



Certificate No.

IECRE.WE.CC.19.0022-R1

IECRE - IEC System for Certification to Standards Relating to Equipment for Use in Renewable Energy Applications

PROVISIONAL COMPONENT CERTIFICATE

Wind Turbine

This certificate is issued to

LM Wind Power A/S
Jupitervej 6
DK-6000 KOLDING

for the component

LM 71.0 P Rotor Blade

wind turbine class (class, standard, year)

unspecific, IEC 61400-1, Edition 3 with Amendment 1

This certificate attests compliance with IECRE OD-501 Ed. 2.0 as specified in subsequent pages. It is based on the following reference documents:

Design basis evaluation conformity statement
Dated

190022-CS-DB-01-1
11/06/2020

Design evaluation conformity statement
Dated

190022-CS-DE-01-1
11/06/2020

Type test conformity statement
Dated

190022-CS-TY-01-1
11/06/2020

Manufacturing conformity statement
Dated

190022-CS-MA-01-3
11/06/2020

Final evaluation report
Dated

190022-FI-BLA-01-1
11/06/2020

The conformity evaluation was carried out in accordance with the rules and procedures of the IECRE System www.iecre.org

The component specification begins on page 2 of this certificate and consists of 2 pages.

Changes in the system design or the manufacturer's quality system are to be approved by the Bureau Veritas Certification. Without approval, the certificate loses its validity.

This conformity statement is valid until: 10/12/2020

Approved for issue on behalf of the IECRE Certification Body:



Laurent Croguennec / pp. Eric Rouaix
President / Wind turbine certification Manager
Paris 11/06/2020

Bureau Veritas Certification France
60 Avenue du Général de Gaulle,
92046 Paris La Défense – France



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Wind Turbine(s)

Designer

Rotor blade designer
Certificate for Quality Management system acc. to ISO 9001

LM Wind Power
Bureau Veritas Certification
No. DK010197 version 2

Model

Blade name
Blade specification
Main drawing
Design life time

LM 71.0 P
BS-00690/A4 (Gen A)
BS-00889/A1 (Gen B)
BD-012497/A2
20 years

Main blade data

Blade length
Blade Material
Mass incl. flange, excl. stay bolts
Static moment to blade root
First eigenfrequency flapwise
First eigenfrequency edgewise

71031 mm \pm 0.1%
Glass Fiber Reinforced Polyester
21,129 kg \pm 3% (Gen A)
21,164 kg \pm 3% (Gen B)
4630.69 kNm \pm 4.5% (Gen A)
4643.85 kNm \pm 4.5% (Gen B)
0.438 Hz \pm 5% (Gen A)
0.437 Hz \pm 5% (Gen B)
0.777 Hz \pm 5% (Gen A)
0.778 Hz \pm 5% (Gen B)

Interface

Root flange outer diameter
Average bolt circle diameter
Number of bolts x bolt size

2869 mm \pm 1 mm
2743 mm \pm 2.7 mm
108 x M36

External conditions

Load report
Characteristic turbulence intensity
Annual average wind speed at hub height Vave
Air density
Outside survival temperature
Corrosion class for external parts
(acc. to DS/EN ISO 12944-2 ed. 2)

TR-10279/A2 (Gen A)
TR-10279/A3 (Gen B)
Within the limitations of loads defined in
load report
Within the limitations of loads defined in
load report
Within the limitations of loads defined in
load report
-30 °C to 40 °C
C5-M



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Wind Turbine(s)

Lightning protection system

Lightning protection level (I, II, III, IV)	I
Lightning protection system	Safe Receptor ILPS
Lightning protection system Component Certificate	CC-DNVGL-SE-0074-04682-0

Limits for the validity of the assessment

The conditions of validity of this certificate are listed in section 3.5 of the Final Evaluation report n°190022-FI-BLA-01-1.

The requirements to integrate the LM 71.0 P rotor blade Component Certificate in a wind turbine Type Certificate are given in section 3.4 of the Final Evaluation report n°190022-FI-BLA-01-1. In particular the aerodynamic data of the blade should be verified at a later stage.

Other related certificates

The following certificates shall be maintained as part of the present certificate:

- Certificate of Quality Management System according to ISO 9001:2015
- SAFE receptor ILPS component certificate, DNVGL Renewables

Outstanding issues

Full fatigue tests and post fatigue static tests must be completed (and assessed by Bureau Veritas Certification) to achieve a full component assessment.