Generators for wind turbines
Standard slip ring generator series for doubly-fed concept from 1.5-3.6 MW
Generators for wind turbines

Featuring a new innovative slip ring unit (SRU) series, ABB’s well proven standard DF product family expands with the main stream to the 3 MW turbine class.

New low maintenance SRU design – reliability from leading manufacturer
Modular component structure – with both air or water cooling
Customer specific modifications – to fit in most turbines used today
Proven rotor design – for overspeeds and converter voltage stresses

The doubly-fed (DF) generator concept
The DF generator is a wound rotor asynchronous machine, with the rotor windings connected to a small converter via slip-rings and brushes. The generator feeds power both from the directly connected stator (approx. 2/3 of Pn) and the rotor (approx. 1/3 of Pn). The converter enables control of the generator speed, power and power factor, thus giving a wider speed range for production and providing the ability to feed reactive power to support the grid.
Proven ABB solutions provide continuous operation for maximum energy production with lowest lifetime cost.

**Proven ABB rotor design**
- Patented carbon-fiber winding-end support rings
  - to withstand sudden uncontrolled overspeeds
- Increased, mica based insulation (2.5 kV)
  - to withstand converter induced voltage stresses
- Minimized Total Harmonic Distortion (THD)
  - especially 5th and 7th order
- Clever cooling arrangement
  - for demanding reactive power production

**New innovative, low maintenance SRU design**
- Reliability from leading SRU manufacturer
  - ABB's long experience and best practices
- Robust and straight-forward construction
  - modular setup for load optimization
  - for demanding reactive power production
  - high endurance for overspeeds
- Site condition simulated tests
  - dedicated SRU test bench
  - reliable pretested components

**Your reliable partner**
ABB is a leader in power and automation technologies that enable utility, industry, and transport and infrastructure customers to improve their performance while lowering environmental impact. The ABB Group of companies operates in roughly 100 countries and employs about 145,000 people.

In the wind power sector, ABB is the largest worldwide supplier of electrical solutions and the market and technology leader in generators, converters, motors, circuit breakers & contactors, transformers and HVDC.

Over the last 30 years ABB has delivered 35,000 generators to leading wind turbine customers all over the world – corresponding to a total of 45 GW of power.

ABB built its first megawatt class doubly-fed generator in 1997, based on more than 120 years of experience in electric motors and generators.

For more information: www.abb.com/motors&generators

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**Typical data of the AMK/L series < 3.6 MW:**

<table>
<thead>
<tr>
<th>Frame / power</th>
<th>Efficiency at rated speed</th>
<th>Cooling (air or water)</th>
<th>Mounting and protection</th>
<th>Voltage</th>
<th>Locked rotor voltage</th>
<th>Rated speed (typical)</th>
<th>Operation speed range</th>
<th>Max. overspeed</th>
<th>Power factor</th>
<th>Insulation class / Temp. rise</th>
<th>Dimensions and weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>500: up to 2.2 MW</td>
<td>aprr. 97...97.5%</td>
<td>IC 616/666, IC81/86W, SRU IC01/06</td>
<td>IM1001 (inclined 4...8 deg), IP54, SRU IP23</td>
<td>690–1000 V +/-10%, 50 or 60 Hz</td>
<td>approx. 1800 V or 2000 V</td>
<td>1750 rpm, 1200 rpm (50 Hz)</td>
<td>1000...2000 rpm/670...1330 rpm (50 Hz)</td>
<td>3000/2300 rpm depending on size</td>
<td>p.f. 0.90 cap ...1.0 ... 0.90 ind</td>
<td>F/B (at Un, p.f. 0.95 cap and 40°C), or F/F</td>
<td>500: L3150 x W1600 x H1850 mm, 6 – 6.7 tn</td>
</tr>
<tr>
<td>560: up to 3.2 MW</td>
<td></td>
<td></td>
<td></td>
<td>3–6 kV +/-10%, 50 or 60 Hz</td>
<td></td>
<td>2100 rpm, 1440 rpm (60 Hz)</td>
<td>1200...2400 rpm/800...1600 rpm (60 Hz)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>630: up to 5.6 MW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2100 rpm, 1440 rpm (60 Hz)</td>
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</tbody>
</table>

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