4-YEARLY MAINTENANCE

4-year maintenance

standards:

- IEC 603[redacted]6:2016 (DIN VDE 0100-600)
- IEC 602[redacted]-1:2005 (DIN VDE 0113-1)
- IEC 614[redacted]24:2010 (DIN VDE 0127-24)

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Customer report
4-YEARLY MAINTENANCE

Wind energy converter master data

Serial number	826[redacted]	**WEC**	E-82 E2
Project number	S-07925-[redacted]	**Control system type**	CS82a
Site	Dizy-[redacted]		

Details on order

Order type	4-YEARLY MAINTENANCE
Order number	940068[redacted]
Final date of order completion	Jul 12, 2024
Completion date of report	Jul 12, 2024
Inspection lot number	94000390[redacted]
Document number	D084[redacted] 7.0
Nominated person in control of the electrical installation during work activities	
Nominated person in control of the work activity	
Performing team	T101 SST [redacted]
Performing company	ENERCON SERVICE FRANCE EST

Inspection checklist

Summary of the test results

Free of defects	294	**With defects**	1	**Total**	295

Details

No.	Check item	Result
Electrical system – Tower base		
1	Check tower base warning systems	3 Not done - Not necessary
2	Check software level	1 Done - No defects
3	Checking the Industrial Ethernet plug-in	3 Not done - Not necessary
4	Check access control	3 Not done - Not necessary
5	Testing ice detection system	1 Done - No defects

No.	Check item	Result
6	Check function of Labkotec ice detection system	3 Not done - Not necessary
7	Measure earth resistance at tower base	1 Done - No defects
	Measured values for item 7	
	Air humidity	dry
	Soil condition	dry
	Outside temperature	25.0 °C
	Measurement 1	1.6 Ω
	Measurement 2	1.7 Ω
	Measurement 3	1.8 Ω
	Average value	1.7 Ω
	Orientation of measuring probes	D
	Test set-up with decoiler, 50m (SAP 146596)	Yes
8	Measuring blade heating system currents on tower base	3 Not done - Not necessary
9	Checking smoke detection system	3 Not done - Not necessary
Electrics - External transformer station		
10	Check external transformer station sockets	3 Not done - Not necessary
11	Measure insulation resistance of sockets in external transformer station	3 Not done - Not necessary
12	Measure the earth resistance of the external transformer station	3 Not done - Not necessary
13	Check cooling system of external transformer station transformer	3 Not done - Not necessary
14	Check capacitive voltage taps in external transformer station	3 Not done - Not necessary
15	Check external transformer station transformer room	3 Not done - Not necessary
16	Check ENERCON transformer protection on external transformer station	3 Not done - Not necessary
17	Perform visual inspection of transformer in external transformer station	3 Not done - Not necessary
18	Take oil sample from external transformer station	3 Not done - Not necessary
19	Check external transformer station’s mediumvoltage switchgear	3 Not done - Not necessary
20	Check medium-voltage switchgear external transformer station every 4 years	3 Not done - Not necessary
21	Check HV HRC fuse on external transformer station	3 Not done - Not necessary
22	Check external transformer station’s low-voltage distribution system	3 Not done - Not necessary
23	Terminal lugs – check low-voltage distribution system of external transformer station	3 Not done - Not necessary
24	Check external transformer station basement	3 Not done - Not necessary
25	Checking the external transformer station UPS	3 Not done - Not necessary

