

# Standards & Certifications

## LEROY-SOMER AND KATO ENGINEERING ALTERNATORS ARE MANUFACTURED IN AN ISO 9001- 2000 ENVIRONMENT.

From materials sourcing to final commissioning and maintenance, our whole organization is devoted to quality.

Our alternators conform to major international standards, including IEC 34-1, NEMA, IEEE, NFC 51-111, UTE 5100, VDE 0530, BS 5000, IEC 2.3, EAC and CSA.

Our marine alternators ship with certificates from all major classification societies, complying with the specifications below:

|  | Temp. Rise Ambient Temperature Class h | Temp. Rise Ambient Temperature Class f | Short-Circuit Current      | Transient Voltage Drop | % Overload P.F. = 0.8 | Temperature Detector              | Space Heaters            | Regulation | Shaft Conformity Certificate                   | Factory Setting | Spare Parts                  |
|--|--|--|----------------------------|------------------------|-----------------------|-----------------------------------|--------------------------|------------|--|-----------------|------------------------------|
|  LRS Lloyd's Register of Shipping     | 110°/45°                               | 95°/45°                                | 300% 2 sec.                | 15% P.F. = 0.8         | 50% 15 sec.           | Electrical propulsion             | R*                       | ± 2.5%     | P ≥ 100 kW                                     | P ≥ 100 kW      | NS*                          |
|  ABS American Bureau of Shipping      | 115°/50°                               | 95°/50°                                | 300% 2 sec.                | 15% 0.6 Pn P.F. = 0.4  | 50% 30 sec.           | P ≥ 500 kVA Electrical propulsion | If weight ≥ 455 kg       | ± 2.5%     | Electrical propulsion                          | P ≥ 100 kW      | Bearings                     |
|  ClassNK                              | 120°/45°                               | 100°/45°                               | 300% 2 sec.                | 15% at Pn P.F. = 0.8   | 50% 2 mn              | P ≥ 500 kVA Electrical propulsion | P ≥ 500 kW               | ± 2.5%     | P ≥ 100 kW                                     | P ≥ 0 kW        | 1 bearing for each 4 or less |
|  BV Bureau Veritas                    | 120°/45°                               | 100°/45°                               | 300% 2 sec.                | 15% 0.6 Pn P.F. 0.4    | 50% 30 sec.           | Electrical propulsion             | R* Electrical propulsion | ± 2.5%     | Shaft driven + Propulsion application          | P ≥ 100 kW      | NS*                          |
|  DNV ** Det Norske Veritas            | 120°/45°                               | 100°/45°                               | 300% 2 sec.                | 15% 0.6 Pn P.F. 0.4    | 50% 2 mn              | NS*                               | S*                       | ± 2.5%     | Shaft driven + Propulsion application          | P ≥ 100 kW      | 1/3 of the diodes + A.V.R.   |
|  GL Germanischer Lloyd's              | 120°/45°                               | 100°/45°                               | mini 300% maxi 600% 2 sec. | 15% 0.6 Pn P.F. < 0.4  | 50% 2 mn              | Electrical propulsion             | P ≥ 500 kW               | ± 2.5%     | Shaft driven generator + Electrical propulsion | P ≥ 50 kVA      | NS*                          |
|  PRS Polish register of Shipping     | 120°/45°                               | 95°/45°                                | 300% 2 sec.                | 15% 0.6 Pn P.F. < 0.4  | 50% 2 mn              | P ≥ 500 kVA Electrical propulsion | Electrical propulsion    | ± 2.5%     | NS*  | P ≥ 50 kVA      | Bearings (R*)                |
|  KRS Korea register of Shipping     | 120°/45°                               | 100°/45°                               | 300% 2 sec.                | 15% P.F. = 0.8         | 50% 2 mn              | P ≥ 500 kVA Electrical propulsion | R*                       | ± 2.5%     | P ≥ 100 kW                                     | P ≥ 100 kW      | Bearings                     |
|  RINA Registro Italiano Navale      | 120°/45°                               | 100°/45°                               | 300% 2 sec.                | 15% 0.6 Pn P.F. = 0.4  | 50% 30 sec.           | Electrical propulsion             | Electrical propulsion    | ± 2.5%     | Shaft driven + Propulsion application          | P ≥ 100 kVA     | NS*                          |
|  RS                                 | 120°/45°                               | 95°/45°                                | 300% 2 sec.                | 15% 0.6 Pn P.F. = 0.4  | 50% 2 mn              | Electrical propulsion             | R*                       | ± 2.5%     | NS*  | P > 0 kW        | NS*                          |
|  CCS China Classification Society   | 120°/45°                               | 100°/45°                               | 300% 2 sec.                | 15% 0.6 Pn P.F. = 0.4  | 50% 2 mn.             | -                                 | -                        | ± 2.5%     | -  | -               | -                            |
|  CGSS Coast Guard Steam Ship TP 127 | 115°/50°                               | 95°/50°                                | 300% 2 sec.                | 15% 0.6 Pn P.F. = 0.4  | NS                    | P ≥ 500 kVA                       | If weight ≥ 455 kg       | ± 2.5%     | P ≥ 375 kW                                     | NS              | -                            |

Notes: This list is not exhaustive and may be revised to include other classification societies - \*NS: not specified - \*R: recommended - \*S: specified - Whatever Class H or F, all the other specifications remain the same.

