



dSVC™ Solution

Frequently Asked Questions

Summary

This FAQ addresses American Superconductor's dSVC pad-mounted SVC for distribution systems. For more information, see the Data Sheet at: http://www.amsc.com/pdf/DSVC_DS_1008_A4.pdf

Questions

1. What is the dSVC?

The dSVC is a self-contained, air-cooled Static VAR Compensator designed for use on underground The distribution systems.

2. How is the dSVC solution packaged, and how does this packaging allow the dSVC solution to be applied?

The dSVC solution is designed and installed inside a large pad-mount capacitor enclosure. With this highly versatile footprint, it can be located along underground distribution circuits, in or next to distribution substations, or immediately next to industrial customers that are the source of voltage flicker.

3. How does this product differ from traditional SVCs?

Traditional, transmission-level SVCs resolve voltage stability issues over a wide area and tend to be large, multi-million-dollar substation deployments. AMSC's dSVC solution is significantly smaller both in size and price, yet it improves the quality of service to a distribution circuit the same way a transmission SVC improves the quality of service to a transmission area.

The dSVC solution is simpler and easier to maintain than a transmission SVC. Distribution solution operators can accurately specify dSVC solutions with limited information and distribution line crews can install, operate and maintain dSVC solutions without special training.

Being completely self-contained, there is no requirement for a dedicated "valve hall" building or a fenced-in substation. The pad-mounted construction allows for direct



connection to underground cables, eliminating right-of-way requirements for overhead lines.

The dSVC solution is standardized, reducing both overall cost and lead-times. Projects can go from specification to start-up in only a few months, while transmission SVC installations can require a year or more to implement.

Each dSVC solution is fully self-monitoring and alarming. In addition to improving quality of service for electric utilities, it provides valuable information on distribution circuit performance on a near real-time basis.

4. What problems will the dSVC solution solve for utilities?

The dSVC solution can be used to resolve multiple issues, including:

- Boosting the quality of service on a distribution circuit by eliminating minor voltage sags and reducing major voltage sags.
- Isolating the effects of voltage flicker caused by one or more customers from the surrounding distribution circuit.
- Optimizing feeder power factors to high levels in real-time, reducing reactive power losses and maximizing circuit capacity at all times.

The dSVC solution's intelligent controls perform all of these functions. If goals conflict, the controller may be programmed to optimize the unit's operation based on the utility's preference.

5. How does the dSVC solution compare with traditional pad-mounted capacitors or voltage regulators applied by utilities?

Capacitor banks and voltage regulators are used for relatively slow control of feeder voltage profiles. Traditional capacitor banks are switched as infrequently as possible to avoid aging the capacitors and the capacitor switches. Under the most critical circumstances, capacitor operations can be spaced no less than five minutes apart. Voltage regulators are typically limited to adjusting once every 90 seconds and cannot correct for power factor.

With the ability to dynamically adjust its output in real time, the dSVC solution acts much faster than conventional capacitor banks and voltage regulators, mitigating the power quality issues that inconvenience area homes and can cost commercial and industrial customers millions of dollars in lost productivity.

The dSVC solution is fully solid-state and provides transient-free switching. These characteristics allow the system to be set to switch as quickly and as often as needed without wear-and-tear concerns.

6. How can the dSVC solution integrate with existing pad-mounted capacitors?

A dSVC solution can be installed on a circuit with existing pad-mount capacitors. If desired the dSVC solution can be used to control the existing pad-mount capacitors, providing comprehensive control of the feeder voltage profile and power factor correction, while providing real-time mitigation of voltage sags and flicker.

7. Physically, how large is the dSVC solution compared to pad-mounted capacitors?

A dSVC solution ranges from 130% to 150% the size of a comparably-rated pad-mounted capacitor bank.

8. How do the controls of the dSVC solution integrate to the utility solution?

The highly flexible dSVC solution control is capable of:

- Interfacing with utility SCADA solutions using DNP 3.0
- Controlling multiple switched cap banks in addition to operating the dSVC solution
- Monitoring real-time solution conditions, including voltage and harmonic levels
- Recording high-speed records of solution events and dSVC solution operations

The control is programmable and may be customized. The default interface reflects end-user needs, closely resembling standard utility capacitor bank and SCADA controls to ensure local operator familiarity with limited training.

9. What ratings are available for the dSVC solution?

Presently dSVC solutions are available in ratings up to 6 MVAR for 15KV distribution solutions and up to 3 MVAR for 5KV distribution solutions.

For future information, contact us at one of our offices or make a connection through our website:
www.amsc.com

© 2008 American Superconductor Corporation, 64 Jackson Road, Devens, MA 01434 USA. All rights reserved. American Superconductor and design, Revolutionizing the Way the World Uses Electricity, AMSC, Powered by AMSC and design, Secure Super Grids, D-VAR, DVC, PQ-IVR, dSVC, PQ-SVC, Windtec and design, and PowerModule are trademarks or registered trademarks of American Superconductor Corporation.

