

INTELLIGENT + PROPULSION

ECHANDIA MARINE

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The enterprises



SHIPPING COMPANY GREEN CITY FERRIES (2014) IS PRIVATELY OWNED

TECH COMPANY ECHANDIA MARINE (2007) IS A SUBSIDIARY

OFFER SUSTAINABILITY

FROM PROPELLER TO PROPELLER



TYPICAL FERRY

1200	300	3	150
MWH OF DIESEL CONSUMPTION	TONS OF CO ₂ EMISSIONS	TONS OF NO _x EMISSIONS	KG OF PARTICLES

ELECTRIC FERRY

500	0
MWH OF ENERGY CONSUMPTION	EMISSIONS



**RENEWABLE ENERGY WITH NO GREEN HOUSE
GASES,
NO_x OR DANGEROUS PARTICLES**

Business areas

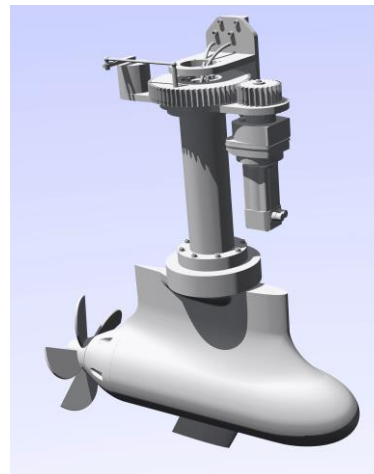
GCF SHIPPING:

OPERATES DEMO
FERRIES BB GREEN &
E/S MOVITZ.
DESIGNS
TRANSPORT SYSTEM
FOR ELECTRIC
FERRIES.



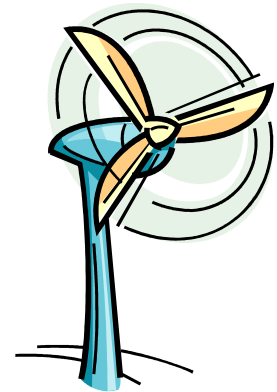
EMS SYSTEM INTEGRATION:

DESIGNS AND
INSTALLS ELECTRIC
DRIVELINES FOR
CITY FERRIES



EMS CHARGING:

BUILDS AND
OPERATES
CHARGING
STATIONS FOR
SUPERCHARGING



Partners and strategic suppliers



Mobile Storage Systems

Innovative energy storage solutions based on safe and reliable lithium-ion battery technology



