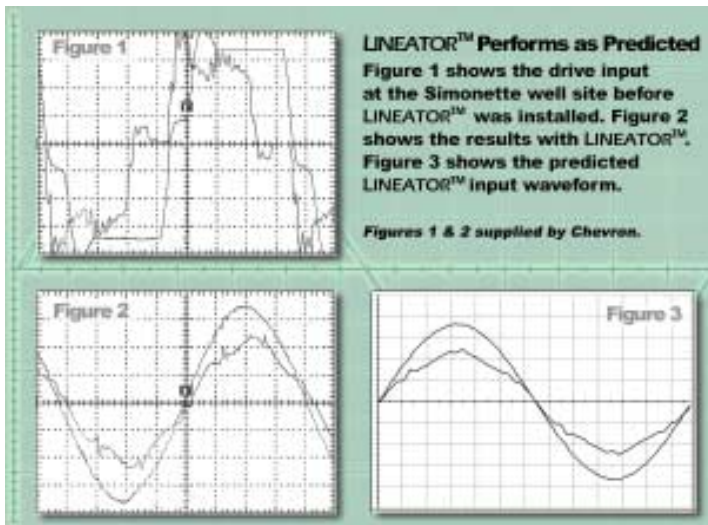




### Scenario

When Chevron uses adjustable speed drives to control motors that operate submersible pumps in remote, unmanned oil wells, they require high reliability in power systems to achieve financial objectives. Therefore, harmonic control to ensure power quality is paramount.

Each well in far Northern Alberta features a single, low voltage adjustable speed drive and supply transformer. Since the drive is the only load on the transformer, current in the system is rich in harmonic frequencies. In addition, since well sites are unmanned, control and communication systems must be safeguarded against interference or failure. The combination of the risk of high harmonics, and the need for high-reliability in these systems, drove Chevron to evaluate all of their options.



Engineers at Chevron decided to take preventive measures to limit harmonics at well sites. For applications where a low voltage drive is the only non-linear load, and when it is a relatively low horsepower (1000 HP or less), Chevron selected Mirus' LINEATOR™ Universal Harmonic Filter (UHF).

### Solution

"LINEATOR™ did as promised", said Peter O'Brien, Chevron Electrical Engineer. "Our experience was with multi-pulse drives. We have used 12-pulse drives. However, in order to achieve the harmonic limits that we need, we realized that we must either purchase 18-pulse drives or evaluate other options. Our drive supplier had fully tested and recommended LINEATOR™ as a power quality solution, and that was enough for us."

Chevron's Simonette well site features a 200 kVA service transformer, a 150 kVA, 480 volt adjustable speed drive and a 150 horsepower UHF.

### Benefits

LINEATOR™ proved to be the right solution for Chevron, because:

- The LINEATOR™ was 9% less expensive than the cost to configure a drive for a 12-pulse operation in this application.
- Installation was easier for Chevron. The LINEATOR™ is essentially "plug and play".
- The LINEATOR™ required no factory testing. (A multi-pulse system may have required testing to ensure correct phase shift and load sharing.)
- The LINEATOR™ provided better-than 18-pulse performance.

### Summary

At the Simonette well site, Chevron achieved two goals with LINEATOR™. They ensured high reliability in critical systems and did it cost effectively.