

# The new Research vessel "Uthörn" driven by green Methanol



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**Originally planned** : Conventional diesel mechanical drive (basic version) cost estimate at 10 M €

**In 2018 available technologies for a non-diesel propulsion of the new ship:**

- Drive with methanol (proto-type but existing) additional costs of 1.5 M €
- Drive with liquid natural gas (LNG) additional costs of 4.6 M €
- Diesel hybrid drive with shore connection additional costs of 5.3 M €
- Electric by 100 % additional costs of 8.7 M €
- Gas hybrid drive with shore connection similar to diesel-hybrid
- Drive with compressed natural gas (CNG) additional costs as LNG
- Fuel cell not available on the market

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## Main dimensions of the new „Uthörn“:

Length over all	35.70 m
Width on frames	9.00 m
Side height	3.65 m
Draft	2.20 m
Max. speed	10.0 kn
Main engines	2 x 300 kW (methanol engines)
Drive power	2 x 200 kW (electric)
Main working deck	80 m <sup>2</sup>
Vent mast	15 m high
A-frame	max. load 3 tons
L-frame	max. load 1.5 tons
Crane	SWL of 1.1 tons at 11 m

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40 years of  
development in  
ship design



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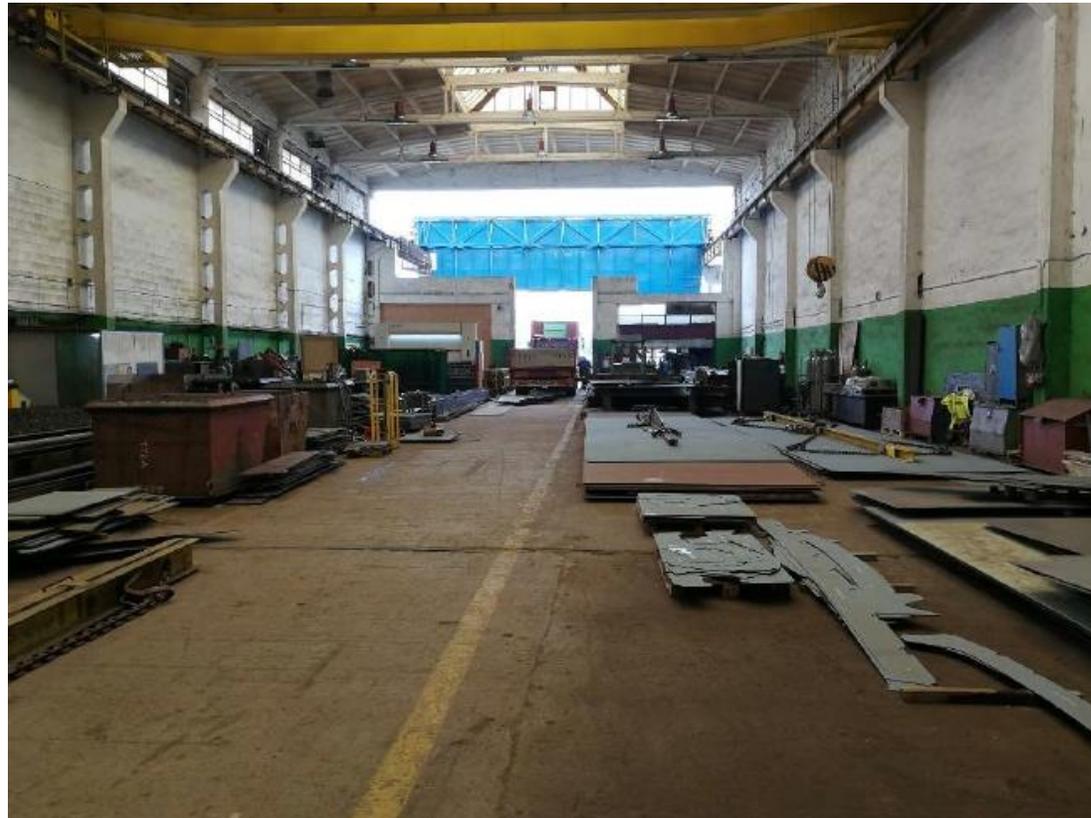
The vessel will provide:

- space for 5 crew members
- 4 scientists (for > 1 day trips)
- up to 25 students for day trips
- Multibeam echosounder (Kongsberg EM 2040)
- Sediment profiling echosounder (type Innomar SES 2000)
- Fishery echosounder (Kongsberg EK 80)
- ADCP(Ocean Marine, Teledyne Marine , 300 & 600 kHz)
- A-Frame
- L-Frame
- „Reinseewasserversorgung“
- Ferry Box system
- Space for lab-containers (4 \* 10 or 2 \* 20 feet) on the aft deck

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Steel burning started on schedule on April 15<sup>th</sup> 2021 in Szczecin (Poland). The flame cutting was carried out by the Kedat company in the industrial park on the site of the former Pomerania shipyard, Gdanska 36.



