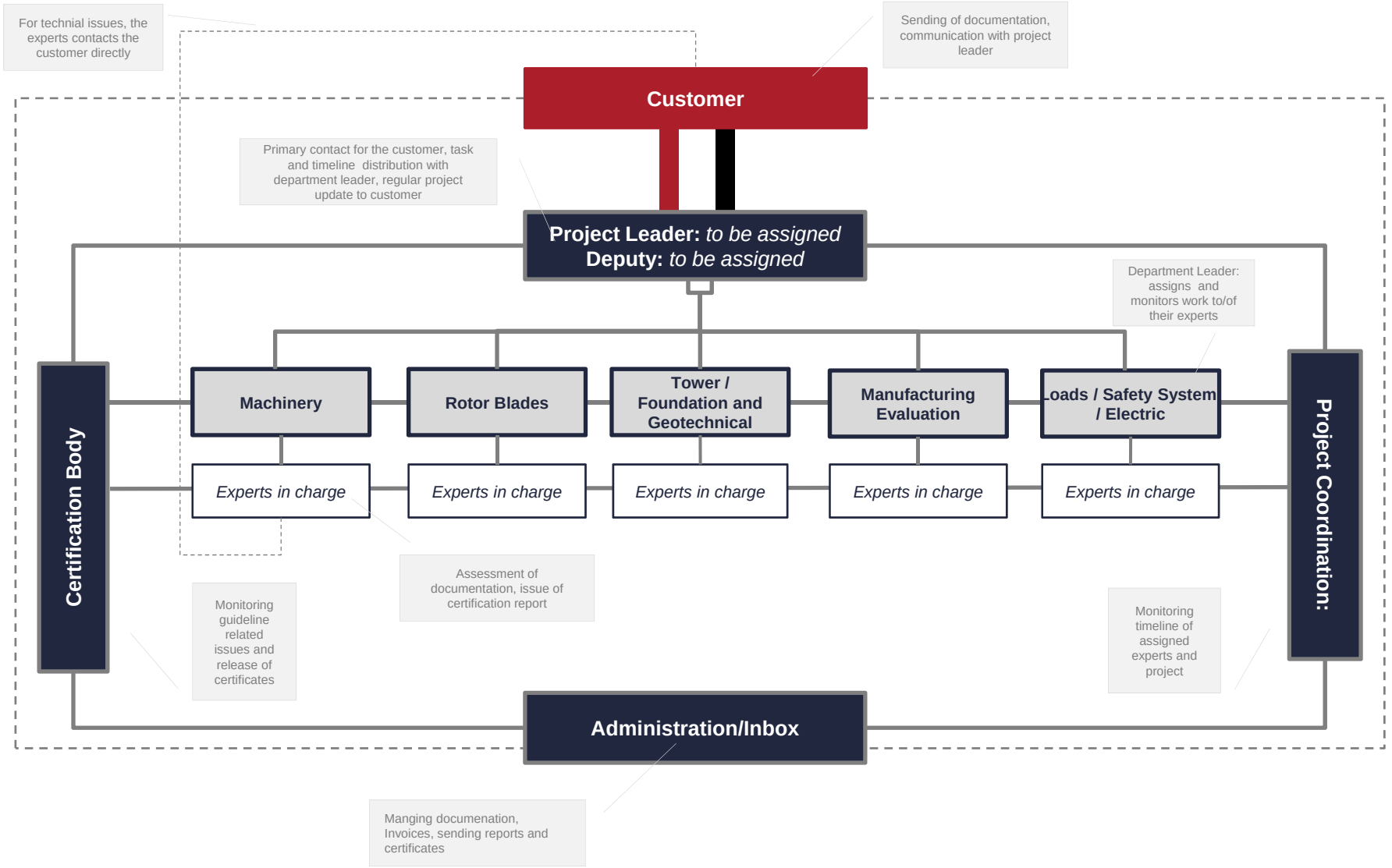
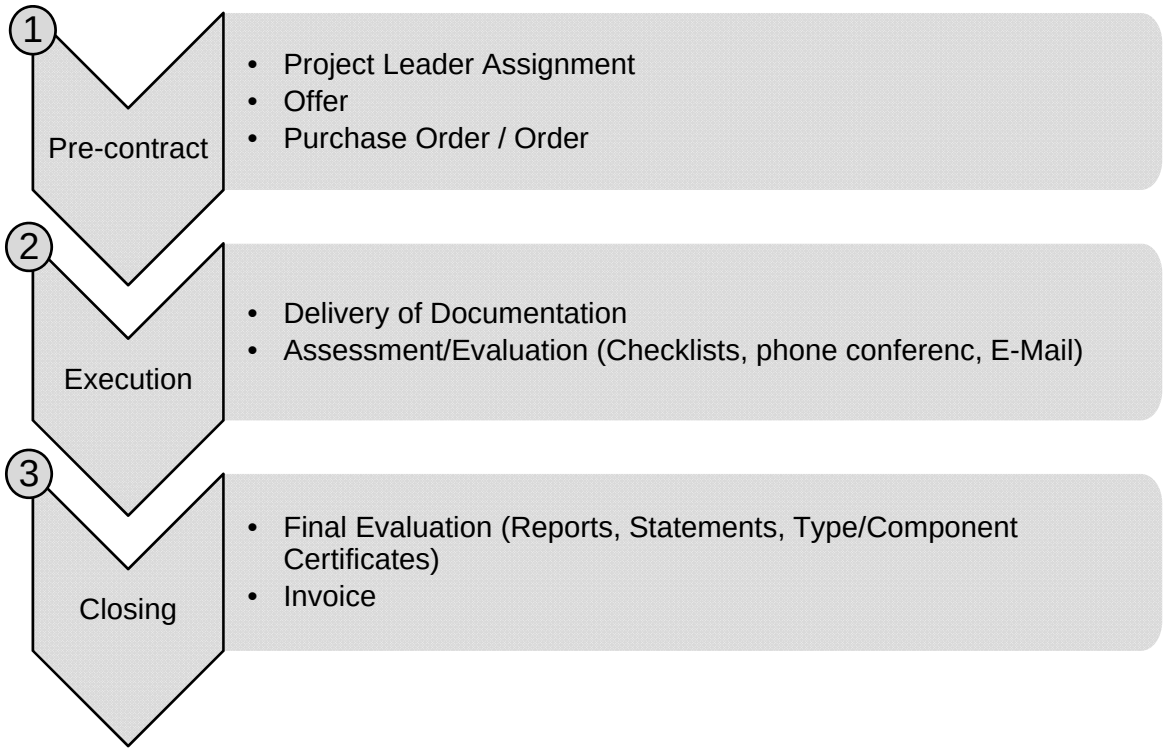
Certification Process