No.	Check item	Result
Electrics - WEC medium voltage area		
26	Checking the capacitive voltage taps	1 Done - No defects
27	Checking the ENERCON transformer protection system	1 Done - No defects
28	Checking the smoke detectors in the transformer room	3 Not done - Not necessary
29	Checking the transformer room	1 Done - No defects
30	Visually inspect the transformer	1 Done - No defects
31	Taking and oil sample	3 Not done - Not necessary
32	Checking medium-voltage switchgear	1 Done - No defects
33	Checking the medium-voltage switchgear every 4 years	1 Done - No defects
34	Checking HV HRC fuses	3 Not done - Not necessary
35	Checking the low-voltage distribution system	3 Not done - Not necessary
36	Checking LV distribution system fans	3 Not done - Not necessary
37	Checking low-voltage distribution system terminal lugs	3 Not done - Not necessary
38	Checking the terminal lugs for the secondary systems cabinet	3 Not done - Not necessary
39	Checking control cabinet terminal lugs	1 Done - No defects
40	Checking UPS terminal lugs	1 Done - No defects
41	Checking NH1 fuse switch disconnector terminal lugs	3 Not done - Not necessary
42	Checking the foundation basement	1 Done - No defects
43	Checking AC busbar system V3	1 Done - No defects
Electrical system – Tower base		
44	Test the continuity of the tower base protective conductor system.	1 Done - No defects
	Measured values for item 44	
	bonding bar E-module 1 - foundation earth electrode	0.90 Ω
	Bonding bar - tower entrance stairs	0.80 Ω
	Bonding bar - crescent housing lighting for external area of tower door	1.00 Ω
	Bonding bar - tower door frame (concrete towers only)	1.00 Ω
	Bonding bar - Tower door lighting housing, indoor	1.00 Ω
	Bonding bar - tower door socket	0.70 Ω
	Bonding bar - tower door industrial power socket	0.80 Ω
	Bonding bar - safety ladder	0.90 Ω
	Bonding bar - service hoist socket	0.80 Ω
	Bonding bar - service hoist lighting (only for Protection Class I)	0.90 Ω
	Bonding bar - service hoist housing	1.10 Ω
	Bonding bar - Tower cabling holders	0.90 Ω

No.	Check item	Result
	Bonding bar - Metal cover of floor duct in tensioning basement ceiling	1.00 Ω
	Bonding bar - DC distribution system =045	0.90 Ω
	Bonding bar - LV distribution system =104	1.00 Ω
	Bonding bar - transformer	0.90 Ω
	Bonding bar - grease pan of transformer	0.90 Ω
	Bonding bar - switchgear of transformer	1.00 Ω
	Bonding bar - remote control unit of MV switchgear =164	1.10 Ω
	Bonding bar - Motor housing for tower fan 1	1.00 Ω
	Bonding bar - Motor housing for tower fan 2	0.90 Ω
	Bonding bar - Motor housing for tower fan 3	0.80 Ω
	Bonding bar - control cabinet =005	0.90 Ω
	Bonding bar - UPS cabinet =068	1.00 Ω
	Bonding bar - socket in UPS cabinet =069	0.90 Ω
45	Measuring insulation resistance	1 Done - No defects
	Measured values for item 45	
	Phase L1 - against PE of power cabinet 1	500.0 MΩ
	Phase L2 - against PE of power cabinet 1	500.0 MΩ
	Phase L3 - against PE of power cabinet 1	500.0 MΩ
	Phase L1 - against PE of power cabinet 2	500.0 MΩ
	Phase L2 - against PE of power cabinet 2	500.0 MΩ
	Phase L3 - against PE of power cabinet 2	500.0 MΩ
	Phase L1 - against PE of power cabinet 3	500.0 MΩ
	Phase L2 - against PE of power cabinet 3	500.0 MΩ
	Phase L3 - against PE of power cabinet 3	500.0 MΩ
	Phase L1 - against PE of power cabinet 4	500.0 MΩ
	Phase L2 - against PE of power cabinet 4	500.0 MΩ
	Phase L3 - against PE of power cabinet 4	500.0 MΩ
	Phase L1 - against PE of power cabinet 5	500.0 MΩ
	Phase L2 - against PE of power cabinet 5	500.0 MΩ
	Phase L3 - against PE of power cabinet 5	500.0 MΩ
	Phase L1 - against PE of power cabinet 6	500.0 MΩ
	Phase L2 - against PE of power cabinet 6	500.0 MΩ
	Phase L3 - against PE of power cabinet 6	500.0 MΩ
	Phase L1 - against PE of power cabinet 7	500.0 MΩ
	Phase L2 - against PE of power cabinet 7	500.0 MΩ
	Phase L3 - against PE of power cabinet 7	500.0 MΩ
	Phase L1 - against PE of power cabinet 8	500.0 MΩ
	Phase L2 - against PE of power cabinet 8	500.0 MΩ

