MOLABO

THE SAFE & POWERFUL CHOICE

ARIES – the perfect electric drive system
with safe-to-touch technology for recreational
and commercial applications





A Company of the
Hechinger Group
Making things work.

THE WORLDS' MOST
POWERFUL
48 V
SAFE-TO-TOUCH
ELECTRIC DRIVE



Victory - Tender 606

MOLABO

THE MOLABO MISSION

MOLABO's mission is to enable sustainable mobility worldwide with safe-to-touch low-voltage electric solutions.

ARIES is not just a product, but a representation of fundamental changes in the field boat propulsion. ARIES is the first electric drive that can provide high power at safe-to-touch voltages of 48 V.

MOLABO not only offers high-performance products, but is also committed to the environment.

All mechanical components for the ARIES are sourced in Europe to support local industry and ensure compliance with strict European standards, in terms of emissions and energy consumption. On average, each ARIES 50 drive avoids up to 1.4 tons of CO_2 emissions for every 100 hours of operation when powered by green electricity, compared to a combustion engine consuming about 6 liters of petrol per hour.

MOLABO has won numerous awards for its groundbreaking innovations, including the Electric & Hybrid Marine Award, New Propulsion Technology of the Year 2023 and also 2024.

Exchange ideas with us:

www.linkedin.com/company/molabo/
www.facebook.com/molaboGmbH
www.youtube.com/MOLABOGmbH
www.x.com/Molabo48V
www.instagramm.com/molabo_com

deutscher mobilitätspreis
ARROW 2019 INNOVATORS AWARD
eMove 360° AWARD
ENERGY AWARDS
Create the Future DESIGN CONTEST
PRODUCED BY TECH BRIEFS
CWIEME 2019 GLOBAL AWARDS
electric & hybrid marine AWARDS 2023 NEW PROPULSION TECHNOLOGY OF THE YEAR
electric & hybrid marine AWARDS 2024 NEW PROPULSION TECHNOLOGY OF THE YEAR

ARIES R50 L/XL outboard motor



electric & hybrid marine AWARDS 2024
NEW PROPULSION TECHNOLOGY OF THE YEAR

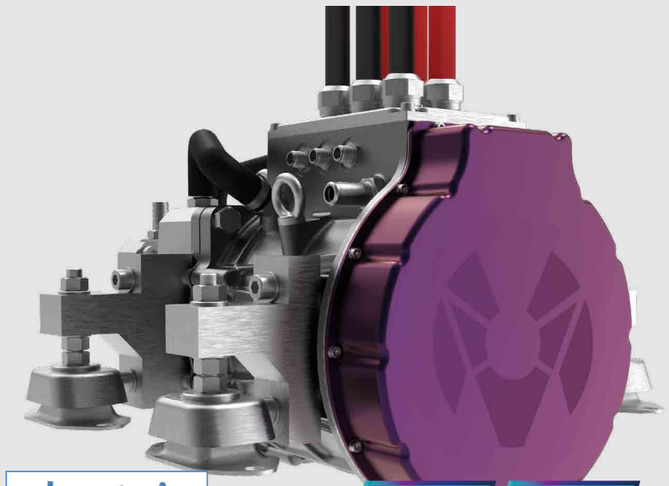
50 kW
Nominal mechanical power

120 kg
Weight outboard without supply lines

48 V
Nominal voltage

1,767 rpm
Nominal speed propeller shaft

ARIES i30/i50 inboard motor



NEW! Power-Upgrade from 25 to 30 kW
30 kW System

electric & hybrid marine AWARDS 2023
NEW PROPULSION TECHNOLOGY OF THE YEAR

30 kW 50 kW

30/50 kW
Nominal mechanical power

64 kg
Weight inboard without supply lines

48 V
Nominal voltage

653 rpm
i30 – Nominal speed propeller shaft

1,087 rpm
i50 – Nominal speed propeller shaft

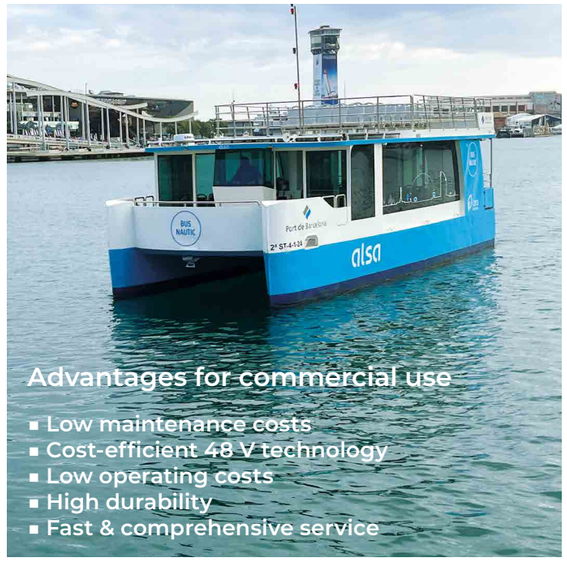

Designboats.ch - Tender 06e

THE SAFE & POWERFUL CHOICE
ARIES low voltage system – cost-saving and efficient

Patented Intelligent Stator Cage Drive (ISCAD) technology enables high power at touch-safe voltages for the first time.

Advantages for boatbuilders and shipyards

- **Flexibility and cost savings:**
  Our electric motor can be installed and maintained by any shipyard due to the touch-safe voltage. There is no need for a separate work area and no dependency on the availability of an expensive HV technician.
- **Quick installation:**
  With the pre-wired MOLAConnect Box and the variable MOLABO battery modules, the entire system can be set up within just one day, saving valuable time and minimizing downtime.
- **Comprehensive service:**
  We take full responsibility for our system. Our dedicated service team is always available and offers assistance within 24 hours. If remote maintenance isn't sufficient, our field service will assist, ensuring your operations run smoothly.
- **Modular battery system:**
  The compact battery modules can be installed either upright or horizontally, allowing for optimal weight distribution even in the smallest spaces. We offer different battery capacities depending on your needs.
- **Everything from a single source:**
  We offer a complete, integrated system solution. From the motor to the battery and software, everything is perfectly coordinated. This streamlines the purchasing process and simplifies technical support, ensuring a seamless experience from start to finish.