a UL company

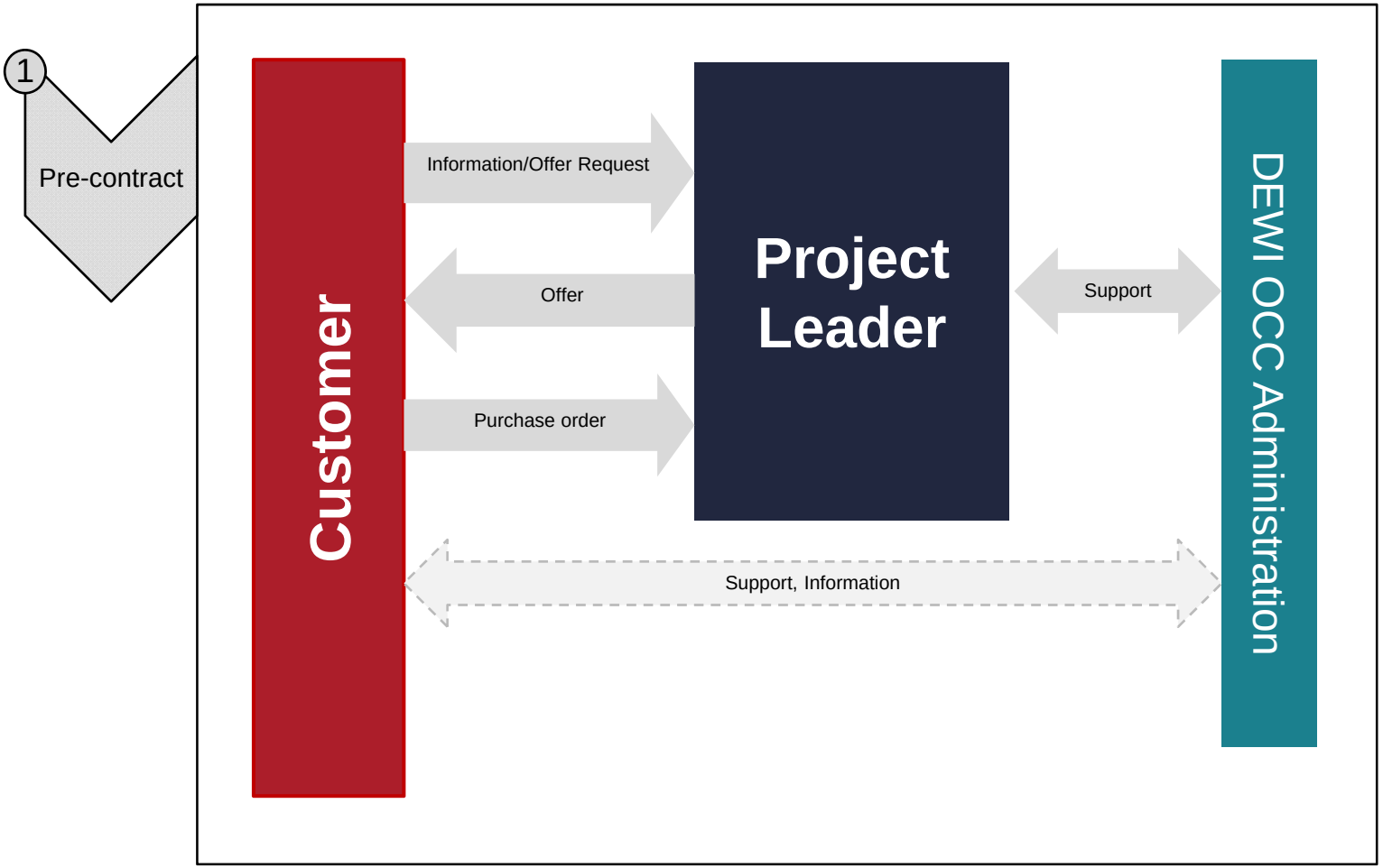
CERTIFICATION PROCESS: PROJECT TEAM



CERTIFICATION PROCESS: ADMINSTRATIVE



CERTIFICATION PROCESS: ADMINSTRATIVE



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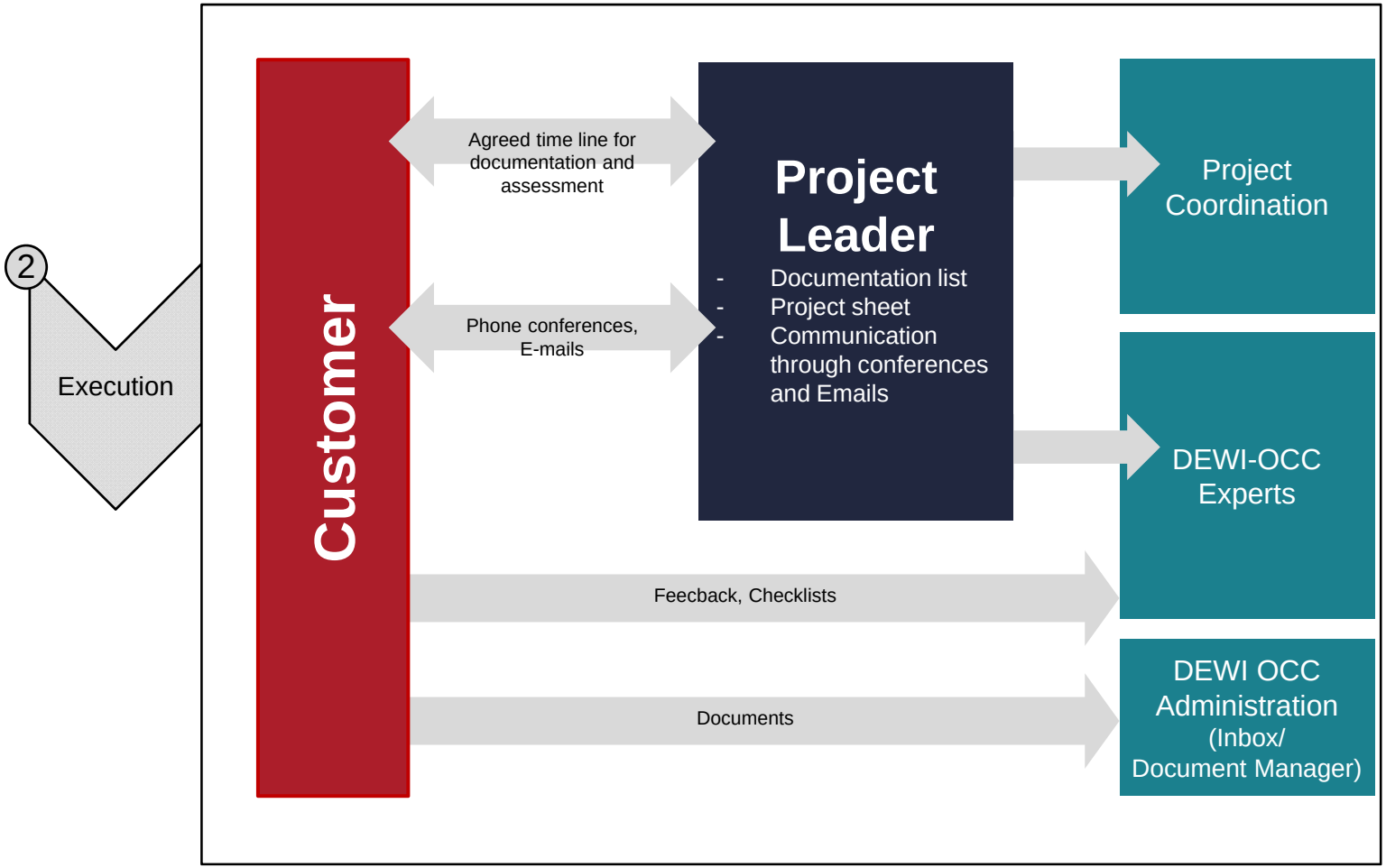

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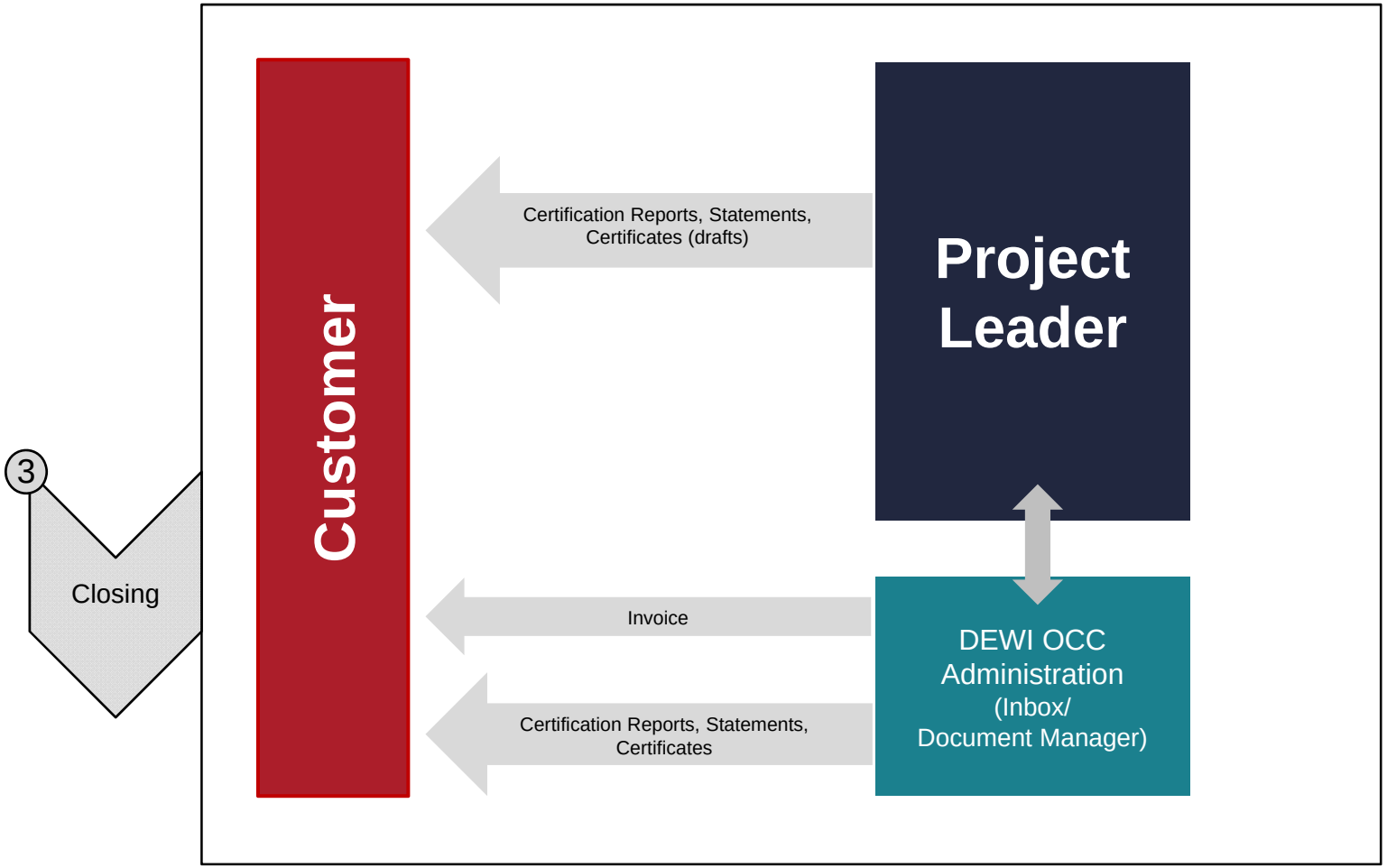


