

Swedish metrology lab "SP" Verify Instrument Transformers with the 1133A

The instrument transformers in the Swedish 220 kV and 400 kV transmission grid substations have their accuracy verified on regular six year cycle. The Swedish metrology lab "SP" has performed the accuracy verification using Arbiter Systems® Inc. Model 1133A Power Sentinels since 2005. The Model 1133A has proven itself to be a very good aid with its short time to reach stability, good data synchronization between 1133As since the comparison is both for phase angle and amplitude, and its ability to be battery powered.

It is possible to make synchronized measurements on multiple instrument transformers that are physically separated, up to several hundred meters, by using multiple Model 1133A's, one PMU per instrument transformer. If three or more instrument transformers are connected then a comparison can be made between each transformer and the group mean. The software package LabView allows for historical comparisons to verify if any drift or sudden changes have occurred in the individual transformers.

Originally developed as an indoor, 19 inch rack unit, the Model 1133As used by "SP" are modified into a portable package for field use.

These proven modifications with over six years field use include:

- fitting the Model 1133A with a battery
- using a simple fuse box to connect the current inputs
- using an interface box with test leads to connect the voltage inputs
- placing the standard 15 m cable on the back of the bag allowing for proper antenna placement and GPS signal tracking while making indoor measurements.
- placing everything else in a carry-on bag

