Certification- Bridging Gap towards Commercialization

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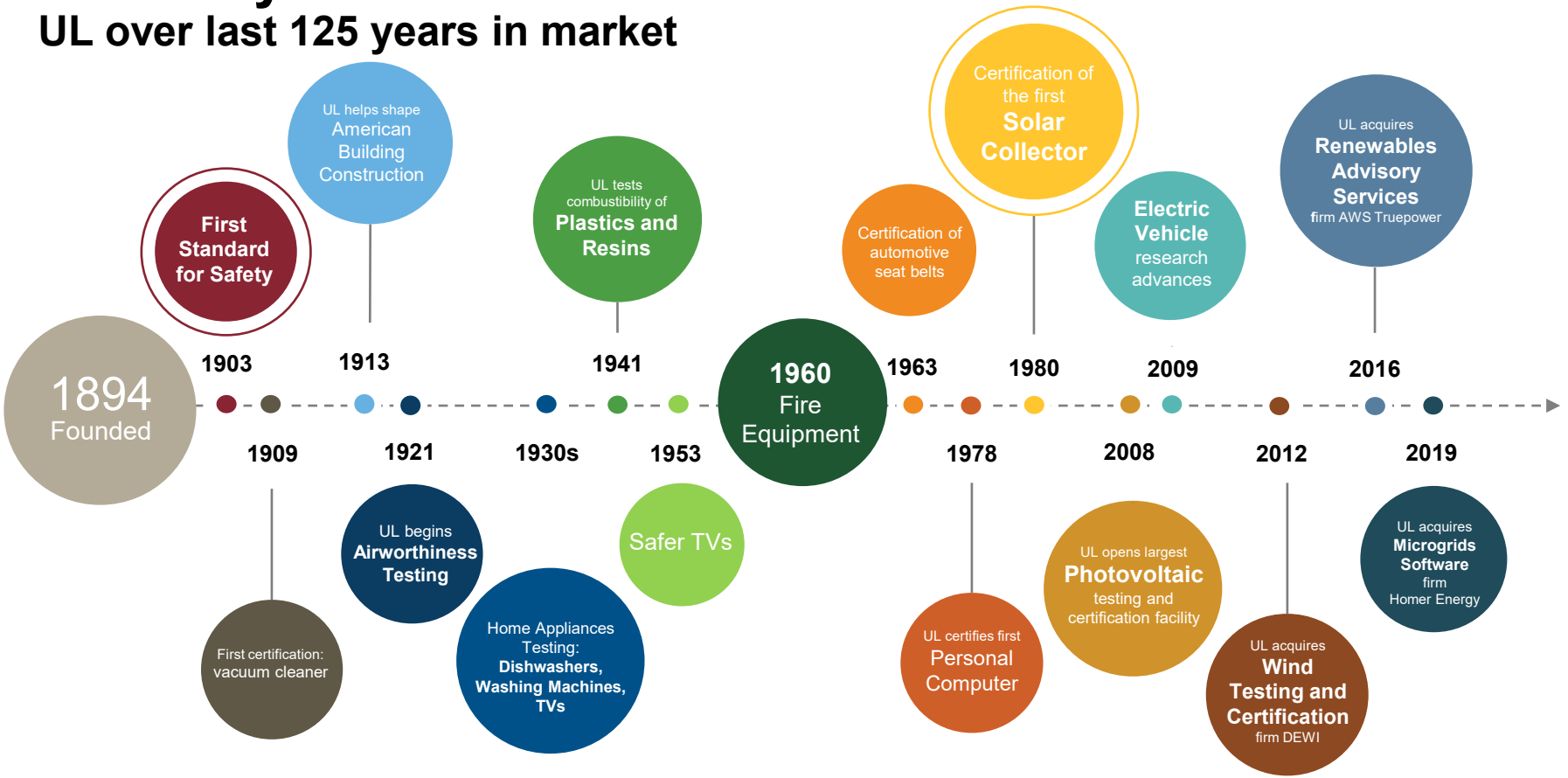
A History of Trust

UL over last 125 years in market



Certification

“procedure by which a **third party** gives written **assurance** that a **product, process or service** conforms to specified requirements, also known as conformity assessment”

IEC 61400-22

Why to certify?

