



■ ■ Project Zemships data sheet

Technical specifications of the FCS Alsterwasser

Category of Ship	Fuel Cell Ship – with an official operation licence for the harbour area and a technical approval of GL
Carrying capacity	Up to 100 passengers
Length over all	25,46 m
Width of body	5,36 m
Height over waterline	2,65 m (2,30 m using the roof lowering device)
Tonnage displacement	72 tonnes fully loaded
Draft with passengers	1,33 m
Max. cruising speed	15 km/h
Materials	Steel and aluminium

Propulsion system

Type of Fuel cell	Proton Motor PM 600, Proton Exchange-Membrane (PEM)(PEM)
Type of fuel cell system	Proton Motor “PM Basic A 50 maritime”
Number of fuel cell systems onboard	2
Fuel cell peak power	48 kW
Max. system efficiency	> 50%
Fuel cell operating temperature	< 70°
Total weight of single fuel cell system	Ca. 500 kg
Size of single fuel cell system	2200 x 1100 x 900 mm
Buffer battery	Lead-gel Battery, 560V (7 x 80 V), 360 Ah
Type of electric motor	AC motor, (100 kW)
Storage of H ₂	gaseous (GH ₂) at 350 bar/15°C
Storage volume onboard	50 kg
Typical refuelling frequency	Every 2 to 3 days



Specifications of hydrogen refilling station

Method of operation	Two-stage hydrogen compression (including ionic compression)
Package design pressure	450 bar
Compression 1st. stage max.	25 bar
Compression 2nd. stage max.	300 bar
Compression 2nd. stage ‚plus‘	450 bar in Booster mode
Electrical equipment	1 x 20 kW, electric motor (rotary screw compressor) 2 x 45 kW, electric motors (radial flow pump) 2 x 4 kW, for oil leakage aggregates and miscellaneous cooling water pumps
Flow rate of pre-pressure-section	300 Nm ³ /h at 2,5 bar inlet pressure
Flow rate of „ionic“ compressor	2x150 Nm ³ /h at 25 bar inlet pressure (depending on backpressure)
Package charging pressure	290 bar
Time needed for refilling procedure	50 kg in 12 minutes