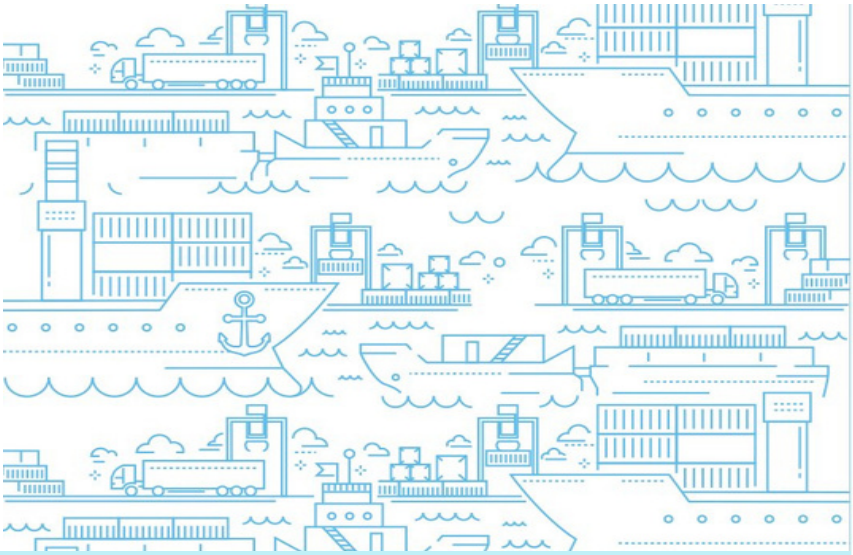
No 7

9th June, 2023

# NEWSLETTER



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Partners:

## The "Magda I" watercraft - let's check on her!

Recently, the engine has been prepared for start-up and software for the engine operation controller under load through the propulsion system of the Magda Unit. Accordingly, installed temporary sea water system and engine cooling system necessary for starting the engine. Not only were the CNG and LNG tanks placed on board the ship, but also the gas installation was combined (CNG tanks, LNG tank, gas compressor and compressed air tank!

As if that were not enough, temporary lighting of the engine room and power supply to the starting and control devices were installed engine's work. The engine was also prepared for the assembly of the Ecumaster electronic control module and the Ecumaster module controlling the engine operation was installed in the control block. Then, the engine was filled with lubricating oil, the engine cooling system was filled with coolant and the CNG tanks were filled with gas to a pressure of 200 bar.

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The engine and the initial adjustment have been started and made on the Magda I unit placed on the quay in the shipyard. Design documentation received from the Maritime University of Technology in Szczecin have been analysed.

On the basis of this, requests for proposals have been prepared for the installation in the power plant and permanent foundation tanks, execution of superstructure and steering gear.

## This is not the end of the actions which have been taken!

Currently, work is in progress on the installations in the engine room, the target deck building, the target deck are being supervised foundation of the tanks based on the design documentation.

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Study visits are important part of the Liquid Energy Project. On the 23rd of March, we visited Zeabuz.

# Enabling waterborne mobility with autonomy and AI.

*"Advanced technology includes not only special cameras underneath all of the corners and radar, but also dedicated control system which takes care of everything, even when the subject will suddenly appear on the following line." says Erik Dyrkoren, CEO at Zeabuz.*

Zeabuz presented more information about the world's first fully autonomic ferry fitted with solar panel on the roof of the boat.

Zeabuz is a spin-off from the progressive research center for autonomous marine operations and system, at the Norwegian University of Science and Technology.

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## Sintef

**One of Europe's largest independent research organisations.**


> *"The priority up to 2050 should be not only using new renewable energy to replace coal fired electricity production to nearly decarbonize the electricity grid but also gradually electrifying road transport"*
>
> Elizabeth Lindstad,
> Sintef Oceans' Chief Scientist.

Scientist Torstein Aarseth Bo, has explained the subject of Smart Maritime Seamap to green shipping, innovation dedicated to improving energy efficiency and reducing harmful emissions from ships.

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## Biokraft Skogn

### The world's largest production facility for liquid biogas fuel (LBG).


Contributes to reducing emissions of greenhouse gases and contributes to green business development.

They convert the cleaned biogas from fishery waste and residual paper mill slurry into liquid fuel.


*"Gas liquefaction which involves cooling gas to a temperature below its boiling point so that it can be stored and transported in its liquid phase"*

**says Terje Hyldmo,**
**Manager, Commercial & Business Development**
**Biokraft AS.**

We have been told about carbon capture and utilization (CCU) process which is about capturing CO2 to be recycled for further usage. We also have heard about carbon capture and storage (CCS) in which a relatively pure stream of carbon dioxide from industrial sources is separated, treated and transported to a long-term storage location.