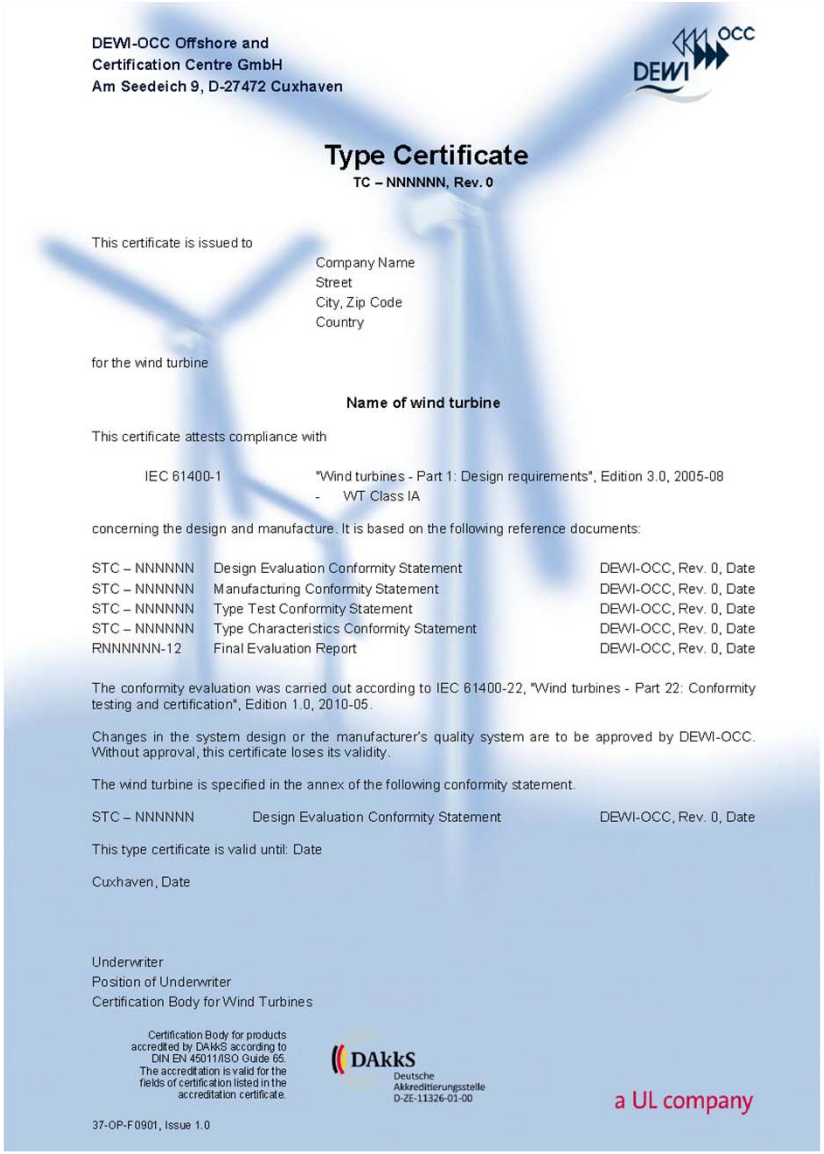
CERTIFICATION PROCESS: TECHNICAL

Design Evaluation

Manufacturing Evaluation

Type Testing

Type Characteristic Measurements (optional)



DEWI-OCC Offshore and
Certification Centre GmbH
Am Seedeich 9, D-27472 Cuxhaven

Type Certificate

TC – NNNNNN, Rev. 0

This certificate is issued to

Company Name
Street
City, Zip Code
Country

for the wind turbine

Name of wind turbine

This certificate attests compliance with

IEC 61400-1 "Wind turbines - Part 1: Design requirements", Edition 3.0, 2005-08
- WT Class IA

concerning the design and manufacture. It is based on the following reference documents:

STC – NNNNNN	Design Evaluation Conformity Statement	DEWI-OCC, Rev. 0, Date
STC – NNNNNN	Manufacturing Conformity Statement	DEWI-OCC, Rev. 0, Date
STC – NNNNNN	Type Test Conformity Statement	DEWI-OCC, Rev. 0, Date
STC – NNNNNN	Type Characteristics Conformity Statement	DEWI-OCC, Rev. 0, Date
RNNNNNN-12	Final Evaluation Report	DEWI-OCC, Rev. 0, Date

The conformity evaluation was carried out according to IEC 61400-22, "Wind turbines - Part 22: Conformity testing and certification", Edition 1.0, 2010-05.

Changes in the system design or the manufacturer's quality system are to be approved by DEWI-OCC. Without approval, this certificate loses its validity.

The wind turbine is specified in the annex of the following conformity statement.

STC – NNNNNN	Design Evaluation Conformity Statement	DEWI-OCC, Rev. 0, Date

This type certificate is valid until: Date

Cuxhaven, Date

Underwriter
Position of Underwriter
Certification Body for Wind Turbines

Certification Body for products accredited by DAkkS according to DIN EN 45011/ISO Guide 65. The accreditation is valid for the fields of certification listed in the accreditation certificate.

