

## Static var compensation systems (SVC) Sophisticated solution for US steel mill



High Power Rectifiers in Turgi, Switzerland, delivered two static var compensation (SVC) systems to a steel mill in the USA. The installation, as well as the pre-commissioning, has been completed successfully.

Big River Steel is a steel mill located in Osceola, Arkansas in the USA. Last year, a 55 metric ton DC reactor was delivered to the customer, followed, some time later, with a static var compensator (SVC).

ABB High Power Rectifier in Switzerland is partner of SMS group GmbH, Germany, who deliver North America's most advanced steelmaking plant to Big River Steel. SMS group offers a full range of products and services. Customers can rely on their tailor-made, turnkey all-inclusive plants, extensions, modernizations and revamps. Worldwide SMS group has more than 14,000 employees and generated sales totaling EUR 3.4 billion.

The DC reactor and SVC from ABB combined with a thyristor-controlled reactor to reduce the impact on the power grid generated by the steel mill's electric arc furnaces (EAF) which can adversely affect other consumers.

The photograph above shows the steel mill's filter. Filter current (left) and the thyristor controlled reactor (right) are connected with a 34.5 kilovolt (kV) bus.

ABB Switzerland's scope of supply includes:

- two high current rectifiers
- two rectifier transformers
- one DC reactor
- one SVC system for an electric arc furnace
- one SVC system for a roller mill
- one transformer for a ladle furnace
- associated cooling systems as well as the control and regulation of the plant

Between January and February 2016 the components of the two SVCs were mounted in the plant under the supervision of specialists from ABB Switzerland.

Between June and July 2016 cold commissioning was carried out including testing of all cables, signals and components, which were checked for the correct functioning and readiness for continuous operation of the plant.

The hot commissioning, which is planned for December 2016, will ensure that all parts and components of the new steel mill are step wise commissioned. This determines how they interact with each other and allows for further testing, to ensuring that the plant is fully optimized when it goes live.

### Technical data: Electric arc furnace's SVC

- Voltage level: 34.5 kV
- inductive current power - TCR Thyristor Controlled Reactor (thyristor controlled coil) = 215 MVAR
- Capacitive current – filter circuits = 200 MVAR
- Filter system existing of five filter circuits: 2., 3., 5., 7. and 11. harmonic filter

### Technical data: Rolling mill's SVC

- Voltage level: 34.5 kV
- Inductive current power - TCR thyristor controlled reactor (thyristor controlled coil) = 105 MVAR
- Capacative current – filter circuits = 96 MVAR
- filter system existing of four filter circuits: 2., 3., 5. and 7. harmonic filter

For more information please contact:

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