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(Bio-)LNG Solution for a Decentralized Energy Supply System aims to implement a (bio-)LNG solution for a decentralized energy supply system for buildings.

The system will integrate a combined heat and power (CHP) plant, solar energy, and smart home technology to create an efficient and sustainable energy supply.

## (Bio-)LNG Solution for a Decentralized Energy Supply System

The Vaillant ecoPower 4.7 CHP system is a key component of the pilot project. Utilizes natural gas, including (bio-)LNG, to generate electricity and heat simultaneously.

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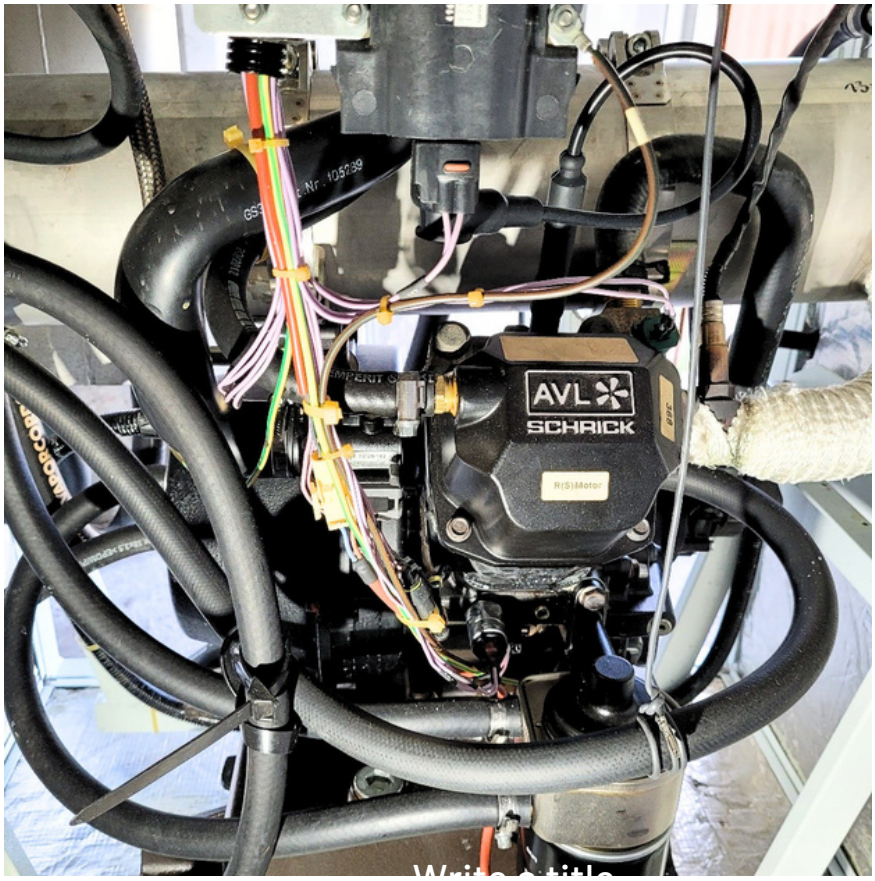
## (Bio-)LNG Solution for a Decentralized Energy Supply System

## The pilot project offers several benefits:

**The use of (bio-)LNG reduces greenhouse gas emissions and contributes to a cleaner and more sustainable energy mix.**

The CHP plant maximizes energy efficiency by utilizing waste heat, resulting in cost savings and reduced energy consumption.

**The integration of solar energy further reduces reliance on (bio-)LNG and promotes renewable energy utilization.**




(Bio-)LNG Solution, Combined Heat and Power (CHP) Plant, Solar Energy Integration, Smart Home Technology.

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## More Biogas

**More Biogas (Kalmar, Sweden) has built a co-digestion plant which was completed in the winter of 2014. The plant produces ready compressed vehicle gas for local use.**


**75,000** tons of substrate contribute to the production of **25** GWh as a vehicle gas. Biogas powers about **80** buses in swedish town.


During study visit in Sweden on May 26th, we visited More Biogas, company located in Kalmar. This company was formed in February 2011 after several years of preparation.

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Study visits are important part of the Liquid Energy Project. On the 26rd of May, we visited Kalmar, Sweden.

"The company extracts elements from fertilizer and phosphorus. The resulting materials are then further recovered and used or sold.
As a result, almost nothing is wasted"
**says Eko Balance CEO.**

## Wärtsilä, Puregas

**This is a small-scale LNG production project which focuses on producing more methan and upgrading it.**

The next step is upgrading and polishing: puregas CA technology which integrate two stage solutions:

1st stage co2 bulk removal at atmospheric pressure;
2st stage co2 polishin at 20/60 barg pressure.


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