

Investigation of bipolar plates for fuel cells using high-resolution Synchrotron CT

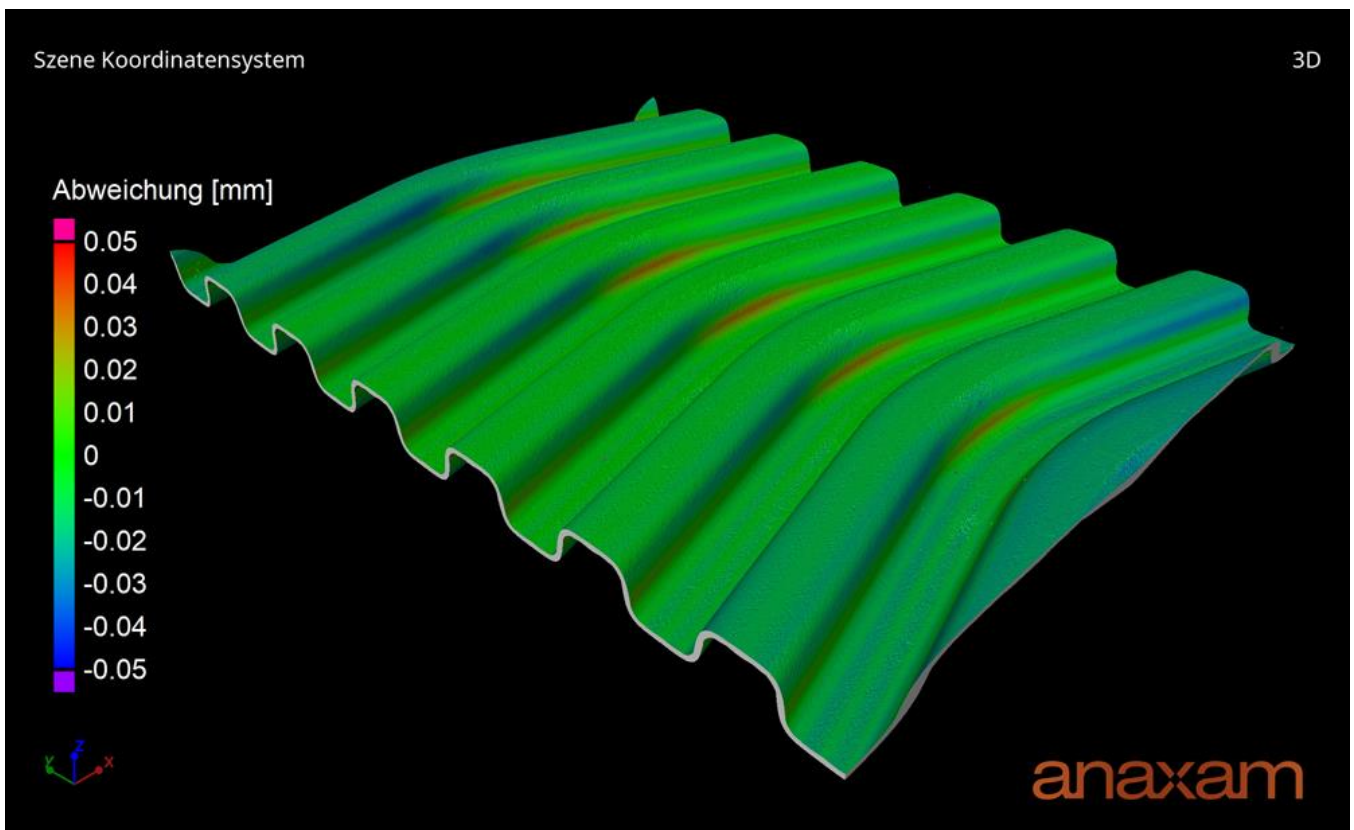
Feintool is an internationally active technology and market leader in the technologies of fine blanking, forming and e-sheet stamping for processing sheet steel. As an innovation driver, the company is constantly pushing the boundaries of these technologies and

developing intelligent solutions for the needs of its customers: high-performance fine blanking systems, innovative tools, and state-of-the-art manufacturing processes for sheet steel in high volumes for demanding automotive and industrial applications.

In addition to battery-powered drive solutions, Feintool is also focusing on hydrogen technology in the context of e-mobility. Against this background, a current challenge is the series production of high-quality, metallic bipolar plates for fuel cells. The new "FEINforming" manufacturing process enables the precise processing of extremely thin material thicknesses. On the one hand, this leads to an increase in power density, but on the

other hand it places increased demands on the forming process.

High-precision channel geometries for the process gases air and hydrogen must be formed into the thin metal plates. The cathode and anode sheets of a bipolar plate must fit together perfectly within a few micrometers to ensure gas-tight laser welding.



ANAXAM's material analytics - based on the most advanced possibilities in the field of measuring methods - using high-resolution synchrotron CT was successfully applied to non-destructively and three-dimensionally characterize bipolar plates with the thinnest

material thicknesses and minimal tolerances. The analysis results helped Feintool to further optimize the interaction between press and tools. ANAXAM's analytics thus made a significant contribution to ensure the highest precision of the bipolar plates.

“ ANAXAM's synchrotron CT method gives us an otherwise unattainable combination of measurement accuracy and resolution in the 3D acquisition of the stamped microstructures of our sample parts.”

Peter Roth, Leader Project Bipolar Plates,
– Feintool Technologie AG

“ The requirements for geometric precision and the integrity of the remaining wall thickness after the forming of metallic bipolar plates require the use of cutting-edge measuring methods - ANAXAM offers us a powerful tool for the development of our manufacturing technology in this respect.”

Christian Maurer, Leader Technology Development,
– Feintool Technologie AG

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