Production site of steel elements in Gdanska 36

# Keel laying ceremony in July 2021



# Turning the hull on 7<sup>th</sup> September 2021

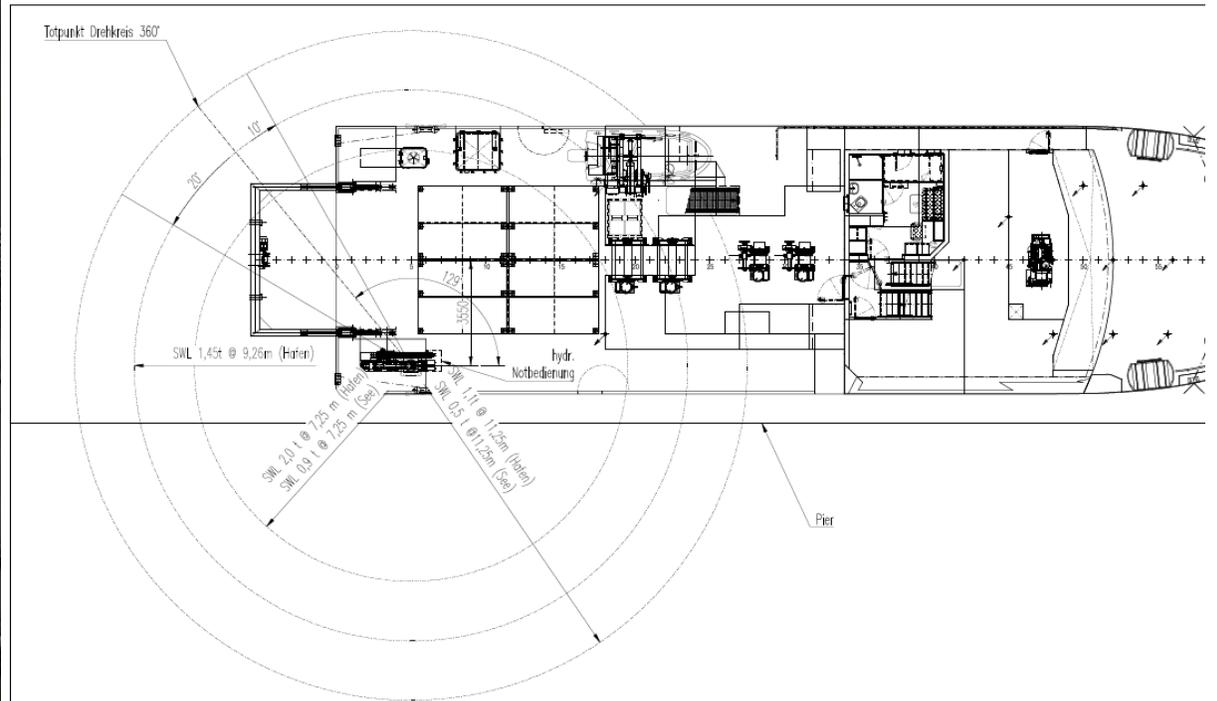


According to the shipyard it is more time, thus cost-efficient, to build the ship keel-up to the main deck and then turn it around with the aid of cranes. This happened 7<sup>th</sup> of September 2021

