	GENERAL SPECIFICATION		
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COMPONENTS OF THE WIND TURBINE

BLADES:

Manufacturer:	VESTAS
Principle:	Shells bonded to supporting beam
Material:	Glass fibre reinforced epoxy and polyester
Bolts connection:	Bonded aluminum ring

BLADE BEARING:

Manufacturer:	Rothe Erde / Rollix
Type :	4 points bearing

BLADE HUB:

Manufacturer:	VESTAS RRB approved supplier
Type :	Cast
Material :	EN GJS400-18U-LT

MAIN SHAFT:


Manufacturer:	VESTAS RRB approved supplier
Material:	34 CrNiMo6
Type:	Forged with flange
Shaft/hub connection:	Bolts 10.9

BEARING HOUSING:

Manufacturer:	VESTAS RRB approved supplier
Type:	Cast Tubular construction
Material:	SG-iron (GGG 40.3)

MAIN BEARINGS:

Manufacturer:	SKF / FAG
Type:	Spherical roller bearing

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MACHINE FOUNDATION:

Manufacturer: VESTAS RRB approved supplier
Type: Welded tubular frame
Material : EN10210 ; Grade S355J2 H

YAW SYSTEM:

Manufacturer: VESTAS RRB approved supplier
Type: Slide block system with build in friction
Material: Cast (Mechanite SF500) (GGG 50)
Yawing speed: < 0,5°/sec.

YAW GEAR. 2 units:

Manufacturer: Bonfiglioli / Trasmital or equivalent
Type: Planetary and worm gears

YAW MOTORS:


Manufacturer: ABB or Equivalent
Type: Induction / Asynchronous

TUBULAR TOWER:

Manufacturer: VESTAS RRB approved supplier
Type: Conical Tubular
Material: Steel
Height: 38.7m / 48.3m
Surface treatment: Metallized + paint
Weight: 32,600 kg / 42,000 kg

PAINT SYSTEM, OUTSIDE:

Sandblasting: SA 3 (DS 2019) / ISO 8501 -1
Metallizing: DSI/ISO 2063 Zn 80
1. coat: UV resistant min. 120um (2 layers)
Top coat: UV resistant min. 40um (1 layer)
Corrosion class (DS/R 454): 3

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PAINT SYSTEM, INSIDE:

Sandblasting: SA 2.5 (DS 2019) / ISO 8501 -1
Zinciferous first coat: Min. 50um (1 layer)
Top coat: Min. 100um (1 layer)
Corrosion class (DS/R 454): 2

GEARBOX :

Manufacturer: JAKE / MOVENTAS / Equivalent
Type: Planetary / Parallel shaft
Rated power: (App.) 660 kW
Ratio: (App.) 63.39
Oil quantity: 125 liters (approx)
Low speed shaft: Hollow shaft
Cooling: Oil pump with oil cooler

COUPLING:

Main shaft - gearbox:

Manufacturer: Stuve or Equivalent
Type: Conical shrink disc

Gearbox - generator:

Manufacturer: Zero-max or equivalent

GENERATOR:

Manufacturer: SIEMENS or equivalent
Type: Asynchronous, 4 poles
Rated Power : 600kW
Voltage : 690V AC
Frequency : 60 Hz
Class of insulation : H
Rotational speed (600kW) : 1830 RPM

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BRAKE UNIT:

Manufacturer: Brembo or equivalent
 Type: Disc type
 Calipers : 3 hydraulic activated
 Disc material : SG-iron

HYDRAULIC UNIT:

Manufacturer: Winstar or equivalent
 Pump capacity 6cc / revolution
 Rated pressure : 275 Bar
 Working pressure : 200 Bar
 Max. test pressure : 240 bar
 Brake pressure : 19 bar
 Pressure transmitter : Piezo electrical
 Oil quantity : 70 liters
 Motor : 4.0 kW

ANEMOMETER:

Manufacturer: VESTAS RRB approved supplier
 Type : Optoelectrical


WINDVANE:

Manufacturer: VESTAS RRB approved supplier
 Type : Optoelectrical

CONTROL UNIT :

Manufacturer: VESTAS / VESTAS RRB /
 equivalent
 Type : Optoelectrical, Microprocessor
 Based Optitip controller

Heavy current :
 Voltage : Customer to confirm
 Lockable circuit breaker : Customer to confirm
 Power supply for light : Customer to confirm
 Generator cut-in : By Thyristors
 Power factor correction : To be decide

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Computer:

CPU: 2 x 80c186 etc.
Configuration: Modules
Operation: Numeric keyboard + function keys
Display : 4 x 40 characters

Top processor:

Supervision / Control: Yawing Hydraulic Surroundings
(Wind, temperature)
Rotation
Generator
Pitch system

Bottom processor:

Supervision / Control: Grid (60 Hz)
Power factor correction
Thyristors
Remote monitoring

OPERATOR PANEL (option):

Information: Operating data
Production
Operation log
Alarm log
Commands: Run/Pause
Manual Yaw start / stop