ENO 82

2.05 MW

enovation for efficiency

ENO ENERGY

Success with wind.

www.eno-energy.com

Leading Edge

Reliable yields even at highest requirements are ensured by the eno 82 due to its highly innovative full-power converter and control technology combined with robust, dependable machine design. Flexible hub heights starting from 58.6 metres permit a wide range of applications. Because of its compact dimensions and its optimal component weights, the eno 82 wind turbine is the ideal choice for logistically challenging projects.

Innovative technology for sophisticated projects

Full flexibility

Whether low or high wind sites the eno 82 is aligned to different site conditions due to its solid design and variable tower heights. The high profitability of the eno 82 is advantageous especially at sites with statutory height restrictions and limited areas. A comprehensive option package for ice, noise and feed-in management extends additionally the operational area.

High availability

97%

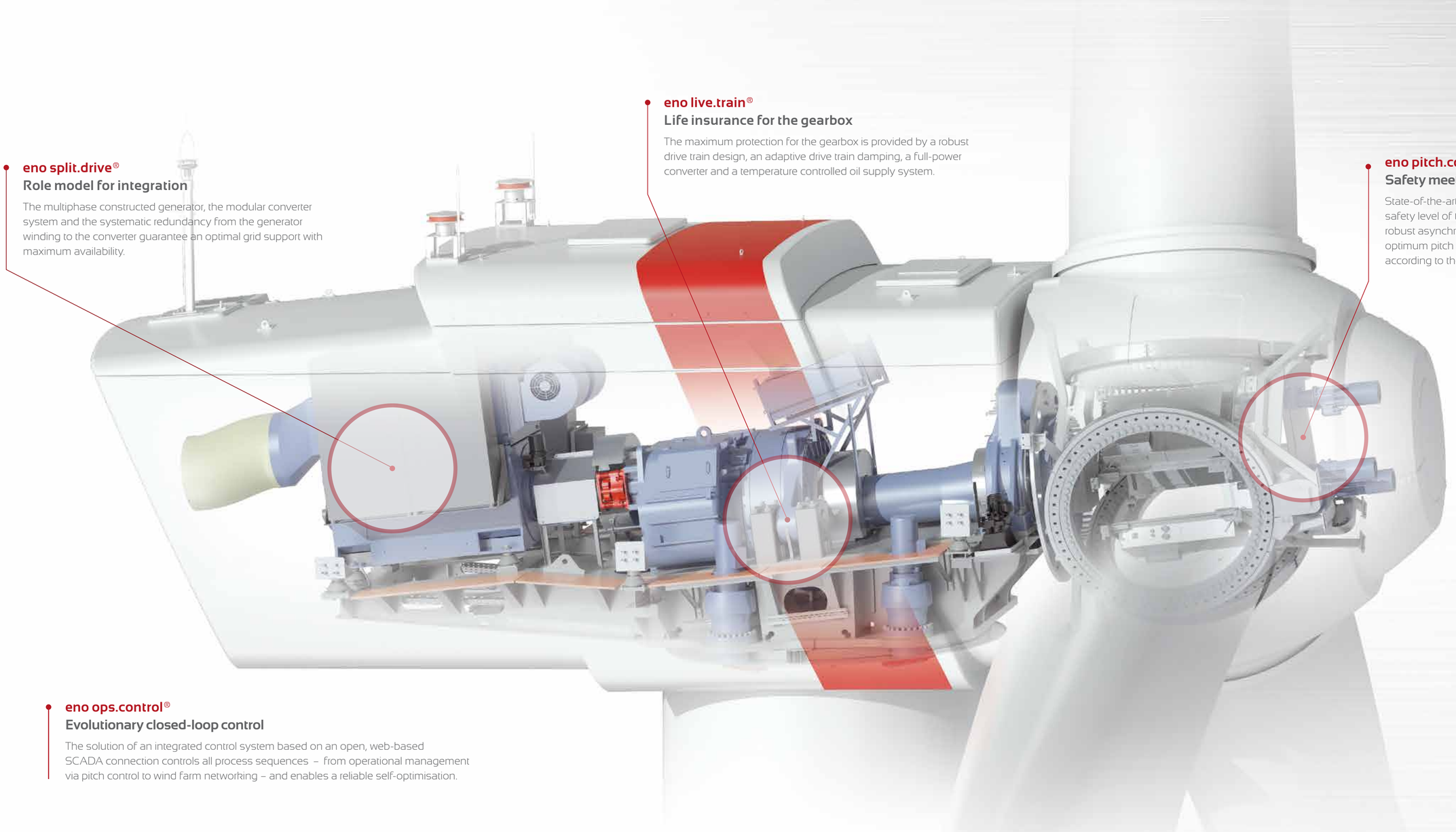
The **eno live.train®** concept guarantees the maximum reliability and durability for all drive train components. The adaptive drive train damping based on the 3 MW class and the grid decoupling by full-power converter technology protect the gearbox optimally against alternating loads. A redundant configuration of lubrication, cooling systems and the converter ensure full operability of the turbine even at a subsystem failure.

