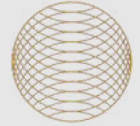
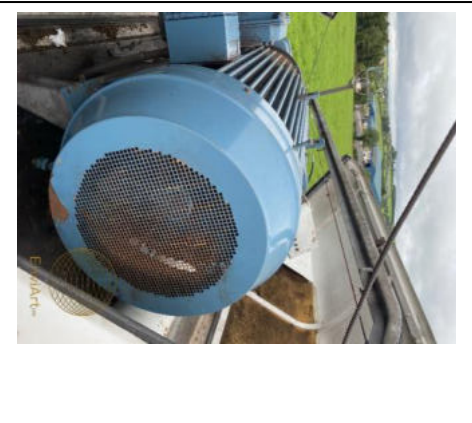
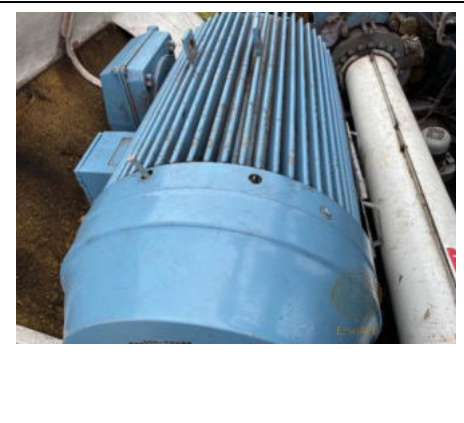
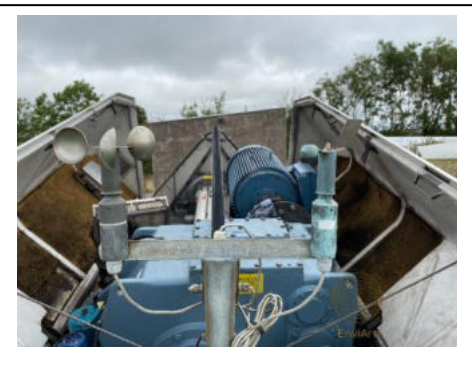
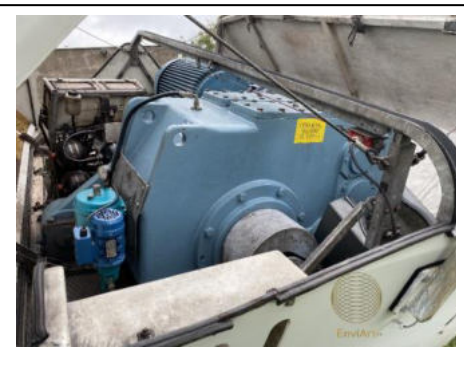
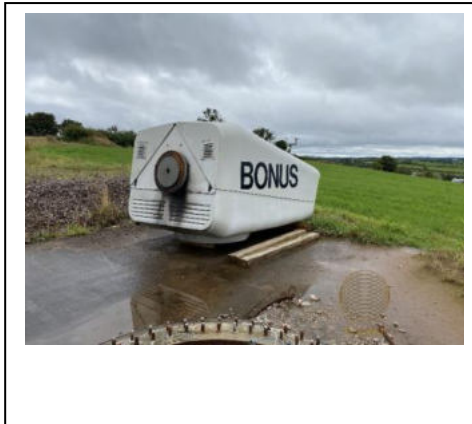
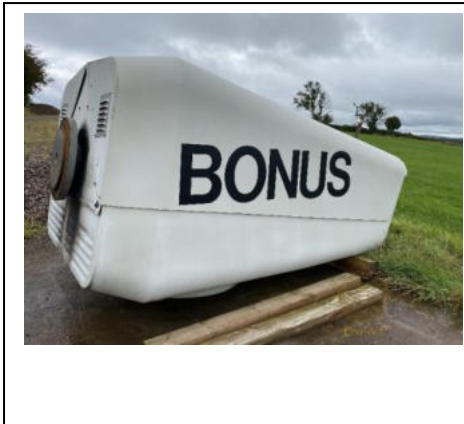
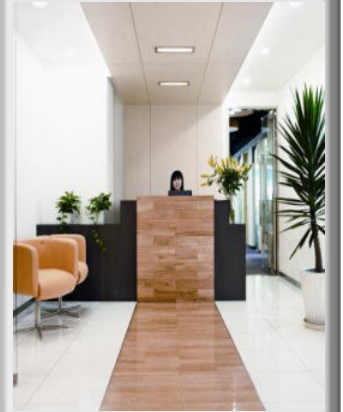