DAkkS Deutsche Akkreditierungsstelle D-ZE-11326-01-00

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37-OP-F0901, Issue 1.0

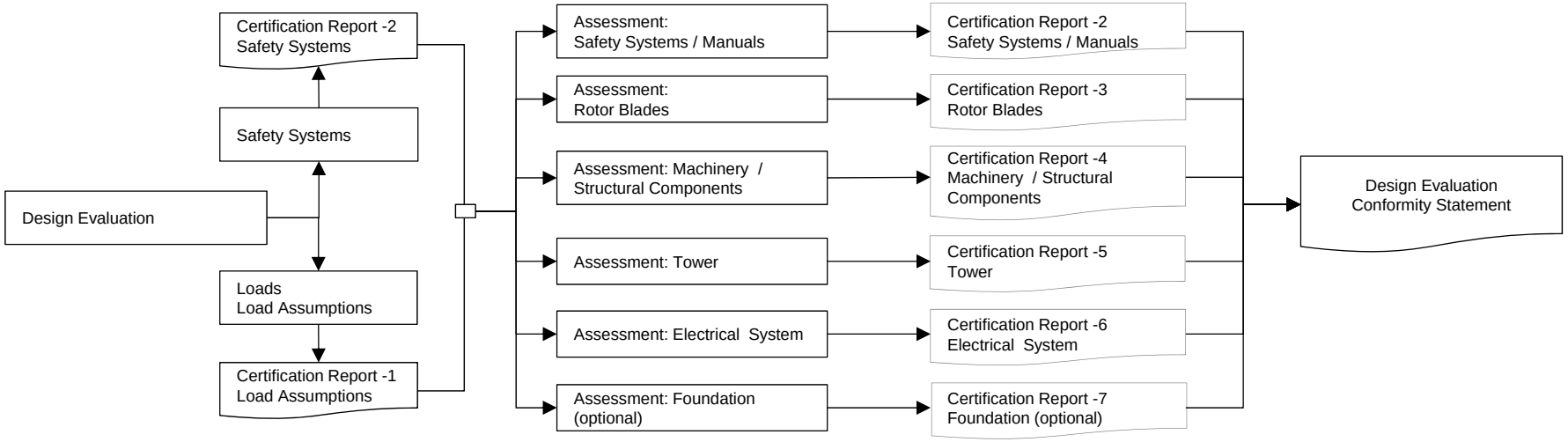
a UL company

CERTIFICATION PROCESS: TECHNICAL

Design Evaluation

1. Load Assumptions
2. Safety System and Manuals
3. Rotor Blade
4. Machinery
5. Tower
6. Electrical System
7. Foundation

CERTIFICATION PROCESS: TECHNICAL

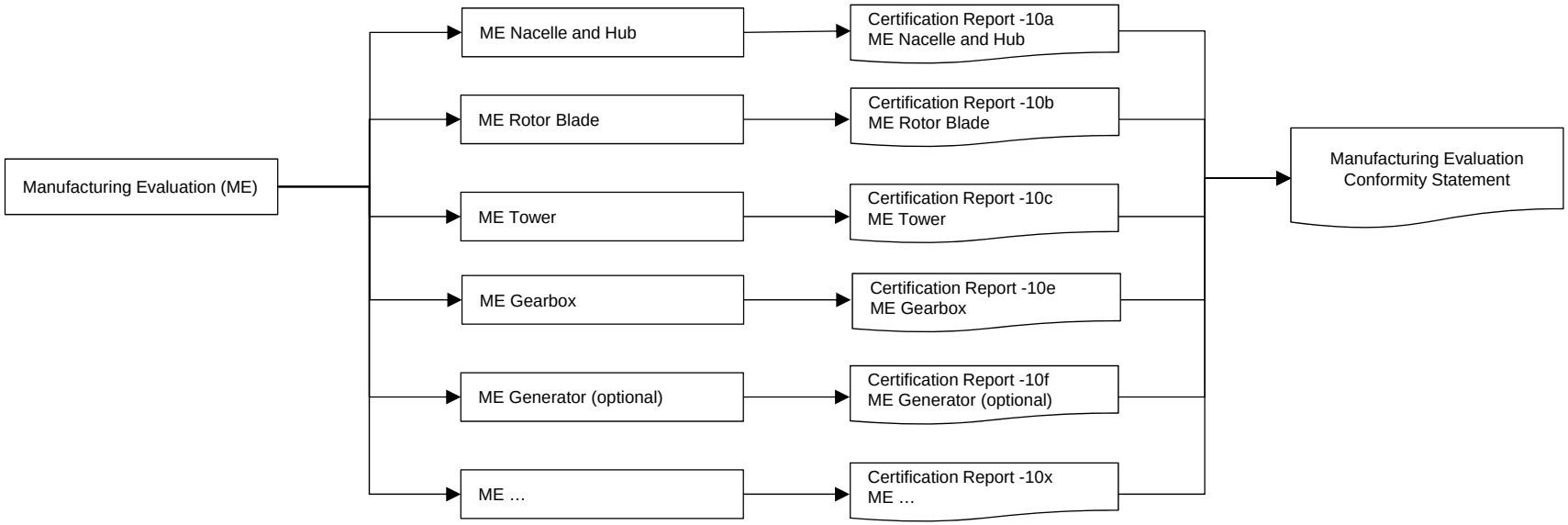


CERTIFICATION PROCESS: TECHNICAL

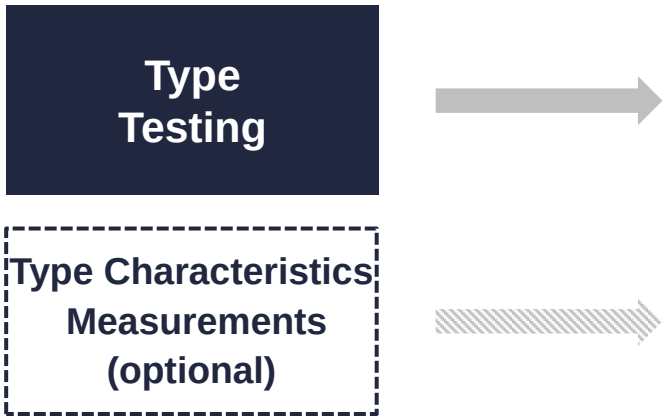
Manufacturing Evaluation

1. Nacelle and Hub
2. Rotor Blade
3. Tower
4. Gearbox
5. …

CERTIFICATION PROCESS: TECHNICAL

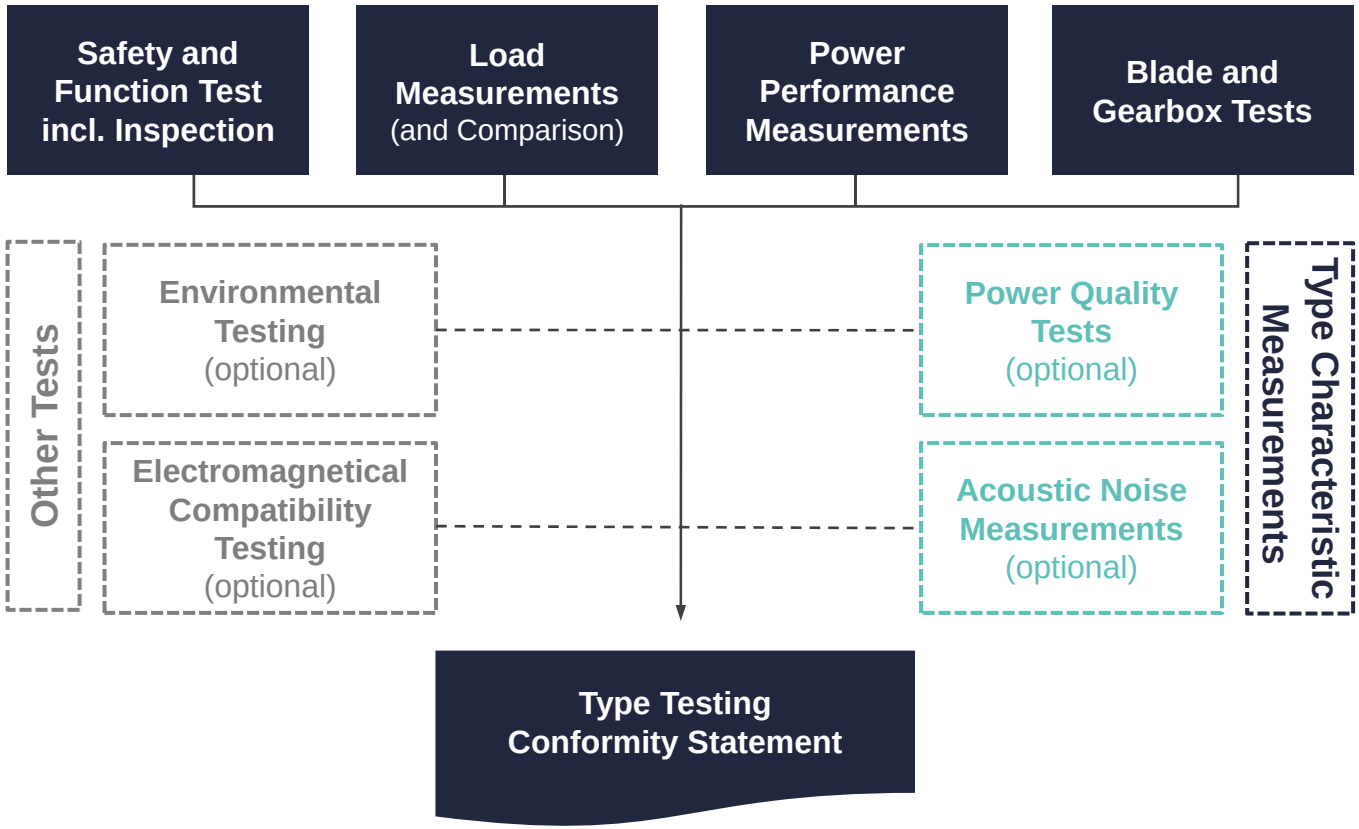


CERTIFICATION PROCESS: TECHNICAL

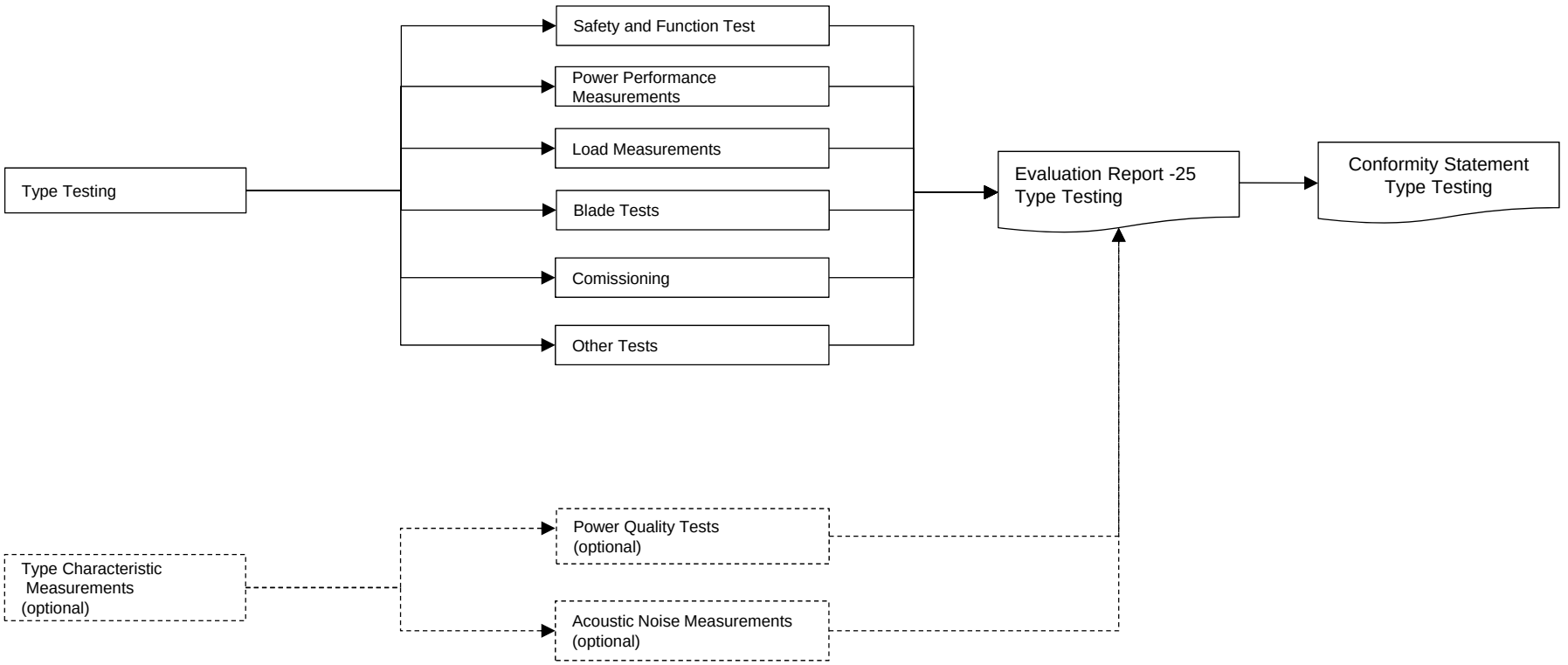


1. Type Measurements
   - i. Safety and Function Tests
   - ii. Mechanical Load
   - iii. Power Performance
   - iv. Noise
   - v. Power Quality
2. Tests
   - i. Gearbox Field Test
   - ii. Rotor Blade Full Scale Test
