

Project Information



Subject: Development of Installation to Manufacture Membrane Electrode Units

Applicant: Coatema Coating Machinery GmbH
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Description of Project / Status of Work:

The fuel cell represents a major alternative to the energy supply possibilities available to date. There is a wide range of different types of fuel cell, and they can be allocated to different areas of application according to their characteristics. Regardless of the area of use or type of fuel cell, the respective electrode coating can be based, for example on a fibre composite as a so-called "textile base" or "other kind of cloth".

The positively or, as the case may be, negatively charged coating is applied using appropriately designed coating techniques, and the merger of the three coatings described above then becomes part of the complex fuel cell. This project focuses in its investigations on the PEMFC fuel cell with its MEA.

The breakthrough in fuel cell technology in general has been prevented to date by the prevailing cost structure. On the one hand, the high price is due to the fact that much of the production is manual and, on the other, by the fact that it is sometimes necessary to use expensive raw materials.

The aim of this project is to initiate the breakthrough of fuel cells by developing a continuous manufacturing process for the MEA. The continuous manufacturing process represents the greatest difference as against previous basic research, in which the work has only been intermittent and so no soundly based knowledge has been acquired. To date it has not been possible to produce a constant quality. There is also no guarantee of reproducibility. Both are, however, elementary prerequisites for marketing.

Coatema therefore developed and built several new pilot coaters. Additionally there was the focus on the test and use of new type of coating application methods. An important step was the design and the building of a 1.000 mm wide pilot production coating line. With this layout, the industrial production of MEA's comes nearer. Big working width and high production speeds lead to higher output, reduce production costs and lead to reproducible results. First interest in these new products come from North America and Asia and show the need of this project and the success. Coatema was funded by the government of NRW to in this project and supported by Forschungszentrum Jülich.