

GREEN. SHIPPING. NOW.

MCN-Veranstaltung "Alternative Kraftstoffe & Technologien"
Zukunft heute: emissionsfreie Küstenschifffahrt

10.06.2021



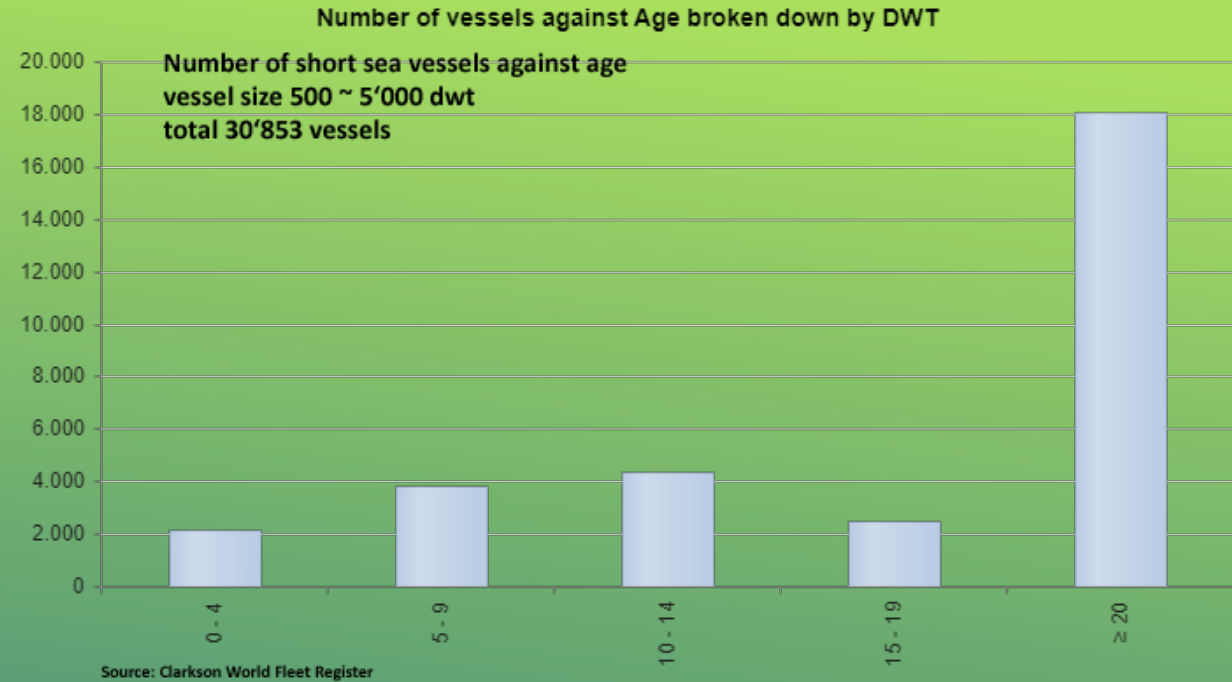
loge shipmanagement

founded 2015 by ing j. gerdes & cpt st. lohmann in haren (ems)

