

# Product Catalogue

*Lyngaa Marine*





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## ABOUT

# Lyngaa Marine

## Lyngaa Marine

*From blacksmithing to “front runner” in maritime electronics.*

*Based in Birkerød, the Danish company Lyngaa Marine enjoys great success in ship automation.*

The company was taken over in 2008 by marine engineer and former naval officer, Per Christiansen. At that time the company primarily targeted shipping companies as well as companies in the maritime industry. Per Christiansen, whom at that time came from the position as a new building manager at Royal Danish, came to the company with several agencies that primarily targeted large yachts and lighter commercial vessels.

The road from a blacksmith company – with trading as a sideline business happened when a long-time



**Westrafjord**

customer had a couple of ships that needed a new propulsion control system. At Lyngaa Marine there is rarely very far from thought to action, so Per decided to undertake the task. The recipe was simple: The

product had to be classified, it had to be built from freely accessible components, and it had to be competitive.

The first system was delivered to Sundbusserne the following year in 2013 – and, well noted, to a fraction of the prevailing market price for similar products.

The solution from Lyngaa Marine turned out to be completely reliable, and rapidly other customers began to contact Lyngaa Marine. Subsequently, the company decided to develop the product from a customized system into a standard system that comply with most applications. The development task was split between Per Christiansen and the newcomer to the company Niklas Studsgaard Nielsen, and in 2017 the LMB 2100 propulsion control system was launched and the premises in Kvistgård was exchanged for larger ones in Farum.

After a slow start, where it was difficult for a small company to break through in a market dominated by major international players, the first systems began to be delivered in 2017. In the following years, revenue grew steadily and in 2021 more than 120 systems were delivered.

The program today includes the following systems:

- LMB2100 & 2101 propulsion control
- LMA2100 alarm & monitoring
- LMT2100 thruster control

- LMR2100 rudder control
- LMPM2100 power management
- LMDP2100 Dynamic Positioning
- LM-Flow

and a broader range of special solutions. In addition, water makers from Parker, maritime electronics from Maretron and various propeller systems are sold.

Most recently, Lyngaa Marine has received major orders for extensive integrated system for fish transport vessels, crew transfer vessels, ferries, fishing vessels, research vessels and the largest SAR boat to date for the norwegian rescue company—Redningssekabet.

Lyngaa Marine currently employs about 20 people and the staff consists of marine engineers, civil engineers, automation technicians and administrative employees.





# LMB2100 STANDARD Propulsion Control System



## LMB2100 STANDARD

The LMB2100 propulsion control system is Lyngaa Marine's bid on the marine classification society approved propulsion control system, which meets with even the most comprehensive demands from the marketplace. The system is designed around a selection of first-class standard hardware components, which assures the reliability and durability of the system as well as easy

and quick access to spare parts.

The system offers communication with engine, gearbox, propeller, or waterjet. The color display gives the user information about all vital data such as: speed, pressures, and temperatures from the entire drive line as well as pitch and rotation direction of the propeller.



**LMB2100**  
**Master Panel**



**LMB2100**  
**Outdoor Panel**



**LMB2100**  
**Slave Panel**

The features of the LMB2100 are:

- Affordable
- Build from standard components
- MCS approved hardware & software
- Easy to install and commission
- Up to eight control stations in one and same system
- Outdoor panels
- Full insight in all vital data from the propulsion line on touch screen
- Easy to re-calibrate
- Remote access via internet
- Efficient support via phone & internet
- Automatic RPM control when clutching PTOs
- Automatic engine overload protection
- Can be extended with alarm system
- Programmable by user via PC browser or the build-in touch screen
- Emergency mode
- Flexible/customizable
- Fuel measurement



**LMB2100**  
**Narrow Panel**

## LMB2100 STANDARD

### NeseJenta

When the new trawler “Nesejenta” was on the drawing board at Vestværftet in Hvide Sande, the very positive experiences from the 2020 delivery of the Hvide Sande registered trawler RI344 “Mikkel Louise”, which is equipped with a 3-positions LMB2100 propulsion control system, was decisive. The new “Nesejenta” was equipped with a 4-positions LMB2100 system, which has fulfilled the expectations to such a degree that the owner, Mr. Kjetil Fjelskår, has decided to replace the propulsion control system on his other vessel with a LMB2100 system.



NeseJenta delivered with LMB2100Standard

Mr. Kjetil Fjelskår explains:

*“The first impression of the LMB2100 system was that the system was very easy to understand and operate. All functions were quickly understood by all the relevant crew members, and we have experienced a trouble-free operation so far. But it is also worthwhile to mention the safety features such as automatic overload protection of the main engine and the PTO in-coupling feature, which prevent the user from coupling PTOs in before the main engine has reduced the speed to an allowable level ”*

### Mikkel Louise

During the planning of the 2020 delivered trawler RI 344 “Mikkel Louise”, Vestværftet in Hvide Sande was looking for a propulsion control system that offered certain control features such as, main engine overload protection, controlled in-clutching of PTOs, more than one combinator mode, and fuel measurement.