3. Validation of Simulation Model
4. Power Quality Tests (optional)
5. Acoustic Noise Measurements (optional)

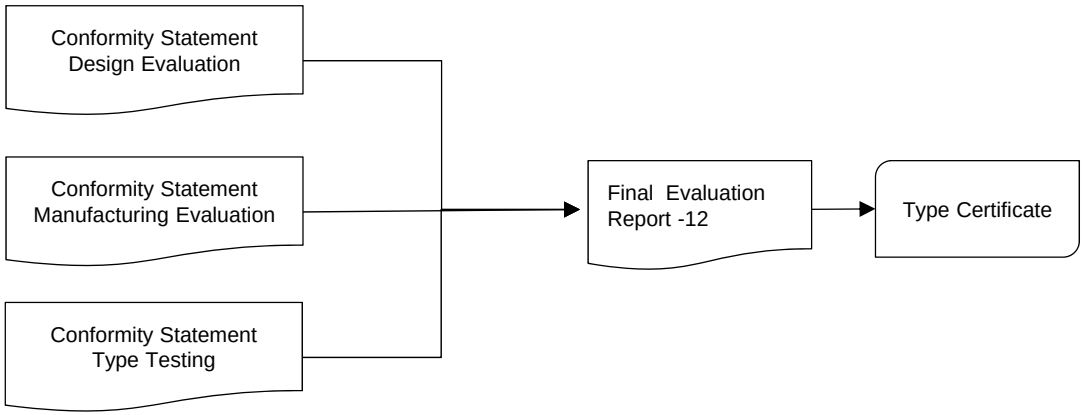
CERTIFICATION PROCESS: TECHNICAL



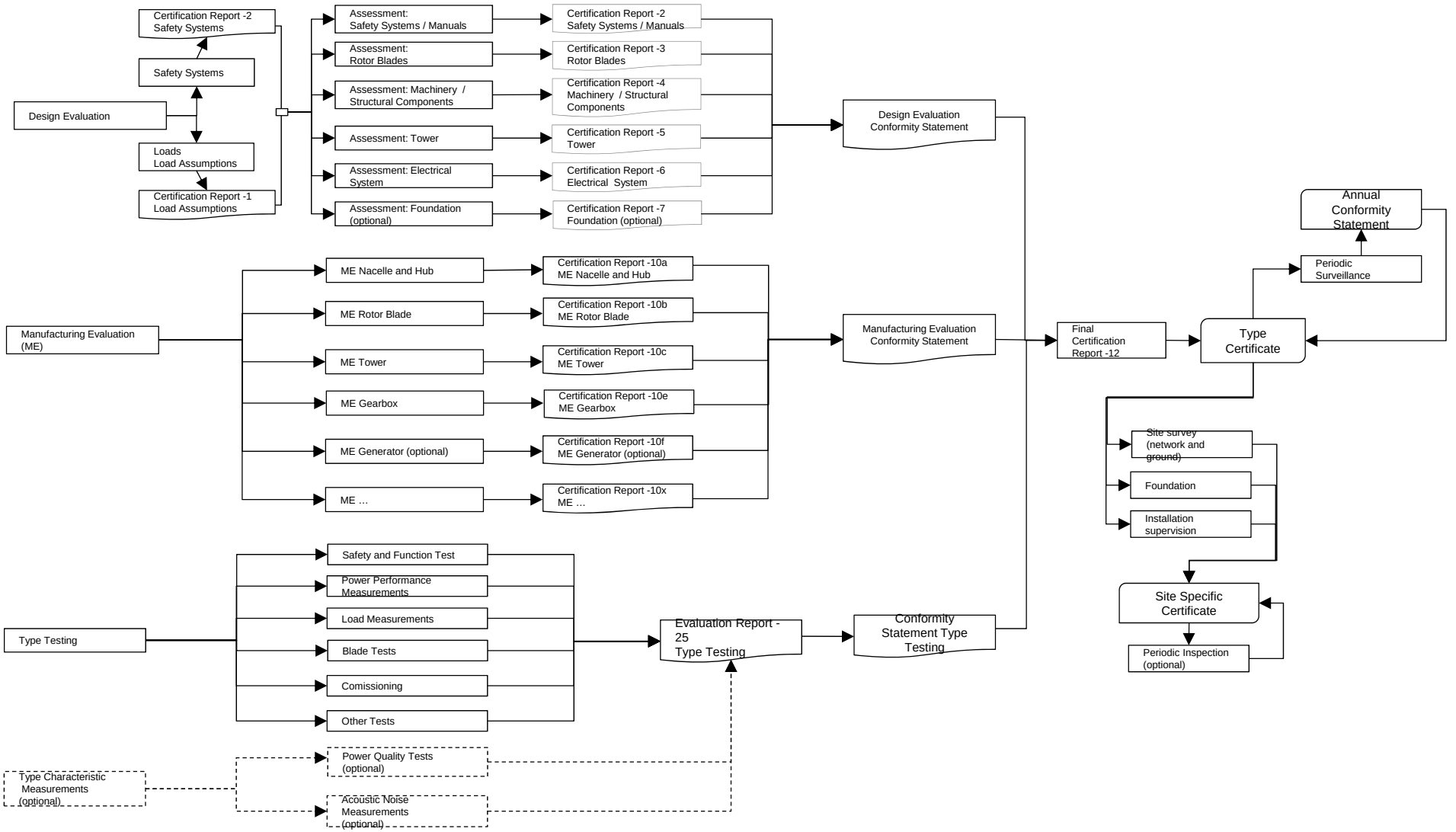
CERTIFICATION PROCESS: TECHNICAL



CERTIFICATION PROCESS: TECHNICAL



CERTIFICATION PROCESS: TECHNICAL



a UL company

CERTIFICATION SCHEMES

Type Certification

Onshore

- IEC WT01
- IEC 61400-22
- GL 2003/2004
- GL 2010
- DIBt 2004

Offshore

- GL 2005
- GL 2012

Project Certification

Onshore

- IEC WT01
- IEC 61400-22
- GL 2003/2004
- GL 2010
- DEWI OCC 37-OP-S0852

Offshore

- BSH Standards
- DNV-OS-J101, 2007/2009
- DEWI OCC 37-OP-S0852

GL

- Type Certificate
  - STC DA
  - STC IPE
  - STC PT
- Project Certificate

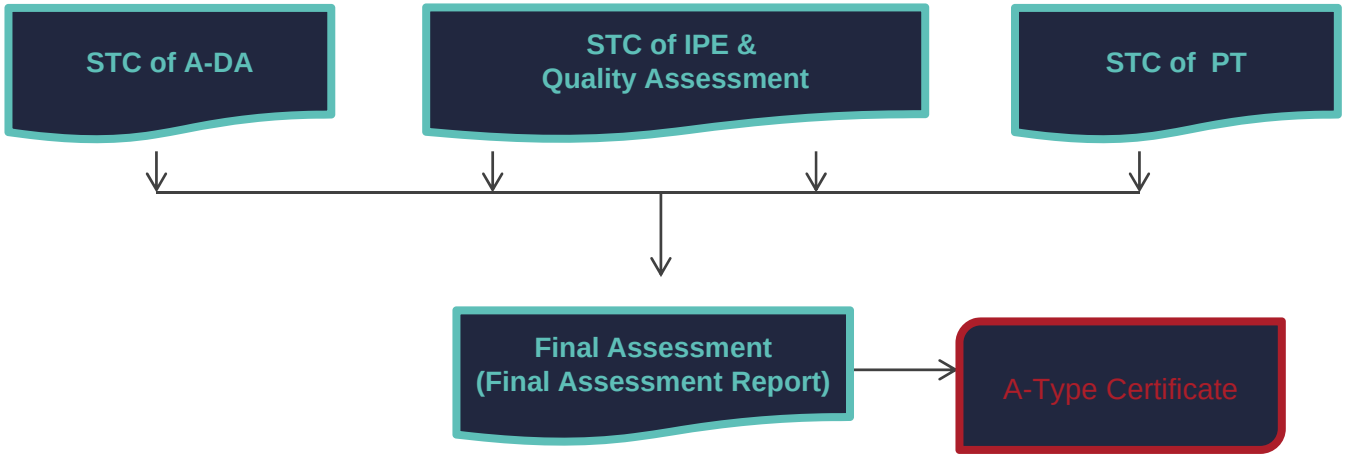
IEC

- Type Certification
  - Design
  - ME
  - TT
- Project Certificate

CERTIFICATION SCHEMES: GL

Type Certification

(GL 2003/2004 and/or GL 2010)