Advantages for commercial use

- Low maintenance costs
- Cost-efficient 48 V technology
- Low operating costs
- High durability
- Fast & comprehensive service



Advantages for recreational use

- Comprehensive worldwide service
- Always up-to-date
- Extended worldwide warranty
- Cost-efficient, sustainable technology
- Customizable range

ARIES R50 L/XL outboard motor

The perfect propulsion solution for recreational boats and work boats up to 8m (26 ft) as a single installation, also available for larger boats as a twin installation.

ARIES 50 as outboard motor for our modular plug & play system. All components are perfectly matched, user-friendly, and meet the latest safety standards.

➡ **Available with different battery banks:**

MASTERVOLT® –
compact and powerful
36 kWh | 48 kWh | 60 kWh

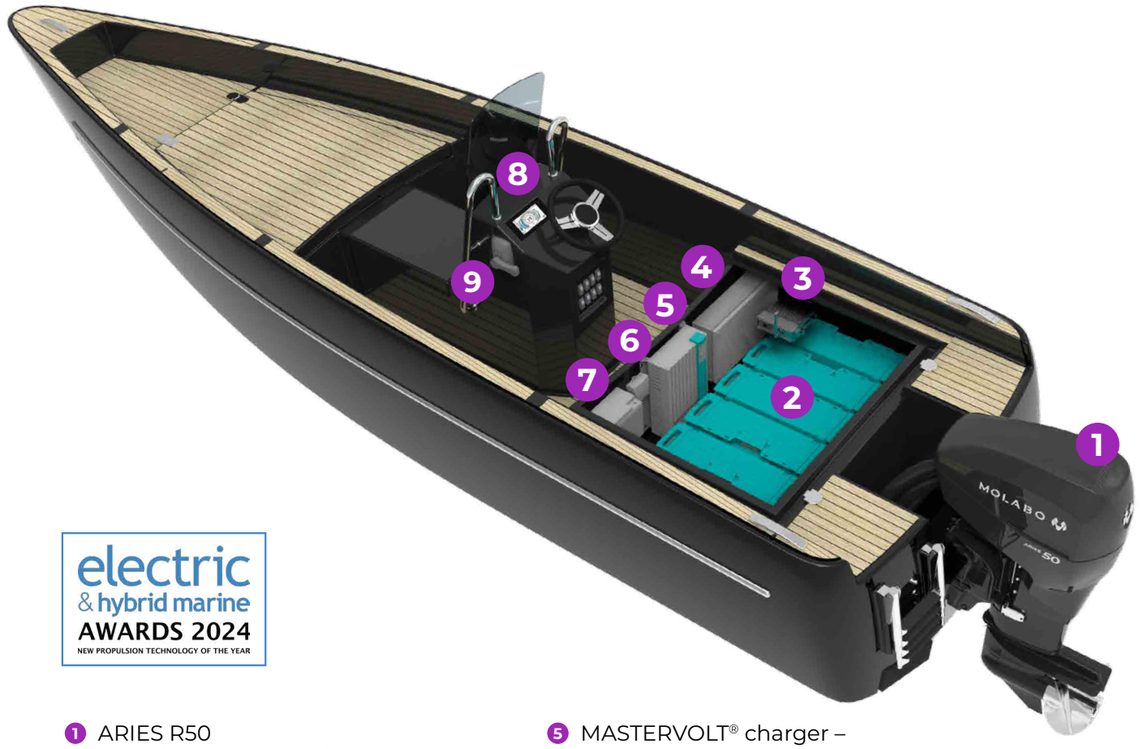
VICTRON ENERGY® –
for long range and lower costs
45 kWh | 60 kWh | 90 kWh | 120 kWh | 135 kWh

NEW!

The MOLABO-ARIES systems are now also available with the smart VICTRON ENERGY® LFP Lithium batteries!



ARIES R50 system overview with MASTERVOLT® components



electric & hybrid marine AWARDS 2024
NEW PROPULSION TECHNOLOGY OF THE YEAR

1. ARIES R50 electric outboard 50 kW
2. MASTERVOLT® LFP battery bank – plug & play, modular
3. MOLA*Link* (IoT gateway)
4. MOLA*Connect* (DC distribution)
5. MASTERVOLT® charger – plug & play, modular
6. Bus CAN gateway
7. 12 V battery (not included in the scope of delivery)
8. Display
9. Throttle: side-mount or top-mount

Specifications ARIES R50

MADE IN GERMANY



Motor type	PM-assisted synchronous reluctance motor
Mech. rated power	50 kW
Nominal voltage	48 V (44 V – 54 V full operation)
Max. voltage	58 V
Logic supply voltage	12 V
Shaft length	L: 20“ / 51 cm XL: 25“ / 63.5 cm
Dimensions (L x W x H)	L: 78 x 37 x 144.7 cm XL: 78 x 37 x 157.2 cm
Colour	Black, white
Propeller standard	13 splines, (4 1/2“ gear case) Evinrude/Johnson/Selva 40-140 hp
Propeller shaft torque	270 Nm
Nominal propeller shaft speed	1,767 rpm
Max. propeller shaft speed	2,640 rpm
Weight (without supply lines)	L: 120 kg XL: 126 kg
Trim / Tilt system	Hydraulic
Max. trim angle	-4° – 12°
Max. tilting angle	12° – 65°
Max. steering angle	±28°
Water cooling	Dual-circuit cooling, max. 35° C input temperature
External cooling circuit	Electric pump
Communication	CAN
Max. drive efficiency	94 % (97 % motor and 97 % inverter)
Protection class	IP65

THE WORLDS' MOST
POWERFUL
48 V
SAFE-TO-TOUCH
ELECTRIC DRIVE

The ARIES inboard is the heart of a system solution

30 kW: For motorboats up to 8 m (26 ft) and displacement boats up to 10 m (33 ft) or 7 t.
50 kW: For motorboats up to 12 m (40 ft) and displacement boats up to 15 m (50 ft) or 12 t.
Available as a single system or as a double system for larger boats.

