

DESCRIPTION



The HySA™ Systems Integration & Technology Validation Competence Centre, HySA™ Systems, hosted by the University of the Western Cape (UWC) and located at the South African Institute for Advanced Materials Chemistry (SAIAMC) is one of three national Competence Centres that were initiated by the Department of Science and Technology's National Hydrogen and Fuel Cell Technologies (HFCT) Flagship Project, also known as Hydrogen South Africa or HySA™.

HySA™ Systems is an industry, technology and product development oriented Competence Centre, which has demonstrated on many occasions its ability to develop, build, commission and validate prototype systems.

Fuel cell - battery hybrid powered Golf Cart is an output of the project realized in the frame of KP-3 Hydrogen Fuelled Vehicles that proves the concept and possibility of PEMFC technology application and MH hydrogen storage in automotive industry.

SPECIFICATION



5 kW nominal power

242 Ah lead-acid battery pack

1.2 kW PEM fuel cell power module

2 x CG cylinders & one MH liquid heat/cooled container

2 500 SL (0.22 kg) hydrogen capacity

50 km practical driving range (i.e. 20 km range increase)

Fuel Cell-Battery Hybrid Powered Golf Cart



BENEFITS

- Zero emission vehicle (ZEV)
- Extension of the vehicle driving range
- Stable operation in a wider power range
- Fast hydrogen refueling

FEATURES

- High system efficiency
- Hydrogen stored in CG cylinders and MH container
- Quiet operation
- Lower charging pressure

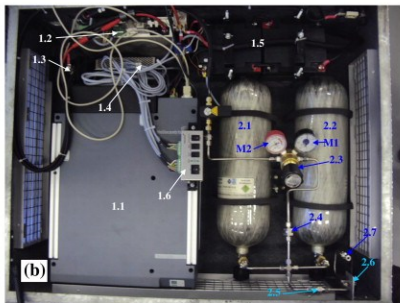
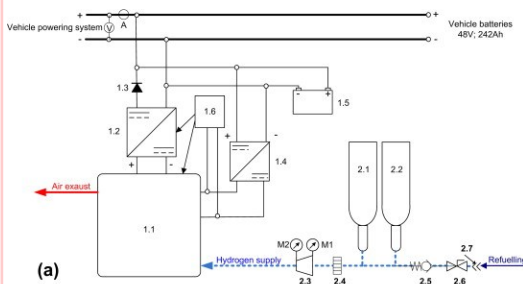


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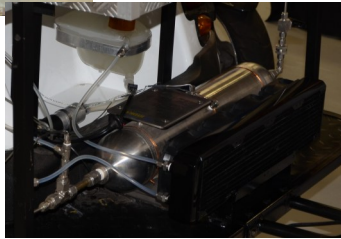
GOLF CART



FUEL CELL SYSTEM



HYDROGEN STORAGE



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GOLF CART

Golf cart model	RHD Road Legal HI Rise LWB
Maximum speed	50 km/h
Motor	5 kW AC
Battery	8 x Trojan T105, 242 Ah
Controller	Curtis 1236

FUEL CELL POWER MODULE

Fuel cell type	Air-cooled PEM stack with 36 fuel cells
Power	1 200 W
Stack rated current	60 A
Stack output voltage	20...36 V
Max. DC/DC output current	27 A
Rated output voltage	48 V
Permissible inlet pressure	1...15 bar
Hydrogen consumption @ 1 200 W	15 SL/min

HYDROGEN STORAGE

Storage method	Compressed Gas (CG) & Liquid cooled/heated Metal Hydride container
Metal hydride material	AB ₂ type alloy
H ₂ storage capacity MH/CG @ 100 bar	1 400 SL (0.12 kg) / 1 100 SL (0.10 kg)
Operating pressure/temperature	< 150 bar/ambient
Hydrogen charging conditions	10-15 min @ 100 bar

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