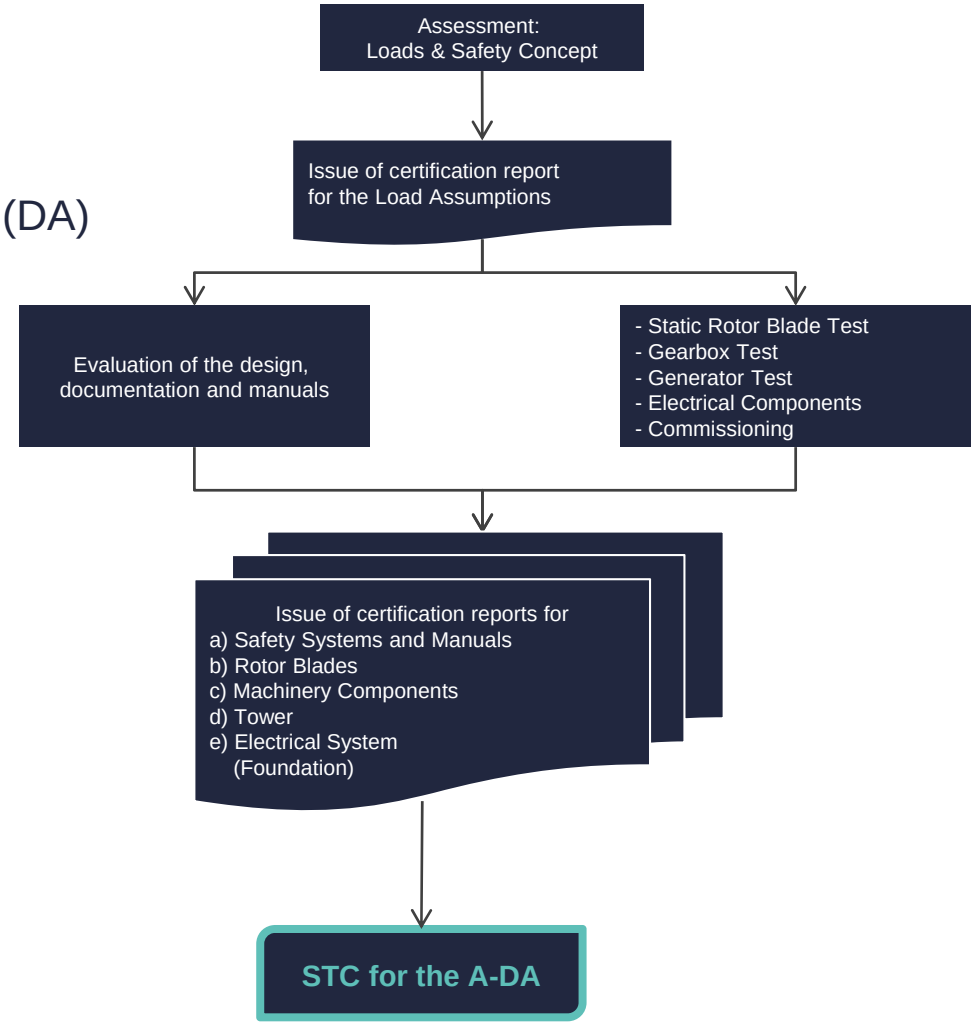
Source: GL 2010, Guideline for the Certification of Wind Turbines, Fig. 1.2.1 Elements of the Type Certificate, Chapter 1, page 4.

CERTIFICATION SCHEMES: GL

Type Certification

(GL 2003/2004 and/or GL 2010)

STC for the A-Design Assessment (DA)

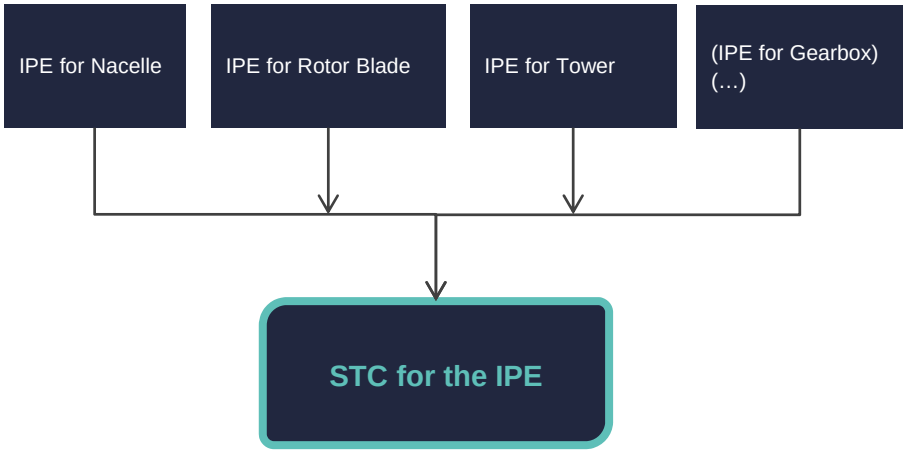


CERTIFICATION SCHEMES: GL

Type Certification

(GL 2003/2004 and/or GL 2010)

STC for the Implementation of design related requirements for production and erection (IPE)



Source: GL2010, Guideline for the Certification of Wind Turbines, 1.2.2.5 Implementation of the design-related requirements in Production and Erection (IPE), Chapter 1, page 7-9.

CERTIFICATION SCHEMES: GL

Type Certification

(GL 2003/2004 and/or GL 2010)

STC for the Prototype Testing (PT)

Evaluation of documentation of prototype testing (e.g. load measurement, power curve)

Comparison of the measurement results with the assumption for design (validation of load simulation)

Comparison of the measurement results with the assumption for design (validation of load simulation)