No.	Check item	Result
	Phase L3 - against PE of power cabinet 8	500.0 MΩ
46	Checking fan housing air filter	3 Not done - Not necessary
47	Check tower base electrical cabinets	1 Done - No defects
48	Check electrical cabinet overvoltage limitation on tower base	1 Done - No defects
49	Checking DC distribution system	1 Done - No defects
50	Checking the SCADA interface backup battery	1 Done - No defects
Electrics - External transformer station		
51	Measure continuity of protective conductor system, external transformer station	3 Not done - Not necessary
52	Check RCDs in external transformer station electrically	3 Not done - Not necessary
Electrical system – Tower base		
53	Checking the tower cooling system	1 Done - No defects
54	Grease fan for tower cooling system	1 Done - No defects
55	Checking the UPS	1 Done - No defects
56	Checking the power cabinet fans	1 Done - No defects
57	Check tower base emergency lights	2 Done - Defects detected
58	Electrical testing of RCD – tower base	1 Done - No defects
	Measured values for item 58	
	Socket next to entrance door – Sinusoidal alternating current	18.0 ms
	Socket next to entrance door – Sinusoidal alternating current	0 V
	Socket next to entrance door – Sinusoidal alternating current	27.0 mA
59	Check upstream RCD electrically	3 Not done - Not necessary
60	Checking the LV earth fault detection system current sensor	1 Done - No defects
61	Checking RCD and emergency lights of service hoist	1 Done - No defects
62	Check service hoist RCD electrically	1 Done - No defects
	Measured values for item 62	
	Service hoist socket – Sinusoidal alternating current	21.0 ms
	Service hoist socket – Sinusoidal alternating current	0 V
	Service hoist socket – Sinusoidal alternating current	26.0 mA
63	Check sockets in tower base	1 Done - No defects
64	Measuring insulation resistance of sockets	1 Done - No defects
	Measured values for item 64	
	Phase L1 industrial power socket, tower door - PE	500.0 MΩ
	Phase L2 industrial power socket, tower door - PE	500.0 MΩ
	Phase L3 industrial power socket, tower door - PE	500.0 MΩ

No.	Check item	Result
	Neutral conductor industrial power socket, tower door - PE	500.0 MΩ
	Phase L1 against phase L2 industrial power socket, tower door - PE	500.0 MΩ
	Phase L1 against phase L3 industrial power socket, tower door - PE	500.0 MΩ
	Phase L2 against phase L3 industrial power socket, tower door - PE	500.0 MΩ
	Phase of socket, tower door - PE	500.0 MΩ
	Neutral conductor of socket, tower door - PE	500.0 MΩ
	Phase of socket, in service hoist - PE	500.0 MΩ
	Neutral conductor of socket in service hoist - PE	500.0 MΩ
Electrics - Tower		
65	Check tower sockets	1 Done - No defects
66	Measure insulation resistance of sockets on tower	1 Done - No defects
	Measured values for item 66	
	Phase of upper socket in tower - PE	500.0 MΩ
	Neutral conductor of upper socket in tower - PE	500.0 MΩ
	Phase L1 of upper industrial power socket in tower - PE	500.0 MΩ
	Phase L2 of upper industrial power socket in tower - PE	500.0 MΩ
	Phase L3 of upper industrial power socket in tower - PE	500.0 MΩ
	Neutral conductor of upper industrial power socket in tower - PE	500.0 MΩ
	Phase L1 against phase L2 of upper industrial power socket in tower	500.0 MΩ
	Phase L1 against phase L3 of upper industrial power socket in tower	500.0 MΩ
	Phase L2 against phase L3 of upper industrial power socket in tower	500.0 MΩ
67	Performing electrical test of the tower RCD	1 Done - No defects
	Measured values for item 67	
	The upper socket in the tower – Sinusoidal alternating current	26.0 ms
	The upper socket in the tower – Sinusoidal alternating current	0 V
	The upper socket in the tower – Sinusoidal alternating current	25.0 mA
68	Checking and measuring the flexible power cables	1 Done - No defects
	Measured values for item 68	
	reduction factor fR	0.90
Electrical system – Machine house		
69	Check warning systems for nacelle	3 Not done - Not necessary
70	Checking the horns	1 Done - No defects
71	Checking the telephone connection	1 Done - No defects
72	Checking the rotor lock	1 Done - No defects
73	Performing an electrical test for the nacelle crane	1 Done - No defects
74	Check the machine house sockets	1 Done - No defects
75	Measure insulation resistance of sockets on machine house	1 Done - No defects

