

ALLEGATO 1

Specification – Technical Data and Equipment List

Enercon E-40 / 6.44 / E2 / E40-6

Serial Number: 44884

The E-40 / 6.44 / E2 / E40-6 is a wind energy converter with three rotor blades, active pitch control and variable speed operation with rated power of 600 kW, rotor diameter of 44m and hub heights of 46m.

The main characteristics are listed below. The detailed technical and maintenance documentation are attached to this Specification together with additional documentation listed in the equipment list.

Technical Data

General	Type:	Gearless horizontal axis wind turbine with variable rotor speed
	Power Regulation:	Independent electromechanical pitch system for each blade
	Rated Power:	600 kW
	Hub Height:	46
	Rated Rotational Speed:	32.5 rpm
	Operating Range Rotational Speed:	Variable, 18-33 rpm
	Cut-in wind speed:	3 m/s
	Rated wind speed:	11.8 m/s
	Cut-out wind speed (10 min. mean):	25 m/s
	Extreme wind speed (50 year gust):	57.6 m/s
	GL-Type Class:	II
Rotor	Diameter:	44 m
	Number of Blades:	3
	Orientation:	Upwind
	Cone Angle:	0 deg.
	Tilt Angle:	4 deg.
	Blade Type:	E 40-6
	Blade Material:	Glass fiber reinforced epoxy
	Manufacturer:	Aero Rotorblattfertigung GmbH
Blade Adapter	Type:	Casted
	Material:	EN-GJS-400-18U-LT
Rotor Hub	Type:	Casted

	Material:	EN-GJS-400-18U-LT
Axel Pin	Type:	Casted
	Material:	EN-GJS-400-18U-LT
Main Braking System	Design:	See power regulation
	Kind of power control	Pitch
	Specification Pitch drive:	MK 40 032-3
	Pitch gear:	Lohmann + Stolterfoht GmbH Type IPC 47V, or: C.H. Schäfer GmbH, type PG 25.1, or: E. Koed Christensen A/S, Type RES 175 GR2
	Specification Pitch motor:	MK 40 033-1
	Pitch Motor:	Weier Elektromotorenwerk GmbH & Co. KG, Type GN 112/4S Bre
Auxiliary Braking System	Design:	Hydraulically activated disk brake with 2 brake callipers
	Location:	At rotor disk
	Assembly Drawing No.:	40.90.109-0
	Brake caliper:	SIME INDUSTRIE GmbH, type BCH 77
	Hydraulic unit:	SIME INDUSTRIE GmbH, type CE2L
Generator	Design:	Synchronous generator (salient pole)
	Type:	E 40 / 600
	Rated Power:	640 kW
	Rated Voltage:	2 times 460 V
	Rated Speed:	36 rpm
	Degree of protection:	IP 23
Main Carrier	Type:	Welded
	Material:	S355J2G3
King Pin	Type:	Casted
	Material:	EN-GJS-400-18U-LT
	Drawing No.:	40.03.020-4
Yaw System	Design:	Active yawing with 4 electric yaw drives with brake motor and friction bearing
	Specification Yaw Drive	MK 40 036-0
	Drawing No. yaw drive:	40.03.025-0
	Yaw Gear:	Lohmann + Stolterfoht GmbH, Type: GFB 24 T4 6001, or: Getriebebau Nord GmbH & Co. KG, type SK PE 41, or: E. Koed Christensen A/S, type: RES 990 GR4
	Specification yaw motor:	MK 40 034-1
	Specification yaw bearing:	MK 40 037-0
	Drawing No. slewing ring	Hoesch Rothe Erde, 061.40.1320.001.48.1503, or:

		SNR Wälzlager GmbH / Rollix Groupe Defontaine, 01-1319-01, or Liebherr-Werk Biberach GmbH, Kud 138 VA 801-010
Tower	Design:	Tubular steel tower with 2 sections
	Length:	45.15 m
	Drawing No.:	40.10.445-1
Weights	Nacelle (incl. rotor blades, machinery and generator):	Approx. 34 to
	Nacelle (without rotor blades, machinery and generator):	Approx. 6 to
	Generator	Approx. 15 to
	Hub	Approx. 13 to (incl. rotor blades)
	Total rotor head	Approx. 28 to (incl. rotor blades)

Equipment List

Description	Qty	Unit
PCB acoustics sensor V1.0 EXX	1	pc
winch MK40014-4	1	pc
PCB I/O board V1.3 E40	1	pc
PCB opt.distribution rotor V1.2 E66	1	pc
PCB yaw monitoring V1.0a EXX	1	pc
PCB optical distrib.nacelle V2.1 E66	1	pc
PCB distribution V2.0 EXX	1	pc
yaw transmission E40/6.xx MK40035-2	4	pc
PCB switch-mode inv.contr.V2.1/2.1a EXX	1	pc
ball bear.slewing rim E40/6.xx MK40031-5	3	pc
PCB power supply inverter V1.1 EXX	2	pc
PCB driver- IGBT3_4 V1.2 Type 01 EXX	2	pc
PCB driver- IGBT3_4 V1.2 Type 02 EXX	2	pc
cabinet power- 600kW V3.0 ass.EXX	1	pc
yaw motor 910 rpm 1,1 KW w.o. se 40034-2	3	pc
yaw motor 910 rpm 1,1 KW with se 40034-2	1	pc
PCB IGBT-Control-1 V3.5 EXX	2	pc
PCB AICA V2.0 type01 E44	2	pc
cabinet nac.control- NCC4415 V3 ass.E44	1	pc
PCB AICA V2.0 type02 E44	1	pc
azimuth bearing MK30001-0	1	pc
PCB yaw-brake V1.4 + IGBT E44	1	pc
battery box	3	pc
pitch box	3	pc
relay box	3	pc
hydraulic aggregate	1	pc
pitch gear box	3	pc
pitch control motor	3	pc
slip ring body	1	pc
pitch bearing	3	pc
cabinet rectifier	1	pc
cabinet excitation	1	pc
cabinet filter generator	2	pc
Rotorblade standard white	3	pc
Generator	1	pc
Nacelle	1	pc
Tower	1	pc
Turbine Electrical Room	1	pc