The system solution around the ARIES inboard makes installation particularly easy and fast, because the components are matched with each other and the boat is thus ready to go in no time at all.

The battery capacity as well as the number of chargers (1 or 3) can be selected on a modular basis. With the system solution from MOLABO you have everything you need for efficient and reliable propulsion of an electric boat.

➡ LFP-battery bank for 30 kW system

VICTRON ENERGY® LFP battery bank for long range and low costs: 30 kWh | 45 kWh

MASTERVOLT® LFP battery bank – compact and powerful: 24 kWh | 36 kWh

➡ LFP-battery bank for 50 kW system

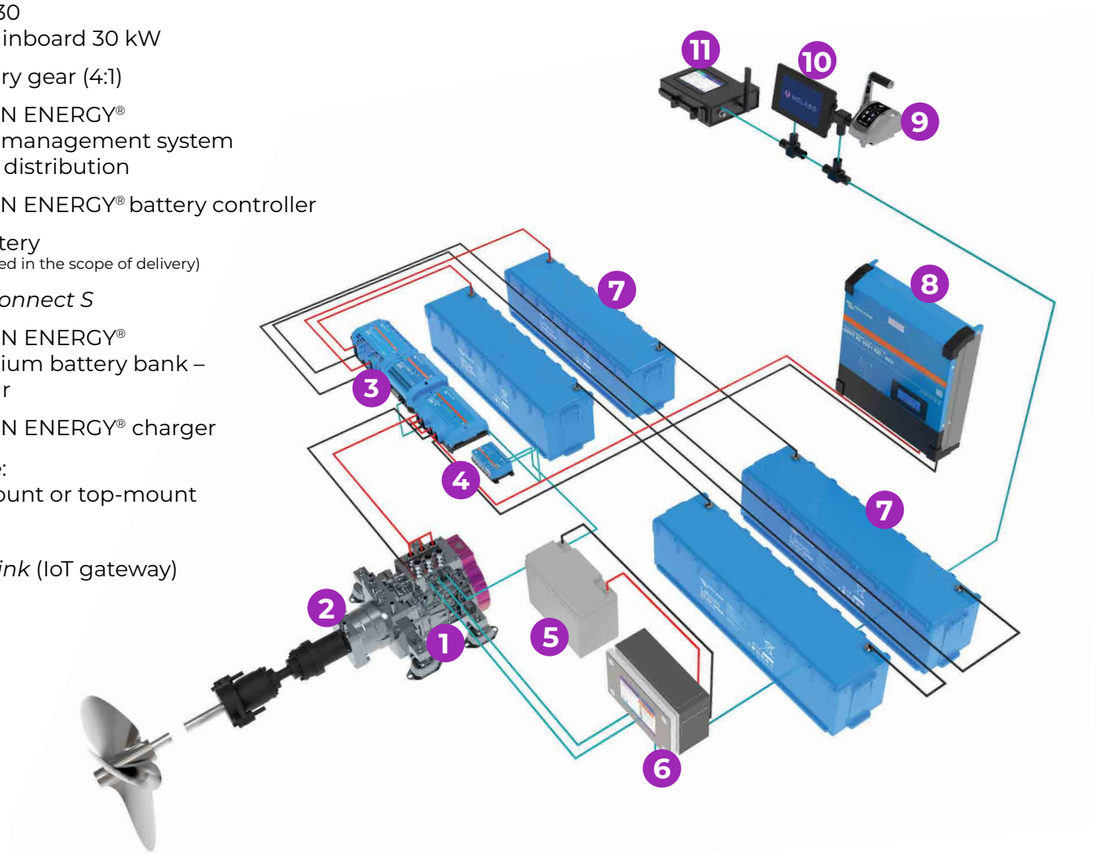
VICTRON ENERGY® LFP battery for long range and low costs:
45 kWh | 60 kWh | 90 kWh | 120 kWh | 135 kWh

MASTERVOLT® LFP battery bank – compact and powerful: of 36kWh | 48 kWh | 60 kWh

NEW! **Now also available as a system with 30 kW continuous power!**
Benefit from a smaller and lighter system and lower costs.

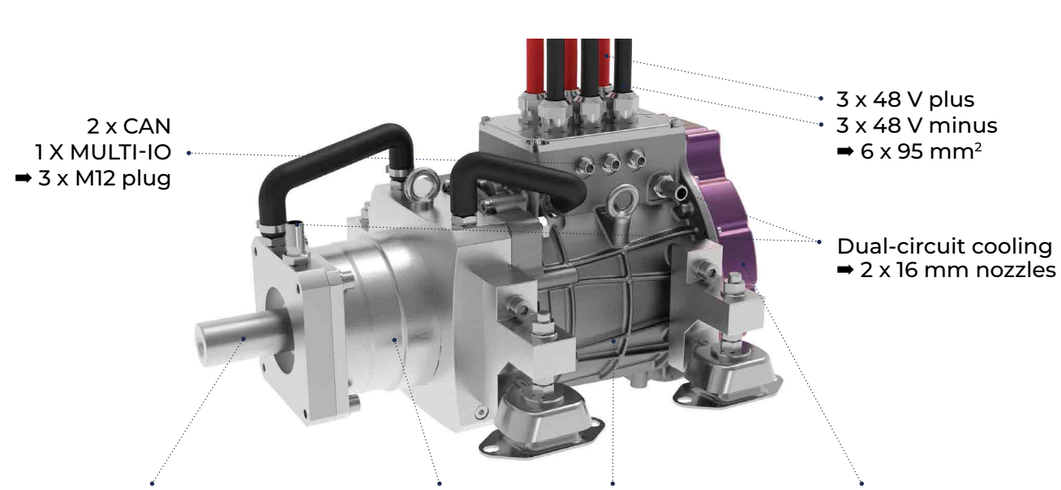
ARIES i30 system overview with VICTRON ENERGY® components

