Vestas®

Service Report

Turbine No./Id: 235[redacted]
Service Order: 59033[redacted]

PAD No.
LIMALONGE[redacted]

Turbine Type: V110
Start Date: 11.05.2022
End Date: 12.05.2022

Customer's Ref./P.O.No.:

Date & Time of Receipt
11.10.2021 22:14:02

Vestas Ref.:
IP10202[redacted]

Customer's Address:
ENERGIE LIMALO[redacted]
[redacted]
[redacted]

Site's Address:
F-

Reason for Call Out: V110 2/2.2MW MK10D D - Service 2 Year

V110 2/2.2MW MK10D D - Service 2 Year

Work Performed

Performed:
Le 11-05-2022
Pause : 8h14
Run : 12h52

12/05/2022
Pause : 8h00
Run : 11h31

V110 2/2.2MW MK10D D - Service 2 Year
According to SWI:
0042-4216 V22 SII for 6-Monthly and Yearly Inspection
0042-4218 V30 SIF for 6-Monthly and Yearly Inspection
0080-1201 V02 Lubrication Chart

Specification of Item Consumption

Item	Description	Serial Number	Quantity	UoM
109113	FILTER,AIR INSERT		2.000	EA
130539	FILTER SIZE 1000 10MY,DIN24550		2.000	EA
149156	GREASE SHELL GADUS S5 T460 1.5 400G		1.000	EA
149266	GREASE KLÜBERPLEX BEM 41-132 540G NOZZLE		2.000	EA
198004	CLEANING PAPER TORK MULTI		3.000	EA
360024	RITTAL COARSEFILTER 120x120x12		6.000	EA
754804	AIR FILTER F/SLIP RING		2.000	EA
877017	OIL SAMPLE KIT, 125ML BOTTLE		2.000	EA
14904740	SHELL RHODINA GREASE BBZ 4KG CARTRIDGE		2.000	EA
14913913	GREASE SKF LGWM 1 1.3KG CARTRIDGE		1.000	EA
14913950	GREASE SKF LGWM 1 5KG CARTRIDGE		1.000	EA
29013588	OPTIGEAR SYNTHETIC CT320 20l		20.000	L

Customer's Address:
ENERGIE LIMAL[redacted]
[redacted]
[redacted]000 ARRAS

Site's Address:
F-

Item	Description	Serial Number	Quantity	UoM
29016726	HYDR FILTER 3mu DIN 24550-400		1.000	EA
51624501	CT6245 BATTERY 3,6V	000B816XEV	1.000	EA
51624501	CT6245 BATTERY 3,6V	000B816VOX	1.000	EA
51624501	CT6245 BATTERY 3,6V	000B81AQZL	1.000	EA
51624501	CT6245 BATTERY 3,6V	000B81JVLS	1.000	EA
60014682	FILTER PAD 180-230M3/H		8.000	EA
60020252	OFFLINE FILTER		1.000	EA
S092676	FILTERPAD PFANNENB. PFA 40.000		2.000	EA
S099128	FILTER 435x395 F. DOOR		2.000	EA

Specification of Time Consumption

Person Name	Date	Start	End	Hours	Activity type
T[redacted]	11.05.2022	07:15:00	08:00:00	0.75	Travel Time
J[redacted]	11.05.2022	07:15:00	08:00:00	0.75	Travel Time
J[redacted]	11.05.2022	08:30:00	12:45:00	4.25	Work Time
T[redacted]	11.05.2022	08:30:00	13:00:00	4.50	Work Time
J[redacted]	11.05.2022	13:15:00	14:15:00	1.00	Travel Time
T[redacted]	11.05.2022	13:15:00	14:15:00	1.00	Travel Time
T[redacted]	11.05.2022	14:15:00	14:45:00	0.50	MOB / DE-MOB
J[redacted]	11.05.2022	14:15:00	15:15:00	1.00	MOB / DE-MOB
T[redacted]	11.05.2022	15:00:00	15:15:00	0.25	MOB / DE-MOB
J[redacted]	12.05.2022	07:15:00	08:00:00	0.75	Travel Time
T[redacted]	12.05.2022	07:15:00	08:00:00	0.75	Travel Time
J[redacted]	12.05.2022	08:00:00	11:15:00	3.25	Work Time
T[redacted]	12.05.2022	08:00:00	11:00:00	3.00	Work Time
T[redacted]	12.05.2022	12:30:00	13:30:00	1.00	Travel Time
J[redacted]	12.05.2022	12:30:00	13:30:00	1.00	Travel Time
T[redacted]	12.05.2022	13:45:00	14:15:00	0.50	MOB / DE-MOB