Bonus 300/31 - De-rated - 250kW – 40m Tower



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**Worldwide
Shipping**



**Turnkey
Deliveries**



**Dismantling
Recycling**



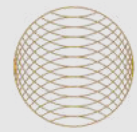
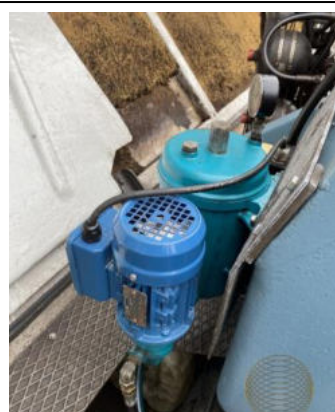
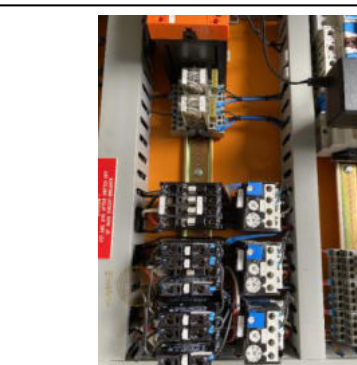
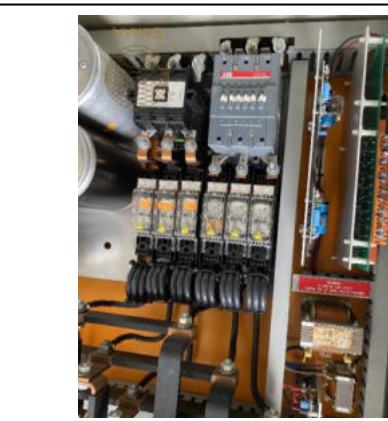
**Installation
Service**



**Fastest
Turnaround**



Bonus 300/31 - De-rated - 250kW – 40m Tower



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*Turnkey
Deliveries*



*Dismantling
Recycling*



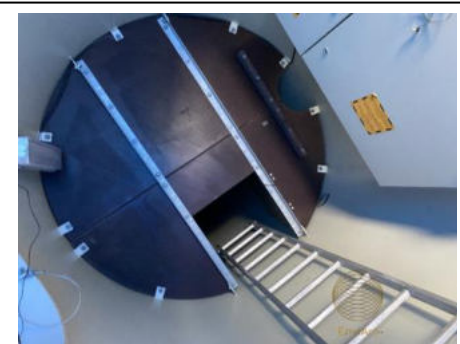
*Installation
Service*



*Fastest
Turnaround*



Bonus 300/31 - De-rated - 250kW – 40m Toer



Year of build: 1996/97

Rated power: 250kW - De-Rated

Tower height: 40 m

Rotor Diameter: 31 m

Refurbished: 2015 by WindTech DK

Swept area: 754.8 m²

Blades Type: LM14.4

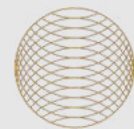
Cut-in wind speed: 3.0 m/s

Gearbox: Flender

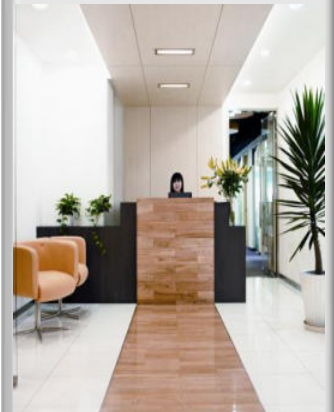
Generator: ABB - 250kW

Grid connection: Thyristors

Grid frequency: 50Hz



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Shipping**



**Turnkey
Deliveries**



**Dismantling
Recycling**



**Installation
Service**



**Fastest
Turnaround**



TECHNICAL SPECIFICATIONS – 250kW De-rated AN Bonus 300/31

Power

- Rated power 250kW ABB Generator
- Rated wind speed 13,0 m/s
- Cut-in wind speed 3,0 m/s
- Cut-out wind speed 25,0 m/s

