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ELEKTRA

Zero-emission canal push boat powered by hydrogen fuel cells and batteries

SUPERIOR PROJECT AIMS

- Participation of the carrier inland water vessel at the climate change policy aims of the Federal Republic of Germany
- Realization as hybrid-electrically powered push boat for local and supra-regional operation
- Implementation and testing of the hydrogen fuel cell technology together with batteries at commercial cargo inland water vessels
- Example for emission free commercial vessels in respect of ecological requirements at sensitive areas (for example congested areas like Berlin/ Brandenburg, Hamburg, Rhine-/Ruhr-Area)
- Concept creation for Securing the availability of hydrogen as an energy store for the use of fuel cells at inland water vessels under consideration of synergy effects with other traffic carriers and leisure areas
- Contribution to the development of rules, regulations and laws for the use of hydrogen, fuel cells and batteries of higher power rates at inland water vessels together with authorities and classification societies



View over fuell cells of the ELEKTRA during seatrial

INNOVATIVE ENERGY SYSTEM



- 1. NT-PEM Fuel cell system, 3 x 100 kW
 - 750 kg **Hydrogen** at 6 MEGC-Tank à 125 kg at 500 bar
- 3. Batteries.

2.

Propulsion 2 x 1.160 kWh On board supply 2 x 116 kWh

- Energy management, Main Switchboards und AC-/ 4. DC-Shoreconnection
- 5. Photovoltaic, 2,1 kWp
- 6. Drive system, 2 x 210 kW
- 7. Propeller with duct, 360° rotatable

PARTNER



MAIN DATA ELEKTRA

MAINDIMENSIONS

Length	20,00 m
Width	8,25 m
Draught	1,28 m
Displacement	~ 130 t

OPERATION REQUIREMENTS

Regional Operation



Supra-regional Operation

• Berlin—Hamburg

- Zone 3 + 4 (without Rhine)
- ~ 130 km range per day (16 hours)
- Service speed: 8,5 km/h
- Operation: hybrid-electrical



(8 hours)

8-10 km/h

hybrid electrical

Total range depending on load and configuration Min. range 400 km without energy supply.

INFRASTRUCTURE

Electric charging and hydrogen bundle exchange stations

at Port Berlin Westhafen and Port Lüneburg.