

SVC

Project Information Collection Guidelines

This document provides guidelines intended to gather the information necessary for the accurate SVC specification. It provides the following:

1. A brief summary of the goals associated with SVC application.
2. A checklist allowing for the rapid and efficient SVC engineering. If specific customer-side load information is made available, the SVC can be optimized, resulting in a lower cost, higher quality solution.

Cautions and Caveats

SVCs are passive devices. They contain integral Transient Voltage Surge Suppressor (TVSS) protection, and installation recommendations include providing additional TVSS protection. Extensive field tests have shown that there are three issues that can affect SVC reliability.

1. Improper operation of nearby switched capacitor banks. On occasions SVCs located in the vicinity of cap banks have been damaged by high voltage transients from improper capacitor switching.
2. It's important to monitor or estimate circuit and customer harmonic levels.
3. To operate properly, a SVC must be sized for instantaneous VAR requirements. This requires either accurate collection of customer load information (new service) or a brief period of high speed monitoring.

New Facility Analysis

Analyzing requirements at a new site is normally a paper exercise. Occasionally load and power quality measurements are available for similar plants. Where such information is available, we appreciate the opportunity to review it. Otherwise, engineering will proceed with the following information:

1. The electrical characteristics of the circuit at the point of application (immediately adjacent to the proposed SVC location) provided by the utility/distributor.
2. The voltage stability goals in quantifiable terms including information such as visibility flicker curve, irritation flicker curve, maximum voltage deviation.
3. Information on the customer's major in-plant loads and their characteristics. In particular:
 - 3.1. Total load (demand and energy).
 - 3.2. Listing of the major loads within the plant, either in a list form or via a customer-provided electrical single-line drawing.
 - 3.3. A brief description of the plant's function (e.g., washing plant, mine, sawmill, etc.).

Existing Facility Upgrades for Flicker/Sag/PQ Problems

Existing Service provision and PQ upgrades allow the use of actual data. Load and power quality measurements **are well worth collecting**. Where this information is already available, we will review it. Otherwise, engineering will proceed with the following information:

1. The electrical characteristics of the circuit at the point of application (immediately adjacent to the proposed SVC location).
2. The voltage stability goal in quantifiable terms including information such as visibility flicker curve, irritation flicker curve, maximum voltage deviation. AMSC will provide SVC options at several cost levels bracketing the goals provided.
3. Information on the customer's major in-plant loads and their characteristics. In particular:
 - 3.1. Total expected load (demand and energy)
 - 3.2. Listing of the major loads within the plant. These can be either in a list form or via a customer-provided electrical single-line drawing.
 - 3.3. A brief description of the plant's function (e.g., washing plant, mine, sawmill, etc.).
 - 3.4. Metered Power Quality data.

Information Checklist

1. Project Details

Name:	
Location:	
Utility/Power Distributor:	
Customer Contact	

2. System Characteristics:

System Impedance <i>(Check One)</i> <input type="checkbox"/> Ohms <input type="checkbox"/> PU			
R0		X0	
R1		X1	

3. Power System Data

Nominal Circuit Voltage (kV)	
Fault Current (MVA)	
X/R Ratio	

4. Customer Transformer Data:

Primary Voltage (kV)	
Secondary Voltage (kV)	
Rating (MVA)	
Impedance (%)	
Winding Configuration (e.g. wye/delta)	

5. Distribution Capacitors – size and location:

kVAR	Voltage (kV)	Switched	Fixed	In-Rush/Detuning Reactor? Size?	Source Impedance at Cap Bank Location
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		
		<input type="checkbox"/>	<input type="checkbox"/>		

6. Voltage Stability Goal (check one – for design guideline):

- GE Flicker Curve – Level of Irritation % Voltage Stability – Specify: _____
 GE Flicker Curve – Level of Visibility Other – Specify: _____

7. Utility circuit map/ location data available?

- No Yes (email to kndiehl@tstar-eng.com or rskemerer@tstar-eng.com)

8. Facility single-line drawing available?

- No Yes (email to kndiehl@tstar-eng.com or rskemerer@tstar-eng.com)

9. What is the Business Activity at the Site?**9. Estimated Facility Load:**

Estimated Demand	
kW	
kVAR	

Major Motor Loads						
HP / Phase	Motor Starter	SS Motor Starter	AC Drive	DC Drive	Function	Harmonic Signature
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Major Non-Motor Loads			
Description	kW Rating	PF	Nameplate

Technical Contacts (optional BUT very helpful)			
Description	Name	Phone Number	E-mail address
Utility			
End-user			
Consultant			