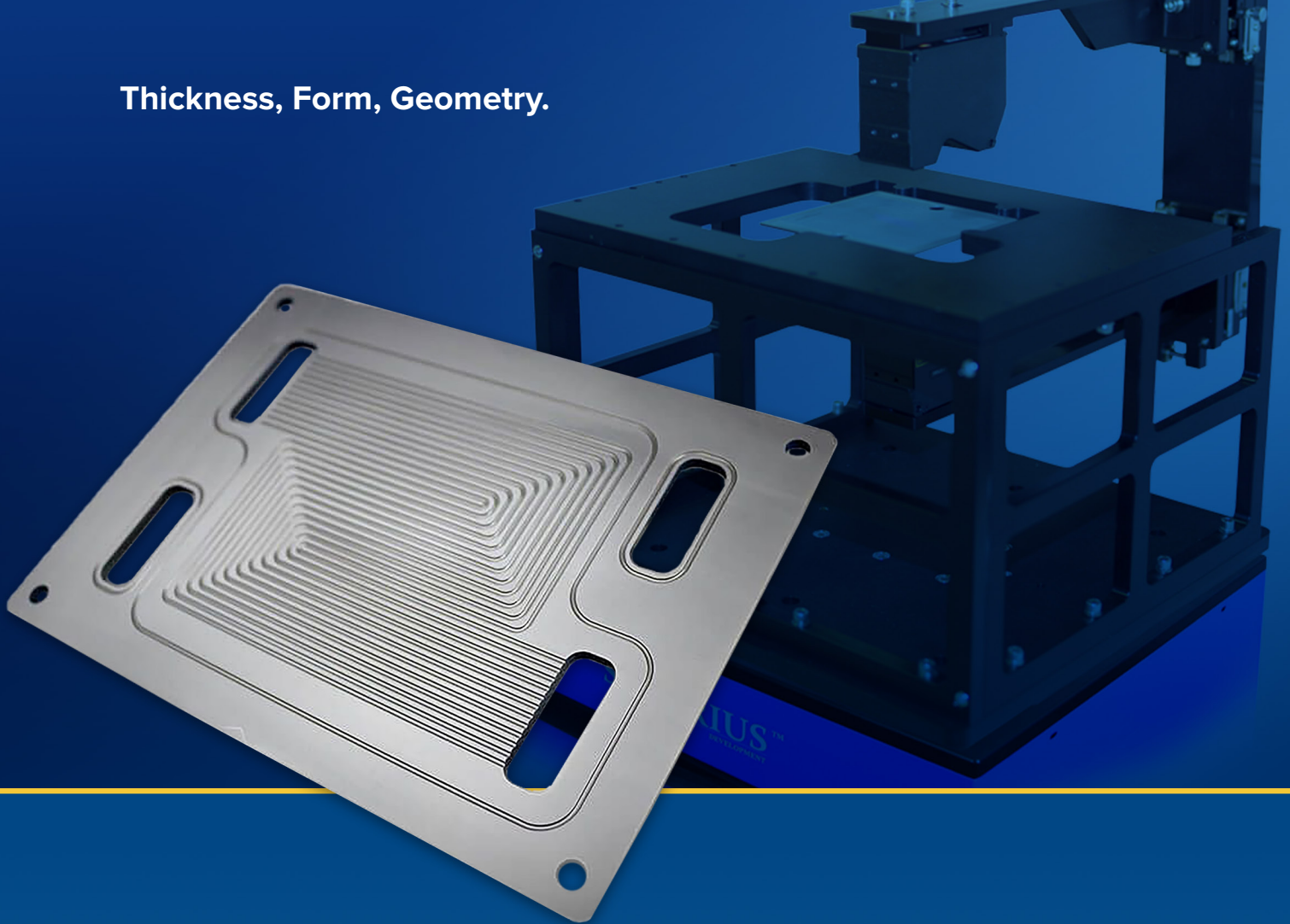


**Thickness, Form, Geometry.**



## **Optical Measurement of Thickness**

Fuel Cell Geometry, Wafer TTV, Battery Dimensions,  
Transparent Surfaces.

