

Making Electric Power Safer, More Reliable, and More Economical®

Chronic Problems

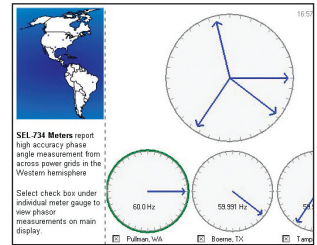
Timeless SEL Solutions

12:05:44 - 1:31:34

Generators trip on local instabilities.

Use synchrophasor information from SEL devices to provide real-time information on system swings, load shifts, and voltage transients.

SEL-734 Revenue Meter, SEL-421 Transmission Relay



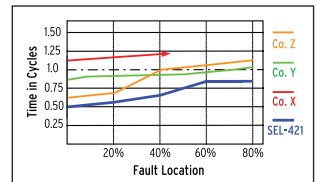
View real-time synchrophasors from across your power system. View a real-time demo at www.selinc.com/synchrophasors.

2:02:00

345kV line trips due to smoke from fire.

Apply SEL line protection relays to improve stability by providing the fastest tripping for all fault types.

SEL-421 Transmission Relay, SEL-311L Line Current Differential Relay



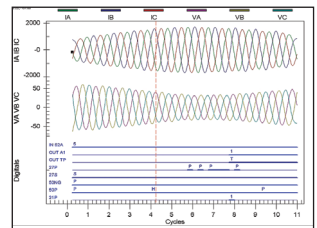
The SEL-421 provides secure, ultra high-speed distance protection for all transmission lines.

3:05:41 - 3:41:33

Lines trip due to sags caused by overloading.

Use SELogic® control equations for thermal overload protection of power lines. Alarm, trip, and communications provide maximum operator information.

SEL-421 Transmission Relay



Event capture from August 14, 2003 detailing power swing.

3:45:33 - 4:08:58

Lines trip on power swings.

Set out-of-step blocking elements in SEL transmission relays to prevent unnecessary line trips. Use out-of-step tripping to balance local load and generation in isolated areas.

SEL-421, SEL-321, SEL-311 Transmission Relays



Reduce time retrieving reports and analyzing system events.

4:10:38

System voltage and frequency declining.

Use multi-step underfrequency and undervoltage load-shedding in SEL distribution and transmission relays for maximum load preservation.

SEL-351, SEL-351A, SEL-351R, SEL-351S, SEL-651R Recloser Controls and Distribution Relays, SEL-311 Transmission Relay

4:13:00

Major portions of the system are in the dark.

SEL devices and event analysis software provide reliable time-tagged event reports and oscillographs to put the system back together.

SEL-2030, SEL-2032 Communication Processors, SEL-5040, SEL-5601 Software

Visit www.selinc.com/selsolutions to learn more about proven SEL solutions.



SCHWEITZER ENGINEERING LABORATORIES, INC.

TEL: 509.332.1890 • FAX: 509.332.7990 • info@selinc.com • www.selinc.com/selsolutions
2350 NE Hopkins Court • Pullman, WA 99163-5603 USA

