Power Quality Storage Development

Development of a superconducting flywheel-based energy storage system to improve power quality, e.g. in applications like distributed / volatile / renewable generation

- Load levelling
- Peak shaving
- Recuperation (cranes, trains, …)
- Island networks

Higher power and capacity are achievable
- Modularity of systems
- Development of higher power / capacity systems

The storage devices have the following advantages
- High power in small foot-print
- No degradation under cycling
- Full real and reactive power capability
- System and charge status always transparent
The specific benefits are

- Renewable energy producers: Meet feed-in requirements of utilities
- Grid operators: Installation of flywheels avoid costly line upgrades
- Industry/transport: Reduce peak power consumption, enhance power quality, recuperation

### Flywheel Demonstrator

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Power Quality System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>500 kVA</td>
</tr>
<tr>
<td>Capacity</td>
<td>5 kWh</td>
</tr>
<tr>
<td>Weight</td>
<td>2 t</td>
</tr>
<tr>
<td>Diameter</td>
<td>1.2 m</td>
</tr>
<tr>
<td>Height</td>
<td>2 m</td>
</tr>
<tr>
<td>Load cycles</td>
<td>50% - 100%</td>
</tr>
<tr>
<td>Cycle life</td>
<td>very high</td>
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</tbody>
</table>

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