

Small Scale Electrolysis Module for Supplying Cars with Hydrogen

Relevance to the Automotive Industry:	If hydrogen is to be used as a fuel either in cars equipped with fuel cells or with internal combustion machines, hydrogen has to be generated and stored. Production of hydrogen can be achieved with many small distributed plants or with few, centralized mass production plants. The project focuses on the decentralised production on hydrogen by electrolysis.	
Research Location:	TUD Thermal Process Engineering	VT
Homepage (Engl.):	http://www.tu-darmstadt.de/fb/mb/tvt/tvt-Dateien/tvt_en.html	
Faculty Mentor:	Prof. Dr.-Ing. Manfred J. Hampe	
Faculty Mentor Email:	hampe@tu-darmstadt.de	
Graduate Mentor:	Dipl.-Ing. Sebastian Lang	
Graduate Mentor Email:	lang@tvt.tu-darmstadt.de	
Project Description:	For the decentralized production of hydrogen many small scale electrolysis plants will be needed. The task is to design a small scale electrolysis plant for the production of hydrogen. The research comprises work on a favorable electrolyte system, on the question if a high pressure electrolysis unit is more advantageous than an electrolysis at ambient pressure, on the design of the electrolysis unit, on the necessity to purify the crude hydrogen, and on the comparison with competing methods for small scale production of hydrogen.	
Jun 9 - Aug 1, 2008; (8 weeks, 40h/week)		
Necessary Skills/ Knowledge:	<ul style="list-style-type: none"> • Thermodynamics • CAD 	
Desirable Skills/ Knowledge:	<ul style="list-style-type: none"> • Ability to work independently • Experience in engineering design 	
Additional Online Resource(s):		

NSF REU Students must have completed at least two semesters of engineering studies prior to the proposed summer research, and they must have at least one semester remaining before they can earn their BS in Engineering.