Battery Boat Green

- Worlds fastest electric ferry



75 passengers, 30 knots for 30 minutes and limited wake wash

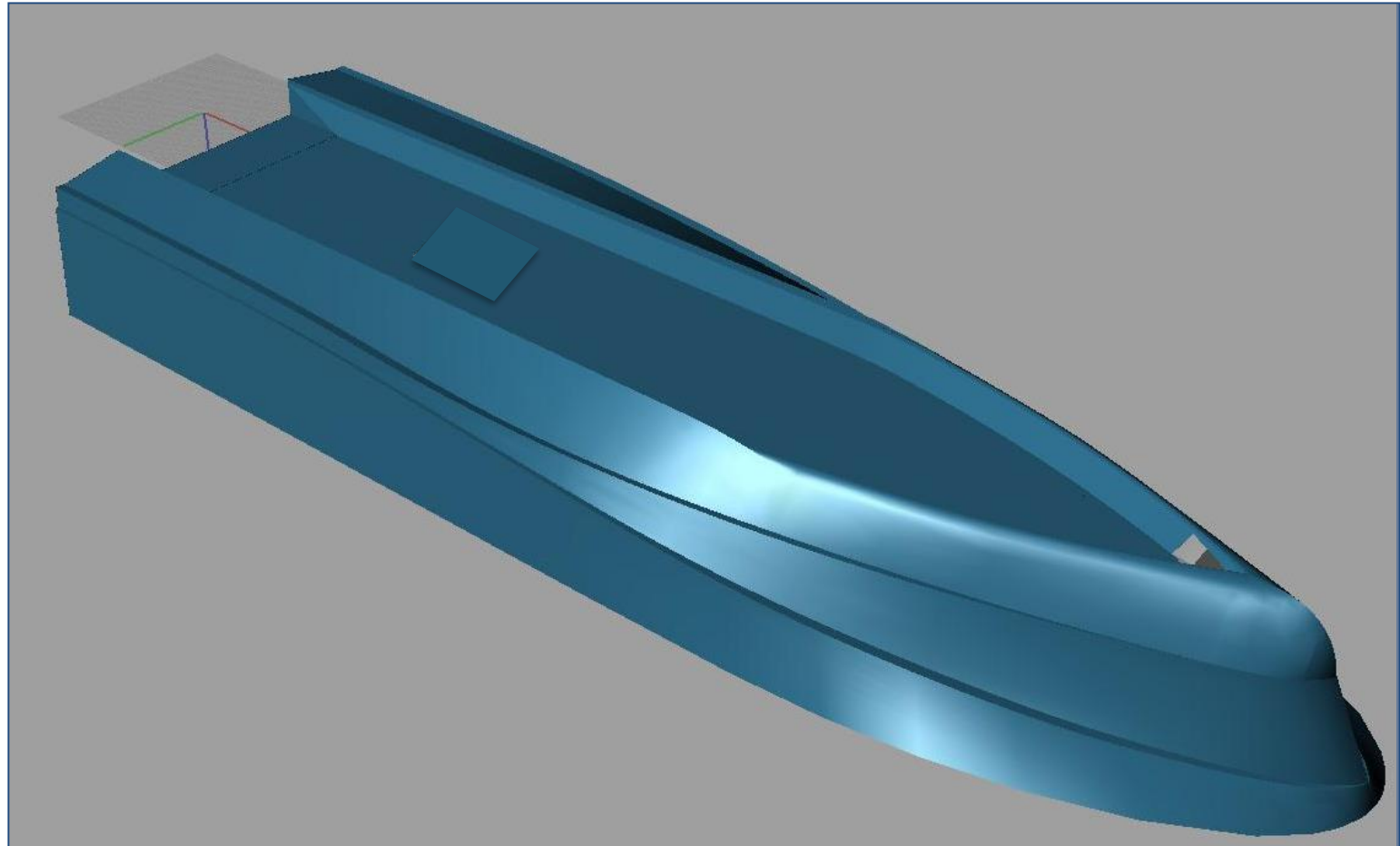
Web: www.bbgreen.info

BB Green performance

CAPACITY:	75 PASSENGERS
DISPLACEMENT:	28 TONNES
HULL WEIGHT:	7 TONNES
SPEED:	25 – 30 KNOTS
POWER:	600 KW
BATTERIES:	500 KWH
RANGE:	12–15 NM
CHARGING:	1,6 MW
CHARGING TIME:	10–15 MIN
EMISSION:	ZERO
WAKE WASH:	MINIMUM