1. ARIES i30 electric inboard 30 kW
2. Planetary gear (4:1)
3. VICTRON ENERGY® battery management system and DC distribution
4. VICTRON ENERGY® battery controller
5. 12 V battery (not included in the scope of delivery)
6. MOLA*Connect S*
7. VICTRON ENERGY® LFP lithium battery bank – modular
8. VICTRON ENERGY® charger
9. Throttle: side-mount or top-mount
10. Display
11. MOLA*Link* (IoT gateway)



ARIES i30/i50 inboard motor

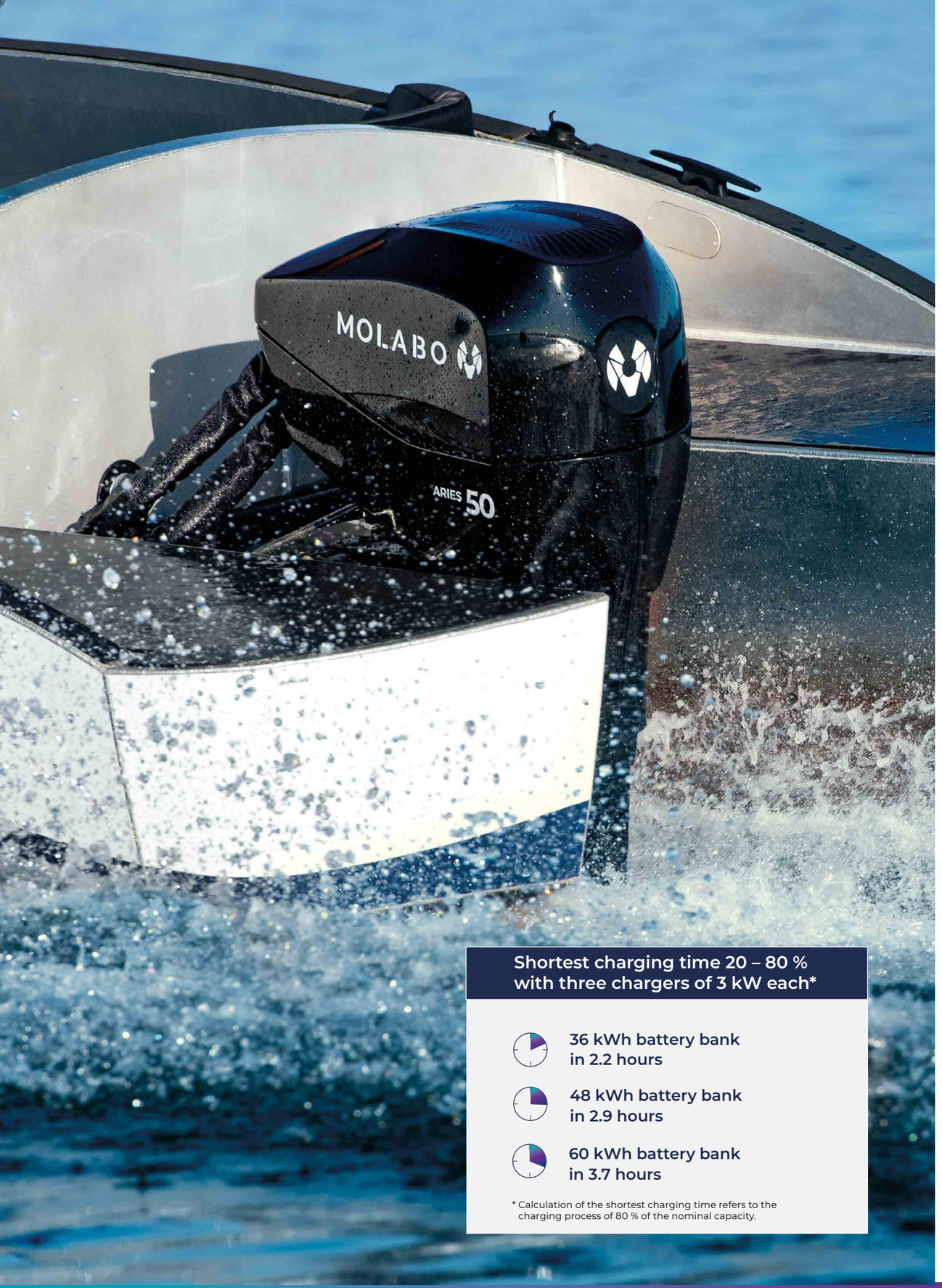
Connections ARIES



MADE IN GERMANY

Specifications ARIES inboard

	ARIES i30	ARIES i50
Nominal mechanical power	30 kW	50 kW
Nominal voltage	48 V (44 V – 54 V full operation)	
Max. voltage	58 V	
Logic supply voltage	12 V	
Weight motor incl. controller	44 kg	
Weight gearbox 4:1	15 kg	
Nominal speed	2,610 rpm	4,350 rpm
Nominal speed with gear 4:1	653 rpm	1,087 rpm
Max. speed	6,500 rpm	
Torque	110 Nm (with 4:1 gearbox: 440 Nm)	
Max. speed with gear 4:1	1,625 rpm	
Dimension motor incl. controller	Ø 254 mm; L: 265.5 mm	
Dimension with gear 4:1	Ø 254 mm; L: 457.5 mm	
Motor type	PM-assisted synchronous reluctance motor	
Communication	CAN	
Protection class	IP67	
Max. drive efficiency	94 % (97 % motor and 97 % inverter)	
Water cooling	Dual-circuit cooling, max. 35 °C flow temperature	



Shortest charging time 20 – 80 % with three chargers of 3 kW each*

- **36 kWh battery bank in 2.2 hours**
- **48 kWh battery bank in 2.9 hours**
- **60 kWh battery bank in 3.7 hours**

* Calculation of the shortest charging time refers to the charging process of 80 % of the nominal capacity.