Excellent grid characteristics

With its well proven combination of a brushless synchronous generator and a full-power converter the eno 82 handles grid faults smoothly and reliably. The wide reactive-power range underlines the excellent grid compatibility of the turbine regarding flicker and harmonics without a need of any additional filters or compensation systems. With these characteristics the eno 82 can easily meet all standard grid connection requirements.

Complete service

Undisturbed power generation, high productivity and reliable yields: To ensure these benefits sustainably eno energy offers a comprehensive service and after-sales programme. The flexible full-maintenance concept – **eno complete.care®** – provides for permanent supervision of the machines, including condition monitoring. Highly qualified on-site service technicians ensure smooth and trouble-free operation of the wind farm. In this way the operating costs can be calculated for long term. Thus, the availability is guaranteed at a high level.



eno split.drive®
Role model for integration

The multiphase constructed generator, the modular converter system and the systematic redundancy from the generator winding to the converter guarantee an optimal grid support with maximum availability.

eno live.train®
Life insurance for the gearbox

The maximum protection for the gearbox is provided by a robust drive train design, an adaptive drive train damping, a full-power converter and a temperature controlled oil supply system.

eno pitch.control®
Safety meets efficiency

State-of-the-art AC drive technology meets safety level of traditional DC systems. The robust asynchronous motors ensures the optimum pitch of the rotor blades at all times according to the latest safety guidelines.

eno ops.control®
Evolutionary closed-loop control

The solution of an integrated control system based on an open, web-based SCADA connection controls all process sequences – from operational management via pitch control to wind farm networking – and enables a reliable self-optimisation.

Proven quality for safe investment

Technical specifications eno 82

General

Type	eno 82
Rated Power	2,050 kW
Cut-in wind speed	3 m/s
Rated wind speed	13 m/s
Cut-out wind speed	25 m/s
Tilt angle	5°

Rotor

Diameter	82.4 m
Nominal speed range	7.0 – 17.9 rpm
Swept area	5,333 m²

Rotor blade

Manufacturer	LM Wind Power
Material	GRP
Length	40.0 m

Gears

Model	Planetary-/spur gearing
Gear ratio	approx. 1:96

Generator

Type	Synchronous generator
Design	slip ringless / brushless excitation

Tower (hub height)

Type Tubular steel	58.6 m; 80 m; 101 m; 108 m

Converter

Type	Full power converter
Model	Modular IGBT inverter topology

Sound power level

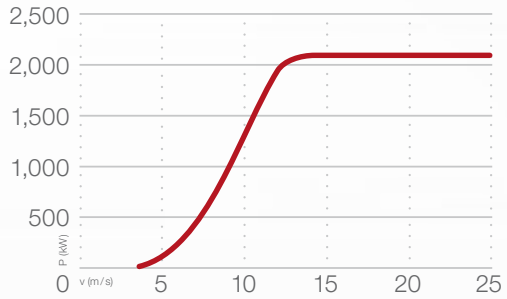
calculated (Mode 0)[1]	104.9 dB(A)

Wind class

Wind class according to IEC	IEC IIa
Wind zone according to DIBt	WZ III

[1] noise-reduced operation modes available on request

Power curve eno 82



Estimated annual energy yield

v_w, hub height	eno 82
6.0 m/s	4,213 MWh/a
6.5 m/s	5,025 MWh/a
7.0 m/s	5,828 MWh/a
7.5 m/s	6,603 MWh/a
8.0 m/s	7,340 WWh/a
8.5 m/s	8,030 MWh/a

Evaluation of reference yield according to FGW TR 5

Hub height	Reference yield in kWh
58.6 m	22 960 276
80 m	25 401 505
101 m	27 218 462
108 m	27 737 717

Efficient wind farms. For a clean future.

It is our goal to make wind energy more efficient. Economic success of renewable energies and growing importance of climate protection go hand in hand. eno energy has already planned and installed a large number of wind farms all over Europe. With this experience we have designed the 2 and 3.5 MW platform to achieve maximum output out of the wind farm. Therefore we offer the most efficient solution for each location.

Contact: sales@eno-energy.com

eno 82	eno 92	eno 100	eno 114	eno 126
2.05 MW IEC IIa	2.2 MW IEC IIIa	2.2 MW IEC IIIa	3.5 MW IEC IIs	3.5 MW IEC IIIs

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