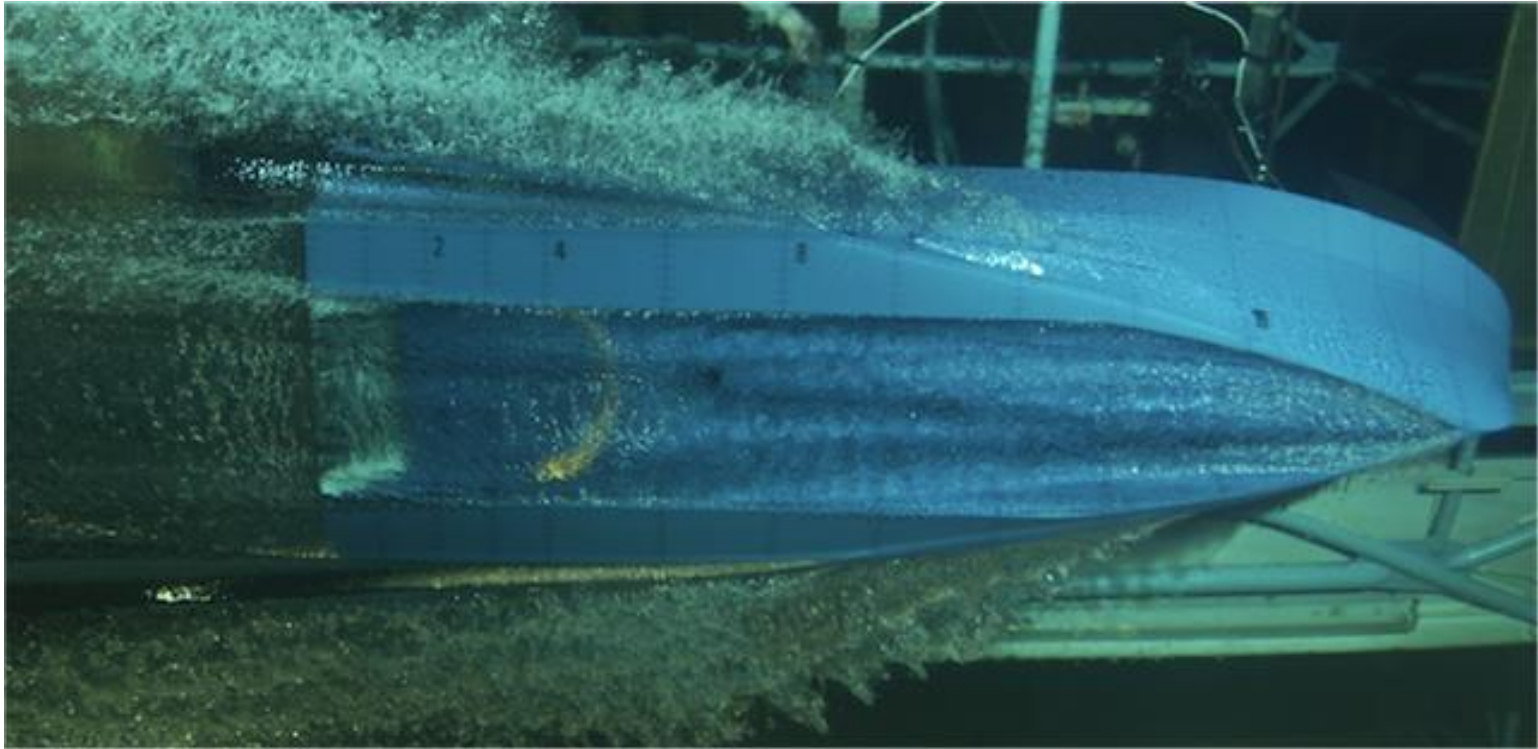
CLASSIFICATION: ACCORDING TO DNV
1A1 HSLC R3 PASSENGER