No.	Check item	Result
	Measured values for item 75	
	Phase L1 of industrial power socket 1 on nacelle control cabinet - PE	500.0 MΩ
	Phase L2 of industrial power socket 1 on nacelle control cabinet - PE	500.0 MΩ
	Phase L3 of industrial power socket 1 on nacelle control cabinet - PE	500.0 MΩ
	Neutral conductor of industrial power socket 1 nacelle control cabinet - PE	500.0 MΩ
	Phase L1 against L2 of industrial power socket 1 on nacelle control cabinet	500.0 MΩ
	Phase L1 against L3 of industrial power socket 1 on nacelle control cabinet	500.0 MΩ
	Phase L2 against L3 of industrial power socket 1 on nacelle control cabinet	500.0 MΩ
	Phase of socket on nacelle control cabinet - PE	500.0 MΩ
	Neutral conductor of socket on nacelle control cabinet - PE	500.0 MΩ
76	Check the emergency lighting system on the machine house	1 Done - No defects
77	Checking the machine house RCD	1 Done - No defects
	Measured values for item 77	
	Socket on nacelle control cabinet – Sinusoidal alternating current	25.0 ms
	Socket on nacelle control cabinet – Sinusoidal alternating current	0 V
	Socket on nacelle control cabinet – Sinusoidal alternating current	27.0 mA
78	Checking the yaw drives	1 Done - No defects
79	Checking smoke detector in machine house	1 Done - No defects
80	Checking the nacelle noise sensor	1 Done - No defects
81	Checking the nacelle control cabinet fan	1 Done - No defects
82	Check the excitation controller fan in the machine house	1 Done - No defects
83	Checking the generator filter cabinet fan	1 Done - No defects
84	Checking the generator filter cabinet terminal lugs	1 Done - No defects
85	Check the rectifier fan on the machine house	1 Done - No defects
86	Checking the cable twist limit switch	1 Done - No defects
87	Checking cam limit switch	1 Done - No defects
88	Check electrical cabinets on machine house	1 Done - No defects
89	Checking generator filter cabinet	1 Done - No defects
90	Check electrical cabinet overvoltage limitation on machine house	1 Done - No defects
91	Measuring loop impedance	1 Done - No defects
92	Measure continuity of protective conductor system on machine house	1 Done - No defects
	Measured values for item 92	
	Bonding bar - Lighting (only for Protection Class I)	1.60 Ω
	Bonding bar - industrial power socket on main carrier	1.40 Ω
	Bonding bar - exterior tower lighting switch socket	1.80 Ω
	Bonding bar - excitation controller box =018	1.50 Ω

No.	Check item	Result
	Bonding bar - fan, frequency converter cabinet =088+1	1.70 Ω
	Bonding bar - Yaw inverter cabinet = 102	1.70 Ω
	Bonding bar – Yaw inverter cabinet socket =102	1.60 Ω
	Bonding bar - nacelle control cabinet =015	1.90 Ω
	Bonding bar - industrial power socket 1 on nacelle control cabinet	1.70 Ω
	Bonding bar - socket on nacelle control cabinet	1.50 Ω
	Bonding bar - winch motor housing	1.90 Ω
	Bonding bar - beacon system control cabinet=115	1.90 Ω
	Bonding bar - yaw motor 1	1.60 Ω
	Bonding bar - yaw motor 2	1.70 Ω
	Bonding bar - yaw motor 3	1.50 Ω
	Bonding bar - yaw motor 4	1.50 Ω
	Bonding bar - yaw motor 5	1.60 Ω
	Bonding bar - yaw motor 6	1.80 Ω
	Bonding bar - rectifier cabinet =017+1	1.80 Ω
	Bonding bar - rectifier cabinet =017+2	1.70 Ω
	Bonding bar - filter cabinet =066 part 1.1	1.60 Ω
	Bonding bar - stator sub distribution system =014	1.80 Ω
	Bonding bar - stator	1.50 Ω
	Bonding bar - motor housing for generator air 1	1.50 Ω
	Bonding bar - motor housing for generator air 2	1.60 Ω
93	Check torque monitoring system on machine house	1 Done - No defects
Electrics - Rotor head		
94	Checking lights in rotor head	1 Done - No defects
95	Check rotor head electrical cabinets	1 Done - No defects
96	Checking the pitch transformer box	1 Done - No defects
97	Check electrical cabinet overvoltage limitation on rotor head	1 Done - No defects
98	Measure continuity of protective conductor system on rotor head	1 Done - No defects
	Measured values for item 98	
	Bonding bar - spinner lighting	2.00 Ω
	Bonding bar - blade relay box A =011	1.80 Ω
	bonding bar - pitch control box A =012	1.90 Ω
	Bonding bar - compact limit switch A =028	1.70 Ω
	Bonding bar - rotor blade A capacitor box =076	1.80 Ω
	Bonding bar - blade relay box B =011	1.50 Ω
	Bonding bar - pitch control box B =012	1.70 Ω
	Bonding bar - compact limit switch B =028	1.50 Ω
	Bonding bar - rotor blade B capacitor box =076	1.90 Ω