# Turning the hull on 7<sup>th</sup> September 2021

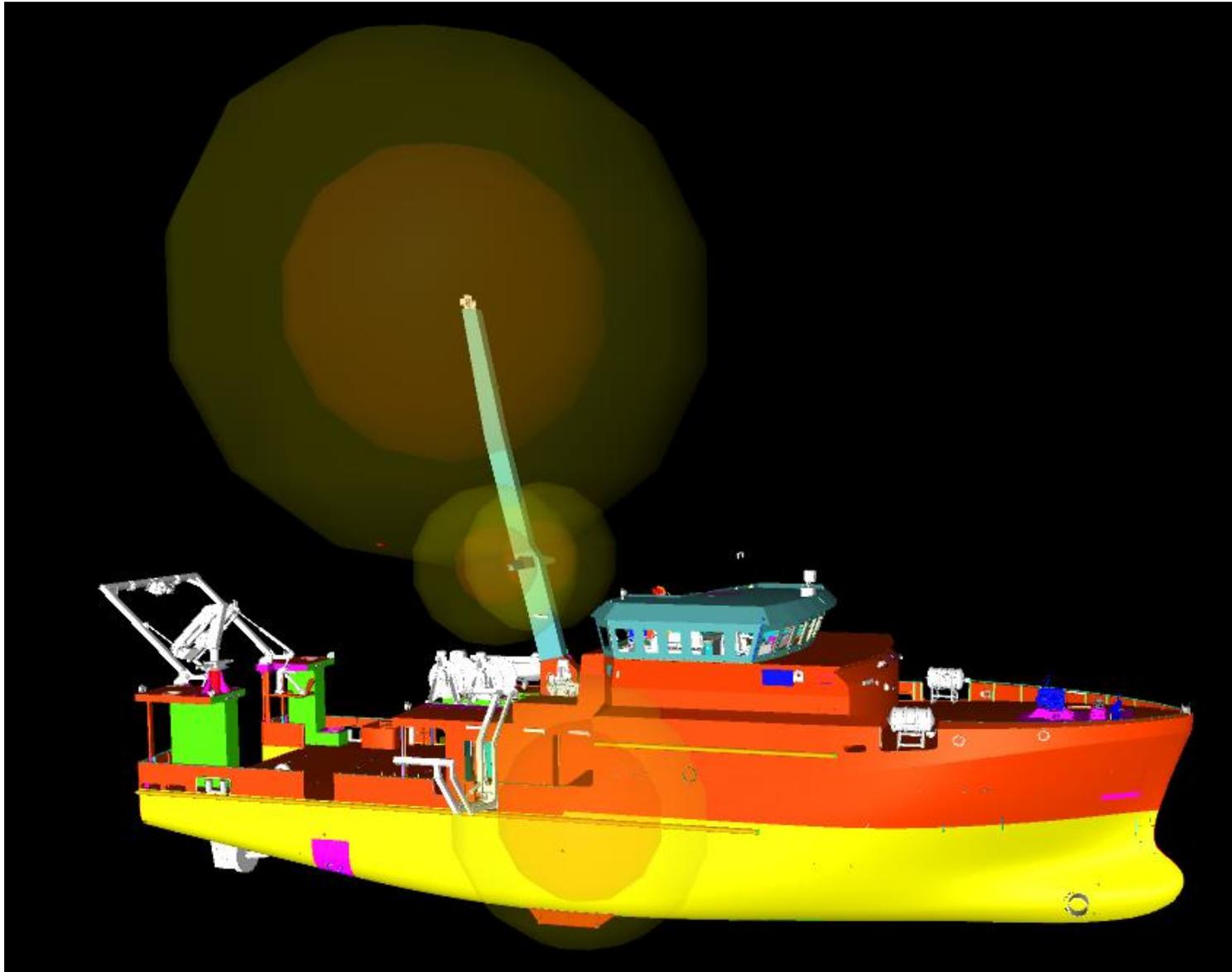