ASV technology - 3 D model final hull shape



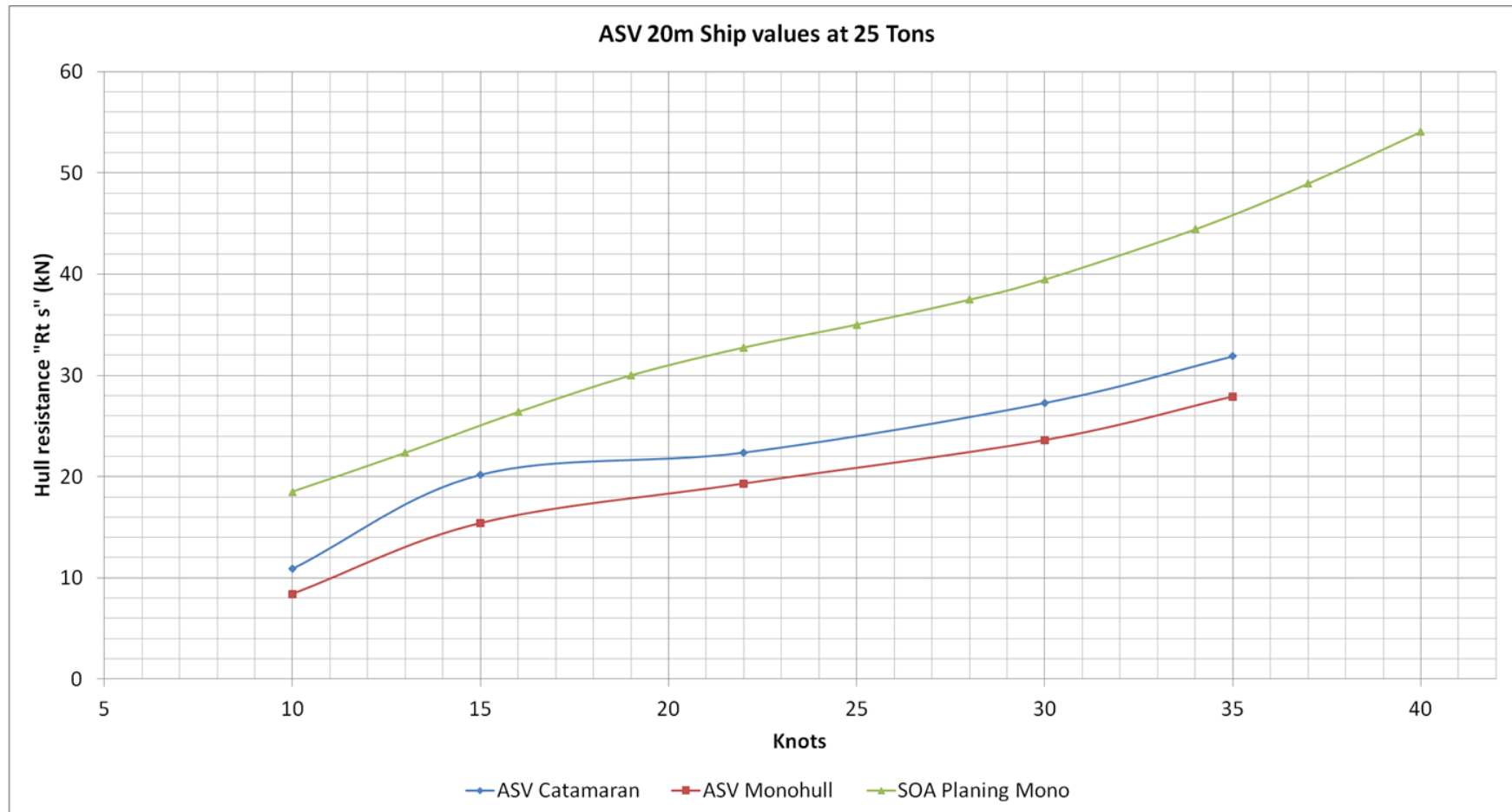
The air cushion covers 80 % of wet surface

