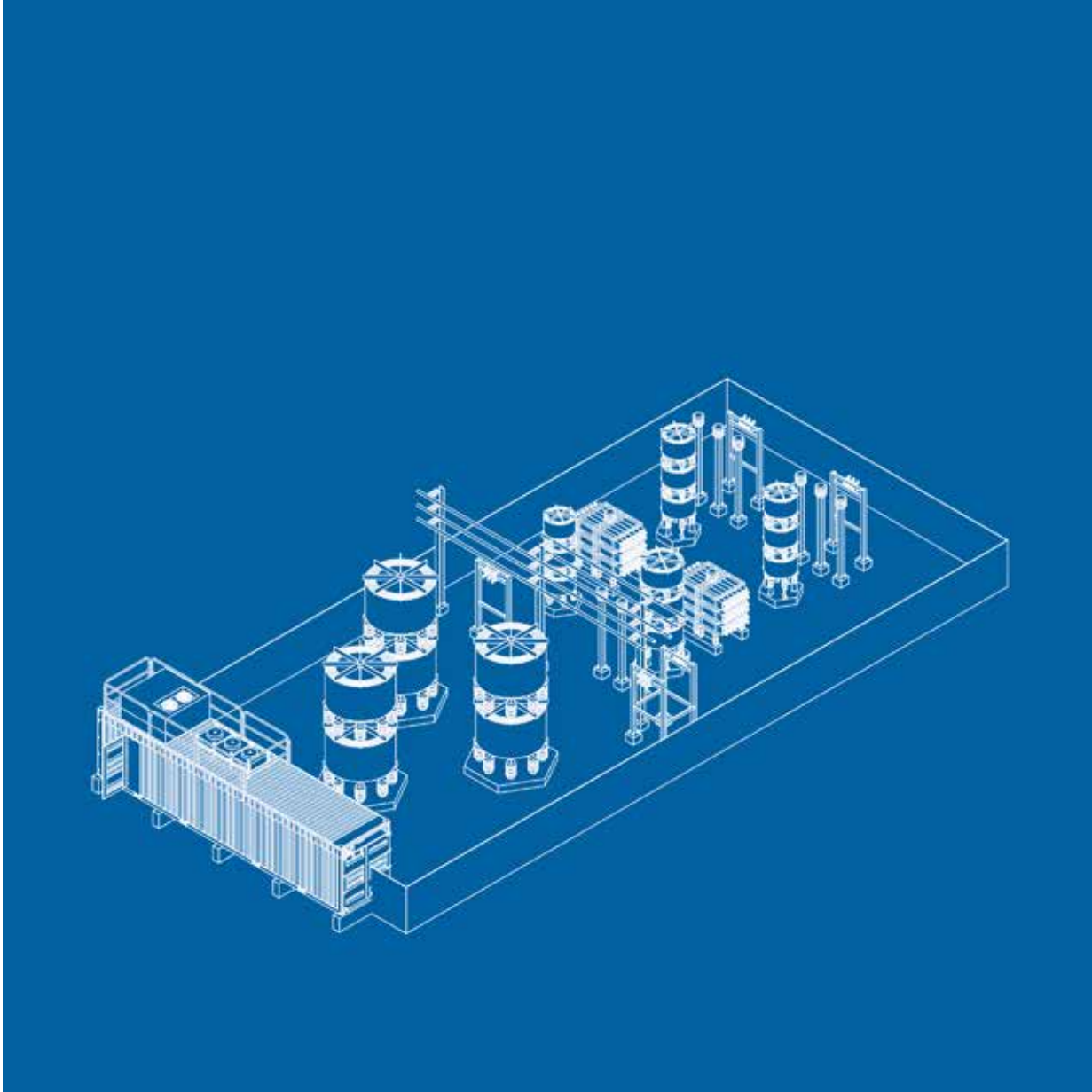


# STATIC VAR COMPENSATOR

**SVC**

Effective and reliable power quality solution for heavy industries and electrical utilities.



