



Certificate No.

IECRE.WE.TC.20.0009-R0

IECRE - IEC System for Certification
to Standards Relating to Equipment
for Use in Renewable Energy
Applications

TYPE CERTIFICATE

Wind Turbine

This certificate is issued to

ENERCON GmbH
Dreekamp 5
26605 Aurich
Germany

for the wind turbine

ENERCON E-126 EP3

wind turbine class (class, standard, year)

IIA/S, IEC 61400-1 Ed.3:2005-08 incl. Amendment 2010-10

This certificate attests compliance with IEC 61400 Series as specified in subsequent pages. It is based on the following reference documents:

Design basis evaluation conformity statement
Dated

Included in the Design Evaluation Conformity Statement

Design evaluation conformity statement
Dated

IECRE.WE.CS.19-0004-R1
2020-02-20

Type test conformity statement
Dated

44 220 19323440-T-IEC, Rev.1
2020-04-03

Manufacturing conformity statement
Dated

4422019142915-M-IEC, Rev.1
2020-03-31

Final evaluation report
Dated

8118 010 847-20 E, Rev.0
2020-04-03

The conformity evaluation was carried out in accordance with the rules and procedures of the IECRE System
www.iecre.org

The wind turbine type specification begins on page 2 of this certificate.

Changes in the system design or the manufacturer's quality system are to be approved by the Certification Body. Without approval, the certificate loses its validity.

This certificate is valid until:
2025-04-02

Approved for issue on behalf of the IECRE
Certification Body:

Dipl.-Ing., Dr. M. Broschart
Deputy Specialist Manager Wind Energy
Essen, 2020-04-03



TÜV NORD CERT GmbH
Langemarckstraße 20
45141 Essen



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Machine parameters:

Power regulation:	Independent electromechanical pitch system for each blade
Rotor orientation:	Upwind
Number of rotor blades:	3
Rotor tilt:	7°
Cone angle:	-2.5°
Rated power:	3000 kW, 3500 kW, 4000 kW
Rated wind speed V_r :	12.1 m/s
Rotor diameter:	127 m
Hub height(s):	86 m, 99 m, 116 m
Hub height operating wind speed range $V_{in} - V_{out}$:	2 m/s – 30 m/s
Design life time:	25 years
Software version:	I/O1 Control Cabinet Version 6.19

Wind conditions:

Characteristic turbulence intensity I_{ref} at $V_{hub} = 15$ m/s:	16 % for HH 116 m; for HH 86 and 99 m see Design Evaluation Conformity Statement
Annual average wind speed at hub height V_{ave} :	8.5 m/s for HH 116 m; 8.0 m/s for HH 99 m; for HH 86 m see Design Evaluation Conformity Statement
Reference wind speed V_{ref} :	42.5 m/s
Mean flow inclination:	8 deg. for HH 99 and 116 m; for HH 86 m see Design Evaluation Conformity Statement
Hub height 50-year extreme wind speed V_{e50} :	59.5 m/s

Electrical network conditions:

Normal supply voltage and range:	24 kV and 36 kV (no range given)
Normal supply frequency and range:	50 / 60 Hz (no range given)
Voltage imbalance:	Not defined
Maximum duration of electrical power network outages:	Not defined
Number of electrical network outages	20 per year



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Other environmental conditions (where taken into account):

Design conditions in case of offshore WT:	N/A
Normal and extreme temperature ranges:	-10 °C - +40 °C (operating) -20 °C - +50 °C (survival)
Relative humidity of the air:	Up to 95%
Air density:	1.225 kg/m ³
Solar radiation:	1000 W/m ²
Lightning protection system (standard and protection class):	IEC 61400-24:2010, LPC 1
Earthquake model and parameters (standard and key parameters e.g. spectrum, model, seismic zone, soil class, etc.):	N/A
Other design conditions :	No ice on rotor blades considered.



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Major components:

**If not otherwise stated, the certificate holder
is the manufacturer.

Blade:

Type: E-126 EP3-RB-05 (vacuum infusion)
Material: E-glass fibre reinforced epoxy
Blade length: 61.8 m
Number of blades: 3
Manufacturer: Rothenseer Rotorblattfertigung GmbH
Drawing / Data sheet / Part No.: R1265.110.10000, Rev.2 (drawing)
D0664490-1, Rev.1 (specification)

Blade bearing:

Type: 2-row ball slewing ring
Manufacturer: Liebherr Components Biberach GmbH
Drawing / Data sheet / Part No.: KUD02800-055WJ18-001-900, Rev.02.4

Blade bearing:

Type: 2-row ball slewing ring
Manufacturer: IMO GmbH & Co.KG
Drawing / Data sheet / Part No.: 02-552800/4-12619, Rev.-, dated 2018-02-26

Blade bearing:

Type: 2-row ball slewing ring
Manufacturer: Thyssenkrupp Rothe Erde
Drawing / Data sheet / Part No.: 002.55.2920.000.48.140D, Rev.C

Pitch System:

Motor / Actuator Type: Rotary drives with 2 DC pitch motors each
and capacitors for emergency power supply.
Pitch Controller Type: Electromechanical
Manufacturer: Emod



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Pitch System:

Motor / Actuator Type: Rotary drives with 2 DC pitch motors each
and capacitors for emergency power supply.
Pitch Controller Type: Electromechanical
Manufacturer: Ruckh

Main shaft (Axle pin):

Type: Cast part
Manufacturer: Heger Guss GmbH; Heger Ferrit GmbH;
GZO Gusszentrum Ostfriesland GmbH
Material: EN-GJS-400-18-LT
Drawing / Data sheet / Part No.: EP3.01.053-5, Rev.05

Main bearing:

Type: Tapered roller bearing in O arrangement
Manufacturer: PSL, a.s.
Drawing / Data sheet / Part No.: PSL612-415-PV_4, Rev.4 (hub side)
PSL612-416-PV_5, Rev.5 (generator side)

Main bearing:

Type: Tapered roller bearing in O arrangement
Manufacturer: FAG Schaeffler Technologies AG & Co. KG
Drawing / Data sheet / Part No.: EDD F-627880.TR1-WPOS 000, Rev. AB
(hub side)
EDD F-627881.TR1-WPOS 000, Rev. AB
(generator side)

Main bearing:

Type: Tapered roller bearing in O arrangement
Manufacturer: SKF GmbH
Drawing / Data sheet / Part No.: BT1-8212 A/VK443, Rev. 0 (hub side)
BT1-8213 A/VK443, Rev. 01 (generator side)

Gearbox:

Type: N/A
Gear Ratio: N/A
Manufacturer: N/A
Drawing / Data sheet / Part No.: N/A



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Yaw System:

Drive Type: 12 yaw motors with integrated motor brakes

Manufacturer: Ruckh

Drawing / Data sheet / Part No.: D0236907-2

Drive Type: 12 yaw motors with integrated motor brakes

Manufacturer: Emod

Drawing / Data sheet / Part No.: MK11503-0

Bearing Type: 2-row ball slewing ring

Manufacturer: Liebherr Components Biberach GmbH

Drawing / Data sheet / Part No.: KUD03203-070WA18-001-900, Rev.02.3

Bearing Type: 2-row ball slewing ring

Manufacturer: Thyssenkrupp Rothe Erde GmbH

Drawing / Data sheet / Part No.: 091.70.3202.011.48.150D, Rev. A

Gear Type: 4-stage planetary gearbox

Manufacturer: Liebherr Components Biberach GmbH

Drawing / Data sheet / Part No.: 368 446 4000 99 00, Rev.03.6

Gear Type: 4-stage planetary gearbox

Manufacturer: Bonfiglioli Trasmital

Drawing / Data sheet / Part No.: I7110T003400, Rev. B

Brake Type: Motor brakes integrated in the yaw motors

Manufacturer: N/A

Drawing / Data sheet / Part No.: N/A



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Generator:

Type	Synchronous, high-pole
Manufacturer:	Windgeneratorenfertigung Magdeburg GmbH
Drawing / Data sheet / Part No.:	E-126 EP3-GE-01
Rated Power:	4330 kW
Rated Frequency:	11.8 Hz
Rated Speed:	12.4 rpm
Max. speed:	19 rpm
Rated Voltage:	4x 2Y x 530 V (AC)
Rated Current:	590 A
Insulation Class:	F
Degree of Protection:	IP23

Converter:

Type:	Liquid cooled, full power
Manufacturer:	Elektric Schaltanlagenfertigung GmbH
Drawing / Data sheet / Part No:	Leistungsschrank 300 kW
Rated Voltage (grid side):	400 V (AC)
Rated Current (grid side):	475 A
Degree of Protection:	IP00 (installed IP20)

Transformer:

Type:	Oil-filled
Manufacturer:	J. Schneider Elektrotechnik GmbH
Drawing / Data sheet / Part No.:	HPNW 4500A-1802T10001
Rated Voltage:	20000 V (HV side) / 400 V (LV side)
Rated Power:	4500 kVA
Degree of Protection:	IP00
Location (e.g. tower bottom):	Tower base



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Tower:

Type: Tubular steel tower
E-126 EP3-ST-86-FB-C-01
Manufacturer: (1) ATEŞ ÇELİK İNŞAAT TAAH. PROJE
MÜHENDİSLİK SAN. VE TIC. A.Ş.
(2) Çimtaş Çelik İmalat Montaj ve Tesisat
A.Ş.
(3) SAM Stahlturm- & Apparatebau
Magdeburg GmbH
Sections: 5
Length: 81.3 m
Drawing / Data sheet / Part No.: D0596579-0, Rev.0

Tower:

Type: Hybrid tower (concrete / steel)
E-126 EP3-HT-99-IS-C-01
Manufacturer: Concrete: WEC Kule İnşaat San. Ve. Tic. A.Ş
Steel: See tubular steel towers.
Sections: several
Length: 96.69 m
Drawing / Data sheet / Part No.: D0692119-0, Rev.0

Tower:

Type: Tubular steel tower (series and strengthened)
E-126 EP3-ST-116-FB-C-01
Manufacturer: (1) ATEŞ ÇELİK İNŞAAT TAAH. PROJE
MÜHENDİSLİK SAN. VE TIC. A.Ş.
(2) Çimtaş Çelik İmalat Montaj ve Tesisat
A.Ş.
(3) SAM Stahlturm- & Apparatebau
Magdeburg GmbH
Sections: 7
Length: 111.18 m
Drawing / Data sheet / Part No.: D0596596-2, Rev.2

Foundation:

Type: N/A
Manufacturer: N/A
Drawing / Data sheet / Part No: N/A



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Foundation Adaptor:

Type: Anchor cage (for tubular steel towers)
Manufacturer: ATEŞ ÇELİK İNŞAAT TAAH. PROJE
MÜHENDİSLİK SAN. VE TIC. A.Ş.
Drawing / Data sheet / Part No.: D0596598-0, Rev.0

Manuals:

Operation & maintenance manual: D0665658-0, Rev.0 (operation);
D0682027-001, Rev.1 (maintenance)
Transport manual: PLM-TES-DC032-VH_E-115E3_E-126_E-
138E1E2_EP3-Rev001de-de
Installation & commissioning manual: D0707840, Rev.000; for installation manuals
see Evaluation Report of safety system and
manuals in the Design Evaluation Conformity
Statement