cloud-based shipmanagement

coastal shipping, trading zone a1

targeting emission free shipping by 2023

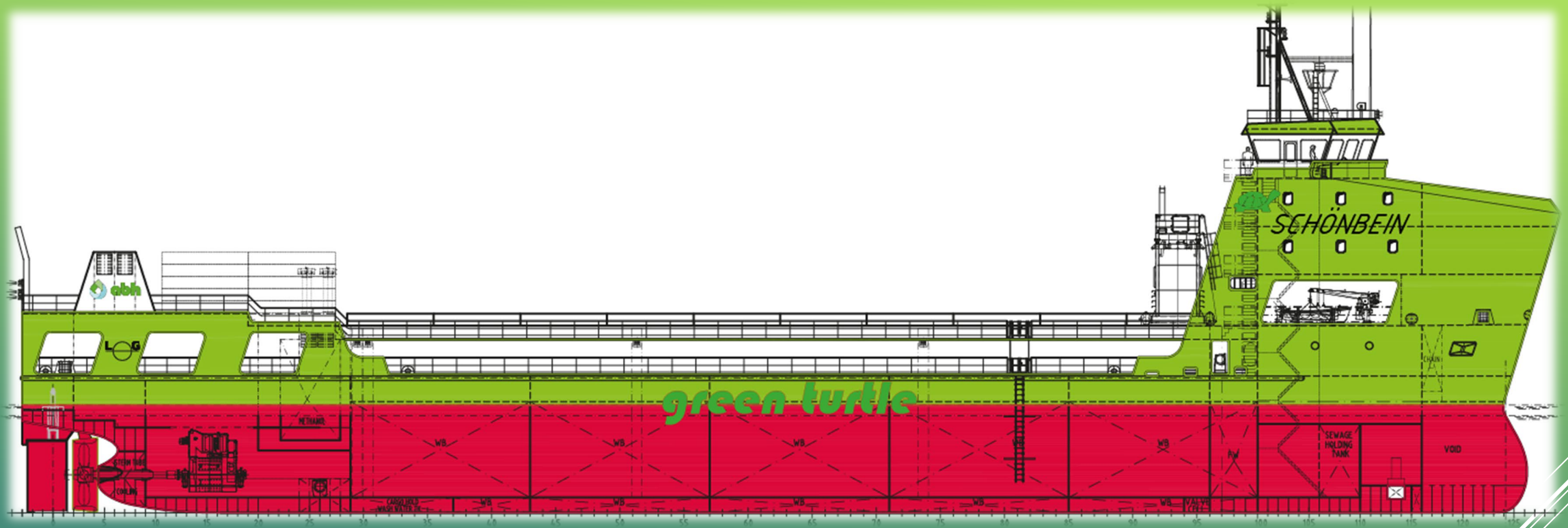


coastal shipping

global approx. 30'000 vessels 500~5'000 dwt / 59 % age ≥ 20 years

european owners approx. 3'200 vessels / 47 % age ≥ 20 years

vessel replacement of today counts for emissions next 20 years!



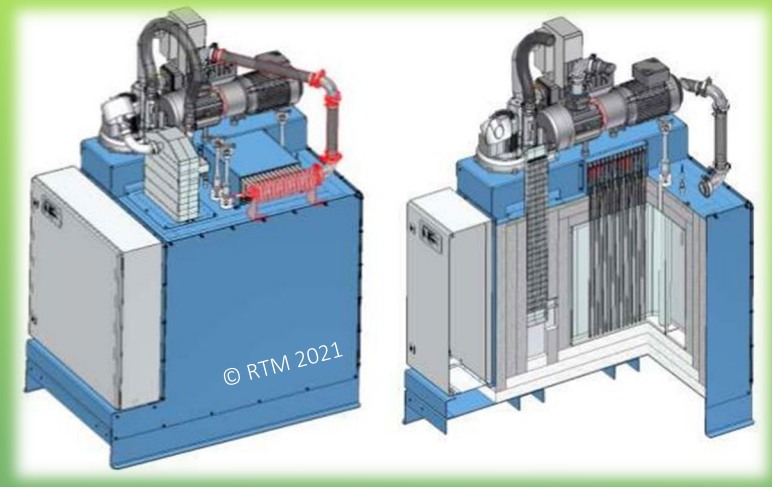
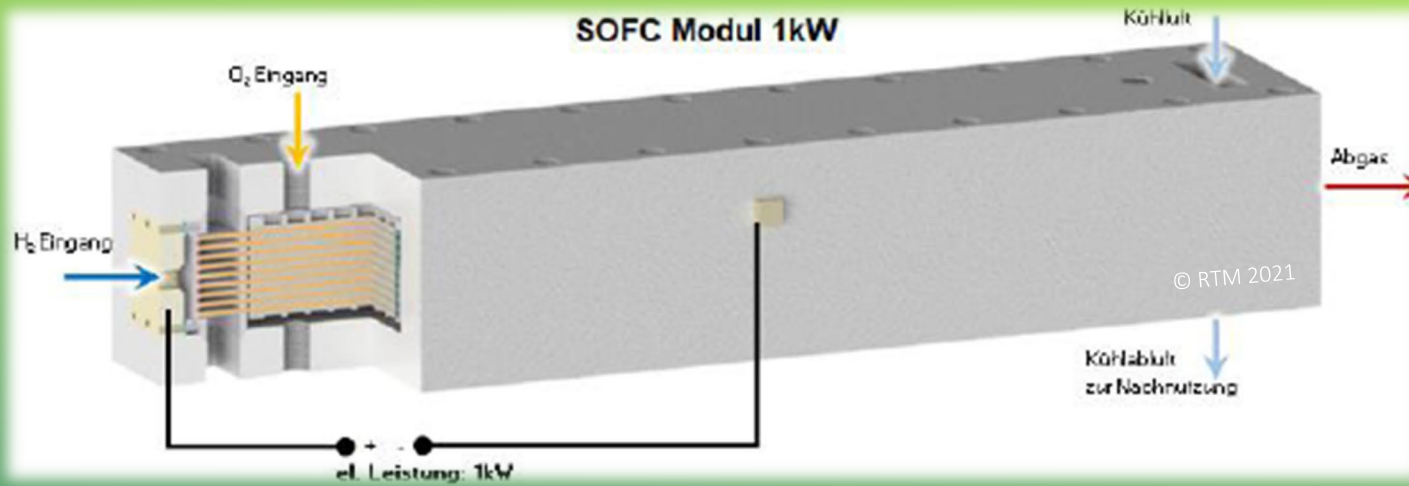
our solution