RI 344 Mikkel Louise delivered with LMB2100Standard

The focus was soon turned to Lyngaa Marine, which was the only relevant player in the marketplace that could deliver a system that fulfilled all the requirements and at the same time was affordable. The system was installed 2019 and it was the beginning of a long and fruitful collaboration with Vestværftet.

The owner, Mr. Torben Johansen, is intending to install a LMB2100 in his latest new building, a shrimper that is scheduled for delivery from Vestværftet in 2022.

# LMB2100 Standard Propulsion Control System



# LMB2100

## SPECIAL VERSIONS

### LMB2100

#### Dual

The LMB2100 Dual has been delivered in large numbers to multi engine vessels such as crew transfer vessels, aqua culture vessels, SAR vessels, and ferries. The LMB2100 is well suited for such installations, and is available for CPP, water jets, and for hybrid solutions.



### LMB2100

#### Electrical Propulsion

The 2100 Electric Propulsion is intended for electrical propulsion and hybrid solutions. The system features all the same functions as the LMB2100 but is prepared to communicate with frequency converters and battery packages.



### LMB2100

#### WaterJet

The LMB2100 Water Jet is developed for controlling of water jets. The core of this variant is still the LMB2100 and posses all the same attributes.



### LMB2100

#### Reverse Gear

The LMB2100 Reverse Gear is developed for reverse gear systems. The core is still the popular LMB 2100 system and with the same well proven performance.



### LMB2100

#### Azimuth

The LMB2100 Azimuth is developed for ships equipped with azimuth thrusters. This can be used for control of azimuth thrusters as main propulsion or control of retractable azimuth in the bow of the vessel.

The LMB2100 azimuth can be delivered with interface to Dynamic Positioning systems



### LMB2100

#### Double Ender

The LMB2100 Double ender system is specially developed for RORO double ender ferries, with propeller in each end of the vessel.





# LMB2100

## SPECIAL VERSIONS

### LMDP2100

#### Dynamic Positioning System

The Lyngaa Marine DP system is designed for easy maneuvering - in dock or on open water. The system includes a joystick control panel.

At docking speed, the system keeps the ships orientation while maneuvering. At higher speed the joystick can be used to control the pitch of the main propeller(s) and rudder(s). The system has a Hold Position mode, where it will keep its current position, and an anchor mode where it will hold its current position but turn the ship so that the bow will always be against the wind.



### LMR2100

#### Rudder Control

The LMR2100 is our rudder control system.

The LMR2100 can control the vessels steering machines.

Amongst the main features are: Synchronizing of rudders, monitoring of rudder position, start of stand-by pumps, emergency control, auto-pilot signal intake, and DP signal intake



### LMT2100

#### Thruster Control

The LMT 2100 is Lyngaa Marine's thruster control system.

The system communicates with both diesel, electric, and hydraulic thrusters. The LMT2100 can be delivered as a stand-alone system, but it can also be intergrated in the LMB2100 series.

LMT2100 is approved by all major marine classification societies.



### LMPM2100

#### Power Management

The system monitors and controls all electric power production and consumption in the vessel.





# LMB2100 SPECIAL VERSIONS



## SYSTEM INTEGRATION

After having developed the LMB2100 propulsion control and the LMA2100 monitoring, alarm, and control systems based on the same software and hardware architecture, Lyngaa Marine set out on new quests – to integrate all major systems of a vessels propulsion, steering, and power management. Subsequently, the firm set out to find customers that would take this next step together with Lyngaa Marine. The search was not long.

A long standing customer Northern Offshore Services (NOS) of Gothenburg in Sweden was so satisfied with not only the products but also the flexibility and competences that Lyngaa Marine has offered to NOS over time, that the company did not hesitate to accept Lyngaa Marines bid for a new integrated ships control system for their new buildings at the Grovfjord Mekaniske ship yard in Troms in Norway.



