Generators for Wind Turbines
The generator is the core of a wind turbine. It converts the rotational energy of the rotor, driven by the kinetic energy of the wind, and converts it into electrical energy using induction.

Therefore, it generates the electric power that the wind turbine system feeds into the grid.
Customer requirements

- Maximum reliability, even under extreme conditions (heat, cold, humidity, salt mist…)
- Long maintenance intervals
- High energy yield
- Low space requirement
- Operation also when feeding into weak grids
# Geared Wind Generator Standard-Package

This portfolio overview represents only the common product line / market level. No limits are set to us at frame sizes, performances and cooling concepts. Ask us for different variants!

## Asynchronous Generator

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## Synchronous Generator

- **Pole Switched**
  - Power range: 1.5 – 10.0 MW
  - Frame size: 500 – 800
- **Doubly Fed Induction Generator**
  - Power range: 0.6 – 5.0 MW
  - Frame size: 400 – 630
- **Squirrel Cage**
  - Power range: 1.5 – 10.0 MW
  - Frame size: 500 – 800
- **Asynchronous generator**
  - Power range: 1.5 – 10.0 MW
  - Frame size: 500 – 800
- **Synchronous generator**
  - Power range: 1.5 – 5.0 MW
  - Frame size: 400 – 630
- **Electrically Excited Generator**
  - Power range: 1.5 – 5.0 MW
  - Frame size: 400 – 630
Geared Wind Generator
Portfolio

LOHER Induction Generator

- Power range: 0.6 MW – 6.0 MW
- Frame size: 355 – 710
- Cooling method: Modular air/air
  - Modular air/water
  - Surface cooling
- Engineered and manufactured with more than 25 years of experience
- Extended speed regulation range by full converter solution
- Preserves the mechanical parts of the turbine
- Fulfillment of grid code guidelines by converter regulation

Full catalog of possibilities available / adaptable to each request.
LOHER Doubly Fed Induction Generator

- Power range: 1.5 MW – 10.0 MW
- Frame size: 500 – 800
- Cooling method:  Modular air/air
  - Modular air/water
  - Surface cooling
- Cost effective converter solution:
  - 30% of the generator nominal power as converter rating
- Preserves the mechanical parts of the turbine
- Unproblematic line connection, converter for performance optimization and fulfillment of current grid code regulations
- Design for high usability

Full catalog of possibilities available / adaptable to each request.
LOHER Electrically Excited Synchronous-Generator

- Power range: 1.6 MW – 5.0 MW
- Frame size: 400 – 630
- Cooling method: Modular air/air
  Modular air/water
  Water-jacket
- Extended speed regulation range by full converter solution
- The possible use of rectifier with step-up converter instead of full converter reduces complexity and costs

Full catalog of possibilities available / adaptable to each request.
LOHER Permanent-Magnet Synchronous-Generator

- Power range: 0.6 MW – 5.0 MW
- Frame size: 400 – 630
- Cooling method: Modular air/air
  - Modular air/water
  - Water-jacket
- Corrosion- and short-circuit proof magnets
- Optimizations of efficiency in coordination with further components on annual energy yield

Full catalog of possibilities available / adaptable to each request.
Geared Wind Generator
Generator product example

DFIG and IG Air to Air Cooled
Size/weight: 500 – 630/ <15 tons
Power rating: 1.4 MW – 3.8 MW

DFIG and IG Air to Water Cooled
Size/weight: 560 – 630/ <16 tons
Power rating: 2.0 MW – 6 MW

PMSG Air to Air or Water Cooled
Size/weight: 500 – 560/ <9 tons
Power rating: 2 MW – 3 MW

EESG Water-jacket Cooled
Size/weight: 400 – 630/ <12 tons
Power rating: 0.6 MW – 3.5 MW

IG Surface Cooled
Size/weight: 450 - 500/ <7 tons
Power rating: 0.6 MW – 1.25 MW
Customer advantages

Comprehensive range facilitates solutions that precisely fit the individual wind turbine
- Double-fed induction generators, induction generators, synchronous generators as well as permanent-magnet generators

Rugged, weatherproof and resistant to corrosion
- Extremely reliable for onshore and offshore applications

Low maintenance costs
- Long maintenance intervals
- Maintenance-friendly design
- Good spare parts availability

Space-saving: as a result of the compact design

High-yield: Yield-optimized efficiency characteristic with increased power factor increases the energy yield of the wind turbine. Generators, dimensioned to match the locally prevailing wind profile optimize the energy yield at each and every location.

Also suitable for weak grids: Designed for larger voltage and frequency tolerances, also for 60 Hz
Customer advantages

The generator as system partner in the drive train

LOHER wind-driven generators on its own already offer every conceivable benefit, from the order process to the product assembly up to operation and service.

A perfectly engineered system of generator and converter furthermore offers functional and operational safety in every working condition with only one contact partner for all issues of the product life:

- coherent development
- technical and cost optimized adjustment of generator and converter
- Our philosophy to offer an entire system: Development, Manufacturing, Test center, Carrying out the certification, Service – All from one source.

System partner: LOHER Dynavert XL and SINAMICS Medium Voltage.

Customized configuration tailored to every turbine type.
Thank you for your attention!