methanol-fueled (fossil or green) sofc (solid oxid fuel cell) power generator

1'000 kWh bess (battery energy storage system)

mof co₂ capturing / storage

dc grid with 1'500 kW dc propulsion motor

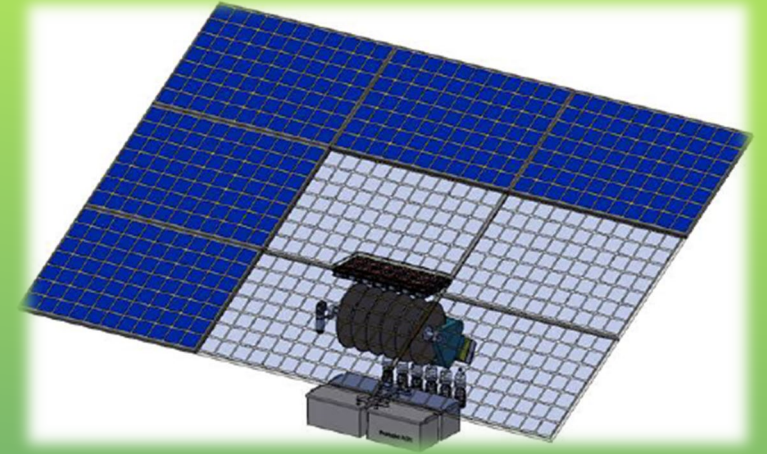


methanol-fueled sofc power generator

fuel consumption 220 gr/kWh

efficiency 72% electrical / 24% thermal

exhaust gas H_2O / CO_2 only



mof* co₂ capturing / storage

> 99% co₂ capture rate

1 ton fuel ch₃oh (methanol) results in 1.375 ton co₂ und 0.1875 ton h₂o

1 ton co₂ requires approx 1m³ mof volume

absorption / desorption in closed compartment suitable for minor pressure swing adsorption (psa)

controlled discharge release of 100 % pure co₂ gas

* mof – metal organic framework, porous network of metals with organic linkers with specific composition

MS "SCHÖNBEIN"