Summarizing report

Simulation Model

„comparison of“

Real turbine

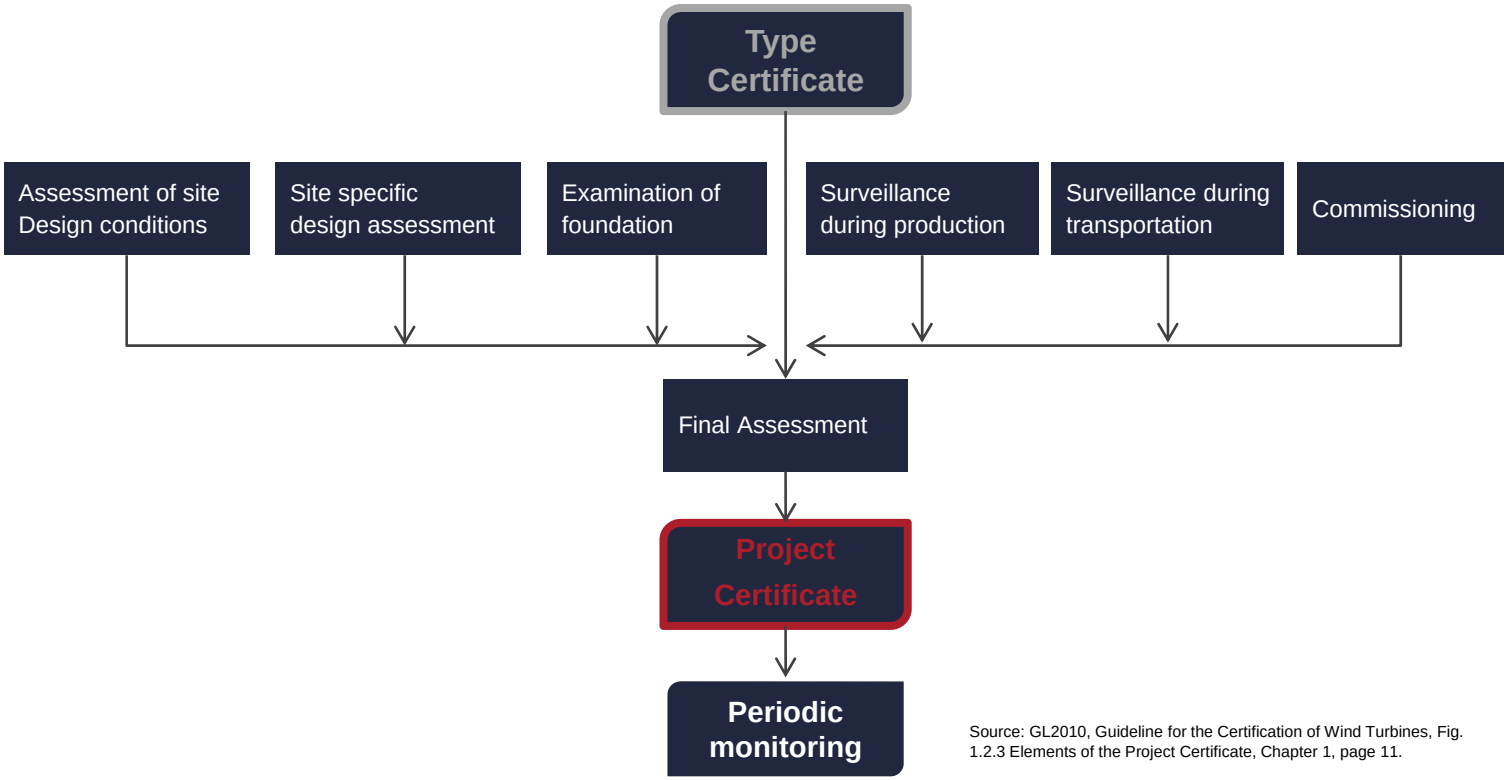
STC for the PT

Source: GL 2010, Guideline for the Certification of Wind Turbines, 1.2.2.7 Protoype Testing, Chapter 1, page 10.

CERTIFICATION SCHEMES: GL

Project Certification

(GL 2003/2004 and/or GL 2010)

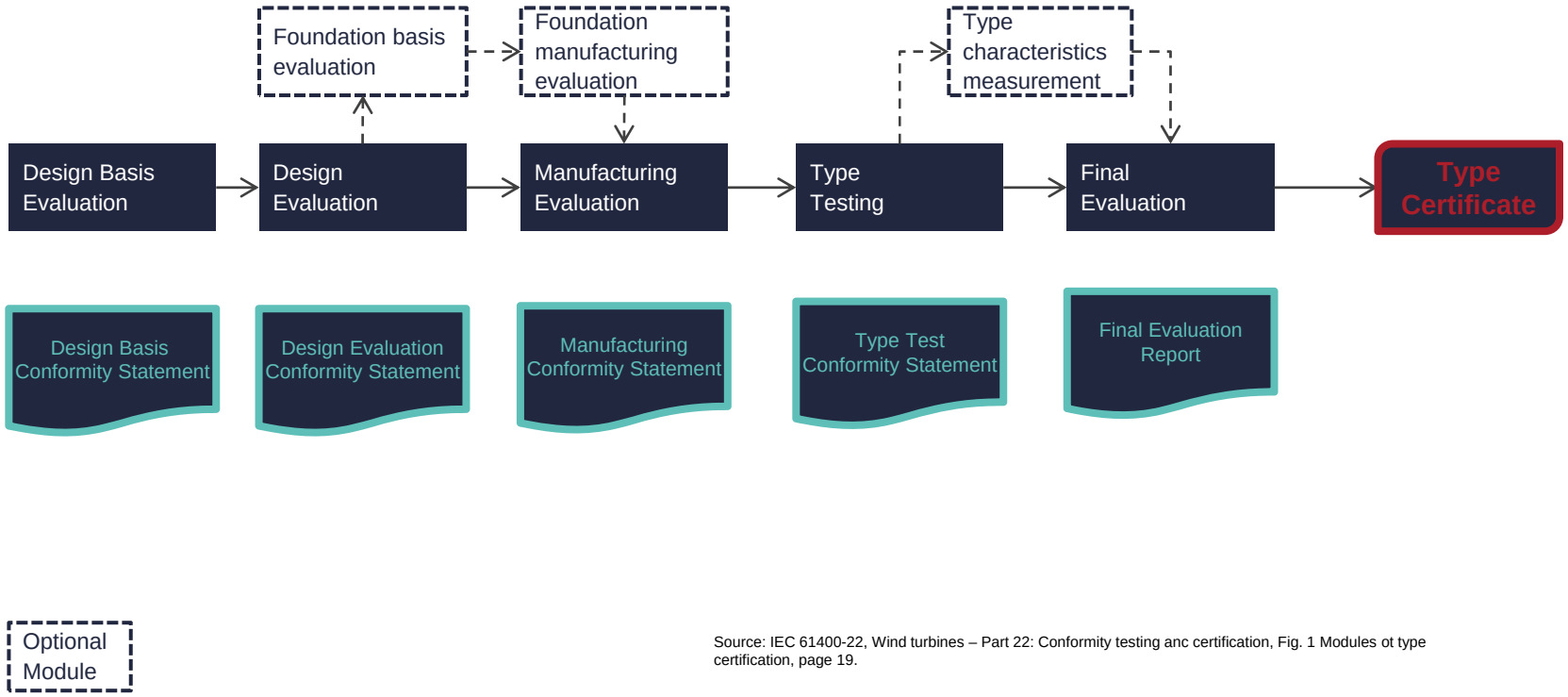


Source: GL2010, Guideline for the Certification of Wind Turbines, Fig. 1.2.3 Elements of the Project Certificate, Chapter 1, page 11.

CERTIFICATION SCHEMES: IEC

Type Certification

(IEC WT 01 or IEC 61400-22)

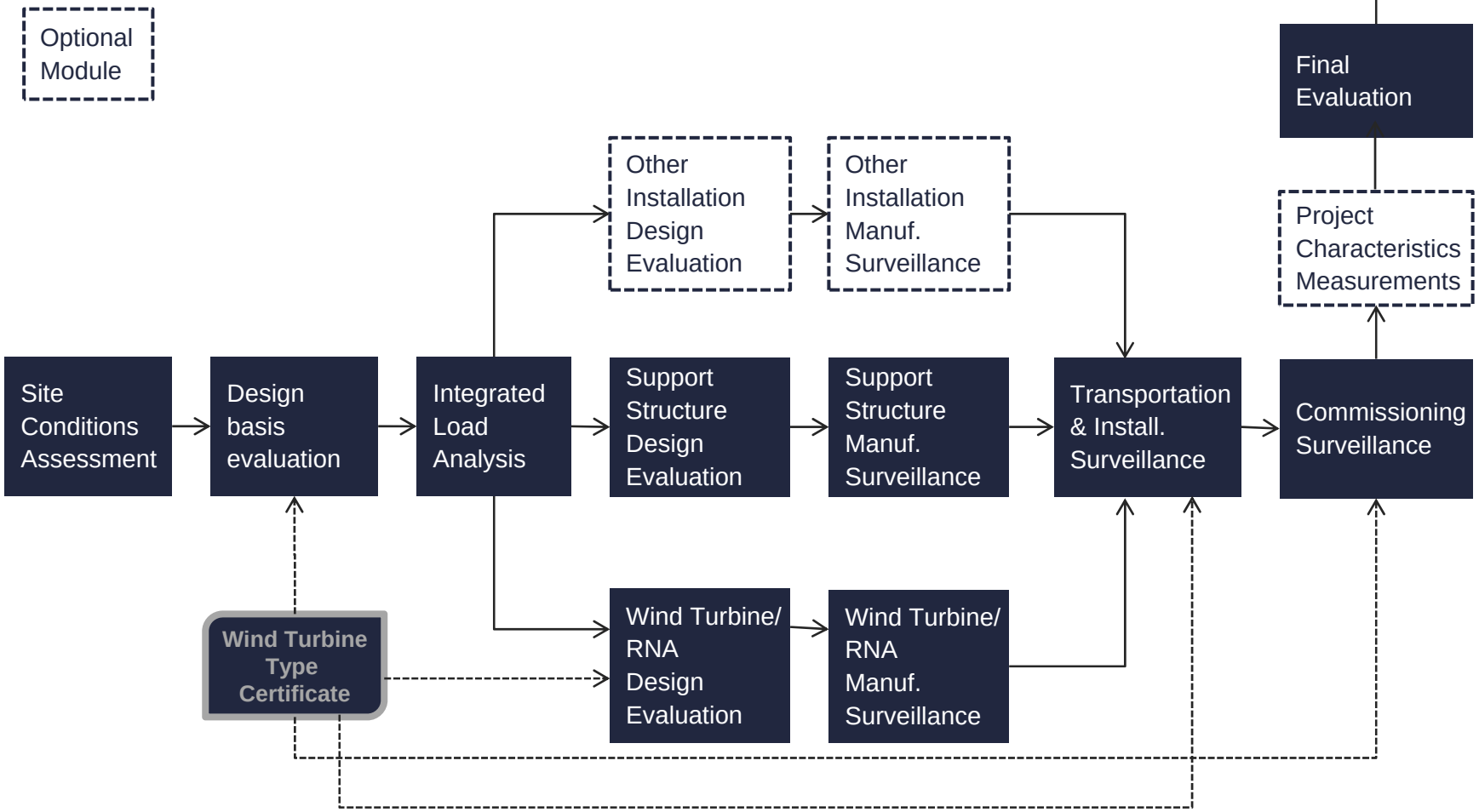


Source: IEC 61400-22, Wind turbines – Part 22: Conformity testing anc certification, Fig. 1 Modules ot type certification, page 19.