Customer's Address:
ENERGIE LIMALON[redacted]
[redacted]
[redacted]000 ARRAS

Site's Address:
F-

Person Name	Date	Start	End	Hours	Activity type
JEFEP	12.05.2022	14:00:00	15:00:00	1.00	MOB / DE-MOB
JEFEP	12.05.2022	16:45:00	17:00:00	0.25	MOB / DE-MOB

Total Time Consumption: 25.50

Service Inspection Form

0010 2 Year Service

0020 Torque works $ST_COVERWIND

0 eSIF

0.01 0. DMS: 0042-4218 V30

1 Prepare for service

1.01	Do a check of the warning log.	OK
1.02	Tightening torque.	OK

2 Functional safety test

2.01	Tower: Do a test of the emergency stop function from the tower.	OK
2.02	To do a test of the emergency stop buttons in the tower: Do the test of the emergency stop buttons -610-02-S1 for the tower control cabinet.	OK
2.03	Do the test of the emergency stop buttons -610-02-S6A for the tower top in the tower.	OK
2.04	Do the test of the emergency stop buttons -610-02-S6B for the tower top in the tower.	OK
2.05	Nacelle: Do a test to see if the emergency stop activates the brake.	OK
2.06	To do a test of the emergency stop buttons in the nacelle: Do the test of the emergency stop buttons -610-02-S3 for the yaw control cabinet.	OK
2.07	Do the test of the emergency stop buttons -610-02-S4 for the main shaft (LSS).	OK
2.08	Do the test of the emergency stop buttons -610-02-S5 for the nacelle control cabinet.	OK
2.09	Do a check of the vibration sensor.	OK

2.10	Hub and blades: To do a test of the emergency stop buttons in the hub: Do the test of the emergency stop buttons -135-S1 for the hub control cabinet.	OK
2.11	Do the test of the emergency stop buttons -135-S2 for the hub I/O box.	OK

3 Safety equipment

3.01	Fall arrest equipment (rail): Visually examine the fall protection rail and the ladder for dents, holes, and cracks.	OK
3.02	Examine all the bolts on the fall protection rail.	OK
3.03	Fall arrest equipment (wire): Examine the safety cable.	Not Applicable
3.04	Examine the bottom bracket.	Not Applicable
3.05	Examine the ladder, the cable, and the cable guides.	Not Applicable
3.06	Examine the top bracket.	Not Applicable

4 Rotor

4.01	Hub: ++05 Hub control cabinet: Do a check of the heating element.	OK
4.02	Visually check the hub control cabinet and the support brackets for loose bolts or cracks in the brackets.	OK
4.03	Do a test of the RCCB in the hub controller.	OK
4.04	Replace the 12 V backup battery in the ++05 hub control cabinet.	Parts not available
4.05	Visually examine the 12 V batteries for leakage.	OK

4.06	Hub cover: Do a check of the fibreglass connections for loose bolts.	OK
4.07	Examine the nose cone for cracks in the fibreglass around the bolted connections.	OK
4.08	Blade bearing: Do a check of the blade bearing seals for leakage.	OK
4.09	Semi-automatic lubrication system: To check the grease hoses: Do a check of the grease hoses for cracks and wear.	OK
4.10	Do a check of the grease hoses and their attachments for tightness.	OK
4.11	Do a check of the grease distribution block assembly and its attachment for tightness.	OK
4.12	Do a check of the grease collecting cans.	OK
4.13	Lubricate the blade bearings.	OK
4.14	Blades: Examine the blades.	OK
4.15	Do a check of the blade collar.	OK
4.16	Do an internal inspection of the structural shell blade.	OK
4.17	Do a check of the LCTU.	OK

5 Hydraulic systems

5.01	Extract a sample of the hydraulic oil.	OK
5.02	Replace the filter element of the return line filter.	OK
5.03	Flush the hydraulic system after the filter change.	OK

6 Gearbox and gear oil system

6.01	Extract the gear oil sample.	OK

6.02	Replace the filter cartridge in the air filter housing.	OK	
6.03	Replace the offline filter and the O-rings in the gearbox.	OK	
6.04	To replace the 2 inline 10 ìm gear oil filters (filter block HG1270): Replace the 2 inline 10 ìm gear oil filters and the O-rings.	OK	
6.05	Visually examine all the fittings, components on the filter block, and the pumps for leakage.	OK	
6.06	To lubricate the main bearings: Lubricate the main bearing without an automatic grease lubrication system.	OK	
6.07	Do a check and adjust the LSS or RPM sensors.	OK	
6.08	To examine the rotor locking pins: Do a visual inspection of the rotor locking pins and the rotor lock disc holes for damage.	OK	
6.09	Lubricate the rotor locking pins.	OK	