No.	Check item	Result
	Bonding bar - blade relay box C =011	1.40 Ω
	Bonding bar - pitch control box C =012	1.80 Ω
	Bonding bar - compact limit switch C =028	1.70 Ω
	Bonding bar - rotor blade C capacitor box =076	1.70 Ω
	Bonding bar - rotor sub-distribution system =013	1.80 Ω
	Bonding bar - slip ring unit =051	1.80 Ω
99	Check power sockets in rotor head	1 Done - No defects
100	Measuring insulation resistance of sockets	1 Done - No defects
	Measured values for item 100	
	Phase of socket, on the rotor - PE	500.0 MΩ
	Neutral conductor of socket on the rotor - PE	500.0 MΩ
101	Perform electrical check of RCD on rotor head	1 Done - No defects
	Measured values for item 101	
	Socket on the rotor – Sinusoidal alternating current	27.0 ms
	Socket on the rotor – Sinusoidal alternating current	0 V
	Socket on the rotor – Sinusoidal alternating current	24.0 mA
102	Checking the Cobham slip ring unit and Label slip ring unit	3 Not done - Not necessary
103	Checking the ENERCON slip ring unit	1 Done - No defects
104	Checking the bearing seal on the ENERCON	1 Done - No defects
105	Checking the torque support and drive mechanism	1 Done - No defects
106	Checking the generator	1 Done - No defects
107	Checking rotor monitoring system	1 Done - No defects
108	Checking rotor head noise sensor	1 Done - No defects
109	Checking the air gap switch	1 Done - No defects
110	Checking rotor blade A’s limit switch	1 Done - No defects
111	Checking rotor blade B’s limit switch	1 Done - No defects
112	Checking rotor blade C’s limit switch	1 Done - No defects
113	Checking pitch motor fans for rotor blade A, B, C	1 Done - No defects
114	Checking the rotor head discharge box	1 Done - No defects
115	Checking discharge box of rotor blade A	1 Done - No defects
116	Checking discharge box of rotor blade B	1 Done - No defects
117	Checking discharge box of rotor blade C	1 Done - No defects
118	Checking blade heating, rotor blade A	3 Not done - Not necessary
119	Checking blade heating, rotor blade B	3 Not done - Not necessary