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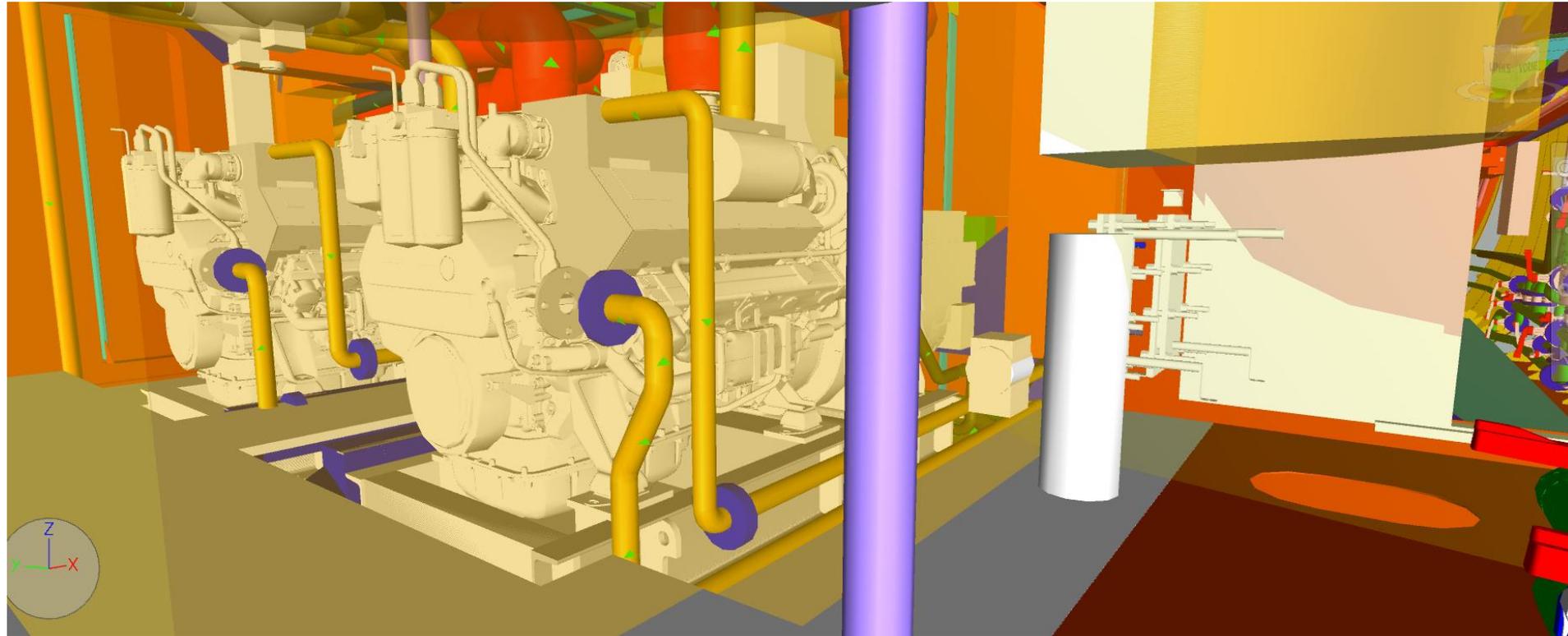


