STATCOM
The surest solution to voltage disturbance mitigation for car crusher and shredder applications

ABB's STATCOM solution can address voltage disturbances at car crusher and shredder facilities to correct power factor, solve voltage flicker, reduce peak demand and save big on utility penalities.

Shredder and crusher motors can often draw intermittent peak high currents that will result in voltage drops in the system. These drops will directly affect the power grid, causing dynamic voltage disturbance problems like unbalance, distortion or flicker. Reactive power control can resolve these issues by improving the power factor and compensating for the voltage instability. In many cases, traditional solutions like switching capacitors are too course and slow to stabilize a weak network.

The most advanced solution to compensate reactive power is to incorporate a STATCOM based on Voltage Source Converter (VSC) as a variable source of reactive power. These solid-state systems offer advantages compared to standard reactive power compensation solutions in demanding applications, where normal reactive power control generated by generators or capacitor banks alone are too slow for sudden load changes.

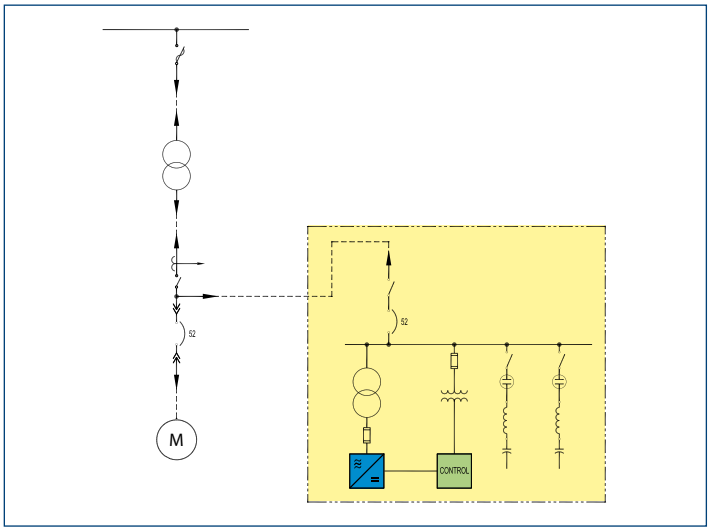
Installing a STATCOM at a suitable point on the network is a powerful and cost effective method to increase grid transfer capability and enhance voltage stability.

What is a STATCOM?

A STATCOM (or Static Synchronous Compensator) is a voltage regulating device. It is based on a power electronics voltage-source converter and can act as either a source or sink of reactive AC power. It is a member of the Flexible AC transmission system (FACTS) family which detects and instantly compensates for voltage fluctuations or flicker, as well as controls power factor.

As a fully controllable power electronic device, the STATCOM is capable of providing both capacitive and inductive VARs.

An ABB STATCOM installation for a car crusher facility in Virginia.



The figure above shows a typical diagram of a STATCOM solution for a car shredder application.

Case study: a hybrid solution

The hybrid concept relies on the coupling of a dynamic VAr compensator (STATCOM) along with a switched capacitor bank of a fixed rating to achieve the lowest overall system cost per kVAr. The ABB system then compensates dynamically to directly mitigate the voltage disturbances causing voltage fluctuations. The switched capacitor bank is controlled by the STATCOM and can therefore be brought onto the system to extend the capacitive range as needed.

The building-block advantage from the engineering experts

ABB's standard, scalable inverter modules and real time controllers are building blocks which benefit from design engineering, quality control and after-sales support found in high volume production. Specific application engineering and packaging ensures the optimal combination of cost effectiveness, quality and operating capability for ABB's STATCOM solution.

Features

- Power factor control
- Voltage regulation
- Independent phase control
- Flicker compensation
- Active harmonic filtering (application specific)
- Multiple system parallel control
- Modular inverter blocks for redundancy and easy maintenance
- Medium voltage transformer can be included in enclosure as option to minimize installation costs
- Over 200% short time overload capacity

ABB Inc.
Power Electronics
16250 W. Glendale Drive
New Berlin, WI 53151
Tel: 262-785-3200
E-Mail: pes@us.abb.com

www.abb.com/powerelectronics

Power and productivity
for a better world™