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ERGON SVC Replacement with Hybrid D-VAR® STATCOM

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Introduction:
In general, the utility industry tends to be a bit conservative with respect to installing the latest technology on their grids. FACTS devices, especially SVCs and STATCOMs, are no longer the latest thing. SVCs came to the industry in the early-1970s while the STATCOM came out in the late 1980s. Some of the earliest SVCs are now approaching their end-of-life and are in need of refurbishment or replacement. This paper presents Ergon's aging SVC replacement solution with a hybrid STATCOM.

Research Design:
The paper covers those items of an SVC that age with time and the harmonic issue that arise from the installation of an SVC. The technology of the D-VAR STATCOM is discussed and how its overload capability, 3 x its continuous rating, was of great benefit at this location. The ability to extend the capability of a STATCOM with capacitor banks, a hybrid STATCOM, will also be discussed. Key to any hybrid STATCOM is how fast the capacitor banks can be switched in and out of service. All of the methods for switching these capacitor banks will be covered including the latest technology.

Main Results and Discussion:
SVCs have been in-service for almost 50 years, The technology of the initial run of SVC has been surpassed by updated SVC technologies and by STATCOM technology. ERGON chose to replace their smaller SVC with AMSC D-VAR STATCOM. To provide the most cost effective solution, a hybrid solution, D-VAR STATCOM with D-VAR controlled shunt capacitor banks, was chosen. The AMSC D-VAR STATCOM has a dynamic rating of 3 x its continuous capability. This dynamic rating along with switched capacitor banks can make this hybrid designed STATCOM very powerful and cost effective dynamic device for voltage recovery post fault clearing. With its overload capability and shunt capacitor switching, it can be very cost effective replacing old SVC installations. Since the hybrid STATCOM does not have the SVC's TCR (thyristor controlled reactor), many of the harmonic issues SVCs have are eliminated.

Conclusion:
FACTS devices are no longer the new thing on for a utility to install and solve an important voltage problem. In fact, some FACTS devices are actually reaching end-of-life. Hybrid STATCOM, STATCOM with controlled switched capacitor banks, is in many cases a superior solution to replacing a smaller type SVC with its faster response, its fewer harmonic issues, and its lower costs.

Keywords: SVC, FACTs, Hybrid STATCOM

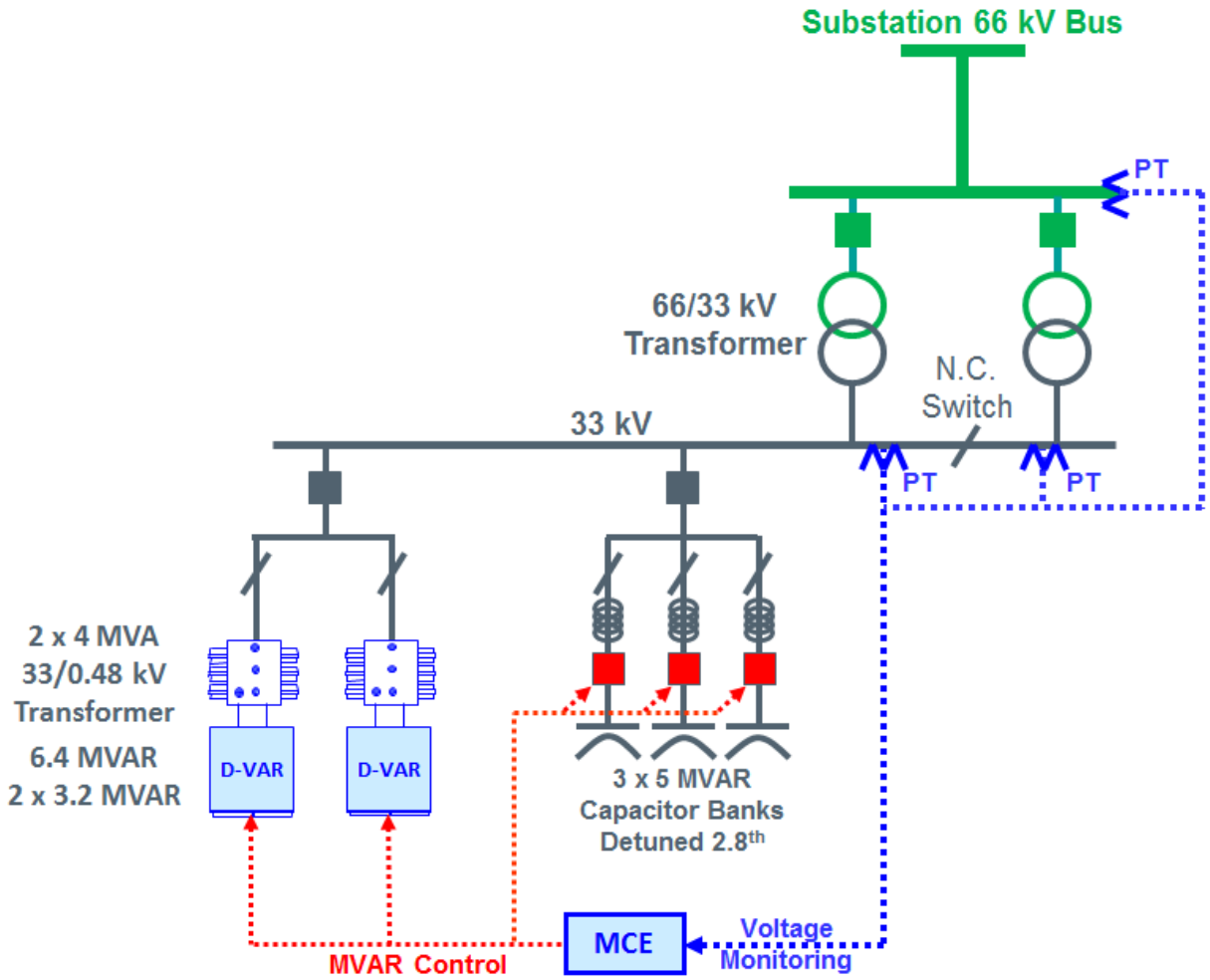

Figure 1: One-Line Diagram of Ergon's St. George Hybrid D-VAR® STATCOM Installation

Figure 2: Ergon's St. George Hybrid D-VAR® STATCOM Installation

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