SWL of 1.1 tons at 11 m  
2.0 tons at 7.25 m

# 3 – D modell of the vessel



# 3 – D modell of the vessel





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Anti-roll tank



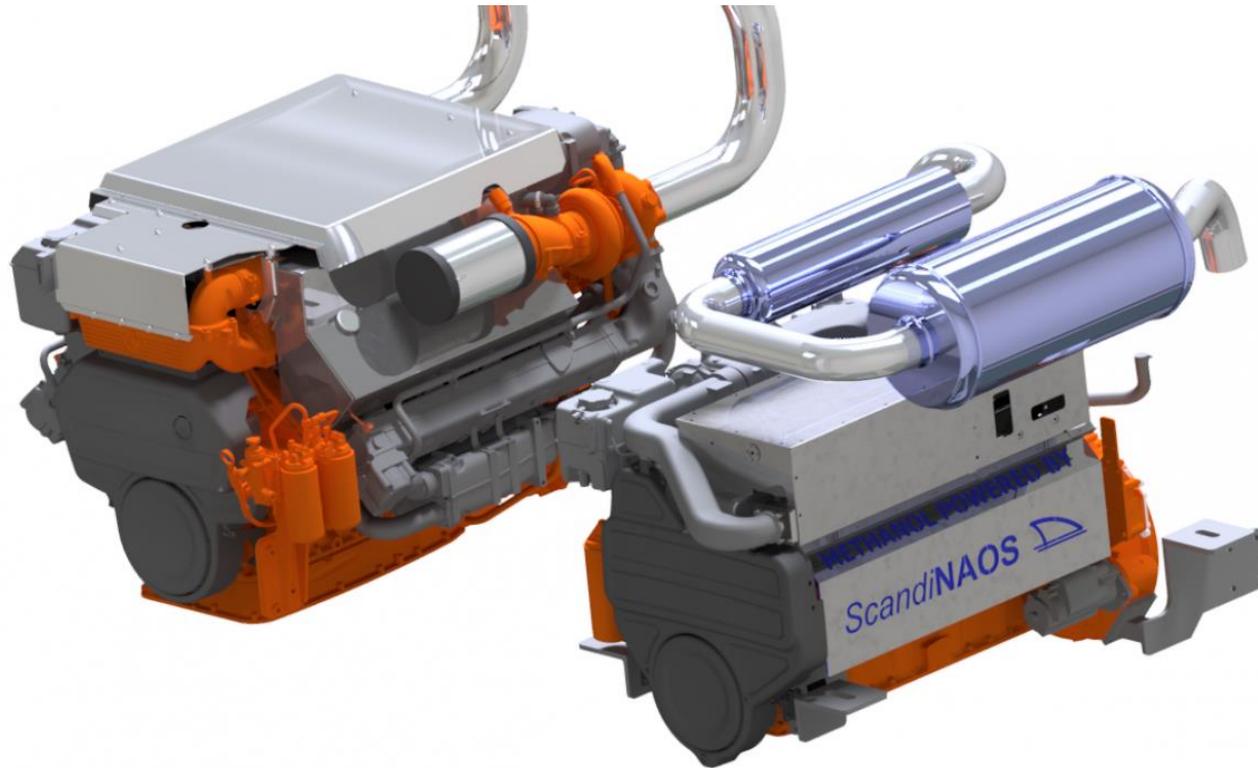
Dinghy with Davit

View on the wheel-house and the flume tank (anti-roll tank)

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The acceptance test of the converted methanol engines took place on 14<sup>th</sup> - 16<sup>th</sup> of June 2021 in the presence of the classification society DNV in Njurunda, Sweden. The test ended successful with minor revisions requested.



Both engines are already installed onboard

# Gas safe concept - necessary changes

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- **Pistons that offer higher compression**
- **Fuel injectors for methanol fuel**
- **Updated seals and valves in the fuel system**
- **The engine's ECU (Engine Control Unit) is new and programmed specifically for methanol fuel**  
**This includes performance, emissions and launch sequences**
- **The engine is designed to be gas-safe and designed for low-flash point fuel, including a ventilated engine cover, splash guard and leak detection**
- **Most of the new parts, including pistons and injectors, are original Scania ethanol truck components**
- **Additional encoders and monitors according to the safety concept**

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**We will apply for the Eco-Friendly Ship Design (DE-UZ 141) "Blauer Engel"**



Die „Uthörn“ ist damit das erste in Deutschland gebaute Schiff, dessen Propeller mit Wasserhydraulik zu verstellen sind

Foto: Lau/Schiff&Hafen

Some details of the engine room (on top), the interior (bottom) and the pitch propeller

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Thursday 30<sup>th</sup> of August 2022



