

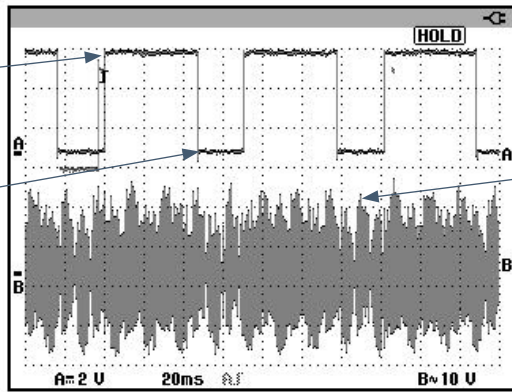


# The Alaska Pipeline: Noise filtration rescues powerline communication technology

The Kuparuk pipeline is approximately 37 miles in length. The system originates at the Kuparuk Oil Field on the North Slope and connects into Pump Station #1 of the Trans Alaska Pipeline System. The Kuparuk portion of the pipeline has two pump stations within the first 10 miles. Conoco Phillips uses a heat trace system to keep the oil warm and uses a 500kva delta to wye isolation transformer with a filter to isolate the communication system.

Power line communication technology allows facilities to transmit data over existing low voltage power lines. This technology requires the data to be sent at different frequencies than the voltage frequency. Data such as the rate of flow and temperature of oil are immediately available. However, something was corrupting the transmission of data. Conoco Phillips had Environmental Potentials perform a full power quality analysis of its electrical system.

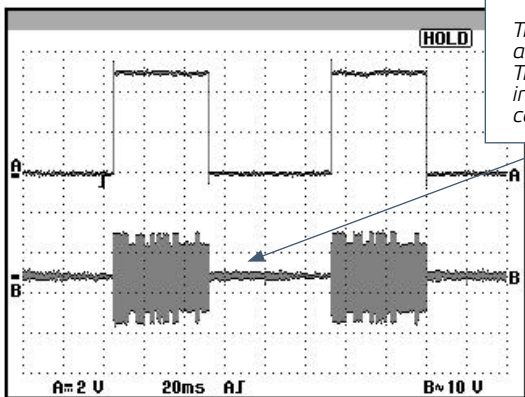
*The top of readings shows what the signal should look like, while the bottom half of the chart shows the actual signal. The top arrow points to the positive half cycle while the bottom arrow points to negative half cycle.*



*The negative half cycle is almost indistinguishable from the positive half cycle. The noise on the waveform completely corrupted the communication channel.*

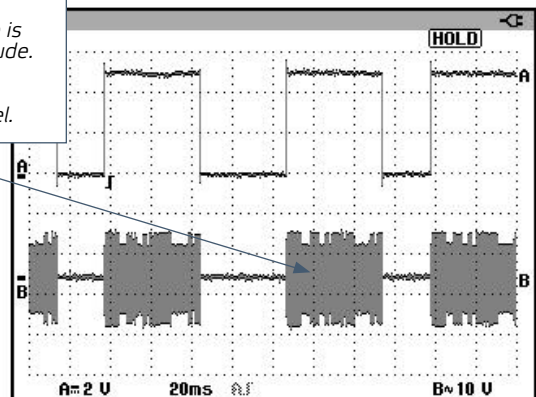
PLI with first filter on Chem Inj

A power quality analysis revealed the facility was saturated with high frequency noise. This is a perfect application for Environmental Potentials' waveform correction technology.



PLI with sixth filter on UPS

*The negative half cycle is almost zero in magnitude. The noise no longer interferes with the communication channel.*



PLI with seventh filter on 8B-1J01

After installing seven filters, the communication signal was cleared and the Environmental Potentials' waveform correction technology eliminates high frequency noise ensuring that data sent over low voltage power lines is not corrupted.