filtering.

The first one shows the reference part with the registered 3D images of both cameras, one in red colour and the second on green colour. The second shows the analysed part. Again, and using red and green colour, appears the reconstruction of the model based in the registering of both point clouds. In this case the burr is clearly shown. A third image shows the final result. It integrates the reference model in red and the analysed part in green. This third image, showing the reconstruction, is done using filtered cloud of points of both measurements.

Finally, the third sequence, “**Laser Deburring process**”, after the analysis, shows the robot positioning the rod on the laser burr cutting station.



The rod at the laser cutting station.

## How to view it.

The full video can be seen at YouTube at

<https://www.youtube.com/watch?v=2KqTBzxh7kU>

Also a link to it can be found at the projects web page.