Range tables ARIES R50 outboard

Range ARIES R50 electric drive with **36 kWh** LFP battery bank (6 x 6 kWh modules)**

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
Eco	6.0 (11.1)	07:15	up to 43.5 (80.6)
Cruise	13.5 (25)	01:20	up to 18.1 (33.5)
Full Speed	24.5 (45.4)	00:30	up to 12.6 (23.4)

** Measured on motorboat, length: 6.05 m, weight approx. 1,350 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

Range ARIES R50 electric drive with **48 kWh** LFP battery bank (8 x 6 kWh modules)**

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
Eco	5.8 (10.7)	09:40	up to 55.9 (103.6)
Cruise	13.1 (24.2)	01:47	up to 23.3 (43.2)
Full Speed	23.7 (43.8)	00:41	up to 16.2 (30.1)

** Measured on motorboat, length: 6.05 m, weight approx. 1,470 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

Range ARIES R50 electric drive with **60 kWh** LFP battery bank (10 x 6 kWh modules)**

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
Eco	5.6 (10.3)	12:06	up to 67.3 (124.6)
Cruise	12.6 (23.4)	02:13	up to 28.2 (52.2)
Full Speed	22.7 (42.1)	00:51	up to 19.5 (36.1)

** Measured on motorboat, length: 6.05 m, weight approx. 1,590 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

Range tables ARIES i30 inboard

Range ARIES i30 electric drive with **30 kWh** LFP battery bank (4 x 7.6 kWh modules)**

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
Eco	6.5 (12)	06:00	up to 39.0 (72.2)
Full Speed	17.2 (31.9)	00:44	up to 12.7 (23.5)

** Measured on motorboat, length: 6.05 m, weight approx. 1,270 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

Range ARIES i30 electric drive with **45 kWh** LFP battery bank (6 x 7.6 kWh modules)**

	Speed in knots (km/h)	Running time in hh:mm	Range in nm (km)
Eco	6.1 (11.3)	09:00	up to 54.9 (101.7)
Full Speed	16.8 (31.1)	01:06	up to 18.6 (34.5)

** Measured on motorboat, length: 6.05 m, weight approx. 1,370 kg. Depending on boat model, load, propeller and local conditions; speed and range information without guarantee.

Shortest charging time 20 – 80 % with three chargers of 3 kW each*

- **30 kWh battery bank in 1.5 hours**
- **45 kWh battery bank in 2.2 hours**

* Calculation of the shortest charging time refers to the charging process of 80 % of the nominal capacity.

THE WORLDS' MOST
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48 V
SAFE-TO-TOUCH
ELECTRIC DRIVE



Earthling E-40 Power Hybrid Catamaran

ARIES Hybrid System

For large sailing yachts up to 120 feet, powerful motorboats, workboats or ferries

The MOLABO hybrid system combines drive and energy management with perfectly fitting components. It fulfils the highest safety requirements and is quick and easy to integrate.

MOLABO's powerful and noiseless electric drives enable both precise manoeuvring and driving at hull speed. Compact 48 V individual battery modules enable flexible installation and ensure a long range.

- **Flexibility and cost savings**
- **Fast installation**
- **Comprehensive service**
- **Modular battery system**
- **Everything from a single source**


Hybrid fire boat Rescue 1500

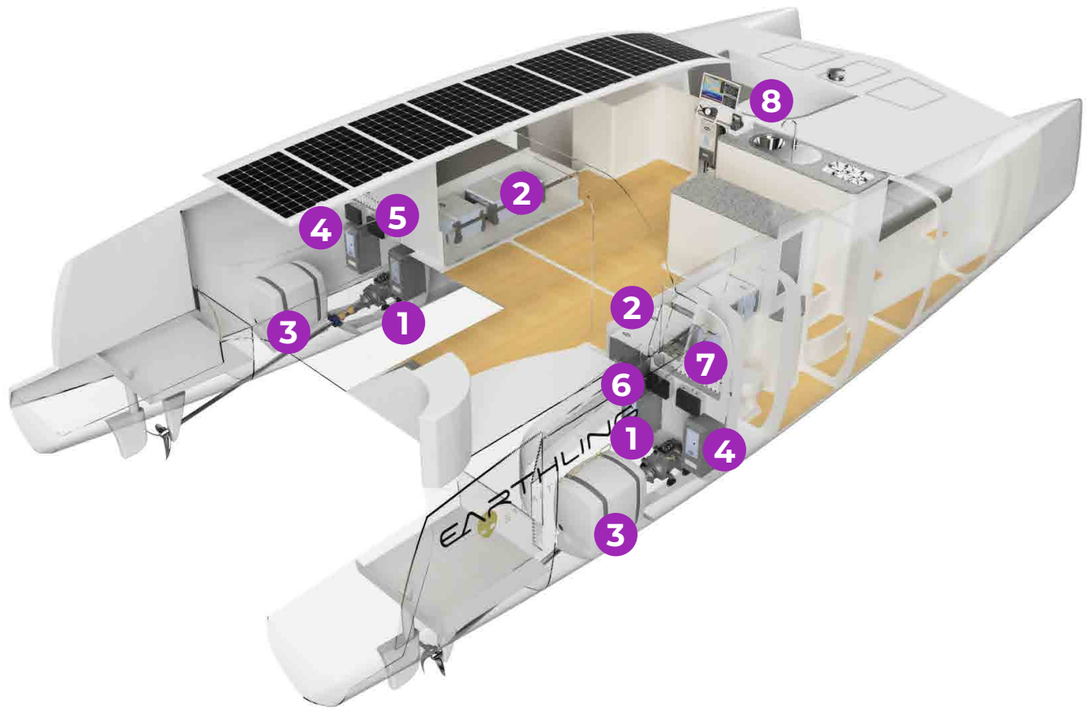
ARIES as a Serial Hybrid System in an Electric Catamaran

MOLABO's hybrid system not only enables flexible use, but also minimises the ecological footprint. With advanced energy management functions, it optimises fuel consumption and maximises efficiency.