**LMR2100 Rudder Control System**

**LMB2100Dual Propulsion Control System**

**LMPM2100 Power Management System**

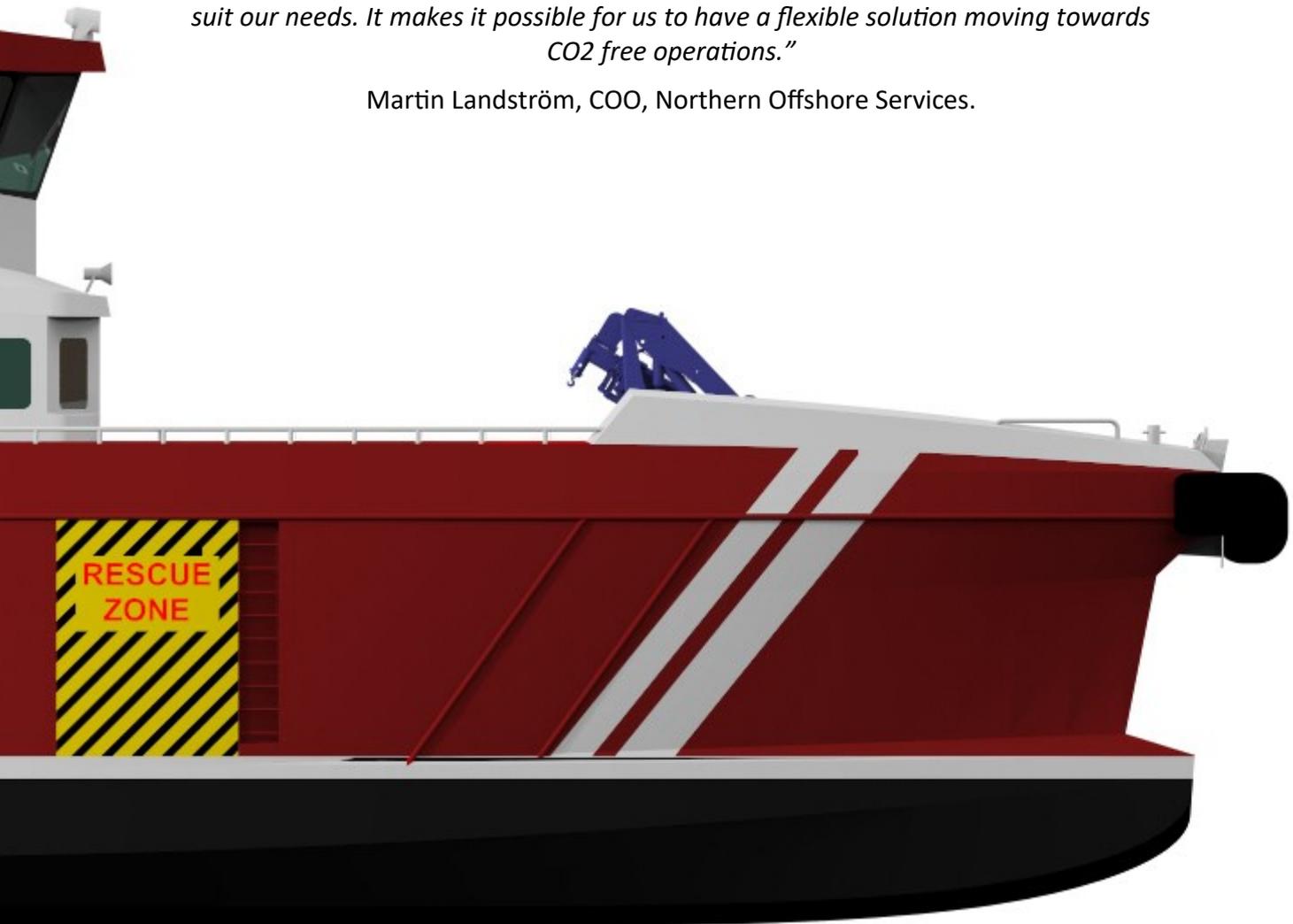
## SYSTEM INTEGRATION

The integrated LM2100 systems also takes control over most of the vessels functions such as: **Propulsion controls, rudder controls, thruster controls, power management, Alarm & Monitoring, Automation, navigation lights, pumps and tank management.**

Since the first project for NOS, Lyngaa Marine ventured further and has sold similar systems for the newest live fish carriers for the Norwegian company Frøy Rederi AS, and a new Norwegian SAR vessel for Redningselskapet that is being constructed at Swede Ship on Tjörn.

*“We are pleased with the ongoing work with Lyngaa to be able to build a system to suit our needs. It makes it possible for us to have a flexible solution moving towards CO2 free operations.”*

Martin Landström, COO, Northern Offshore Services.



