

Australia's Ergon Energy Saves Over \$200,000 With LineIQ Diagnostics

"[LineIQ] allowed us to accurately check and balance the load on each phase confirming that we had successfully rectified a problem that had led to customer complaints for over a year."

-Maurie Freeman, Ergon Energy, Kingaroy, QLD



BACKGROUND –

Ergon Energy is one of Australia's largest utilities. It currently serves over 500,000 household and business customers in Queensland, New South Wales, Victoria, and the ACT.

Over a 12-month period, Ergon received numerous supply complaints from customers served by the same rural feeder. The 11kV feeder served over 10,000 commercial and residential customers, and ran from a 66kV substation equipped with smart devices and voltage regulators. Approximately 2 kilometers from the substation, the feeder split into a number of spurs.

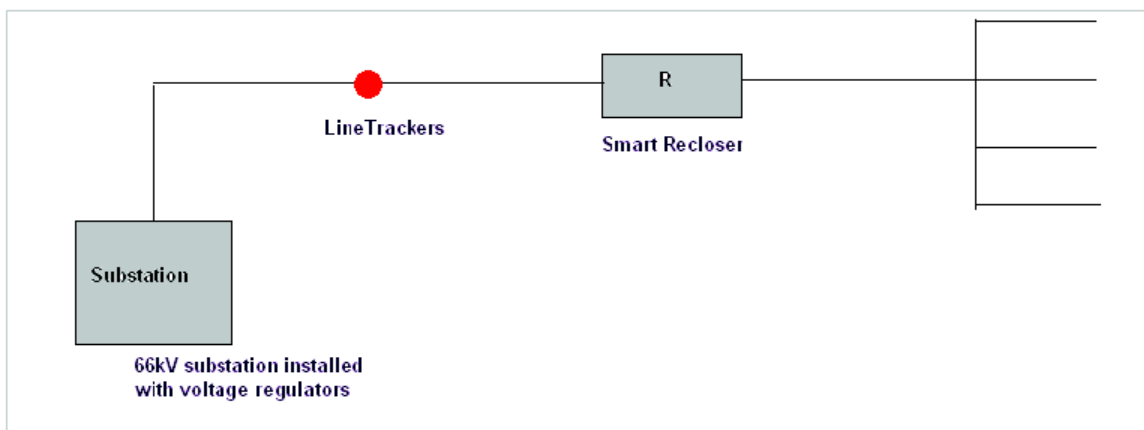


Figure 1. Diagram of the feeder in question.

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Ergon initially attributed the supply complains to feeder age and deterioration. They suspected that the copper conductor was both too old to support the estimated load, and did not have the correct diameter to do so.

CHALLENGE –

Ergon had developed a theory regarding the supply issues, but they needed data before committing resources to correct the problem; acting on incorrect assumptions would prove costly while failing to correct the supply issues. Ergon had determined the estimated cost of replacing the feeder to be over \$250,000.

The investigative team charged with diagnosing the supply issues discovered that the loads had not been accurately measured and suspected that load imbalance was a factor. Not only would load imbalance significantly reduce supply quality, it would also prevent voltage regulators from operating effectively.

Unfortunately, Ergon had no accurate means to monitor load on the suspect feeder.

SOLUTION –

To meet the challenge, Ergon chose the LineIQ line monitoring solution. The team placed LineIQ Sensors on each of the three phases of the 11kV feeder. Built-in communications allowed wireless download of event history records from each phase.

Substation voltage regulators continuously adjust voltage in order to meet demand. The regulators on a three-phase system take their readings from only one phase, and then regulate voltage across all three phases based on this single input. If phases are out of balance, the reading would be accurate for only one phase, rendering the regulators ineffective on the other two phases.

LineIQ would wirelessly record and transmit voltage data on each of the three phases, thus allowing an accurate diagnosis of a load balancing issue.

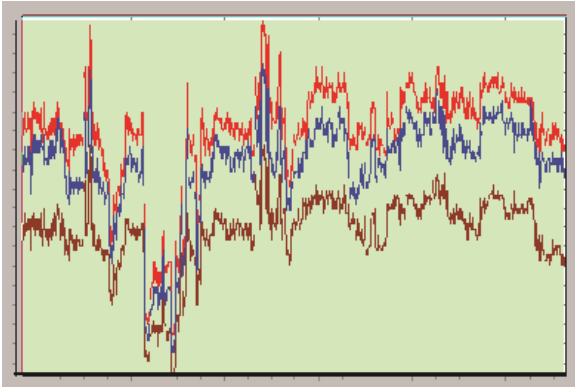


Figure 2. LineIQ data showing load imbalance.

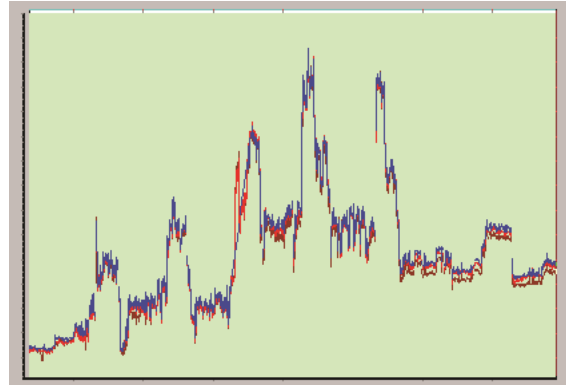


Figure 4. LineIQ data after load balancing.

The data from LineIQ confirmed that the loads on the troublesome lines were not balanced. Ergon made appropriate adjustments at the substation to balance the three phases, and used LineIQ once more to verify the results.

LineIQ data also showed that only a small section of the feeder line was in need of replacement; the majority was still operating efficiently.

OUTCOME –

Using LineIQ to obtain accurate data on transmission line quality, Ergon not only accurately balanced the load on the three-phase feeder, but also avoided the unnecessary capital expenditure of replacing conductor for the entire feeder line since only a small section was damaged—a savings of over \$200,000.

Loads balanced across the region netted operating efficiencies and improved supply quality. Complaints that had plagued Ergon for a 12-month period came to an end.