

# Static frequency converter for grid interconnection

## Rail frequency converter – PCS 6000



**In various countries railway power grids are operated at a different frequency than the public power grid. In the past dedicated power plants were built to supply the single phase railway grids. Progressively the public three phase AC network is being interconnected to the railway grid via frequency converters. ABB is pioneer and world market leader in providing these railway interconnections. The success of ABB's PCS 6000 Rail product platform is based on continuous development and technological innovation.**

### Efficient power supply

Railway power supplies are single phase systems. In several countries these grids are operated at 16.7 Hz or 25 Hz due to historical reasons. Instead of operating two different types of power plant, the rail grid can be efficiently connected to the public grid, allowing efficient utilisation of the total generation capacity.

### Solution

The PCS 6000 Rail is a medium voltage static frequency converter that allows the connection of 3 phase public grids to single phase railway power grids, at 16.7 Hz or 25 Hz. The sophisticated design, based on the broad experience in the field, provides a wide range of benefits. For example the bi-directional power transfer that allows feeding power back to the public grid while trains feeding back energy to the grid during braking.

### Benefits

- Bi-directional power transfer
- Black start and island mode
- Reactive power compensation
- High Efficiency over entire power range
- Low maintenance costs (no rotating parts)



### Reliability

The PCS 6000 Rail design is part of ABB's family of frequency converters which are used for a wide range of applications. The standardization of these power electronic modules delivers substantial advantages in terms of cost and quality. With many PCS 6000 sold worldwide this converter has an unbeatable track record of high reliability and availability.

### Medium voltage converter

The PCS 6000 converters are based on three-level IGCT (Integrated Gate Commutated Thyristor) phase modules. The IGCT is the state-of-the-art semiconductor element for this power range. The converter units are connected by a medium voltage DC link (intermediate circuit). For the controls the well proven AC 800PEC is installed. The converter modules are water cooled with virtually maintenance free closed loop water system equipped with redundant circulating pumps.

### Key facts

|                           |                      |
|---------------------------|----------------------|
| Application               | Railway power supply |
| Type                      | PCS 6000 Rail        |
| Installation              | Indoor or outdoor    |
| Norminal voltage          | 15 - 220 kV*         |
| Norminal power            | 10 - 120 MVA / unit* |
| Norminal input frequency  | 50 Hz / 60 Hz        |
| Norminal output frequency | 16.7 Hz / 25 Hz      |
| Ambient temperature       | -25 ... 40°C *       |

\* Other values available upon request

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