



 MV MAIN TRANSFORMERS

 LV POWER TRANSFORMERS

 LC SINE-WAVE FILTERS

 GRID CONVERTER'S OUTPUT SET

 VSD INPUT HARMONIC FILTERS

 START-UP AUTOTRANSFORMERS

## ELHAND Components for Maritime Industry



ELHAND Transformatory is the leading manufacturer of inductive components for Maritime, AC Drives, Railway, Oil & Gas, Mining and Power Electronics Industries. Our offer includes low and medium voltage transformers, reactors and filters dedicated to the most demanding applications.

Quality Supported by Certificates





### ■ ■ ■ MV MAIN TRANSFORMER

Elhand medium voltage dry-type transformers are unique combination of designers knowledge, the latest production technologies and 40+ years of experience gained from own projects. The best winding and impregnation techniques are the warranty of long, failure-free operation.

- Power: up to 3 MVA
- Voltage: up to 21 kV (depending on power)
- Protection degree: IP00 – IP66
- Cooling: Air Natural, Air Forced, Water

ET3H

### ■ ■ ■ GRID CONVERTER'S OUTPUT SET



Grid converter's output set is a ready made solution, which enables connection of Grid Converters to the ship grid. LC filter changes PWM voltage to sinusoidal waveform and transformer eliminates common-mode voltage. The structure of this system creates LCL filter with galvanic insulation in very compact design.

- Power: up to 2,6 MW
- Voltage: up to 1000 V
- Protection degree: IP00 – IP66
- Cooling: Air Natural, Air Forced, Water

ET30+EF3LC



### ■ ■ ■ LV POWER TRANSFORMER

Marine is one of Elhand core businesses. More than 400 marine transformers leave Polish factory every year. Thanks to tailor made production, the customer can have deep insight in the project from the first sketch to FAT. Core of power transformers is made in step-lap technology, which ensures top in class efficiency.

- Power: up to 3 MVA
- Voltage: up to 1000 V
- Protection degree: IP00 – IP66
- Cooling: Air Natural, Air Forced, Water

ET30

### ■ ■ ■ VSD INPUT HARMONIC FILTER



ElhandHF™ Harmonic Filter allows to utilize system power capacity to maximum degree, protects equipment from malfunction and extends system run life. Compensation of harmonics by filter application helps to comply with IEEE 519 or other energy quality standards. Harmonic Filter saves electricity and increases investment return.

- Power: up to 2,6 MW
- Voltage: up to 1000 V
- Protection degree: IP00 – IP66
- Cooling: Air Natural

EF3H



### ■ ■ ■ LC SINE-WAVE FILTER

Sine-Wave filter is essential part of modern ship electricity grid. LC filter converts rectangular PWM voltage into sinusoidal thus eliminates harmful side effects of transistors switching. Filter can be placed at the input of AFE Drive or Grid Converter or at the output of VSD to protect the motor.

- Power: up to 2,6 MW
- Voltage: up to 1000 V
- Protection degree: IP00 – IP66
- Cooling: Air Natural, Air Forced, Water

EF3LC

### ■ ■ ■ START-UP AUTOTRANSFORMER



Start-up autotransformer is dedicated to large DOL motors, which are connected to relatively weak ship grid. Direct start of the motor generates high current peak and voltage drop in the system. Elhand start-up autotransformer reduces the motor voltage and lowers the current peak, thus contributes to longer life of generator and whole electrical system.

- Power: up to 2,6 MW
- Voltage: up to 15 kV
- Protection degree: IP00 – IP66
- Cooling: Air Natural, Air Forced, Water