**LMA2100 Alarm & Monitoring System**

**LMT2100 Thruster Control System**

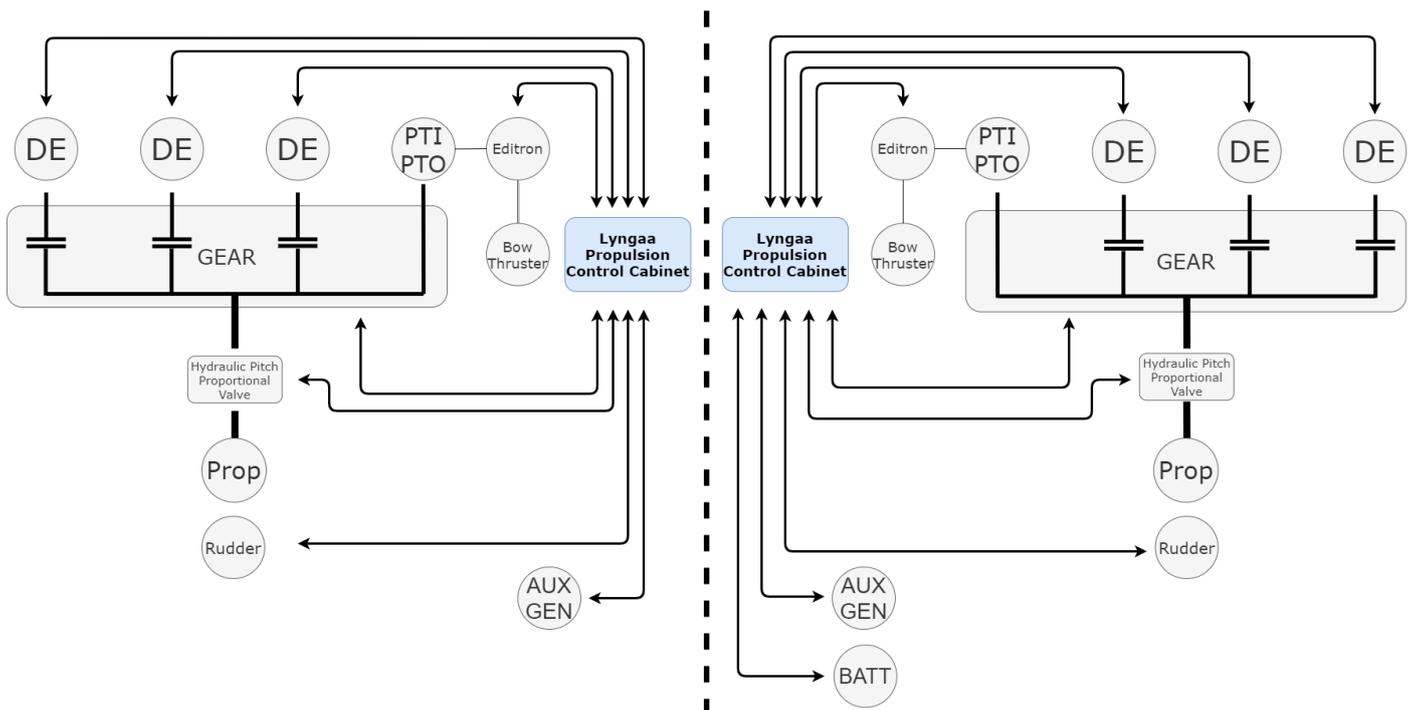
**LMDP2100 Dynamic Positioning System**

## NOS ENERGIZER

### The NOS Energizer

The **NOS Energizer** arguably features the most advanced propulsion plant that the World has seen to date.

The 40-meter catamaran Crew Transfer Vessel boasts all in all 8 propulsion engines driving two gearboxes each with one CPP propeller. The six 550 kW diesel engines are connected with two shaft alternators / electrical motors of each 275 kW, which work in a PTO / PTI arrangement on the gearboxes. Furthermore, the power plant is supported by a 275 kW battery bank that allows peak shaving or pure electrical propulsion in a limited period of time.



The **Northern Offshore** company have chosen Lyngaa Marine as the system integrator based on previous performance – or in other words: Performance, Simplicity, and Reliability.

Lyngaa Marine had all the basics in place in terms of separate systems such as the LMB2100 propulsion control, the LMA2100 alarm & monitoring, the LMT thruster control, the LMR rudder control, the LMPM power management, and the LMDP dynamic positioning system. The real task was then to integrate all the systems in a simple and user-friendly set-up. Much was developed in sync with the project, and many details and functions were custom made for the owner as the needs arose.



**LM2100 Shipcontrol Panel—all functions within easy reach for the navigator**

## NOS ENERGIZER

### The Captain's Chair.

The full control over the vessel had to revolve around the captain's chair in order to secure safe and timely operation of the vessel. It was a great challenge for Lyngaa Marine to design a prioritized lay-out of all the functions related to the operation of the vessel. However, the integrated Lyngaa Marine LM2100 system was successfully handed over to the yard and owner in February 2022 with the full appreciation from the crew for the functionality of the system.



### The Control Panel.

The LM2100 integrated control system was designed with the intent that the navigator can perform all essential ship control without leaving the navigator's chair and still have full monitoring of all essential functions.