No.	Check item	Result
120	Checking blade heating, rotor blade C	3 Not done - Not necessary
121	Checking connection of lightning protection on rotor blade A	1 Done - No defects
122	Checking connection of lightning protection on rotor blade B	1 Done - No defects
123	Checking connection of lightning protection on rotor blade C	1 Done - No defects
124	Checking the fos4X ice detection	3 Not done - Not necessary
125	Checking the Wölfel ice detection	3 Not done - Not necessary
126	Checking the eologix ice detection	3 Not done - Not necessary
127	Checking the fos4x sensors on rotor blad	3 Not done - Not necessary
128	Checking the fos4x sensors on rotor blad	3 Not done - Not necessary
129	Checking the fos4x sensors on rotor blad	3 Not done - Not necessary
130	Checking the Wölfel sensors on rotor bla	3 Not done - Not necessary
131	Checking the Wölfel sensors on rotor bla	3 Not done - Not necessary
132	Checking the Wölfel sensors on rotor bla	3 Not done - Not necessary
Electrical - components outside nacelle		
133	Check precipitation sensor	3 Not done - Not necessary
134	Checking the beacon system	1 Done - No defects
135	Replace lamps in Reetec beacon system	3 Not done - Not necessary
Electrical system – Machine house		
136	Check the machine house air cooling system	1 Done - No defects
137	Checking the rectifier earth fault monitoring system	1 Done - No defects
138	Checking generator residual current monitoring	1 Done - No defects
Electrical system – emergency shutdowns		
139	Checking the nacelle control cabinet EMERGENCY STOP buttons	1 Done - No defects
140	Testing the control cabinet EMERGENCY STOP button	1 Done - No defects
141	Testing the tower entrance door EMERGENCY STOP button	1 Done - No defects
142	Testing the E-module EMERGENCY STOP button	1 Done - No defects
143	Checking the main safety circuit relay K4 emergency shutdown	1 Done - No defects
144	Checking emergency shutdown MSC relay K3	1 Done - No defects
145	Checking the rotor lock emergency shutdown	1 Done - No defects
146	Checking the vibration sensor emergency shutdown	1 Done - No defects
Electrical system – Machine house		

No.	Check item	Result
147	Check resistances in the heating element of the blade heating system	1 Done - No defects
Electrics-country-specif. maint. items		
148	Stopping the WEC	1 Done - No defects
Electrical system – Finishing steps		
149	Resetting warning messages and parameters	1 Done - No defects
150	Carrying out the final evaluation	1 Done - No defects
Mechanical - Tower base		
151	Checking foundation	1 Done - No defects
152	Checking bolt connections on bolt cage with load ring	3 Not done - Not necessary
153	Checking fire extinguisher in tower base	1 Done - No defects
154	Visual inspection of tower base	1 Done - No defects
Mechanical - Tower		
155	Checking the tower anchorage points	1 Done - No defects
156	Checking the tower ventilation system	1 Done - No defects
157	Checking the tower bolt connections	1 Done - No defects
158	Checking the concrete tower	1 Done - No defects
159	Checking the internal prestressing system	3 Not done - Not necessary
160	Checking the external prestressing system	1 Done - No defects
161	Checking the external prestressing system	1 Done - No defects
162	Checking steel tower	3 Not done - Not necessary
163	Checking steel section	1 Done - No defects
164	Visually inspecting the tower	1 Done - No defects
Mechanical - Safety ladder		
165	Checking the safety ladder stickers	1 Done - No defects
166	Checking the start and end of the climbing path of the safety ladder	1 Done - No defects
167	Checking the C-profile and fall arrest noses on the safety ladder	1 Done - No defects
168	Checking the mounting of the safety ladder	1 Done - No defects
169	Checking the rungs of the safety ladder	1 Done - No defects
170	Checking gap widths on ladder sections	1 Done - No defects
171	Visually inspecting safety ladder	1 Done - No defects
172	Checking the safety catches of the safety ladder	1 Done - No defects
173	Checking the lateral rail exits of the safety ladder	1 Done - No defects
174	Checking the small rest platforms of the safety ladder	1 Done - No defects

