Application Note AN2009-29

Distributed Generation Interconnection With the SEL-651R Advanced Recloser Control

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INTRODUCTION

With growing public concern about climate change and energy independence, there is an ever-increasing desire to add distributed generation (DG) to the existing distribution grid. DG can come in many forms, including wind turbines, photovoltaic, methane capture, and more conventional sources like small gas or diesel generators. All of these new sources help support the ever-growing demand for power.

PROBLEM

Many of these DG sources must be located where they have sufficient wind, sun, methane, or other considerations. These DG sources are being connected into a distribution system that was designed for distributed loads, not distributed sources. IEEE 1547 is a good source to help utilities and independent power producers (IPPs) safely meet the requirements of an interconnection; however, questions remain about how to properly connect a DG facility to the grid.

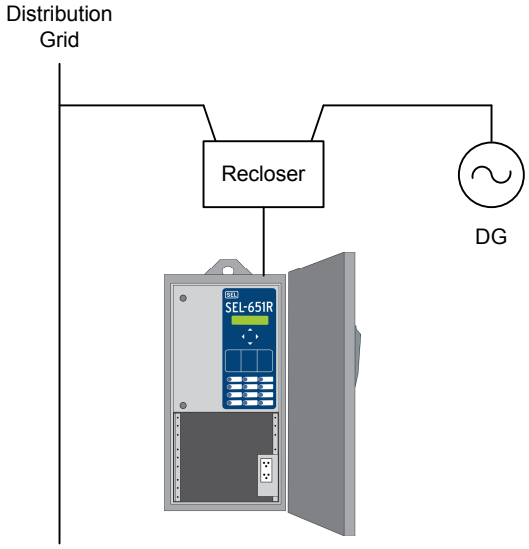

Figure 1 Typical one-line diagram of DG interconnection point

SEL SOLUTION

SEL offers several solutions for interconnection protection and control that meet the requirements of both utilities and IPP operators. The SEL-651R Advanced Recloser Control is an excellent choice for many typical small- to medium-scale DG facilities. The SEL-651R incorporates control of a local recloser that can be used at the interconnection to the grid and also provides

advanced protection, metering, and control capabilities needed to properly protect the IPP and utility systems. Common requirements described in IEEE 1547 include:

- Voltage regulation
- Synchronization
- Monitoring
- Isolation
- Abnormal voltage conditions
- Abnormal frequency conditions
- Islanding

The SEL-651R simplifies interconnection protection and control by offering everything needed for typical applications in a single device.

Figure 2 The SEL-651R provides protection and control for intertie reclosers at IPP sites

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