Power and Reactive Sign Conventions

Scope

This document defines the metering sign conventions for power flow. This document was created to provide all parties involved with a common standard from which to base their designs, installations, and written contracts.

Purpose

The lack of a common standard for metering sign conventions may lead to confusion, which may cause multiple sites to follow opposing conventions. This document will provide a common standard from which to base their designs, installations, and written contracts.

Sign Conventions for Megawatt and Megavar Flows

The sign conventions are defined for eight different types of sites.

IN, *received*, and "-" are synonymous.
OUT, *delivered*, and "+" are synonymous.

1. Generators, Synchronous Condensers, and Static VAR Compensators

   Definition: Any Generator, Synchronous Condenser or Static VAR Compensator facility whether company or customer owned, where the power is metered as generation and not flow into or out of an interchange or substation point.

   - Watt or VAR flow from a generator, synchronous condenser or static VAR condenser is designated as *OUT*, *delivered*, or "+".
   - Watt or VAR flow into a Generator, Synchronous Condenser or Static VAR Compensator is designated as *IN*, *received*, or "-".

2. Capacitors and Reactors

   Definition: Any capacitor or reactor, where the VARs are metered.

   - VAR flow from a Capacitor is designated as *OUT*, *delivered*, or "+".
   - VAR flow from the system to a Reactor is designated as *IN*, *received*, or "-".

3. Buses

   Definition: Any bus, where the Watts and VARs are metered.

   - VAR flow from a Bus into the system is designated as *OUT*, *delivered*, or "+".
   - VAR flow from the system to a Bus is designated as *IN*, *received*, or "-".

4. Interconnection

   Definition: All lines which connect one system to another system.

   - Watt or VAR flow into a system is designated as *IN*, *received*, or "-".
   - Watt or VAR flow out of a system is designated as *OUT*, *delivered*, or "+".

5. Step-Up Transformer and Generating Stations

   Definition: A transformer that has flows from the low to the high side voltage windings.

   - Watt or VAR flow from the low side to the high side voltage windings is designated as *OUT*, *delivered*, or "+".

6. All Other Transformers

   Definition: A distribution or transmission transformer that is not a generator step-up transformer.

   - Watt or VAR flow from the high side to the low side of a transformer is designated as *OUT*, *delivered*, or "+".
   - Watt or VAR flow from the low side to the high side of a transformer is designated as *IN*, *received*, or "-".

7. Substation

   Definition: Any substation not designated as an interchange tie point.

   - Watt or VAR flow entering a substation is designated as *IN*, *received*, or "-".
   - Watt or VAR flow leaving a substation is designated as *OUT*, *delivered*, or "+".

8. Other Locations

   For all other locations, or where the direction of flow is not apparent, a description of the meter location in the circuit being measured, together with a one-line diagram of this circuit, should be used to show the positive direction of flow.