

# MARPOSS

# MEASUREMENT AND INSPECTION OF FUEL CELLS COMPONENTS



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## INTRODUCTION

This semi-automatic station is dedicated to quality control on flat and thin components -- even those with large dimensions -- where it is necessary to perform precise dimensional checks and inspection for detection of defects that could compromise their correct functioning.

It's well-suited for the control of fuel cell and electrolyzer components, such as membranes, CCM (Catalyst Coated Membrane), MEA (Membrane Electrode Assembly), GDL (Gas Diffusion Layer), flow plates and BPP (Bi-Polar Plates). On these components it is possible not only to detect the presence of defects such as scratches, tears, inclusions, contaminants, wrinkles, but also to measure their dimensional characteristics.

Similar checks can be carried out on other types of components in varying materials, characterized by a quasi-flat surface of large dimensions to be analyzed.

## DESCRIPTION

The station employs a combination of different probes based on Marposs-STIL proprietary chromatic confocal technology, which are mounted on controlled axes to automatically perform the scanning measurement or the retooling strokes.

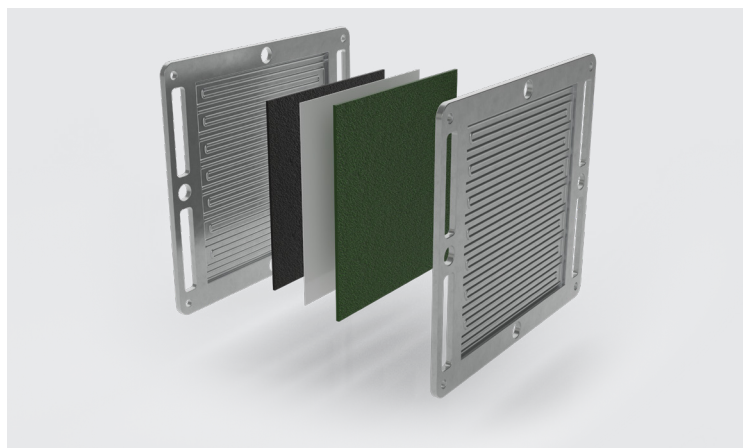
The MC2 linear confocal camera guarantees the acquisition of very high-resolution images with perfect focus on a depth of field up to 2.6 mm, normally unimaginable for high-resolution cameras with conventional optics.

The SW for analysis of the acquired images allows the identification of different types of potential defects.

Following the detection of potential defects, ROIs (Regions of Interest) are identified and a second in-depth scan is performed using an MPLS line confocal sensor, which allows evaluation of the topography. This sensor performs direct measurements of the z-profile (height) of the surface and of the defects.

Combining this acquired data with the positions read on the machine axes provides a check of the overall dimensions of the component and its details, as well as measuring the defects in the three directions and mapping their position.

Depending on the type of component and the required controls, it is possible to integrate different configurations of probes based on other technologies, such as laser profilometers, confocal or interferometric point sensors, linear or matrix cameras.



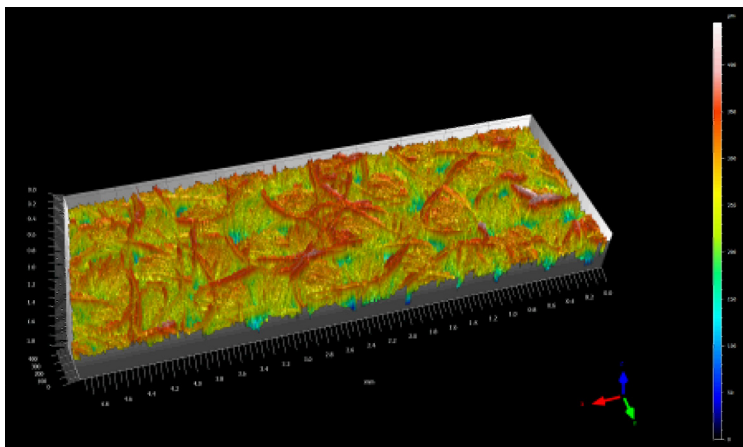
## TECHNICAL SPECIFICATIONS

Gauge overall dimensions	Width 2,0 m x Depth 1,5 m x Height 2,2 m
Maximum measured part (x-y)	600 mm x 200 mm
Maximum measurable variation in z	2,6 mm (with MPLS DeepView)
Maximum retooling stroke in z	50 mm (to measure parts of different height)
Scanning speed	Up to 200 mm/sec, depending on the requested performance

Further technical data (measurement resolution in x, y and z, accuracy, repeatability, cycle time, ...) will depend on the selected versions for MC2 and MPLS sensors.



SURFACE SCANNING THROUGH MC2 HIGH RESOLUTION CONFOCAL LINE CAMERA



TOPOGRAPHIC MAPPING THROUGH MPLS CONFOCAL LINE SENSOR

For a full list of address locations, please consult the Marposs official website

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