# TAILORED POWER QUALITY SOLUTION

TO SUIT YOUR NEEDS

**Are you searching for a solution to improve the productivity, capacity and reliability of your plant?** Voltage instability, flicker and harmonic distortions are commonly experienced power quality challenges. Poor power quality can undermine the productivity, capacity and reliability of industrial plants with challenging loads such as electric arc furnaces. Power quality problems also impact the stability and transmission capacity of the supply network.

## GOOD POWER QUALITY SAVES MONEY AND ENERGY

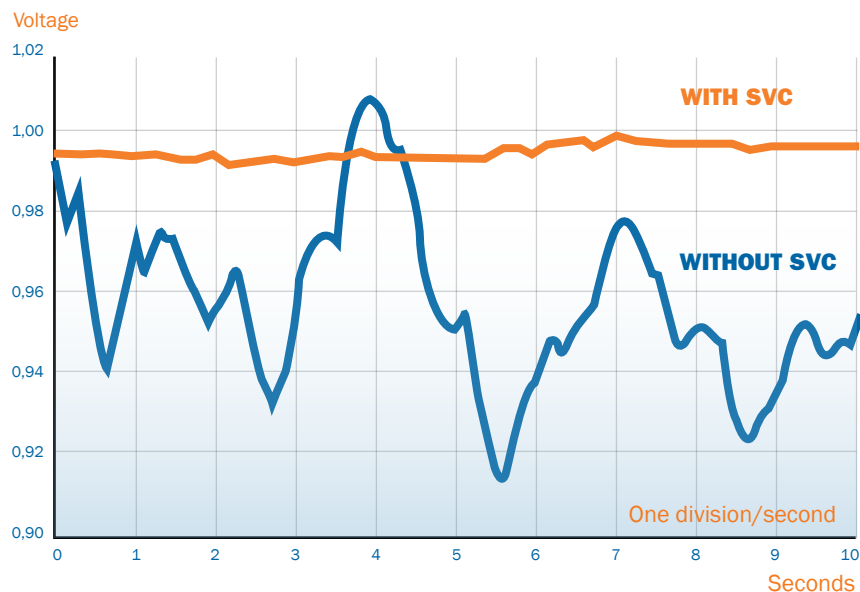
Power Static Var Compensator is an effective and reliable power quality solution – an investment that pays off quickly.

Fast and effective response to voltage variations, flicker and harmonic distortions bring proven benefits to both heavy industrial plants and supply network. SVC releases the undermined capacity while improving productivity and reliability in your plant at the same time. Supply network and neighboring facilities enjoy greater voltage stabilization and enhanced transmission capacity.

Each SVC system is tailor-made to fit the network fault level and load parameters.

## FUNCTIONS OF THE STATIC VAR COMPENSATOR:

- Voltage stabilization and load balancing by injecting inductive or capacitive reactive power
- Flicker mitigation through dynamic response to fast fluctuation of loads
- Maintaining of power factor to desired levels
- Harmonic mitigation
- Improved voltage on loadbus



# APPLICATION

## CUSTOMIZED SOLUTION FOR CHALLENGING APPLICATIONS

Static Var Compensator is an effective power quality solution for steel, metal, mining and electrical utilities. Suitable applications include:

- **Electrical arc furnaces (EAF), rolling mills, ladle furnaces and shredders in steel and metal industry**
- **Winders, conveyors and crushers in mining industry**
- **Electrical utilities in power transmission and distribution sector**
- **Other heavy industrial applications**

## CUSTOMER BENEFITS:

- Increased plant productivity and capacity
- Improved energy efficiency
- Reduced heat losses
- Higher plant lifetime
- Reduced maintenance costs
- Improved plant reliability



# ROBUST AND RELIABLE



The Static Var Compensator's state-of-the-art high voltage thyristor valve, reliable controller, modern user interface and redundant technical design are combined into a fast, reliable and robust system that is easy to operate and complies with all standard communication protocols.

The Static Var Compensator is connected parallel with the load to be compensated. The system provides reactive power in proportion to the system supply voltage.