### The LMA2100 Alarm & Monitoring System.

The LMA2100 alarm & monitoring system is a full-blown IAS system, which not only caters for the crews needs of information but also offers a vast number of automatic and/or remotely controlled functions. For the **NOS Energizer** we have made 10 separate screens, which covers all the functions in the integrated systems. All the pages have been designed in close collaboration with the owner and the yard, and a high degree of consideration has been paid to the crews wishes and requirements.



### The LMPM2100 Power Management System.

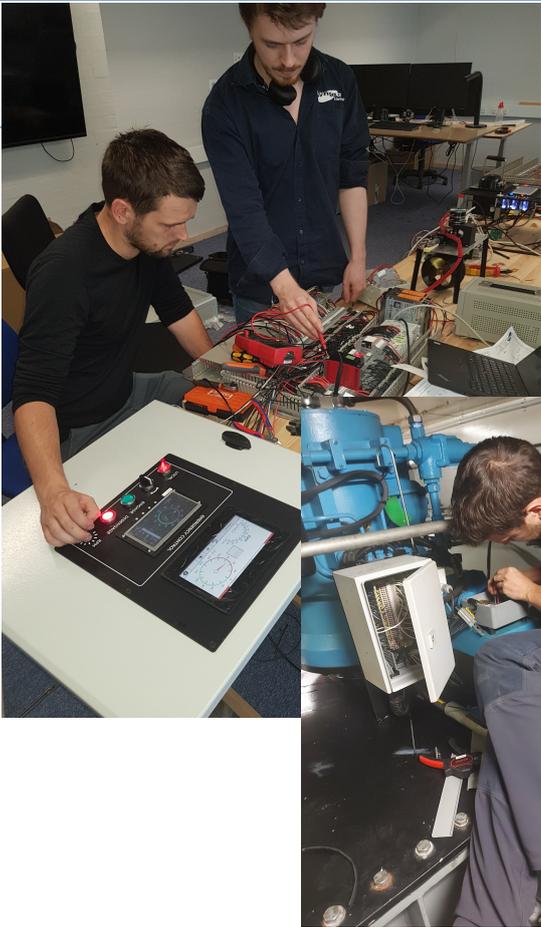
The LMPM2100 power management system has been greatly re-worked in order to comply with the interaction between the nine power modules incorporated in the system – not to mention the integration of the 275 kWh battery bank.



### The LMR2100 Rudder Control, the LMT2100 Thruster Control & the LMDP2100 Dynamic Positioning Systems.

The LMR2100 and the LMT2100 systems controls the rudders and the thrusters on board the NOS Energizer. Both functions are linked with the LMB2100 propulsion control system in the LMDP2100 dynamic positioning control system. The LMDP2100 instantly take over the vessel control when activated and it will maintain the exact position of the vessel during the period that the vessel is in DP-mode.

