Introduction on Certification and Testing of Wind Turbine in China

China General Certification Center (CGC)
June, 2013

Zhang Yu
Content

- Who’s CGC
- Certification requirements and standards.
- Grid connection requirements
- Trends.
Accredited since 2008 by China National Accreditation Service for Conformity Assessment (CNAS) - a IAF member

For wind turbine certification and type testing.

According to IEC standards.
Who’s CGC

We focus on

Wind  Solar

Energy  Bio-energy

Low-carbon

For wind energy we provide:

- Standards Development
- Certification
- Testing
- Industry Study & Consulting
- Wind farm services (due diligence etc.)
- Training

- Founded in 2003 with the authorization of the government
- Earliest and biggest in wind
- Named as National Energy Lab for Wind & Solar Simulation, Testing & Certification
- Located in Beijing with 130+ employees.
- IEC TC 88 and CAC CBC member.
整机测试 Wind Turbines Testing:
- 功率特性 Power performance measurement
- 电能质量 Power quality measurement
- 载荷 Mechanical load measurement
- 噪声 Acoustic noise measurement

部件测试 Component Testing:
Rotor blade test facility:
- Static testing and Fatigue testing
- The blade length up to 100m
- Blade Material testing
- Generator, bearing and drive chain testing facility (under construction)
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Certification requirements in China

- IEC series standards
- Not compulsory
- Required by all the developers
- Design evaluation will do currently
- International certificate recognition well implemented
Main references for wind turbines:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Title</th>
<th>Corresponding Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 61400-22 Edition 1.0 2010-05</td>
<td>Wind turbine-Part 22: Conformity testing and certification</td>
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<tr>
<td>IEC 61400-3 First Edition 2009-02</td>
<td>Wind Turbines-Part3: Design Requirements for Offshore Wind Turbines</td>
<td>GB/T 18451.3-xxxx, IDT (Progressing)</td>
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</tbody>
</table>
# Main references for wind turbines:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Title</th>
<th>Chinese Standard</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 61400-12-1 First Ed. 2005-12</td>
<td>Wind Turbines-Part12-1: Power Performance Measurements of Electricity Producing Wind Turbines</td>
<td>GB/T 18451.2-2012, IDT</td>
<td></td>
</tr>
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Situation

• Temporarily required by the government
• Work scope under discussion
• For the moment Power Quality, LVRT & Active/reactive power performance testing are required (by the end of 2014)
• Test labs: CEPRI and CGC
Standards

- IEC 61400-21-2008 Wind turbines - Part 21 Measurement and assessment of power quality characteristics of grid connected wind turbines
- GB/T 19963-2011 《Technical rule for connecting wind farm to power system》
- Q/GDW 392-2009 《Technical Rule for connecting wind farm into power grid》
Requirements of LVRT

Basic requirements in GB/T 19963-2011
Requirements of LVRT

Worldwide requirements
Content

■ Who’s CGC
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Wind energy development in China
Wind energy development in China

- Plan of installation by the government (Sep, 2012)
- Unit: GW
- 2012 data from CGC

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2015</th>
<th>2020</th>
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<tbody>
<tr>
<td>Onshore</td>
<td>74.9</td>
<td>99</td>
<td>170</td>
</tr>
<tr>
<td>Offshore</td>
<td>0.39</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>75.3</td>
<td>104</td>
<td>200</td>
</tr>
<tr>
<td>Wind percentage</td>
<td>2%</td>
<td>3%</td>
<td>5%</td>
</tr>
</tbody>
</table>
Trends

National Standards

- New national standards are being developing
- As supplements to cover common environmental condition which the IEC standards don’t. such as,
  - Low temperature;
  - High altitude;
  - Typhoon condition.
- No conflicts with existing IEC standards
Certification and other

- Type Certification will be required by the market
- Site-specific assessment may be demanded
- Requirements of grid connection will be finalized
- Wind power plants performance may be surveyed and data will be collected by a national supervisory center
Thank you

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