The solar energy generated on board and the energy obtained through hydrogenation (recuperation) are available for propulsion. In addition, the built-in generator provides sufficient energy to cover long distances if required.

Advantages for sailing yachts:

- **No engine noise, reduced generator noise**
- **Independence - sufficient energy on board**
- **Worldwide remote error and system analysis as well as software updates**
- **Effortless docking with the Dockmate docking system (optional)**
- **Sustainable through the use of solar energy, reduced fuel consumption**



1. MOLABO ARIES electric inboards
2. Lithium-ion batteries
3. Range extender generator
4. Chargers
5. DC-DC Converter
6. MOLA*Link* (IoT gateway)
7. AC Inverter
8. Throttle

ARIES

THE SAFE & POWERFUL CHOICE



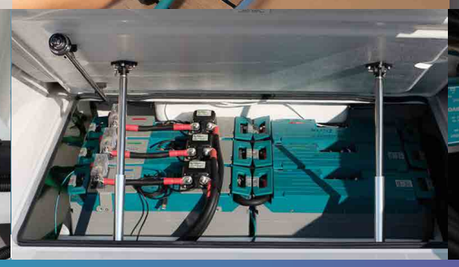
Frauscher - 650 Alassio













Specifications system components

VICTRON ENERGY® LFP Lithium Battery 200 Ah or 300 Ah/25,6 V NG

- Plug & play
- Long service life and maximum safety
- 2,500 cycles, 80% DoD
- Battery Management System (BMS)
- LiFePO4 chemistry
- Parallel connection of up to 384 kWh
- Weight
  200 Ah module 37 kg
  300 Ah module 52 kg
- Dimensions
  200 Ah module 648 x 235 x 162 mm
  300 Ah module 841 x 206 x 205 mm
- Protection class IP65
- Global service

MASTERVOLT® LFP Battery MLI Ultra 24/6000

- Plug & play - MOLABO preconfigured
- Long service life and maximum safety
- 3,500 cycles, 80 % DOD
- Battery Management System (BMS)
- LiFePO4 chemistry
- 2.5-C discharge rate
- Parallel connection of up to 5 x 2 modules
- MasterBus communication interface
- Dimensions 622 x 197 x 355 mm
- Weight 46,7 kg (1 x 6 kW module)
- Protection class IP65
- Global service

MASTERVOLT® Mass 48/50 charger

- Plug & play
- 1 or 3 chargers connected in parallel
- Charging power 3 kW
- Nominal output voltage 48 V
- Total charging current 50 A at 57 V
- Nominal input voltage 230 V (180-265 V), 50/60 Hz
- Weight 7.7 kg
- Protection class IP23

VICTRON ENERGY® Multi RS Solar 48/6000

- Plug & Play integration
- Choice of 1 or 3 chargers
- Power of 3.5 kW (16 A AC input current)
- Charging current can be reduced for connections with lower power
- 230 V inverter included (for stand-alone power supply on board)
- Protection class IP22
- Weight 12.2 kg

MOLA*Connect*-Box

- Plug & play
- Pre-assembled screw points for e.g. 12 V chargers and fuses
- Clamp connection e.g. for key switch, light and emergency stop
- 48 V DC distribution, charging and discharging
- Soft start / pre-charge of the capacitors
- Thermal management (independent control of the water pumps)
- Interface MOLABus to MasterBus
- Dimensions 500 x 300 x 120 mm
- Weight 15 kg
- Protection class IP23

MOLAConnect-Box S

- Plug & Play
- Incl. key switch, emergency stop switch and cabling
- Thermal management (independent control of the water pumps)
- Dimensions 200 x 150 x 80 mm
- Weight 1.6 kg
- Protection class IP66

MOLA*Link* (IoT-Modul)

- Integrated SIM card
- Remote system configuration
- Remote error and system analysis
- Remote software updates
- Protection class IP67

5“ or 7“ TFT graphic display

- LED backlight
- Automatic brightness control
- Capacitive touch screen
- MOLABus
- Protection class IP68

Throttle

- Electronic throttle available as
  - Top mount single
  - Top mount twin
  - Side mount starboard, center console
  - Side mount starboard, cockpit
- CAN bus integrated
- CMD Select
- Harbour mode
- Protection class IP67

dockmate

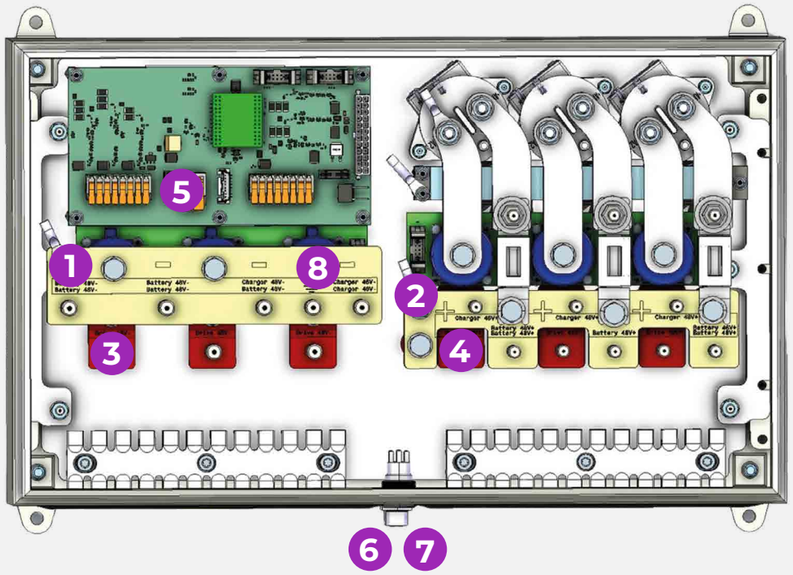
NEW:
Dockmate remote controlled docking system (optional)

MOLA*Connect*

Four times faster for easy and quick installation.