7 Generator and coupling

7.01	Generator: Do a check of the bearings for unusual noise.	OK	
7.02	Do a check of the automatic lubrication system.	OK	
7.03	Do a check to see if the grease return pipe is blocked.	OK	
7.04	Do a check of the lubrication pump for tightness.	OK	
7.05	Do a check of the power slip ring system.	OK	
7.06	Measure all ground brushes:	OK	
7.07	Ground brush # 1:	92,000	mm
7.08	Ground brush # 2	92,000	mm
7.09	Ground brush # 3	91,000	mm

7.10	Ground brush # 4:	88,000	mm	
7.11	Ground brush # 5:	93,000	mm	
7.12	Ground brush # 6:	96,000	mm	
7.13	Do a check of the form and function of the ground brushes.	OK		
7.14	Identify the power brush type: Mersen	OK		
7.15	Identify the power brush type: BGB			Not Applicable
7.16	Measure the most worn power brush:	OK		
7.17	Measurement:	52,500	mm	
7.18	Do a check of the form and function of the power brushes.	OK		
7.19	Identify the slip ring unit type: Mersen	OK		
7.20	Identify the slip ring unit type: BGB			Not Applicable
7.21	Do a check of the slip ring surfaces.	OK		
7.22	Do a check and measure the groove depth for the power brushes.	OK		
7.23	Power brush # 1:	5,400	mm	
7.24	Power brush # 2:	5,400	mm	
7.25	Power brush # 3:	5,400	mm	
7.26	To check the suction fan and the filter for the PSRS: Do a check of the suction fan, the filter, and the exhaust hose fitting.	OK		

8 Cooling and conditioning

8.01	To do a check of the liquid cooling system: Do a visual inspection of the	OK		

	circulation pump -690-02-G1 for leakage in the shaft seal.	
8.02	Do a check of the 2 hoses in the front end for incipient cracks, wear, and leakage.	OK
8.03	Do a check of the 2 hoses in the ILU pipe system for incipient cracks, wear, and leakage.	OK
8.04	Do a check of the 5 hoses in the pump area for incipient cracks, wear, and leakage.	OK
8.05	Do a check of the 2 hoses on column 3 (right-hand side) for incipient cracks, wear, and leakage.	OK
8.06	Do a check of the 3 hoses for the roof section for incipient cracks, wear, and leakage.	OK
8.07	Do a check of the 2 hoses in the rear end for incipient cracks, wear, and leakage.	OK
8.08	CoolerTop®: Do a check of the CoolerTop® ladder for loose or missing bolts.	OK
8.09	Visually examine the fibreglass for cracks along the leading edge.	OK
8.10	Visually examine the cooler elements on the CoolerTop® for damage through the skylight.	OK

9 Nacelle

9.01	Safety functions: Examine the parking brake.	OK
9.02	Do a test of the shock sensor.	OK
9.03	Nacelle controller cabinets: To do a check of the ++03 CON A controller section: Do a test of the heating element.	OK
9.04	Do a test of the safety system batteries.	OK
9.05	Do a check of the fan and the air filters.	OK

9.06	To do a check of the ++53 CON B controller section: Do a test of the heating element.	OK	
9.07	Do a check of the fan and the air filters.	OK	
9.08	Replace the safety system batteries.		Notification faite Parts not available
9.09	To do a check of the ++04++3 busbar cabinet: Do a test of the heating element.	OK	
9.10	Do a check of the fan and the air filters.	OK	
9.11	Do a test of the main circuit breakers (-405-04-F1, -400-04-F1, and -660-02-F2).	OK	
9.12	To do a check of the ++04++1 VCS converter cabinet: Do a test of the heating element.	OK	
9.13	Do a check of the air filter.	OK	
9.14	Rotating transfer unit: To do a check of the slip ring unit (BGB): Visually examine the slip ring unit for burns and excessive dust.	OK	
9.15	Do a visual check of the brushes for burns and wear.	OK	
9.16	To do a check of the slip ring unit (REKOFA): Visually examine the slip ring unit for burns and excessive dust.		Not Applicable
9.17	Do a visual check of the brushes for burns and wear.	OK	
9.18	Wind sensor: Clean the wind sensor.	OK	
9.19	Visually examine the cables for damage and wear.	OK	
9.20	Examine all the wind sensor equipment, the brackets, and the masts for severe damage.	OK	
9.21	Do a check of all the wind sensor equipment, the brackets, and the	OK	

masts for tightness.