TRUST **SAFETY** **QUALITY**

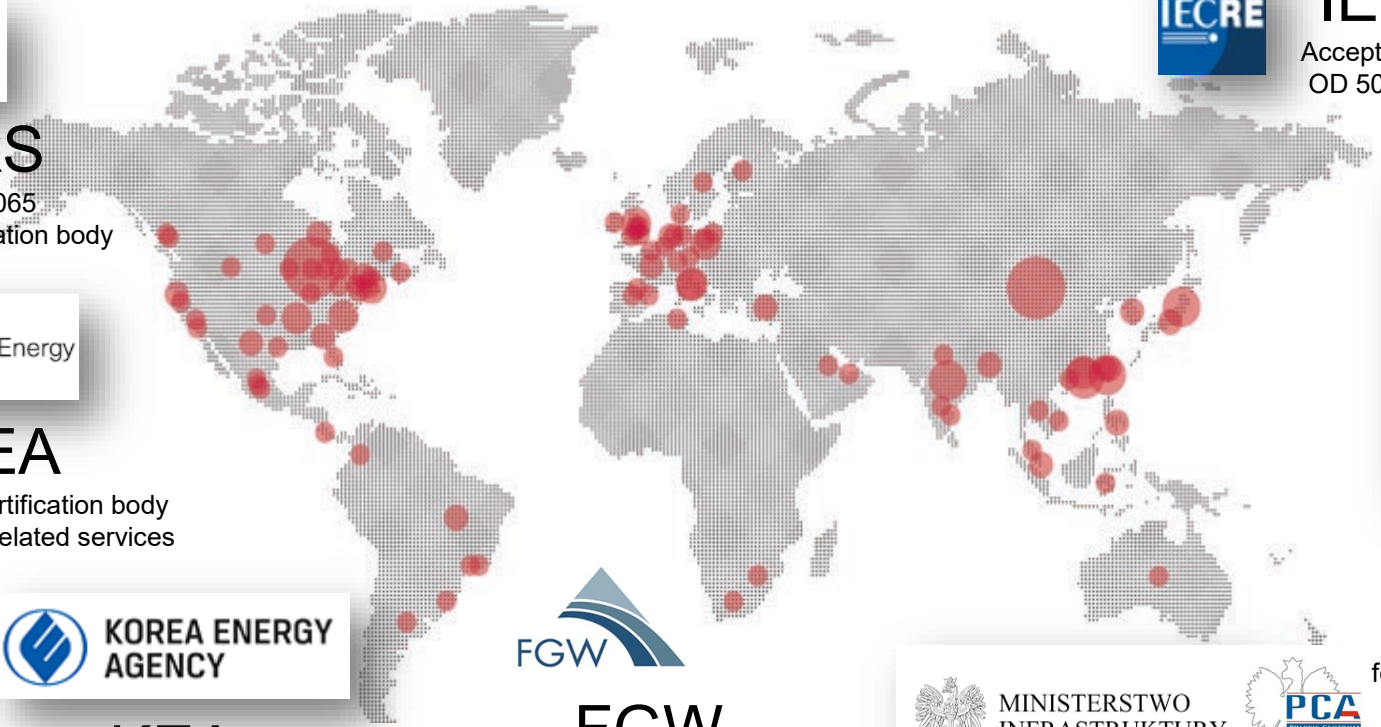
1. **Avoid biases** through independent third party

2. Ensure **trust** in the technology (**safety and structural integrity**) through conformity assessments

3. **Risk mitigation** for project planning and investment

4. **Quality** assurance, **commercialization** of the product

How we certify?



DAkkS

ISO/IEC 17065
Accredited certification body

DEA

Recognized certification body
for entire wind related services

KEA

Accepted certification body for
design and type test evaluation

FGW

Accepted for equipment, component, unit certification, and type A and type B system certification

IECRE

Accepted RECB for
OD 501 & OD 502

BSH

Recognized
certification body
for offshore projects

Polish Offshore Recognition with PRS

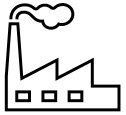
Committee Participation

- BSH Arbeitskreis Klarstellung
- BWE (Weiterbetrieb)
- DKE AK383.0.5 (IEC 61400-5, -23)
- DKE TBKON / REMC
- FGW AG TR4 - EZA-Regler Modelle
- FGW AK TR4
- FGW AK TR8
- FGW AG TR4 - EZA-Regler Modelle
- FGW FAEE
- IEA Task 52
- IEC TC 88 MT01
- IEC TC 88, IEC61400-50-4
- IEC TC88 PT5 (IEC 61400-5)
- IECRE OD501-1
- IECRE OD501-2
- IECRE OD501-4
- IECRE WG 006
- IECRE WG 008
- IECRE WG 011
- IECRE TF 009
- IECRE WG 501
- IECRE WG010 GCC
- NTS GTSub
- PTPiREE PL GCC
- WAB Arbeitskreis Gründungsstrukturen

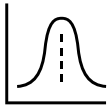
Key aspects within Certification

Design

Manufacturing



Testing



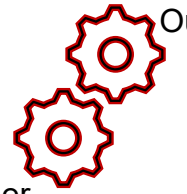
Transport and Installation

Comissioning

Core Certification Services

Component	Type	Project/Wind farm
Certification of a wind turbine component like gearbox, blades, floaters etc. as stand-alone as per design assumptions and specific standards	Certification of a type of wind turbines as per design assumptions and specific standards (Tower / Foundation optional)	Certification of complete wind farm including site evaluations, integrated load evaluation, and foundation.

Certification services at earlier stage



Proof of Concept

Objective is to ensure that the design is conceptually acceptable and feasible. Scaled model or component test can be a part during conceptual evaluation. Aim is to mitigate the risk of non-compliance development of the product in **R&D** which can lead to rejection for the market. This can be supported further via **„Certification accompayining Services**“.

Process Certification

As a part of the design evaluation through inspection (remote or physical) at the designer‘s office. The component design process shall be demonstrated by the customer, for all design phases starting from the used inputs and ending at the finalized component design office. Aim is risk mitigation of development of similar products certified trough the same process „**Scalability**“

For more information

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Thank you

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