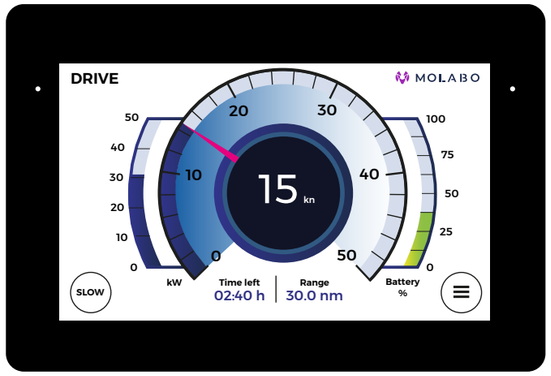
The pre-cabling of the MOLA*Connect* box significantly reduces the installation time required for the ARIES 50 system, making it up to four times faster compared to systems that don‘t offer a pre-cabled box.

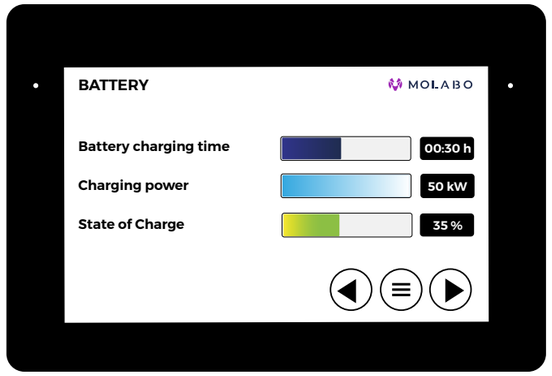
With no more time-consuming individual wiring necessary, the entire process can be completed within just one day.



1. Battery terminal strip -
2. Battery terminal strip +
3. Motor terminal strip -
4. Motor terminal strip +
5. External components (e.g. 12 V, battery, water pump, e-stop)
6. 12 V e-stop switch, data socket 8-pin M12
7. Data socket 5-pin M12
8. Ground connection

Display User Interface





MOLABO‘s groundbreaking ISCAD technology



The core of the innovative Intelligent Stator Cage Drive (ISCAD) technology is the new stator of the electric motor. Instead of complicated windings, simple rods are used which form a kind of cage.

This makes the ISCAD technology a highly parallel system from the battery to the motor. Multiple bars make it possible to handle the high currents on the AC side, which are necessary for very high power at 48 V, to be distributed over many phases.

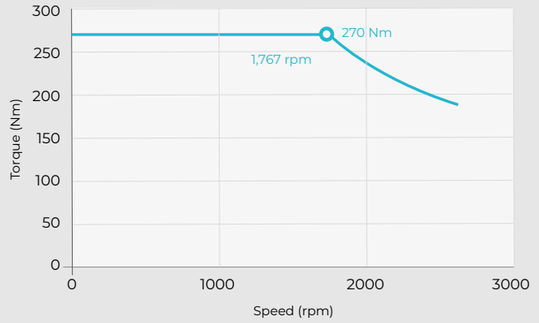
The ARIES 50, due to its low induced voltage, uses low-voltage semiconductors that operate more efficiently under partial load compared to high-voltage components, resulting in battery protection and reduced operating costs.

With the innovative stator cage technology, ARIES 50 offers a unique riding experience through powerful and silent acceleration.

ARIES i30 / i50
Torque vs. Speed*
– values at the propeller shaft

ARIES i30 / i50
Power vs. Speed*
– values at the propeller shaft

ARIES R50
Torque vs. Speed*
– values at the propeller shaft



ARIES R50
Power vs. Speed*
– values at the propeller shaft



** Diagrams refer to engine with 4:1 reduction ratio*

MOLABO Service – Reliable Support and Excellent Availability

Our service team is on hand to provide you with expertise and quick solutions for all matters relating to our innovative 48V drive systems.

Remote monitoring and updates via MOLA*Link* (IoT gateway):
Our service team is there for you at all times and can fix your hardware and software problems conveniently over the internet.

On-site service:
A MOLABO technician will visit your company to carry out maintenance or repair work directly.

Our service offer for you:

- **Technical support:** Whether for commissioning, maintenance or troubleshooting – our experts are at your side. We support you with all technical issues and ensure that your systems run smoothly.
- **Remote support:** Many problems can be solved quickly and easily via remote access. This saves you valuable time and resources. We can also install updates and product improvements directly on your system.
- **Training & education:** Our comprehensive range of training courses gives you the opportunity to expand your knowledge of our products and technologies. So you are always up to date.
- **Extended worldwide warranty**
  Drive worry-free with our comprehensive manufacturer's warranty on the entire system. After certified installation and regular system testing, we offer an extended battery warranty of five years, guaranteeing at least 80 % of the battery capacity.

