

Projektinformation



Subject: Co-Generation of Heat, Refrigeration and Electrical Power with PEM Fuel Cell and Desiccant Evaporative Cooling, DEC

Applicant: Energiel Institut, FH Gelsenkirchen, University of Applied Sciences,
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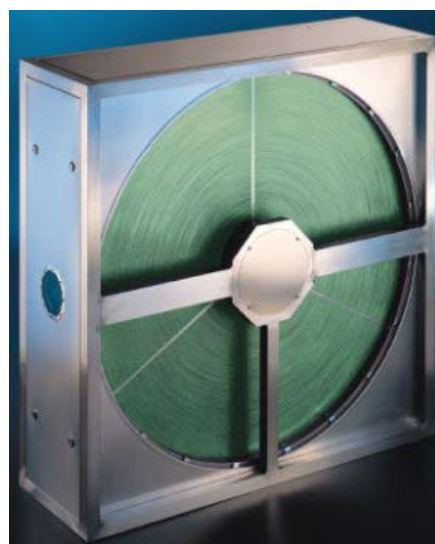
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Description of project:

A stationary fuel cell operates very efficiently when used in CHP-process, thus producing heat and electricity. But the usage of heat forms some problems during the summer months.

This projects aims at an innovative usage of heat which can be achieved by a combination with a DEC air conditioning system. The so called Desiccant Evaporative Cooling dehumidifies by an adsorbing regenerator-wheel (picture), which contains a matrix covered with lithium chloride. It cools by an adiabate evaporation of water. A 5.0 kW PEM fuel cell supplies 6.4 kW heat at 70 °C - 50 °C to a DEC-system and facilitates co-generation in summertime for another approximately 1000 hours increasing the cost effectiveness. The Dec-technology works as an air-conditioner, thus is cools and humidifies the air. Besides this, it can be used in winter times for recovering energy from off gas.