**The continuous development** of materials and products in the fields of mechanical engineering, energy technology, semiconductor industry or consumer electronics requires ever faster and more precise possibilities for monitoring semi-finished and finished products.

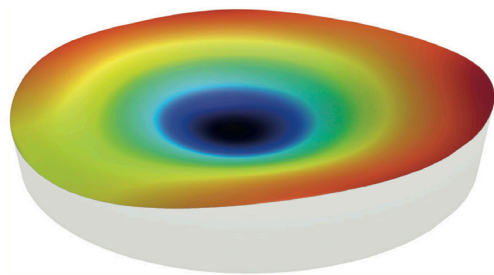
Solarius has offers a comprehensive portfolio to measure the thickness of all possible products and developed the AOP Thickness, a machine that enables simultaneous measurement of the top and bottom side of a test object. The ability to detect the thickness and geometry from two sides avoids errors that would result from deformation of the support side and the resulting uneven contact with the specimen holder. The topographies of the top and the bottom face of the device under test are measured simultaneously, not only resulting in a thickness value for every point of the sample, but also enabling the evaluation of flatness, parallelism and each side's geometrical values.

**SOLARIUS**  
THE VISION OF QUALITY

# Applications in Quality Assurance

## Fuel Cell Geometry

The bipolar plates of fuel cells are used for the supply and extraction of reactants and reaction products and are therefore essential for the supply of energy. The correct ratio of feed and discharge results in a specific length of stay of the reactants, which is determined by the geometry of the channels. This means that checking the shape is indispensable for the proper function of the fuel cell. This check can be performed by the Solarius fuel cell measuring device, which simultaneously measures the topography of both sides of the bipolar plates. Proprietary software carries out the evaluation at predefined measuring points and makes a clear good/ bad decision.

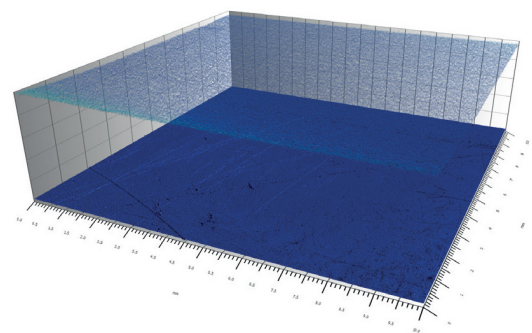
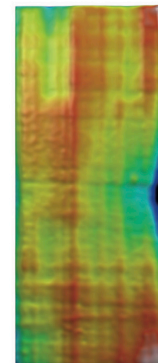


## Wafer TTV

An ideal wafer is a perfectly plane-parallel flat disc. In reality, production-related deviations already occur with raw wafers. This total thickness variation (TTV) has an influence on all subsequent process steps and must therefore be monitored as well as wafer bow and warp, some of which only occur after several process steps.

## Battery Dimensions

A modern lithium cell combines high energy density, high output voltage and small dimensions. The aim is to make the best possible use of the available installation space in the end device in order to enable a long battery life. This also requires monitoring of the dimensions to ensure that the battery can be installed appropriately in the end device. In addition to the pure size, parallelism and flatness are also measured. Solarius's solutions for measuring battery packs automatically record both sides of a battery pack and make a pass/ fail decision. Defective parts are sorted out without user influence.



## Transparent Thickness

Optically transparent materials do not need to be flattened on one side or measured simultaneously from both sides to determine their thickness. With the help of confocal measurement technology and knowledge of the refractive index, it is possible to measure the topographies of the upper and lower surfaces in the same time and to determine the thickness of the specimen from the difference of both surfaces. This principle is equally suitable for foils of all kinds, as well as for coatings or glasses.

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