CERTIFICATION SCHEMES: IEC

Project Certification

(IEC WT 01 or IEC 61400-22)

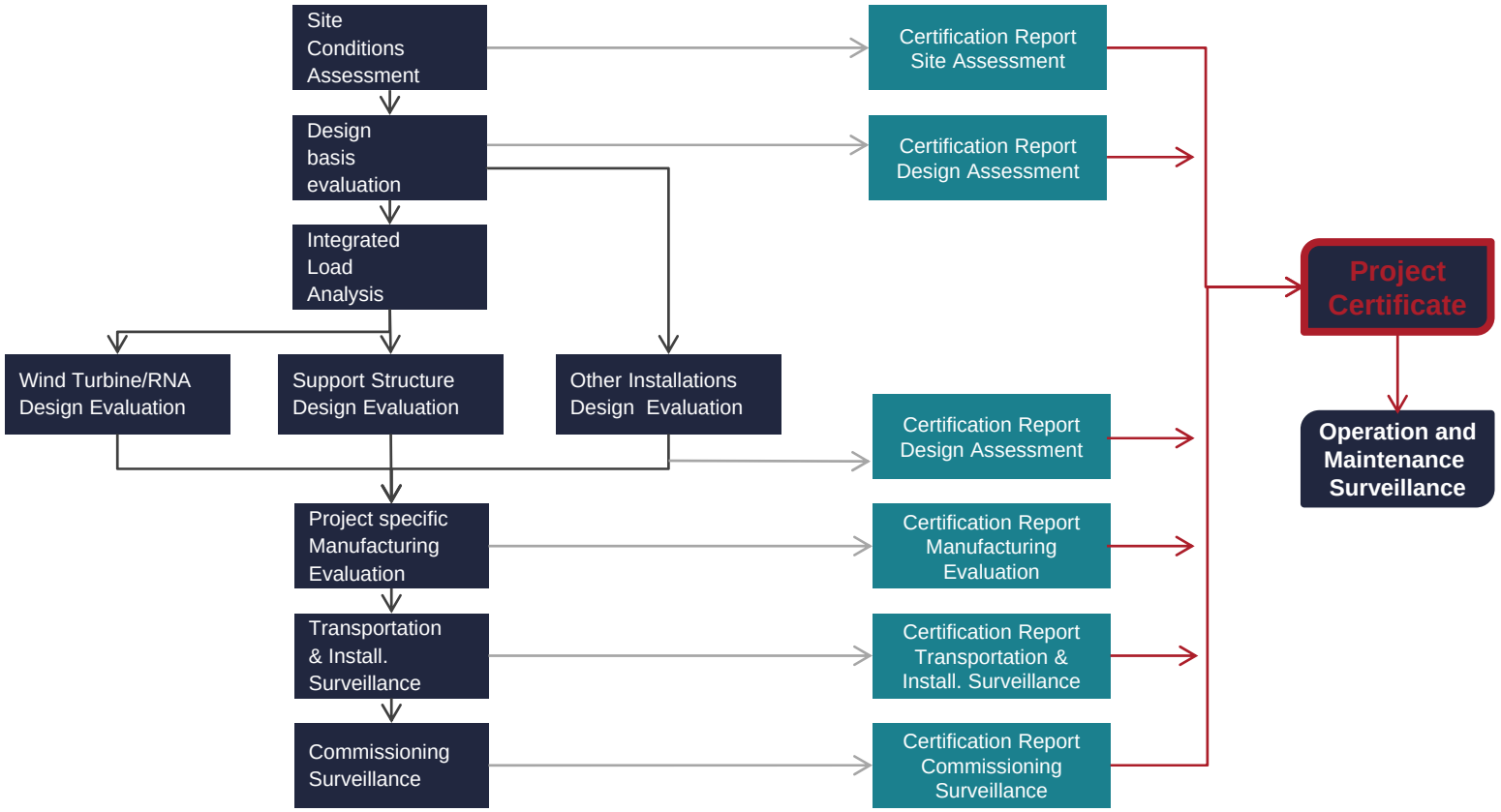


RNA
Rotor Nacelle Assembly

CERTIFICATION SCHEMES: IEC

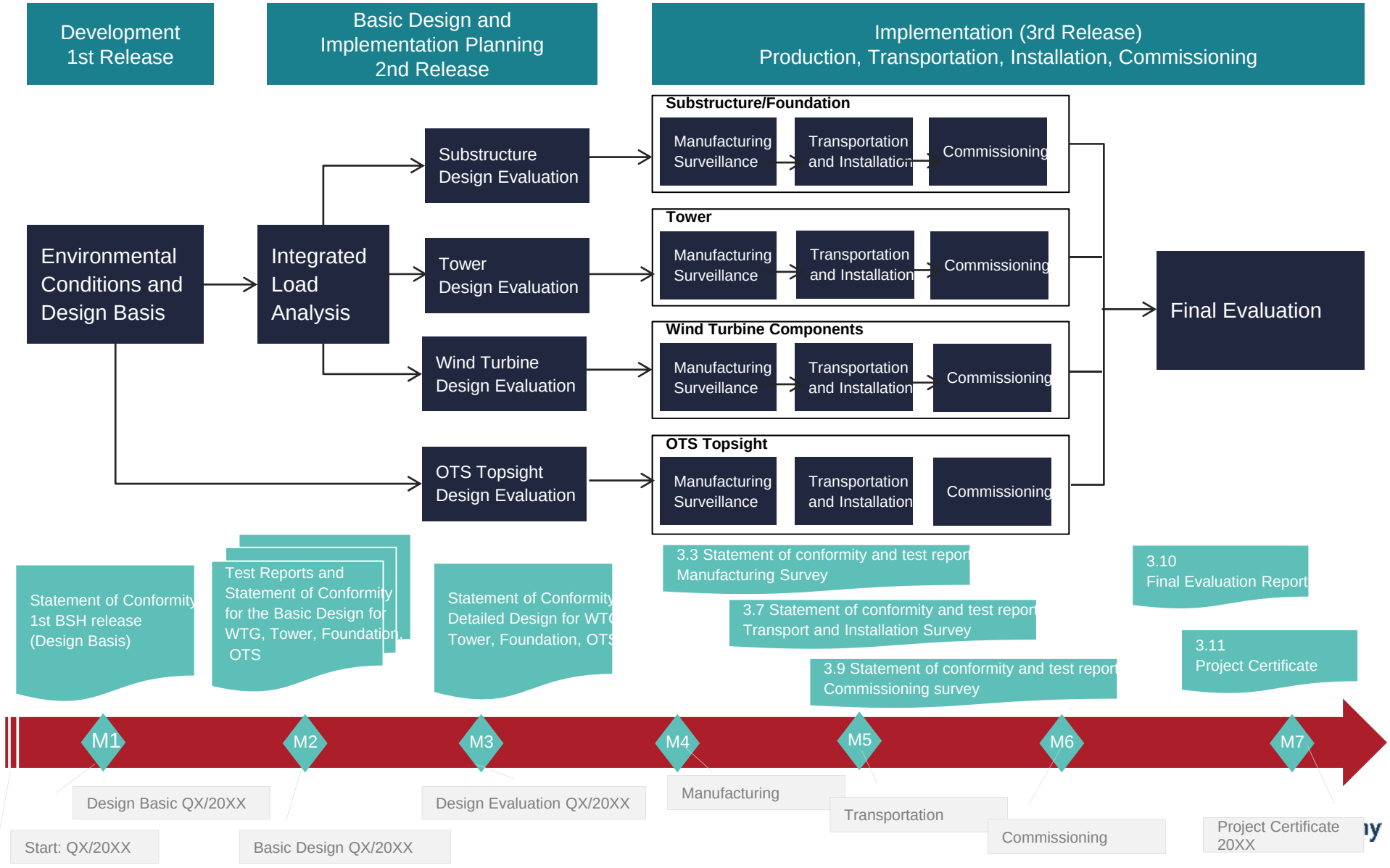
Project Certification

DEWI-OCC 37-OP-S0852



CERTIFICATION SCHEMES

Project Certification (BSH)



Introduction of DEWI-OCC

A Global Certification Provider serving the Wind Energy Industry

a UL company