\*\* \*: Alternators are proposed for secondary use. All demands for propulsion must be submitted for consultation. Generators intended for propulsion are subjected to case by case approval and shaft certification type 3.2 by classification societies requested. Table is applicable to standard low voltage alternators up to 5000 kW electrical power.

Consult the societies rules for all other products (e.g. heat exchangers, medium voltage, electrical propulsion, ...).

**LEROY-SOMER™**

**KATO ENGINEERING™**

[www.leroy-somer.com/epg](http://www.leroy-somer.com/epg)

**Marine Alternators**

**Certified alternators  
for reliable power generation**

**Nidec**  
All for dreams

**LEROY-SOMER™**  
**KATO ENGINEERING™**

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## Built to Resist

OUR PRODUCTS ARE DESIGNED AND BUILT TO PROVIDE LONG-LASTING AND RELIABLE PERFORMANCES.



### CLASS H INSULATION

OUR ALTERNATORS ARE CLASS H INSULATED, MEANING WE SOURCE TOP-QUALITY MATERIALS FROM TRUSTED SUPPLIERS TO GUARANTEE A PRODUCT WITH SUPERIOR HEAT-RESISTANCE.

The entire rotor-stator system is carefully impregnated with a **special insulating** coating to protect it against dust and wear.

**The result :** longer life, better performance.



### COMPACT DESIGN

SOMETIMES, GAINING A FEW INCHES IS CRITICAL. THIS IS ESPECIALLY TRUE ABOARD VESSELS WHERE SPACE IS LIMITED AND COMPONENTS ARE CRAMMED TOGETHER IN STRATEGIC AREAS.

Our alternators are designed to provide the maximum power with **the minimum footprint**.

Our **patented cooling** and AREP excitation technologies allow us to offer **the most compact alternators** on the market.



### ROBUST DESIGN

ABOARD A SHIP, VIBRATIONS ARE THE ENEMY OF ANY ROTATING MACHINE.

In the design phase, our engineering teams analyze the impact of vibrations through **finite element modeling**, and we provide 3D models of our products to help their integration in gensets or on ships.

Internal vibrations are reduced through **antivibration mounts** for sensitive components.



### HIGH MOTOR STARTING CAPABILITY

RELIABLE MOTOR STARTING IS A KEY REQUIREMENT FOR MARINE ALTERNATORS, TO ENSURE BOW THRUSTERS, WINCHES AND RUDDERS GET THE POWER THEY NEED, WHEN THEY NEED IT.

Our alternators are **optimized with digital regulation** features allowing Soft Start and load impact adjustments, and their electrical and mechanical design allows them to **sustain 300% nominal load for 10 seconds**.

## Support & Services

### Certified experts, trusted professionals

OUR SUPPORT AND SERVICE TEAMS ARE ISO 9001 AND ISO 14001 CERTIFIED, DEMONSTRATING OUR ONGOING COMMITMENT TO QUALITY.

Our field engineers are cleared to work in specific and hazardous environments, including marine, oil & gas and nuclear facilities.

They all have the qualification and experience to meet your needs.

Our worldwide network also guarantees our capability to respond quickly to any request, taking local regulations and conditions in consideration.

### Field service

WE OFFER THE FOLLOWING SERVICES:

- Installation & commissioning
- Re-assembly & rewinding
- On-site inspection & repair
- Maintenance operations
- Diagnostics & optimization
- Vibration analysis

WHAT YOU GET:

- Complete & thorough testing
- Detailed intervention report
- Satisfaction & follow-up

## Built-in Quality

SOME PEOPLE NEED TO BE CHALLENGED TO MEET EXPECTATIONS. SOME PEOPLE PERCEIVE REGULATIONS AS A CONSTRAINT. NOT US.

We build quality alternators that are designed to withstand the test of time and extreme conditions. We source the best materials, and craft our designs around reliability and performance. The experience and know-how of our workers is our ultimate guarantee of quality.

The result? Most of our alternators meet marine specifications by design. Nothing is altered to have them comply with some of the world's most demanding rules.

Kato Engineering and Leroy-Somer have an extensive track record demonstrating their commitment to quality and performance. Our alternators supply high-demand commercial and industrial businesses around the globe.



### Remanufacturing workshop

We offer turnkey remanufacturing service including on-site removal, transport, and re-commissioning operations.

WE SERVE ALTERNATORS UP TO 35MW AND 80 TONS.

All remanufacturing is performed to precise factory specifications, including balancing and dynamic load tests.