No.	Check item	Result
175	Checking the safety ladder fasteners	1 Done - No defects
176	Performing a test climb of the safety ladder	1 Done - No defects
177	Checking the 'Next Check' inspection label on the safety ladder	1 Done - No defects
Mechanical - Service hoist		
178	Checking the completeness of document pouch on service hoist	1 Done - No defects
179	Checking safety signs on service hoist	1 Done - No defects
180	Checking the hoist cage of the service hoist	1 Done - No defects
	Measured values for item 180	
	Opening dimension of door profile, measuring point 1	2 mm
	Opening dimension of door profile, measuring point 2	2 mm
	Opening dimension of door profile, measuring point 3	2 mm
	Opening dimension of door profile, measuring point 4	2 mm
181	Checking anchorage points on service hoist	1 Done - No defects
182	Checking the wire rope guides on service hoist	1 Done - No defects
183	Checking the key-operated switch in the lift cage	1 Done - No defects
184	Checking the safety guard and cable pulley in the lift cage	1 Done - No defects
185	Checking the hoist cage crossbeam of the service hoist	1 Done - No defects
186	Checking the door safety switches on service hoist	1 Done - No defects
187	Checking the top end-of-travel system in the parked position	1 Done - No defects
188	Checking the service hoist floor cut-off switch	1 Done - No defects
189	Checking the service hoist outside sensor in the parked position	1 Done - No defects
190	Checking the service hoist emergency stop button	1 Done - No defects
191	Checking the service hoist emergency control unit	1 Done - No defects
192	Checking the hoist cable and safety cable at the hoist touchdown platform	1 Done - No defects
193	Checking the cable fasteners with landing box	1 Done - No defects
194	Checking the cable fasteners without landing box	3 Not done - Not necessary
195	Checking the tension of guide ropes on service hoist	1 Done - No defects
196	Checking the indicator lights on service hoist	1 Done - No defects
197	Checking service hoist winch	1 Done - No defects
	Measured values for item 197	
	Winch	Goracon G-Trac 600 (060918-03)
	Operating hours	25 h
	YOM of winch	2015
198	Checking the service hoist safety catch	1 Done - No defects

No.	Check item	Result
199	Checking the automatic operation of the service hoist	4 Not done - Assembly suspended
200	Checking the steel cable for the service hoist	1 Done - No defects
201	Oiling the steel cable for the service hoist	1 Done - No defects
202	Checking the wire rope guide on landing platform service hoist	1 Done - No defects
203	Checking the trailing cable and the restraint	1 Done - No defects
204	Checking the landing platform switches on the platforms	1 Done - No defects
205	Checking the guardrail locking device on service hoist	1 Done - No defects
206	Checking the top end-of-travel system and cut-off device on the hoist exit platform	1 Done - No defects
207	Checking the upper tower crossbeam on service hoist	1 Done - No defects
208	Performing a service hoist test run	1 Done - No defects
209	Completing work on the service hoist	1 Done - No defects
Mechanical - Machine house		
210	Checking the machine house anchorage points	1 Done - No defects
211	Inspect nacelle crane mechanically with chain hoist	1 Done - No defects
	measured values of item 211	
	YOM of winch	2015
212	Checking the machine house first aid kit	1 Done - No defects
213	Checking the machine house fire extinguisher	1 Done - No defects
214	Checking the Firespy fire-extinguishing system in the machine house	3 Not done - Not necessary
215	Checking rescue barrel	3 Not done - Not necessary
216	Checking the machine house fitted parts	1 Done - No defects
217	Checking the machine house casing	1 Done - No defects
218	Checking the main carrier and the axle pin	1 Done - No defects
219	Checking yaw gears	1 Done - No defects
220	Checking yaw bearing	1 Done - No defects
221	Checking the stator shield	1 Done - No defects
222	Checking the rotor lock	1 Done - No defects
223	Checking the electromechanical brake	1 Done - No defects
224	Checking the shaft sleeve	1 Done - No defects
225	Checking the machine house bolt connections	1 Done - No defects
226	Visual inspection of machine house	1 Done - No defects
Mechanical system – Rotor head		
227	Checking the rotor head anchorage points	1 Done - No defects