## MJØLNER & THE AZIMUTH SYSTEM



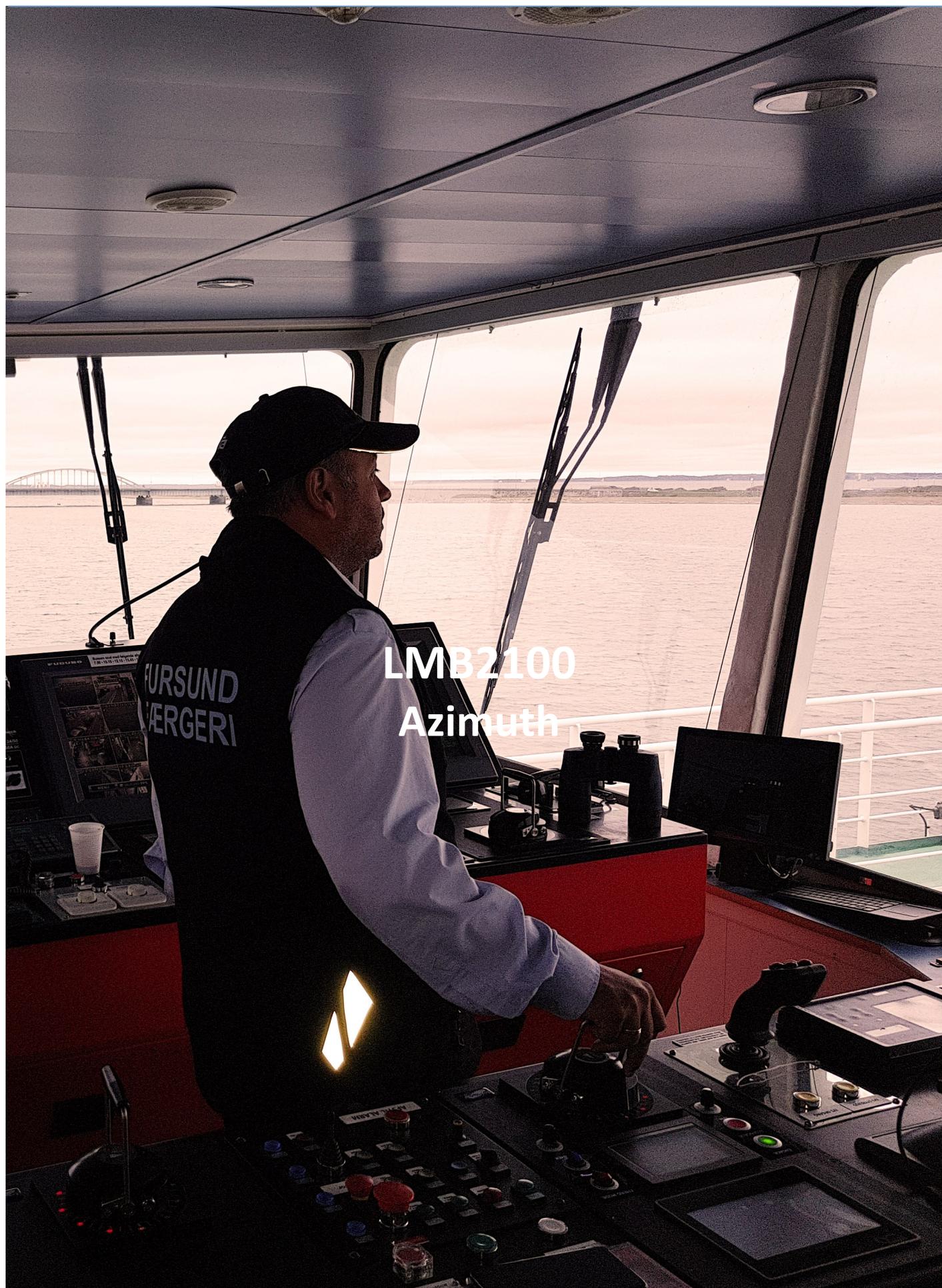
The 2012 build Danish ferry Mjølnær Fur was experiencing problems with the vessels original azimuth propulsion control system to the extent where the manufacturer of the system had given up trying to solve the problems. The main issue was that the ferry would momentarily lose the control of one of the vessels two azimuth thrusters during harbor maneuvers. Furthermore, the maintenance cost of the system was deemed unsustainable. Consequently, Lyngaa Marine was asked to inspect the problem and, subsequently, was invited to create a proposal for a new propulsion control system.

Lyngaa Marine was awarded the contract for the new system at the end of May 2021 and the system was developed over the summer period. The brand new LMP2100 Azimuth system was commissioned in September 2021.

The Operations Manager of the Fursund Færgeri, Anne-Marie Mortensen explains:

*“We are very satisfied with the performance of our new propulsion control system. The crew and I are impressed with the simplicity and the functionality of the system. It is very intuitive, and we have experienced no problems with the transit to the new system. With up to 72 daily round trips the reliability is important to us, and we firmly believe that we have made the right choice”.*







**LMB2101 Basic  
Propulsion Control System**

## LMB2101 BASIC

The LMB2101Basic Propulsion Control System was created specifically to smaller, unclassified work boats. The idea was to meet the requirements from the marketplace to offer a “no-nonsense” system that should be simple, reliable, and not the least affordable. Thus, the LMB2101Basic was created as a narrowed down version of the LMB2100 system.

The LMB2101Basic offers the same basic features as the LMB2100, however, the communication between the system and the user is based on the use of a PC instead of the touch displays that the LMB2100 features.



**L 232 Tove Kynde delivered with LMB2101Basic**

The LMB2101 is built from “off-the-shelf” standard components that are well proven and accepted by users worldwide for their ruggedness and durability. The system is not class approved but all hardware and soft-

ware used in the LMB2101Basic are approved by all major marine classification societies. This ensures that National Marine Authorities (NMA) will approve the LMB2101Basic system.

The system communicates with all known engines, gear boxes, propellers, and water jets.



**LMB2101  
Master Panel**

**LMB2101  
Compact Panel**



**LMB2101  
Outdoor Panel**



**LMB2101  
Slave Panel**

### The features offered are:

- Affordable
- Build from standard components
- MCS approved hardware & software
- Easy to install and commission
- Up to five control stations in one and same system
- Engine overload protection
- Outdoor panels
- Easy to re-calibrate
- Efficient support via phone & internet
- Automatic RPM control when clutching PTOs
- Automatic engine overload protection
- Can be extended with alarm system
- Programable by PC browser

## LMB2101 Basic with alarms

Small to mid-sized vessels can benefit from the LMB2101 Basics ability to extend the system with monitoring & alarm, and simple automation features (e.g., start-up & shut-down processes, valve controls, tank management, etc.)

