

Industrial Machinery

Bipolar Plates for Fuel Cells

The production costs of fuel cells need to be significantly reduced before the technology can gain commercial acceptance. The Proton Exchange Membrane fuel cell stack contains the membrane electrode assembly, bipolar plate, seal, and end plate. Of these components, the bipolar plate is one of the most costly and problematic to produce.

The bipolar plate is a multi-functional component in a PEM fuel cell stack. Its primary function is to supply reactant gases to the gas diffusion electrodes via flow channels. Stainless steel grade 444 is an excellent material to use for the bipolar plates. It is comparable to austenitic 316 grade in corrosion resistance. It also has the advantage of being significantly less costly than 316 grade.

The Mexican Centre for Research and Technological Development in Electrochemistry (CIDETEQ) has undertaken research which shows that grades 316 and 444 both exhibit good performance in the fuel cell. The plate underwent 500 hours of operational testing.



Location/environment | QUERÉTARO, MÉXICO/INDOOR

Product | COLD ROLLED STAINLESS STEEL SHEET

Fabrication process | CUTTING AND MACHINING

Grade/surface | GRADE 444

Material thickness/diameter | 3.43 MM

Weight | 0.250 KG

Competing material | STAINLESS 316, 316L AND GRAPHITE

Date of completion | MAY 2008

Manufacturer | CIDETEQ AND INMEC SA DE CV

Material supplier | THYSSENKRUPP MEXINOX

Source of information | CENDI

Remarks

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