No.	Check item	Result
228	Taking a front and rear main bearing grease sample	1 Done - No defects
229	Greasing the rear and front rotor bearing	1 Done - No defects
230	Perform a visual inspection of the generator rotor	1 Done - No defects
231	Checking the rotor head casing	1 Done - No defects
232	Checking the rotor hub and the blade adapters	1 Done - No defects
233	Checking rotor head seals	1 Done - No defects
234	Checking the pressure switch for the rotor head central lubrication system	1 Done - No defects
235	Checking central lubrication system on rotor head	1 Done - No defects
236	Checking pitch gear rotor blade A	1 Done - No defects
237	Checking the pitch gear for rotor blade B	1 Done - No defects
238	Checking the pitch gear for rotor blade C	1 Done - No defects
239	Checking rotor blade A blade flange bearings	1 Done - No defects
240	Checking the blade flange bearings of rotor blade B	1 Done - No defects
241	Checking the blade flange bearings of rotor blade C	1 Done - No defects
242	Check lightning protection system of rotor blade A	1 Done - No defects
243	Check lightning protection system of rotor blade B	1 Done - No defects
244	Check lightning protection system of rotor blade C	1 Done - No defects
245	Checking the rotor head bolt connections	1 Done - No defects
246	Visual inspection of rotor head	1 Done - No defects
Mechanical - Rotor blade		
247	Checking the rotor blade A bolt connections	1 Done - No defects
248	Checking the rotor blade B bolt connections	1 Done - No defects
249	Checking the rotor blade C bolt connections	1 Done - No defects
250	Checking the TES spring bolts on rotor blade A	1 Done - No defects
251	Checking the TES spring bolts on rotor blade B	1 Done - No defects
252	Checking the TES spring bolts on rotor blade C	1 Done - No defects
253	Check rotor blade A base plate	1 Done - No defects
254	Check rotor blade B base plate	1 Done - No defects
255	Check rotor blade C base plate	1 Done - No defects
256	Check laminate on rotor blade A	1 Done - No defects
257	Check laminate on rotor blade B	1 Done - No defects
258	Check laminate on rotor blade C	1 Done - No defects
259	Check web bonding on rotor blade A	1 Done - No defects

No.	Check item	Result
260	Check web bonding on rotor blade B	1 Done - No defects
261	Check web bonding on rotor blade C	1 Done - No defects
262	Check crescent on rotor blade A	1 Done - No defects
263	Check crescent on rotor blade B	1 Done - No defects
264	Check crescent on rotor blade C	1 Done - No defects
265	Check the connection between the lightning protection cable and the discharge ring on rotor blade A	1 Done - No defects
266	Check the connection between the lightning protection cable and the discharge ring on rotor blade B	1 Done - No defects
267	Check the connection between the lightning protection cable and the discharge ring on rotor blade C	1 Done - No defects
268	Check lightning protection cable on rotor blade A	1 Done - No defects
269	Check lightning protection cable on rotor blade B	1 Done - No defects
270	Check lightning protection cable on rotor blade C	1 Done - No defects
271	Check the connection between the lightning protection cable and the flat profile on rotor blade A	1 Done - No defects
272	Check the connection between the lightning protection cable and the flat profile on rotor blade B	1 Done - No defects
273	Check the connection between the lightning protection cable and the flat profile on rotor blade C	1 Done - No defects
274	Check flat profile of web on rotor blade A	1 Done - No defects
275	Check flat profile of web on rotor blade B	1 Done - No defects
276	Check flat profile of web on rotor blade C	1 Done - No defects
277	Check rotor blade A on outside nacelle	1 Done - No defects
278	Check rotor blade B on outside nacelle	1 Done - No defects
279	Check rotor blade C on outside nacelle	1 Done - No defects
280	Check flange spoiler longitudinal bolts for rotor blade A	1 Done - No defects
281	Check flange spoiler longitudinal bolts for rotor blade B	1 Done - No defects
282	Check flange spoiler longitudinal bolts for rotor blade C	1 Done - No defects
Mechanical - Nacelle exterior		
283	Checking anchorage points nacelle exterior	1 Done - No defects
284	Checking fitted parts nacelle exterior	1 Done - No defects
Mechanical-country-specif. maint. items		
285	Checking rescue barrel	1 Done - No defects
286	Check the safety ladder safety cable	1 Done - No defects
Mechanical system – finishing steps		
287	Repair paint	1 Done - No defects
288	Acoustic check of WEC	1 Done - No defects

Customer report

4-YEARLY MAINTENANCE

No.	Check item	Result
Measuring device		
1000	Type of measuring dev. (install. tester)	[redacted] 165[redacted]
1001	ID number	1003[redacted]
1002	Calibrated	to
1003	Date – month	3
1004	Date – year	2025

Report overview

No.	Defect location	Defect type	Report
57	tower, entrance area - lighting, entrance inside	special, lighting - illuminant defect	920072792[redacted]

Signature

12.07.2024 , 81[redacted]

Order: 940068[redacted]