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Numerical Investigations and New Technologies“**

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02-05 July 2017

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TECHNOLOGICAL ANALYSIS FOR MACHINING OF THE REFORMERS FOR FUEL CELLS TESTING

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Abstract

Reformer is an integral component of the polymeric electrolyte membrane (PEM) fuel cell and it is used for experimental combustion testing. By analyzing the geometry of the experimental reformer, it consists of three plates, two pins for leading and a single screw for sealing. In terms of technological analysis for manufacturing of the experimental reformer emphasis was thrown on the intermediate plate which is necessary to carry out Wire EDM machining. Before the machining based on CAD models it was performed tool part generation in order to perform machining simulation. In order to minimize manufacturing costs by techno-economic analysis it was varying the wire thickness, and therefore cutting parameters. Besides the variation of the cutting parameters it was varied and the intermediate plate thickness. It was made a three sets of experimental reformer, wherein the electrical discharge machining (EDM) was performed on two machines (Mitsubishi FA-10S Wire EDM and "Ewis" EV.00.000M4) with two different wire thickness. After machining is was carried out the welding procedure, and after that re-machining in order of remove the excess material which is applied by welding process.

Keywords

Reformer, CAD/CAM systems, Wire EDM machining

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