5'000 dwt eco mpc-box carrier

loa 89,97 m

b 16,20 m

dr 5,70 m

v_e 10,5 kn

p_{mcr} 1'500 kW
bess 1'000 kWh

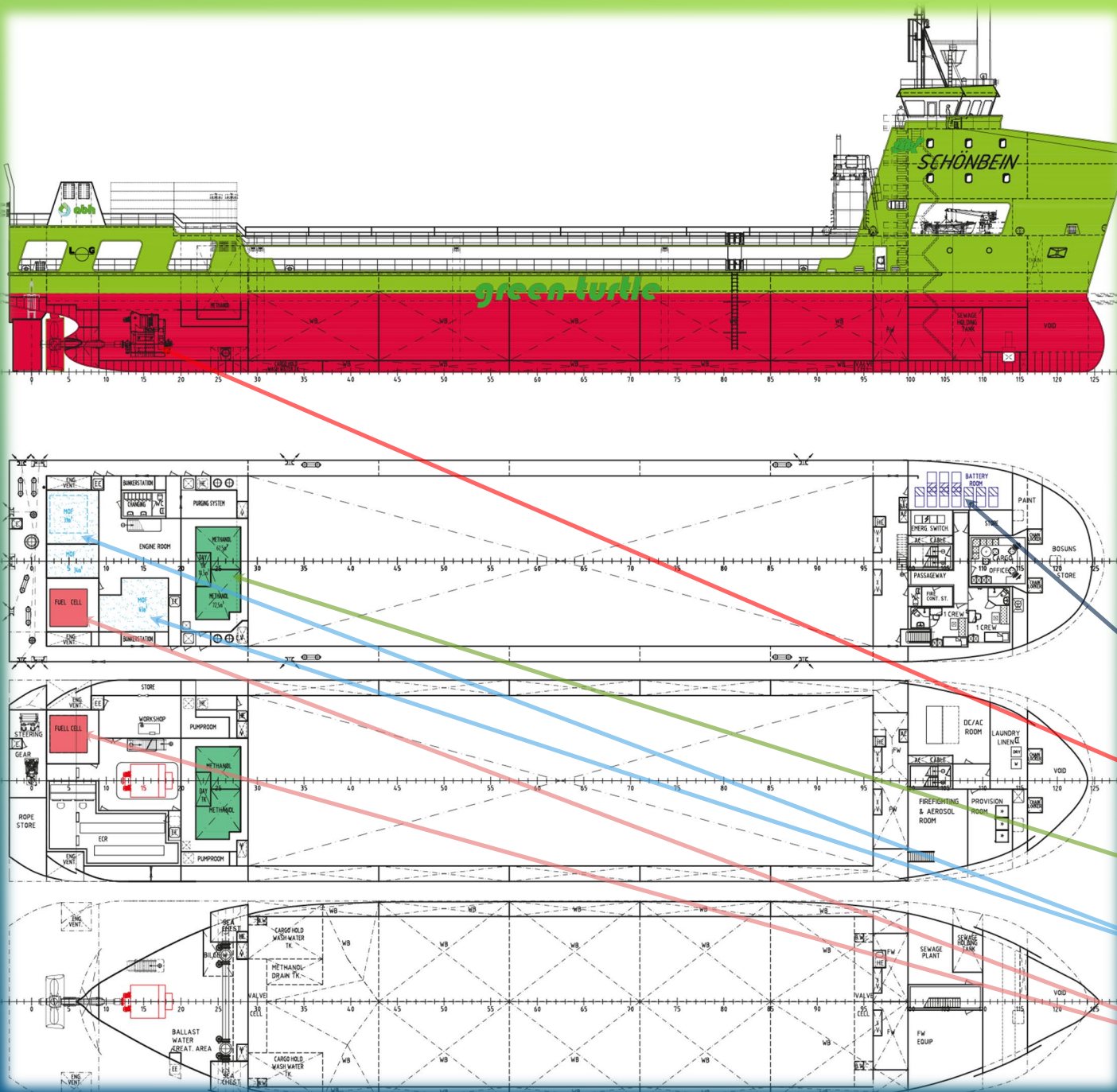
battery room

dc propulsion engine

methanol fuel tank

mof co2 storage

sofc power generator



			traditional 5'000 dwt coastal vessel	Green Turtle 5'000 dwt coastal vessel / fossil Methanol	Green Turtle 5'000 dwt coastal vessel / synthetic Methanol	incl. CO ₂ Capturing	
						Green Turtle 5'000 dwt coastal vessel / fossil Methanol	Green Turtle 5'000 dwt coastal vessel / synthetic Methanol
Installed Power	M/E	kW	1.740,0	1.500,0	1.500,0	1.500,0	1.500,0
	AE1	kW	200,0	0,0	0,0	0,0	0,0
	AE2	kW	200,0	0,0	0,0	0,0	0,0
	EmG	kW	100,0	0,0	0,0	0,0	0,0
	Batteries	kWh	0,0	1.000,0	1.000,0	1.000,0	1.000,0
	TOTAL	kW	2.240,0	2.500,0	2.500,0	2.500,0	2.500,0
Power vs = 12 kn	ME	kW	1.566,0	1.350,0	1.350,0	1.350,0	1.350,0
Power veco = 10,5 kn	ME	kW	975,0	880,0	880,0	880,0	880,0
Fuel Consumption veco	ME	t/day	4,4	4,6	4,6	4,6	4,6
Fuel Consumption GenSet		t/day	0,3	0,5	0,5	0,5	0,5
Fuel consumption total		t/day	4,7	5,2	5,2	5,2	5,2
CO ₂ Generation Factor			3,1	1,4	1,4	1,4	1,4
CO ₂ Generation		t/day	14,6	7,1	7,1	7,1	7,1
		t/yr	5.239,5	2.561,3	2.561,3	2.561,3	2.561,3
CO ₂ Capturing		t/day	0,0	0,0	0,0	7,0	7,0
		t/yr	0,0	0,0	0,0	2.535,7	2.535,7
CO ₂ MoF Storage, Dauer [d]= 17,0		t	0,0	0,0	0,0	120,0	120,0
Volumenfaktor = 1		m ³	0,0	0,0	0,0	120,0	120,0
CO ₂ Emission		t/day		7,1	0,0	0,1	-7,0
		t/yr		2.561,3	0,0	25,6	-2.535,7
Reduction		%		51,1	100,0	99,5	148,4

MS "SCHÖNBEIN"

5'000 dwt eco mpc-box carrier

co₂ emission

„traditional“ vessel 5'240 t / yr

„green turtle“
- 25 t / yr

mrrelevant co₂ reduction

- fossil methanol 99.5 %
- green methanol 148,4 %

green turtle

joined development by



M. B. C.



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