The 2101Basic system has been installed in more than 100 work boats in the following segments:

**Fishing, aqua culture, wind service, crew transfer vessels, ferries, tugs, yachts, coasters and dredgers.**



*HM95 August delivered with LMB2101 & LMA2101*

### Building HM95 'August' at Jobi Yard in Strandby

When the new gill netter/Danish siener HM95 August was ordered at the Jobi Shipyard in Strandby, both yard and owner held a preference for a locally manufactured propulsion control system. However, when the question about monitoring & alarm system arose, Lyngaa Marine approached the shipyard and the yards electrical contractor with a suggestion to an "extended" propulsion control system with 20 alarm & monitoring channels and control of engine overload and controlled coupling of PTOs.



The owner immediately recognized the smartness of the system as well as the positive impact on the budget, so the decision was easy to make. The LMB2101 system with alarm and monitoring extension was installed and commissioned in February 2021.

Skipper René Olsen explains:

*"We have not had any reason to regret the choice of LMB2101 for our new building. The system has worked reliably from day one and we certainly appreciate the functionality and the easy operation of the alarm and control side of the system."*



*HM95 August delivered with LMB2101 & LMA2101*



# LMA2100

## Monitoring, Alarm & Control Systems



# LMA2101

## MONITORING, ALARM & CONTROL SYSTEMS

The LMA2101 monitoring & alarm system is the most flexible and affordable monitoring, alarm, and control system that the marine industry has seen to date. The LMA2101 is built on the same software architecture as the LMB2100 and LMB2101 systems. It is therefore possible to extend both the LMB systems with an alarm section, which is driven by the LMB computer. This solution is extremely affordable and is well suited to vessels, which requires up to approximately 50 alarm channels.

The main features are:

- Affordable
- Same software architecture as the LMB2100 family
- Build from standard components
- Easy to configure
- MCS approved hardware & software
- Remote access via internet
- Efficient support via phone and internet
- Programmable via PC or the built-in display(s)
- Flexible/customizable

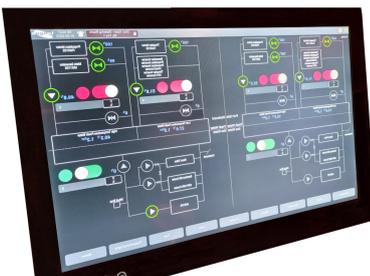


The LMA2101 offers access through displays of all sizes and the displays can be placed in any compartment of the vessel. The system can be extended with extra channels and the yard or the ship's crew can easily configure new alarms and create new layouts.

The LMA2101 facilitates the opportunity to control and operate many processes i.e., valve operation, start/stop of pumps, start/stop of engines, tank management and many other processes from the huge library of functions. Also, intelligent commu-

nication with alternator synchronizers, refrigeration plants, navigation lights, stand-by equipment, automatic filling of day tanks, operation of trim systems, full power management, and much more is possible.

LMA2101 is approved by all major marine classification societies.



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## LM FLOW

### FOCUS ON FUEL ECONOMY

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The new LM-Flow is a new and necessary development to all vessels whose operation is sensitive to fuel consumption. With the new developments with unrest in the World and subsequent rising bunker prices, it has become more important than ever to manage fuel consumption carefully.



#### LM FLOW

#### FOCUS ON FUEL ECONOMY

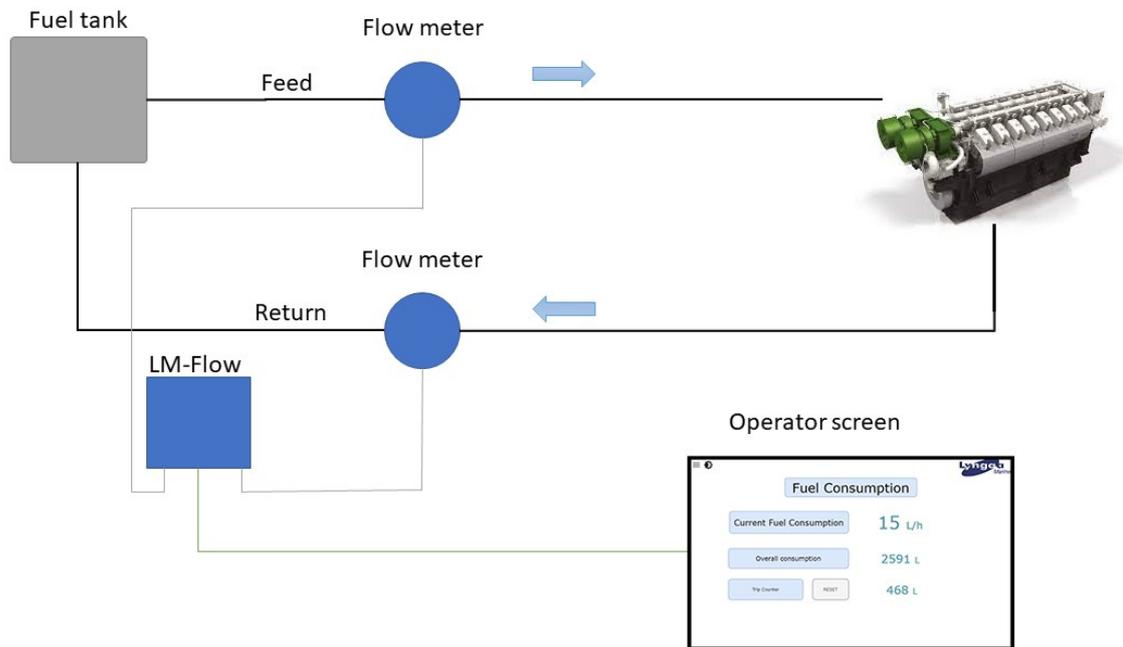
Lyngaa Marine has developed the new LM-Flow system, which caters for vessels with engines that consumes from 10 l/hr to 1500 l/hr - or measured in engine power - up to approximately 6.000 kW diesel engines.