In the heart of the system is thyristor valve that is developed to meet the demands of performance and reliability in harsh industrial environment. Due to its mechanical composite construction, the size of the valve is compact and it can be installed even in a standard sea freight container. The electronics are simple and robust, but the device is still equipped with comprehensive monitoring and electrical protection features. All communication between high voltage thyristor disc level and ground control system is utilizing fibre optics which makes long distance signal transfer possible.

Thyristor-controlled reactors (TCR) generate SVC's inductive power and passive filter capacitor banks generate its capacitive power. As TCR also generates harmonic currents, the capacitor banks are fine tuned for not only reducing harmonics generated by the load but also from the system itself.

The thyristors are net commutated thus they can be turned on once per cycle. This feature along with the control and measuring strategy define response time for reactive power and voltage changes. When open loop control strategy is implemented, the typical response time of the SVC system is 10ms (50Hz).

Control & protection system guarantees superior performance for flicker mitigation, reactive power control, power factor control and voltage stabilization. Advanced protection system ensures that the components are well protected against unexpected system fault conditions. Master controller regulates the operation of thyristor valve in order to respond to the system's reactive power requirements.

# INNOVATIVE FEATURES

FOR SUPERIOR PERFORMANCE

## Innovative design and reliability

Thyristor valve is compact and robust due to its innovative mechanical composite construction

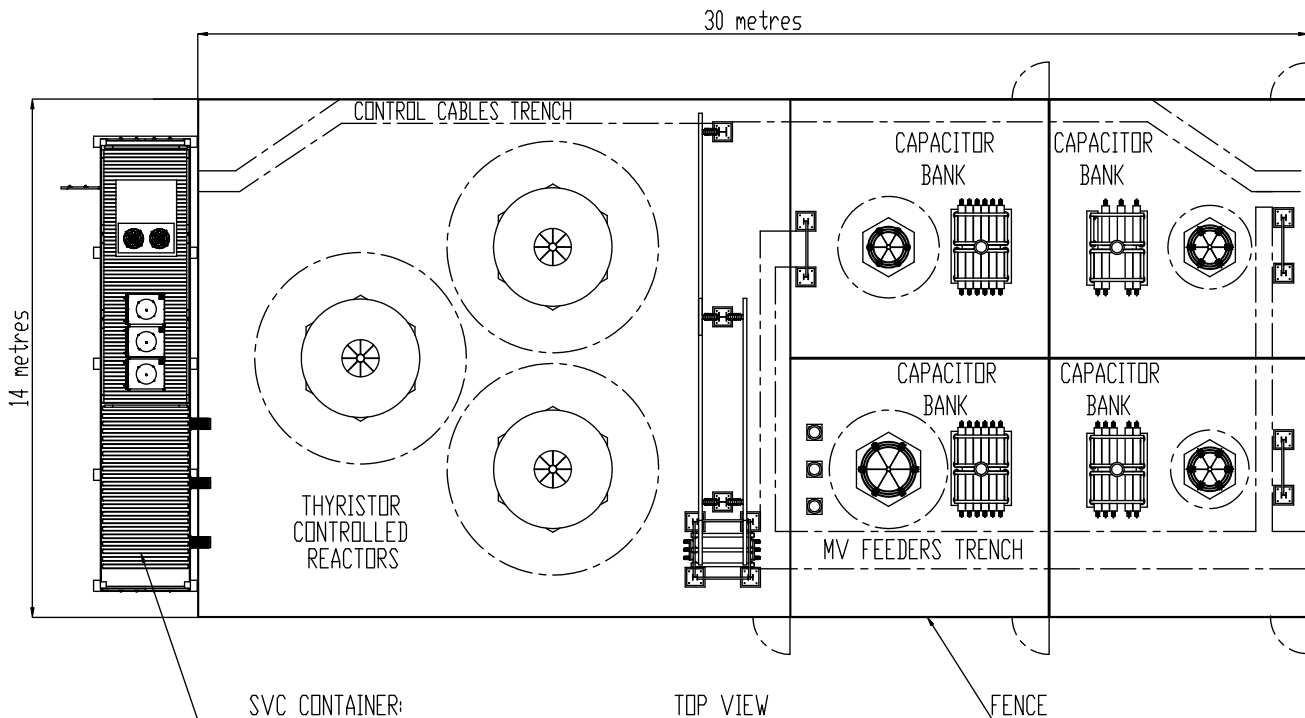
- Fibre optics based communication between high voltage thyristor disc level and ground control system makes long distance signal transfer possible
- Due to compact valve design a system can be built in a standard container and is easily re-locatable.
- Advanced protection system ensures that the components are well protected against unexpected system fault conditions