EA3R



## ELHAND Components for Maritime Industry

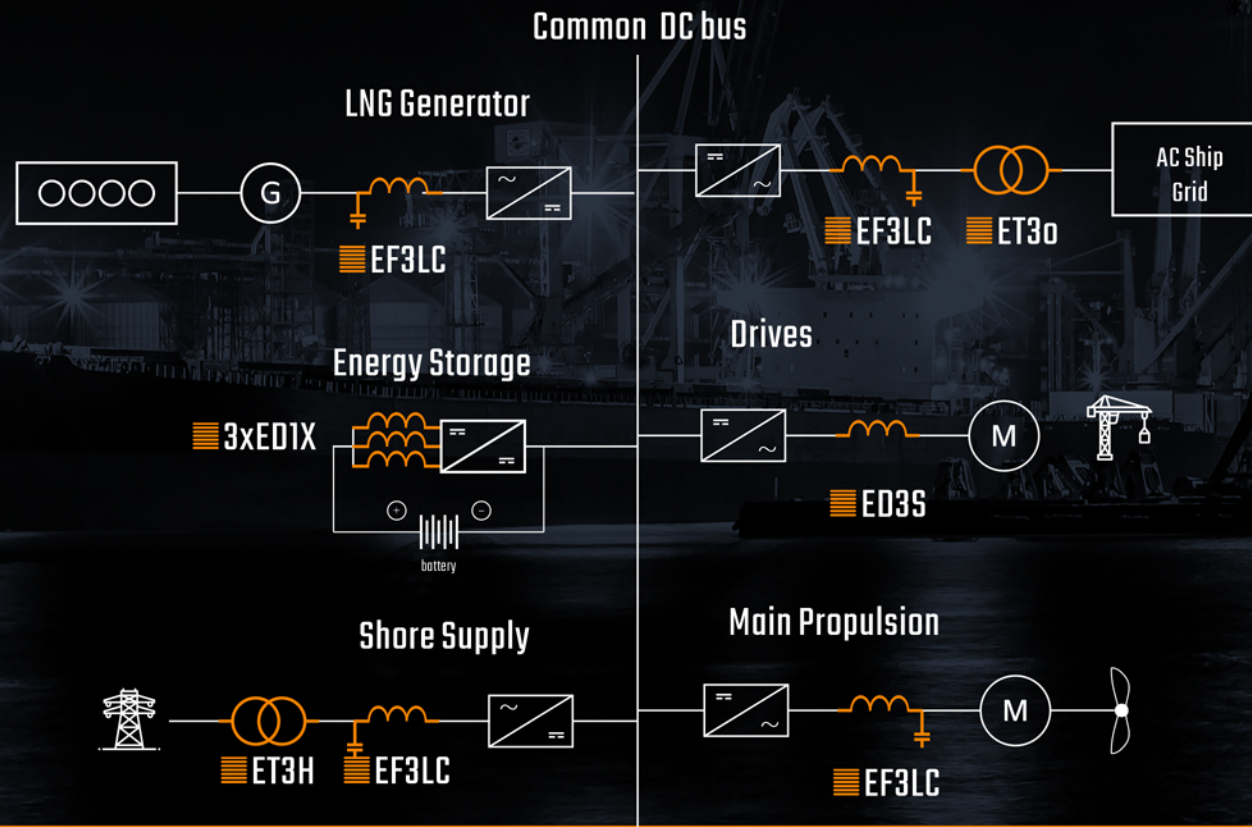


Lower Your Operational Expense by Using Newest Magnetic Technologies and Modern Designs.

- Cost optimization.
- Highly customized, non-standard solutions.
- Less carbon footprint.
- High quality at a reasonable price.
- Full service: design, manufacture, transport.
- Made in Europe.

40+  
Years of Experience

# Ship Hybrid DC Grid



**ELHAND Components for Maritime Industry**



We have manufactured over 6 000 transformers and filters for the maritime market.

See Our Reference List >>



See References From Our Customers >>



# Selected Projects

## MV and LV power transformers for luxury yacht

**Power:** 1,5 MVA & 2 MVA

**Voltage:** 6600±2x2,5%//690 V & 690±2x2,5%//400 V

**Protection degree:** IP44

**Cooling:** water cooler integrated in transformer enclosure

**Certification body:** LR

**Production:** 2021



## MV ship transformer for shore connection of Baltic ferry

**Power:** 2,5 MVA

**Voltage:** 10700±2x2,5%//660 V

**Protection degree:** IP23

**Cooling:** air natural

**Certification body:** PRS

**Production:** 2022



## LV transformer for Polish war ship Kormoran

**Power:** 160 kVA

**Voltage:** 400//230 V

**Protection degree:** IP23

Special diamagnetic enclosure, undetectable by radar.  
Transformer resistant to overload when firing a cannon

**Production:** 2015



## ELHAND Components for Maritime Industry



### They Also Trusted Us.

- Damen Shipyards Gorinchem
- Alewijse Marine Galati S.A.

- Baumüller
- Gebhard B.V.
- IKM Subsea AS
- Kongsberg Maritime AS

- Navytec
- Israel Shipyards
- Remontowa Holding S.A.
- Elkon Elektrik Sanayi Ve Ticaret

**40+**  
Years of Experience