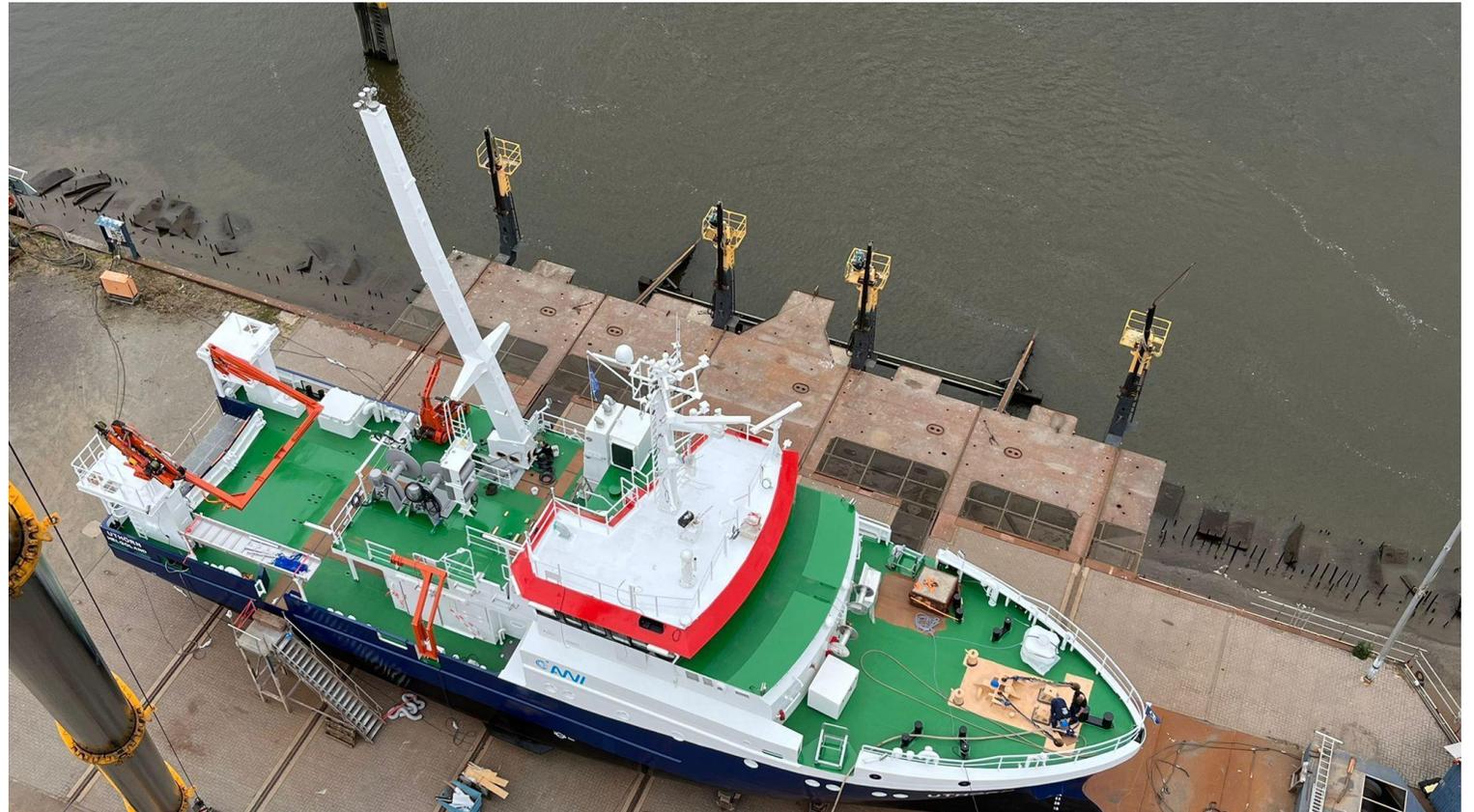
The new „Uthörn“ after transfer out of the construction hall to the ships-lift along-side the river Weser

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Front and back view of the new vessel shortly before launch on Thursday 30<sup>th</sup> of August 2022

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Mounting of the signal and the vent mast with the aid of a mobile crane

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After succesful launch  
the vessel was transferred to a  
ponton for final installation of  
equipment



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Ship Christening by the Federal Minister of Education and Research, Mrs. Stark-Watzinger 01.11.2022



12 | 2022 Euro 29,80  
74. Jahrgang | C 6091  
www.schiffundhafen.de

Schiffsbeschreibung:  
Forschungsschiff „Uthörn“ 12  
Smart Ports: Effizientes Management  
durch intelligenten Hafenbetrieb 40  
7 Fragen an: Arved Fuchs 52

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## Final time schedule

- The new building is 98% complete in terms of manufacturing and equipment
- There are still a few Harbour Acceptance Tests awaiting. They can only be carried out after methanol bunkering because for parts of the tests the engines have to run
- The methanol bunkering is planned for mid June 2023
- Engine test drive including emission measurement on June 15<sup>th</sup> 2023
- Sea acceptance tests incl. internal shipyard test drive June 21<sup>st</sup> - 23<sup>rd</sup> 2023
- Scientific commissioning and testing 26<sup>th</sup> – 20<sup>th</sup> July 2023  
(scientific projects of the AWI are also served during this period)
- Final acceptance/ handover on 28<sup>th</sup> July 2023

## 2022 award goes to Fr. Fassmer

Berne-based shipyard Fr. Fassmer wins the 38<sup>th</sup> edition of HANSA’s prestigious »Ship of the year« award

2017	Mega yacht	»Aviva«	A & R
2018	Cruise ship	»AIDAnova«	Meyer Werft
2019	Research vessel	»Atair«	Fr. Fassmer
2020	SAR vessel	»Hamburg«	Fr. Fassmer
2021	Mega yacht	»Nord«	Lürssen
<b>2022</b>	<b>Research vessel</b>	<b>»Uthörn«</b>	<b>Fr. Fassmer</b>



HANSA International Maritime Journal, März 2023