



Certificate No.

**IECRE.WE.CC.19.0019-R0**

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

## COMPONENT CERTIFICATE

### Wind Turbine

This certificate is issued to

GE WIND FRANCE SAS  
Ile de Nantes, 11 rue Arthur III (Immeuble Insula)  
44200 Nantes  
FRANCE

for the component

HAL-X Tower

wind turbine class (class, standard, year)

Class IB, IEC 61400-1 Ed 4, 2019

This certificate attests compliance with IEC 61400 Series as specified in subsequent pages . It is based on the following reference documents:

Design basis evaluation conformity statement  
Dated

190038-CS-DB-01-0  
16-07-2019

Design evaluation conformity statement  
Dated

190038-CS-DE-01-0  
16-07-2019

Type test conformity statement  
Dated

Not applicable for tower

Manufacturing conformity statement  
Dated

190038-CS-MA-01-0  
16-07-2019

Final evaluation report  
Dated

190038-FI-TWR-01-0  
16-07-2019

The conformity evaluation was carried out in accordance with the rules and procedures of the IECRE System [www.iecre.org](http://www.iecre.org)

The component specification begins on page 2 of this certificate.

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: 15-07-2024

Approved for issue on behalf of the IECRE Certification Body:



Jean-Michel Audrain / pp. Eric Rouaix  
General Manager / Wind turbine certification Manager  
Paris 16-07-2019

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



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Applications

## **COMPONENT CERTIFICATE**

### **Wind Turbine(s)**

#### **Designer:**

Tower designer:

GENERAL ELECTRIC RENOVABLES  
ESPAÑA  
Lloyd's Register LRQA  
No. 10024923

Certificate for Quality Management system acc. to ISO 9001

#### **Machine parameters:**

Design life time:

25 years

Rotor speed:

7.8 rpm

#### **Other environmental conditions (where taken into account):**

Minimal outside operational temperature:

-10°C (over minus ten degrees Celsius)

Minimal outside survival temperature:

-20°C (over minus twenty degrees  
Celsius)

#### **Tower:**

Type:

Cylindrical steel tower with three  
sections

Sections:

Conical sections with L-shaped flanges

Mean diameter at bottom section:

7.93 m

Mean diameter at top section:

5.70 m

Length:

111.20 m

Main Drawings No.:

448W5098 dated on 2019/03/01  
448W5099 dated on 2019/03/01  
448W5100 dated on 2019/03/01  
448W9677 dated on 2019/03/15

#### **Loads**

Design loads for the component:

Specified in HAL-X Series Tower  
Design Evaluation WE-48514 rev B

#### **Interfaces:**

Nacelle:

Symmetric flange with 156xM48 10.9  
bolts

Foundation:

Symmetric flange with 180xM64 10.9  
bolts