Rotor

- Diameter 31m
- Number of blades 3
- Rotor speed 21 / 31 U/min
- Material Glas-fibre reinforced plastic.
- Manufacturer LM

Gear box

- Type spur
- Stages 3
- Ratio 1:48
- Manufacturer Flender

Generator

- Type asynchronous, pole-switchable
- Number 1
- Speed 1000 / 1500 U/min
- Grid connection via thyristors
- Manufacturer ABB

Control and Protection System

- Power limitation stall
- Speed control fixed (2-step)
- Main brake blade tip control
- Second brake system disk brake
- Yaw control system 2 electric gear motor(s)
- Control system KK-Elektronik

SERVICE REPORT

Job Sheet No:		Technician 1:	JW
Customer:	C' O'Neill	Technician 2:	PLW
Location:	Cabragh	Date:	3/6/20
Project Nr:		Van Nr:	1
Turbine Type:	Bonus 300	Travel Start:	1015
Turbine ID:		Work Start:	1100
Open Hrs Total:		Work End:	1730
Work Hrs:		Travel End:	1815

Description

Service:	2	Fault:		Inspection:		Other:	
Reason for Visit:				Work Done:			
Annual Service				<ul style="list-style-type: none"> - Service carried out to checklist - Checked 2 accumulators (both over 125) - Replaced brake fluid & bled H/S brakes - H/S brake 55% L/S brake 80% - Small weep from sight glass on globe (highlighted) - greased & cleaned nozzles & yaw - cleaned platform on way down. - Set up cams on globe sensor 			

Materials

Part ID:	Qty:	Description:	Part ID:	Qty:	Description:
	1/2	Mobil MS			
	2	Mobil 460 WP			
	1	optional			
	1	Dot 4 1ltr.			
	1/2	Rags			
	2	Clamp 1ltr.			
	1	Nitro 200ml.			

Notes

- CSC offline filter + motor to be replaced in next 2 weeks
- Check gearbox sight glass-

Signatures

Signed Technician:		Signed Customer:	
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Envia

SERVICE REPORT

Job Sheet No:		Technician 1:	Jo
Customer:	C. O'Neill	Technician 2:	Col
Location:		Date:	12/11/2020
Project Nr:		Van Nr:	1
Turbine Type:	Boam 250	Travel Start:	0945
Turbine ID:		Work Start:	1030
Gen Hrs Total:		Work End:	1515
Ok Hrs:		Travel End:	1600

Description

Service:	2	Fault:	
Reason for Visit:		Inspection:	
		Other:	
<p style="font-size: 1.2em;">1/2 hr Service</p>		<p>Work Done:</p> <ul style="list-style-type: none"> - 1/2 hr service carried out grease & clean nozzle, yaw, tower. - Replaced oil filter motor 240V - took oil sample 	

Materials

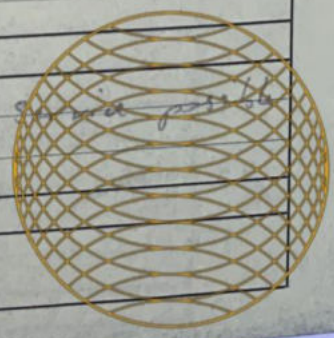
Part ID:	Qty:	Description:	Part ID:	Qty:	Description:
	1/2	Mobil V3		1	oil sample kit
	2	Mobil H60			
	1	Optimal			
	1	Brake Cleaner			
	1/4	Regs			
	240	Cleaner			
	1	Refuse Sack			
	2	gloves			
	1	Oil filter motor 240V			

Notes

* Brake pads change at next service possible

Signatures

Signed Technician:	Signed Customer:
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Technician:	Jo	Customer:	
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SERVICE HISTORY SAMPLE

300 kW Mk II / Mk III Inspection- and maintenance schedule

9

★ - Service at every service visit
 ■ - Service after 500 hours operation
 X - Service every 6 months
 O - Service every year.