Tank tests - @ SSPA underwater @ 30 knots



2000 tests have been made to find optimum hull shape

ASV Mono - BB GREEN hull resistance comparison



30 – 40 % less energy consumption

Web: www.bbgreenhull.com

Vacuum infusion



Carbon sandwich light weight construction

Web: www.bogreem.fr

Carbon sandwich lift fan ducting



15 m³ air per second

Web: www.bggreening.com

Lift fan impellers - tailor made fan system



Lifts the ship 40 cm at full speed

From fan to air cavity

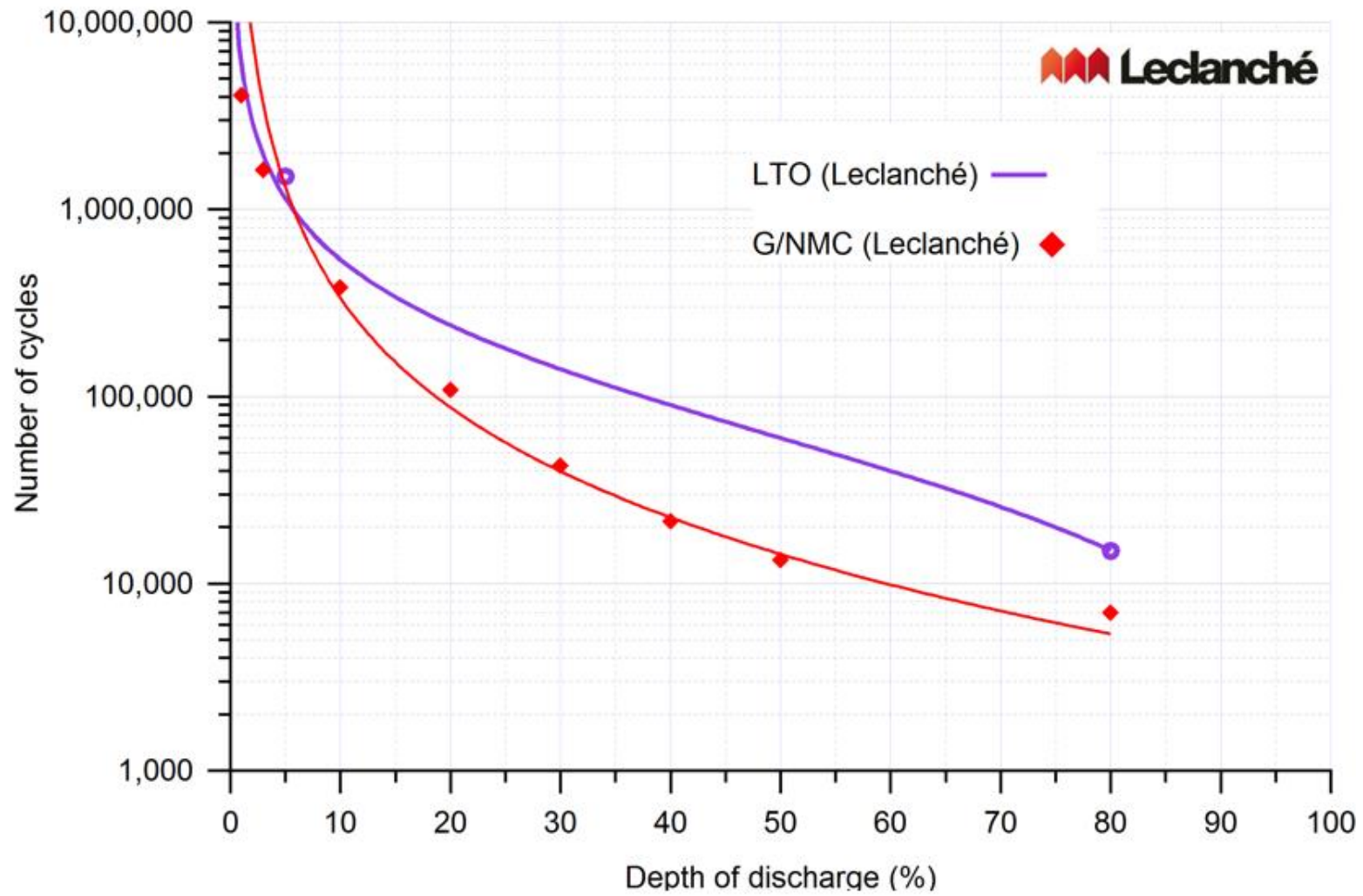


Batteries - Leclanché Lithium Titanate Oxide

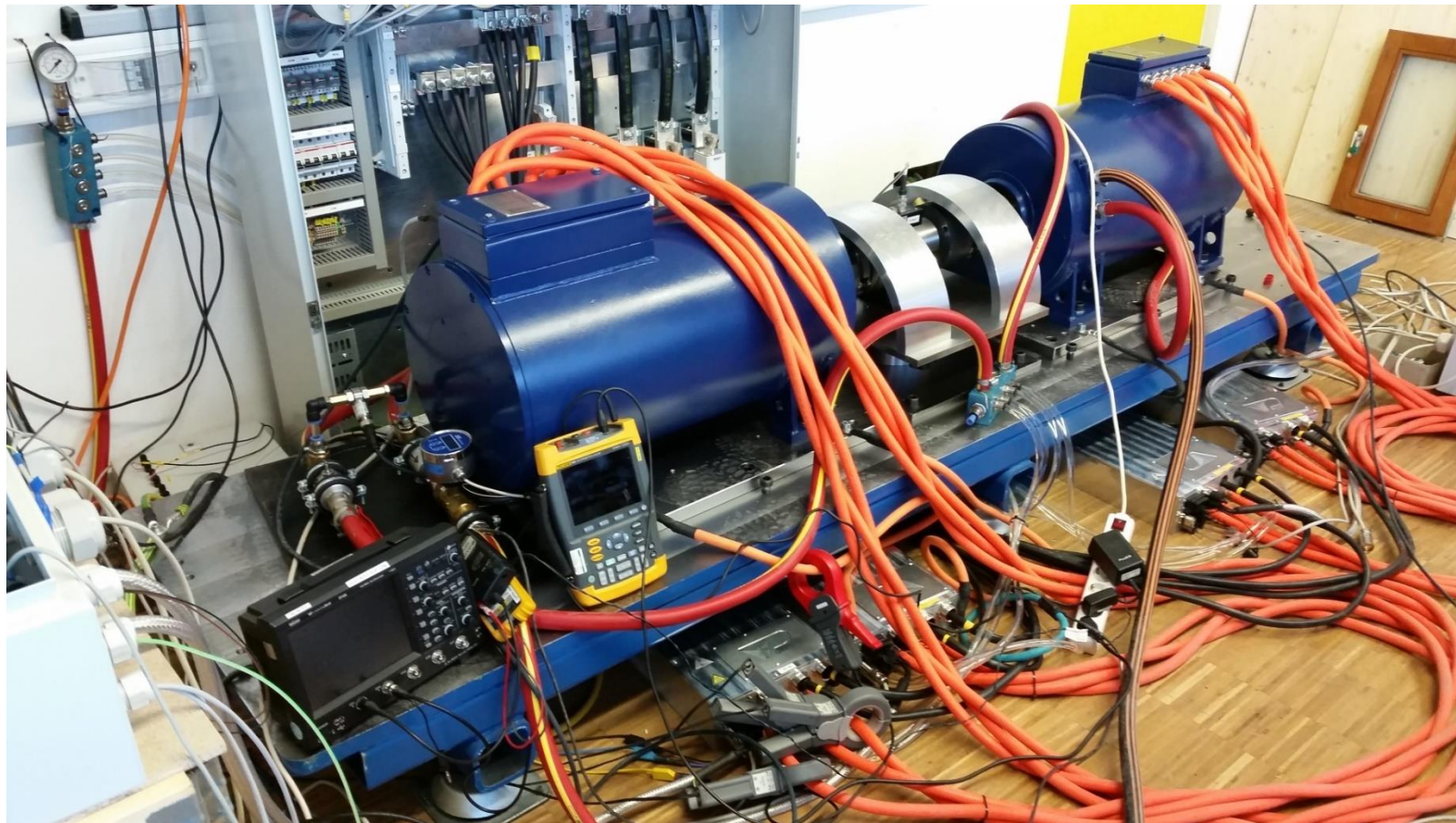


60 000 cycles and 4 C charging

Batteries – Lifetime



Pre-installation driveline tests



Two 280 kW PM motors

Impressive manoeuvrability



Volvo Penta's famous IPS drives

Web: www.bggreening.com

Pneumatically controlled flap



Web: www.bbgreen.info

Total cost of ownership

ENERGY COST INCLUDING BATTERY WEARING IS LESS THAN FOR A DIESEL DRIVEN VESSEL WITH SAME PERFORMANCE*

MAINTENANCE COST IS ALMOST ZERO

INVESTMENT IS IN THE SAME RANGE AS A DIESEL DRIVEN HIGH PERFORMANCE VESSEL

*) Big variations in diesel and electricity prices depending on country

Questions?