## Sophisticated monitoring and remote access

- The system can be monitored and controlled remotely or at on-site workstations
- Comprehensive monitoring and electrical protection features
- Advanced and easy-to-use user interface with 19" touch screen

## Effective control strategy

- Open and close loop control strategies permit effective flicker mitigation, reactive power control, power factor control and harmonic mitigation
- Proven control algorithms



SVC CONTAINER:

- THYRISTOR VALVES
- CONTROL AND PROTECTION SYSTEM
- COOLING UNIT AND AIR/WATER HEAT EXCHANGER
- AIR CONDITIONING UNIT

TOP VIEW

FENCE

# TURNKEY PROJECT DELIVERY

The commercial and technical challenges of Power's customers are fully understood as the company's experts have decades of experience in steel, mining and other demanding industrial applications.

Our experienced project team takes care of the whole project right from the initial phase including onsite delivery to installation, commissioning and training of personnel. Furthermore, our after-sales services ensure smooth operation of the system and maximize the return on investments.

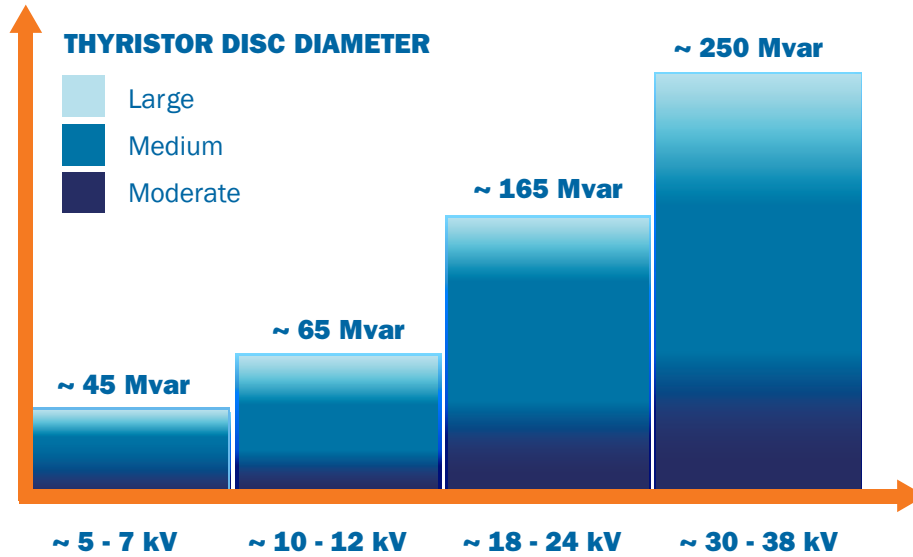
## TYPICAL SVC PROJECT ACTIVITIES INCLUDE:

- System studies and in-depth analysis
- Engineering, simulations and design
- Factory tests for validation of required criteria
- On-site delivery, installation and commissioning
- Training and after-sales support
- Modernization and upgradation



# WIDELY ADJUSTABLE POWER RANGE

The system can be built for all medium voltage levels starting from 3.3kV all the way up to 38.5kV. The power output range starts from 4Mvar up to 250Mvar and the systems can be connected parallel for a higher total output.



## CHOOSING BETWEEN SVC AND STATCOM?

To achieve superior flicker reduction on weaker grids, STATCOM could be alternative solution for your specific application. Working as a Voltage Source Converter (VSC) STATCOM is built on latest power electronics technology. By providing short-term over loading capabilities, STATCOM could be the right solution when superior flicker reduction is the goal. Our experts will be happy to discuss the best solution for your specific challenges.