

Case study

Boosting energy efficiency at aluminium smelters

Sohar Aluminium Company

Sohar Aluminium houses one of the world's largest aluminium smelter potlines. Each year 375,000 tons of aluminium are produced here.

Customer challenge

The smelting process created high levels of harmonics. It was imperative to keep these under control to adhere to the grid codes and be connected to the Oman power grid without any compliance issues.

Hitachi Energy solution

When Sohar Aluminium decided to interconnect to the Oman Grid, both for import, export and stability reasons, it became necessary to install harmonic filters to remove harmonics that would otherwise disturb other customers on the grid.

Hitachi Energy delivered a turnkey solution, including a study of the harmonics in the plant as well as the design, supply, installation, testing and commissioning of a harmonic filter system. The power quality solution comprises four harmonic filter banks at 55 Mvar and high-voltage switchgear.

The filter system from Hitachi Energy has solved power quality issues with regard to harmonics and reactive power and allows Sohar Aluminium to connect to the Oman grid without any compliance issues. The system has also improved power quality in the smelter facility and reduced electrical losses.

Sohar Aluminium also installed Hitachi Energy's disconnecting circuit breaker (DCB) which provides the combined functionality of a circuit breaker and a disconnector in a single unit. The low space requirements and the low maintenance requirements makes the DCB the perfect outdoor solution for an outdoor unit like the harmonic filter system.



Facts

Country	Oman
Customer	Sohar Aluminium
Year of delivery	2007
Location of project	Sohar
Hitachi Energy solution	Two identical filter systems with a generation of 110 Mvar each at 220 kV 50 Hz Each system consists of one 3 rd and one 5 th harmonic 55 Mvar C-filter Two disconnecting circuit breakers (DCB) for 245 kV



Customer benefits

- Execution of a complete, tailor-made, turnkey project
- Improved power quality in the smelter facility and reduced electrical losses
- Enabled Sohar Aluminium to connect to Oman grid without any compliance issues
- Enabling a more flexible and reliable grid connection

A complete program with comprehensive support

Hitachi Energy's capacitor and filter product portfolio consists of a wide range of high, medium and low voltage capacitors and filters that can address any power quality issue of an industrial, commercial

or utility installation. They help solve a variety of problems leading to customer benefits like trouble free operations of electrical system, less down-time, compliance with regulations and even possible reduction of CO₂ emissions and running costs.

By partnering with Hitachi Energy, customers get access to a rich experience in analysis, design and engineering skills for managing power quality issues.

Hitachi Energy Sweden AB
High Voltage Products
SE-771 80 Ludvika, Sweden
Phone: +46 (0)240 78 20 00

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. Hitachi Energy Ltd. does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of Hitachi Energy Ltd.