Check list	Technician	Bolt	Tightening	Inspection	Replace	Lubrication	Test
CONTROLLER with corresponding electrical installations							
							Look through the fault register
							Reset - 10 min. average time
							Light-emergency light in the tower
							Screws and bolts
							Ribbon cables and multi plugs
							Cable eyes in the main power connector
							Clamps on auxiliary relays
							Auxiliary contacts on the contactors
							Capacity in the phase battery
							Variators and variator fuses
							Covers on conduits
							Damage to paintwork on cabinet
							Leakages on the cabinet
							Heating elements in the controller
TOWER							
							Foundation bolts
							Water penetration and cracks in the grouting
							Tower / Nacelle
							Tower section / tower section (only with double sectioned towers)
							Ladder fittings
							Platforms
							Door (lock mechanisms and seals)
							Cracks in welds
							Corrosion protection
							Safety equipment (optional)
							Attach earthing cable to flange by the tower connection (lightning protection)
NACELLE AND COVER OF THE NACELLE							
							Nacelle / cover of the nacelle
							Hinges on the nacelle hatches
							Hub cover (spinner)
							Evacuation equipment (optional)
							Vibration switch
YAW SYSTEM							
							Nacelle bedplate / Yaw system
							Yaw gearbox
							Oil (level) in the yaw gearboxes
							Teflon plates between the brake blocks and the brake block brace
							Yaw pinion, yaw ring and yaw bearing
							Brake block and brake drum
							Bracing flange / Brake block brace
							Yaw position indicator
							Cable twisting switch / control
							Bolts in wind vane pipe
							Wind vane and anemometer
							Lightning protection (slide shoe-arrangement)
TRANSMISSION SYSTEM							
							Main shaft / Hub
							Main bearing (housing)
							Leakage from the gearbox
							Oil pressure on the gearbox (only on Valmet gearbox)
							Oil filter for gearbox (only on Valmet gearbox, after 500 hours, thereafter every 6 months, thereafter every 6 months. (Retrofit: replace 1 st time after 14 days, thereafter every 6 months.
							Oil cooler, oil filter, pump, fitting, hose for leakage / cracks and cooling fins of the radiator for rust
							Cleaning the cooling element.
							Hoses for gear oil
							Oil (level) on the gearbox (NB: see chapter 5, page 2 - 4 in Service manual)
							Bolts on the gearbox / Gearbox suspension
							Shrink disc on the gearbox / main shaft / brake disc
							Generator suspension
							Generator cables
							Generator heating

200h/100h

Annual service list

original service list

□ - Service every 2 years
 @ - Service every 3 years
 ▼ - Service every 5 years

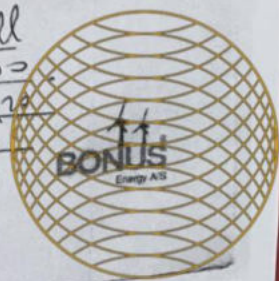
Check list	Technician	Bolt	Tightening	Inspection	Replace	Lubrication	Test
							Generator bearings
							Coupling
							Alignment of generator
							Brake caliper with brackets
							Cracks and other damages
							Surface protection
							Lightning protection (on gearbox suspension and generator)
BRAKE- AND HYDRAULIC SYSTEM							
							Pressure switch
							Valves (soft brake and hard brake)
							Accumulators
							Hydraulic pressure
							Brake pressure on high speed brake
							Hydraulic oil (level)
							Brake fluid (level)
							Pressure filter
							Highspeed centrifugal release unit (HCU) (test in stop position)
							Centrifugal release unit (CU) (test in stop position). If there is any leakage, replace the CU.
							Leakage
							Gap between brake pads and brake disc
							Brake calipers
							Thickness of brake pads (BREMBO)
							Leakage from the brake calipers
							Overspeed (computer overspeed)
							Rotating union
BLADES							
							Blades / hub / blade tips
							Check for noise and cracks when the rotor is rotating
							Cylinders for the blade tips
							Check the welds on the hydraulic cylinder hinge on the blade tips, for cracks
							Count the total number of stall-lists
							Lightning marks on the blade tips
							Blade tips dismounted for inspection
							Other: See "Installation and Maintenance Manual for LM Blades"

Replace Fluid

Was lightning-up necessary □ YES NO
 If yes: - State which bolt joints were tightened-up, and how many degrees/turns the bolts were turned.