10 Yaw system

10.01	Yaw bearing system: Measure the radial backlash.	OK
10.02	Claw beam number 1: CW end:	0,050
10.03	Claw beam number 1: CCW end:	0,050
10.04	Claw beam number 2: CW end:	0,050
10.05	Claw beam number 2: CCW end:	0,050
10.06	Claw beam number 3: CW end:	0,000
10.07	Claw beam number 3: CCW end:	0,000
10.08	Claw beam number 4: CW end:	0,000
10.09	Claw beam number 4: CCW end:	0,000
10.10	Claw beam number 5: CW end:	0,050
10.11	Claw beam number 5: CCW end:	0,000
10.12	Claw beam number 6: CW end:	0,000
10.13	Claw beam number 6: CCW end:	0,050
10.14	Claw beam number 7: CW end:	0,000
10.15	Claw beam number 7: CCW end:	0,050
10.16	Claw beam number 8: CW end:	0,000
10.17	Claw beam number 8: CCW end:	0,000
10.18	Claw beam number 9: CW end:	0,050

10.19	Claw beam number 9: CCW end:	0,050	
10.20	Claw beam number 10: CW end:	0,050	
10.21	Claw beam number 10: CCW end:	0,000	
10.22	Claw beam number 11: CW end:	0,050	
10.23	Claw beam number 11: CCW end:	0,000	
10.24	Sum: CW end:	0,027	
10.25	Sum: CCW end:	0,022	
10.26	Do a check of the bolts for the end-stop (brass or aluminium piece) for the radial slide plates.	OK	
10.27	Yaw lubrication system: Manually lubricate the yaw sliding surface.	OK	

11 Service crane

11.01	Examine the service crane.	OK	

12 High voltage

12.01	Do an inspection of the transformer, the transformer room, and the HV switchgear.		Service 2Y

13 Service lift and climb assistance

13.01	Do a check of the service lift and the climb assistance according to the supplier's user manual.	OK	

14 Tower

14.01	To do a visual inspection of the middle section liquid damper (optional): Do a visual inspection of the liquid level in the barrels.		Not Applicable

14.02	Do a visual inspection of the barrels for liquid leakage.		Not Applicable
14.03	Do a visual inspection of the mechanical components of the damper units and wires.		Not Applicable
14.04	++06 UPS cabinet: Do a check of the settings of the timers and the temperature control devices according to the relay setting document. See 0061-1789 'Relay setting for V100/V110 2,2 MW VCS/VCSS Mk 10D'.	OK	
14.05	Do a check of the MCBs.	OK	
14.06	Visually examine the UPS battery cartridges and the UPS battery packs for leakage.	OK	
14.07	To do a test of the UPS batteries: Do a test of the UPS batteries.	OK	
14.08	Replace the UPS batteries, if necessary. Date (as a comment)		Not Applicable
14.09	Replace the UPS, if necessary. Date (as a comment).		Not Applicable
14.10	Do a check of the heating elements.	OK	
14.11	Examine the fan.	OK	
14.12	Do a check of the air filters in the UPS cabinet.	OK	
14.13	++01 Ground control cabinet: Do a test of all processor backup batteries in all the cabinets.	OK	
14.14	Examine if the heating elements are activated.	OK	
14.15	Do a test of the ++01-300-F1, ++01-660-12-F10, and ++01-660-10-F11 RCBOs and RCCBs.	OK	
14.16	Do a check of the contactor switching counter for contactors -695-02-Q1 and -695-04-Q1 for number of switching.	OK	

14.17	Number of switching:	Not Applicable
14.18	++51 Light box: Examine the RCCB ++51-640-02-03-F1 inside the ++51 light system control panel.	OK
14.19	Visually examine the 12 V batteries for leakage.	OK
14.20	Examine the function of the emergency light and the 12 V batteries.	OK
14.21	Do a check of the air filter in the light box cabinet.	OK

15 Finish work

15.01	Clean the cabinets, the covers, and the other surfaces for grease spots and finger marks.	OK
15.02	Clean grease from the checker plates and the other surfaces.	OK
15.03	Remove the collected grease from the yaw top teeth.	OK
15.04	Clean the tower basement and tower from inside.	OK