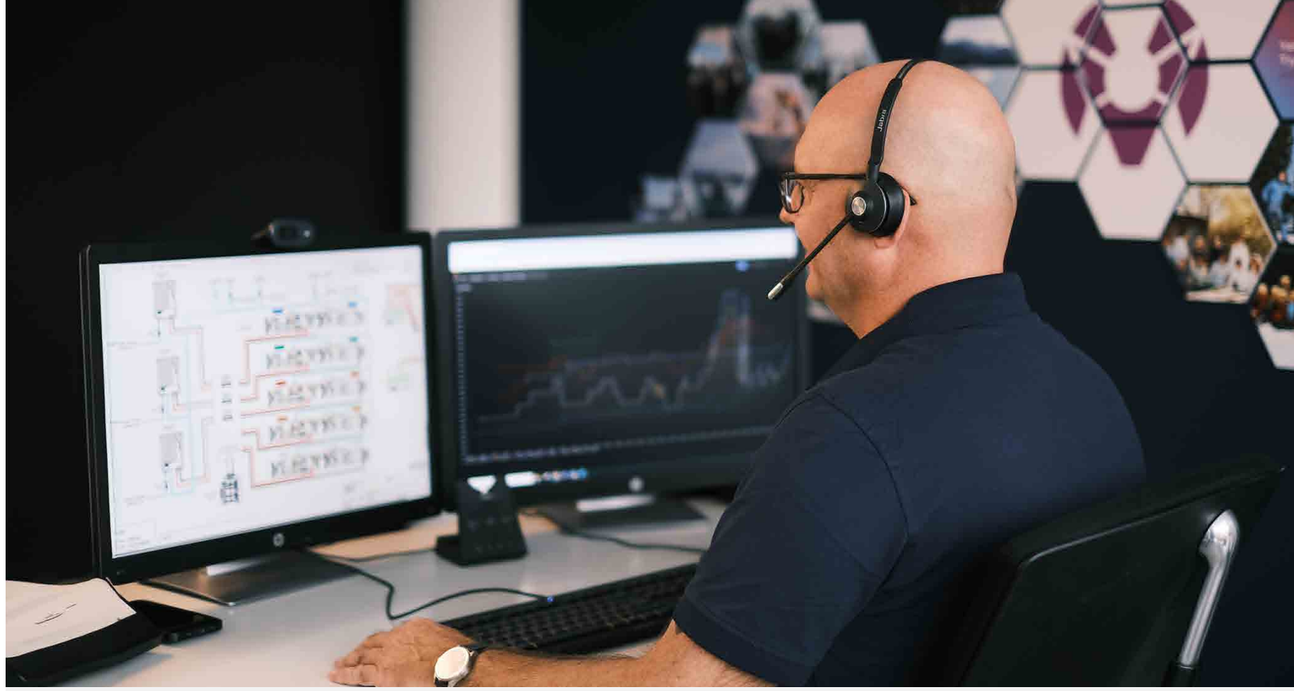
Telephone hotline: +49 89 179 251 079
E-mail support: service@molabo.com

Our aim is to always offer you the best possible service so that you can make optimum use of our products.

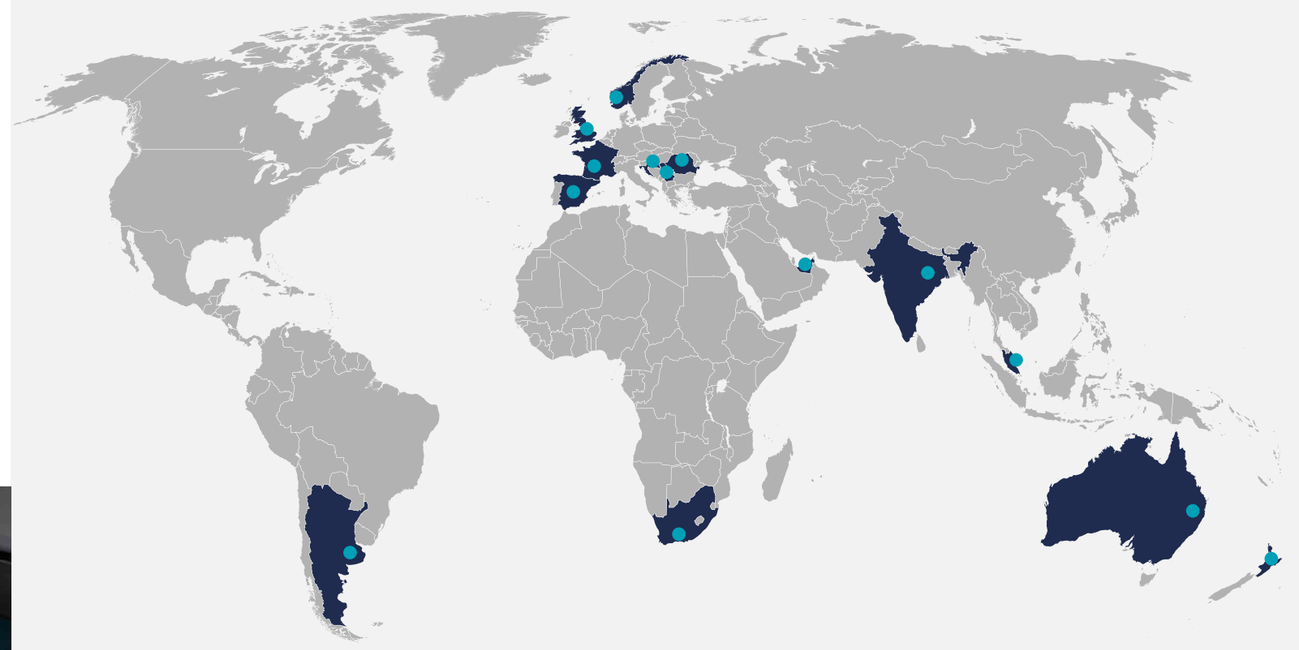
Trust in the expertise of MOLABO – we are always at your side!







MOLABO Service Partner Network



For the locations of our installation & service partners, see
www.molabo.com/en/dealers-partners

Get in touch with us

Our competent team is always available to provide you with further information or individual advice.

MOLABO –
Your partner for innovative electromobility solutions.



Boat: Fountaine 44 Power Hybrid Catamaran

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