Service observations: 175 to certify ladder / brace / SA.
 2nd Accumulator Empty
 1x Oil bolt missing

Nacelle no: Edm O'Neill
 Place: B300
 Service performed by - date: JLB/20
 Service supervisor: JLB



Borupvej 16 - DK 7330 Brande - Denmark
 Rev. 10.01.2000 - ECH 06622 - SM 9019

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TURBINE STATUS

- F Fault.
- S Out of operation, has to be started manually.
- W Too high wind velocity to operate ($wv > 25$ m/s) 600 sec.
- w Too high wind velocity to start ($wv > 20$ m/s) 600 sec.
- L Auto-retwist (rechts om) UNCONDITIONAL.
- F Auto-retwist (links om) UNCONDITIONAL.
- I Auto-retwist (rechts om) CONDITIONAL.
- R Auto-retwist (links om) CONDITIONAL.
- s Allowed for auto-retwist waiting for lower wind ($wv < 20$ m/s) 600 sec.
- M Manual motorstart (service).
- A Autom. motorstart.
- o Does not carry out optimal yawing.
- p Stopped because of too many cutting-ins on the generator without starting production. auto start when $wv < 20$ m/s
- t Control of wind velocity $> 3,5$ m/s for 3 minutes before brake is released.
- b Sufficient wind for automatic start 3,5 m/s 30 sec.
- * Inactive, wind velocity $< 3,5$ m/s 30sec

BRAKE STATUS

- = Brake release (inactive).
- B Brake activated.
- b Insufficient hydraulic pressure on air brake.
- p Service brake activated.

GENERATOR STATUS

- G Generator cut-in by contactor.
- I Generator is being cut-in by thyristors.
- t Motorstart is not possible within 5 minutes.
- * Generator inactive.

ERROR CODES

FAULT REPORT

- 01 VIBRATION SENSOR ACTIVATED
- 02 YAW RELAY OR OVERHEATING
- 04 THERMICAL CUT_OUT OF GENERATOR
- 05 CABLE TWIST SENSOR ACTIVATED
- 06 ASSYMETRY IN CURRENT
- 07 BRAKE FLUID LEVEL TOO LOW
- 08 VOLTAGE ON GRID (net) TOO HIGH
- 09 VOLTAGE ON GRID (net) TOO LOW
- 10 FREQUENCY ERROR
- 11 ROTOR RPM BEYOND MAX. LIMIT
- 12 RPM_SENSOR ON MAIN SHAFT DEFECTIVE
- 15 RPM_SENSOR 1 ERROR
- 16 RPM_SENSOR 2 ERROR
- 17 TOO MANY PUMP ACTIVATIONS
- 19 24_VOLT CUT_OFF (comp.spanning)
- 20 HYDRAULIC PUMP ERROR
- 23 CCB1 ERROR (μ P1) (foute scan in programma)
- 24 MAX. CONTINUOUS YAW_TIME EXCEEDED
- 26 UNCONTROLLED YAWING, 24_VOLT OFF (wordt gevolgd door 19)
- 27 CUT_OUT ERROR ON GEN. , FREE_WHEELING (x_KW for y_SEC)
- 28 BRAKETIME > MAX.TIME , FREE_WHEELING
- 29 BRAKE ERROR
- 30 GENERATOR OVERHEATED
- 31 GEAROIL OVERHEATED
- 32 THYRISTOR OVERHEATED
- 33 OVERPRODUCTION ON THE GENERATOR
- 34 PRESSURE SWITCH ERROR
- 36 TEMPERATURE MEASUREMENT ERROR
- 37 GEAR BEARING OVERHEATED
- 38 AMBIENT TEMPERATURE (gondel temp) < -25 °c
- 39 SEQUENTIAL ERROR (interrupt_performance on CCB2 fault)
- 40 AVERAGING ERROR (berekenings fout in de gem.waardes)
- 41 ANEMOMETER ERROR (verm. komt niet overeen met windsnelh)
- 42 DISC BRAKE ERROR
- 44 BYPASS CONTACTOR ERROR (overbruggings relais thyristoren)
- 45 CIRCUIT BREAKER TRIP (hoofdschakelaar uitgevallen)
- 46 EXTERNAL STOP

ERROR CODES