The LM-Flow can form part of the LMB2100 propulsion control systems, the LMA2100 alarm & monitoring systems, or it can be a used as a stand-alone system, or form part monitoring systems from other manufacturers.

The LM-Flow offers an amplified out-going signal, which is not vulnerable to electric noise or transmission over long distances.

## LM FLOW

### FOCUS ON FUEL ECONOMY



Conceptual representation

#### The LM-Flow systems support the following system parameters:

- RS485 + Modbus
- Interface with any external Modbus compliant display or computer
- Designed to Maretron MxAR series flowmeters with built-in temperature sensors
- Any pulse flowmeter with 2 in-line PT100 sensors
- Optional signal pass-through for external signal computation
- Connect multiple LM-Flow systems on the same RS485 bus in a multi-engine vessel
- User configurable fluid type and custom thermal expansion coefficient (MDO, Water, Lube oil, Gasoline, Custom)
- User configurable flowmeter K-factor and flowmeter type pre-sets

# LMB2100

## DATASHEET

Technical Data LMB2100	
Main Power Supply (supervised)	24 Vdc
Emergency Power Supply (supervised)	24 Vdc
Power Consumption without actuator	<0.7 Amp
Power Consumption Slave Panels	<0.3 Amp
Resistance input	8
Digital input	16
Digital input free	1
Digital output	16
Digital output free (For PTO)	2
Voltage input 0-10 Volt	2
Voltage input 0-30 Volt	2
Data communication	TCP/IP
Degree of protection indoor panels	IP54
Operating temperature	-25 to +55 Celcius
IEC 60945 Classification	Exposed
Weight Master Panel	2700 g
Dimension Master	360 x 280 mm
Weight Slave Panel indoor	2500 g
Dimension Slave Panel	360 x 280 mm
Weight computer	2000 g
Approvals	BV, DNV, GL, Rina RR, Lloyds

Stay up-to-date with  
**Propulsion Control System**  
[www.lyngaamarine.com](http://www.lyngaamarine.com)

# LMB2101

## DATASHEET

Technical Data LMB2101 Basic	
Main Power Supply (supervised)	24 Vdc
Emergency Power Supply (supervised)	24 Vdc
Power Consumption without actuator	<0.5 Amp
Power Consumption Slave Panels	<0.1 Amp
Resistance input	8
Digital input	16
Digital input free	1
Digital output	16
Digital output free (For PTO)	2
Voltage input 0-10 Volt	2
Voltage input 0-30 Volt	2
Degree of protection indoor panels	IP54
Degree of protection outdoor panels	IP67
Operating temperature	-25 to +55 Celcius
IEC 60945 Classification	Exposed
Weight Master Panel	2400 g
Dimension Master	260 x 260 mm
Weight Slave Panel indoor	2300 g
Weight Slave Panel outdoor	3300 g
Dimension Slave Panel	260 x 260 mm
Weight computer	2000 g

Stay up-to-date with  
Propulsion Control System

[www.lyngaamarine.com](http://www.lyngaamarine.com)

### **Lyngaa Marine**

The Danish company Lyngaa Marine was founded in 1998. More than 30 years of experience in the ship building- and marine electronics industry, makes a solid base for today's company.

At Lyngaa Marine we offer 24 hour service. Our customers are highly professional and dependent on the daily use of the equipment and solutions supplied by us. Therefore we've full availability of spares and equipment from our own warehouse.

We represent several high end manufacturers for the marine industry. And we offer engineering solutions and design for the shipbuilding industries.



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