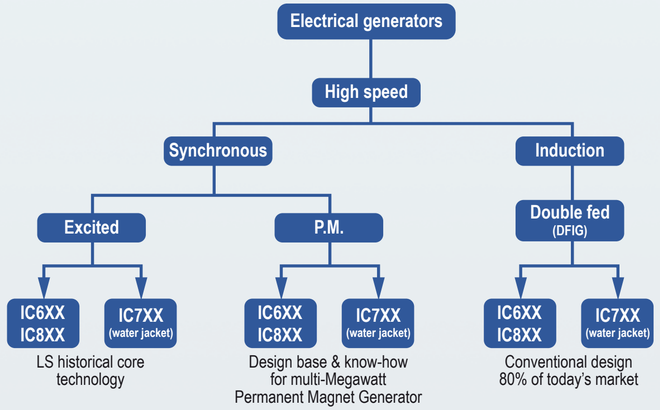
The wind turbine market

Leroy-Somer technology map



Leroy-Somer operations

Wind turbine generators are designed and developed in France. They are then mass produced in dedicated production lines in factories appropriately located. Readily available LS facilities exist in USA/Europe/India/China

Leroy-Somer production sites use highly efficient manufacturing tools, such as stamping, machining, welding, winding, vacuum and pressure impregnation and load testing.

Production flow organization optimizes lead time and quality. All this taking into account the physical size and weight of generators (2 to 60 tons).

Control of processes, permanent monitoring and comprehensive tests of all products before shipment guarantees Leroy Somer quality.

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Global service

In addition to total quality management, Leroy-Somer provide a complete range of services to aid consultants, assemblers and end-users alike.

Wherever you are, our engineers are available to assist during all phases of the project.

Leroy-Somer's commercial and service network is worldwide, including 470 fully dedicated branches, guarantying prompt and effective service.

www.leroy-somer.com

MOTEURS LEROY-SOMER 16015 ANGOULÊME CEDEX - FRANCE

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LEROY SOMER®

GENERATORS FOR WIND TURBINES

Worldwide generator specialist

At the heart of energy production plants, positioned between the drive end and the distribution, Leroy-Somer generators meet the demands of today's market needs.

Leroy-Somer generators are the result of 90 years expertise. Leroy-Somer are specialists in electrical rotating machines and generators, including low, medium and high voltage, for power up to 20 MW.

Innovation, mastering of technologies, product reliability and close service are requirements, which make Leroy-Somer World class leaders in generator technology.

Leroy-Somer produced its first wind turbine generator in the 80s. Since then, Leroy-Somer has designed and built generators of all types and sizes for this market. Leroy-Somer was among the first industrial-scale producers of 3MW generators.

Today, several dedicated production lines in our facilities around the world are producing produce highly efficient and reliable generators for leading wind turbine manufacturers.

The rapid growth in energy needs is a global reality, which is being met by Leroy-Somer in the strictest compliance with environmental constraints. Leroy-Somer is ISO 14001 and ISO 9001 certified.

Dedicated products

Synchronous, TEAAC
850 kW

DFIM, TEWAC
2000 kW / 3000 kW

Synchronous, TEWAC
2600 kW

Power ranges	**600 kW - 5 MW**
Shaft height	450 - 630 mm & more
Poles	4 - 6 - 8
Type of generators	induction, synchronous or Permanent Magnet
Speed range	fixed or variable speed
Voltage ranges	**400 V - 15 kV**
Construction	IM 1001 - IM 1101 - IM 1002 ...
Cooling mode	air/air - air/water

DFIM : Double Fed Induction Machine
Non exhaustive range. Other configuration can be designed on request

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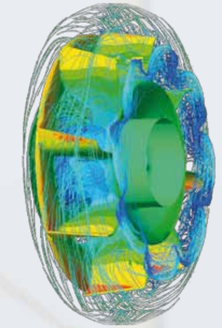
Design & offer

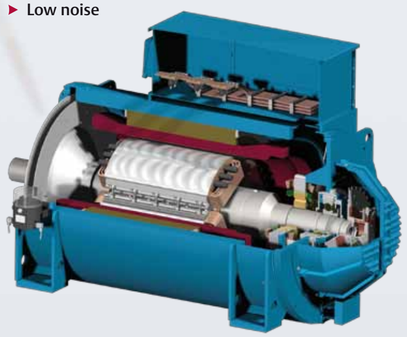
Leroy-Somer engineering uses the most up to date tools, e.g. finite element modeling and 3D CAD, in order to optimize the mechanical, thermal and electrical performance of its generators.

Leroy-Somer has developed a **water-cooled system**, which particularly suites wind turbine applications. Water cooling focused on the active parts of the generator guarantees heat control and therefore extends the generator's life.

Main benefits:

- High electrical efficiency
- Reliability
- Compact design
- Efficient cooling
- Low noise





Leroy-Somer has developed a **reinforced insulation system** which enhances the generators reliability in wind turbine applications.

Demanding environment:

- Severe environments (salt, dust, ...)
- Extreme ambient temperatures
- Highly variable load cycles
- High over voltage due to converters

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