



# TSAT-based Monitoring

## Taking the Pressure off Terasen Gas' Communications Budget

*"If there were ever a rupture in our pipeline, we would know almost immediately—thanks to our Infosat satellite-based monitoring system—and shunt the gas through another route to maintain uninterrupted service, minimizing risk of serious incident. Not only is the TSAT-based system very cost-effective, but it is also highly reliable."*

**Frode Hansen**  
Group Leader Measurement  
Terasen Gas

### PROJECT SUMMARY

**Terasen's gas division was under pressure to reduce costs in all areas of their operations when the price of natural gas increased dramatically in the late 1990s. Based on their experience using satellite as a reliable back up for their landlines, they chose Infosat to install a communications system using TSAT systems. Terasen significantly reduced ongoing communications costs and saved time when deploying new monitoring points.**

### THE CHALLENGE

Terasen Gas is in the gas distribution business, where safe handling of volatile materials is paramount and equipment and human resource costs are high. The Company must ensure the safety of the gas distribution system and maintain steady flows of product to commercial and residential customers down the rugged Pacific coast. Pipeline pressure and gas temperature need to be precisely monitored in real-time at numerous points throughout the system. Terasen technicians, informed of the exact temperature and pressure at various points within the high-pressure gas pipelines, can shut down portions of the system during a rupture or equipment failure. Without this information, things could go seriously wrong.

During the late 1990s, the cost of natural gas soared. Senior management, in an attempt to stabilize the price of this commodity for customers, asked all departments to trim costs where they could.

### THE SOLUTION

Frode Hansen, Group Leader Measurement for Terasen Gas knew that one of the major costs of their remote pipeline supervisory control and data acquisition (SCADA) system was the leasing of telecommunications landlines. Hansen began investigating other methods of communication including microwave and satellite-based systems.

*"We explored using microwave towers and radio frequency to accomplish the same thing, but soon realized the mountainous terrain we needed to cover would mean extra towers and installations to ensure data flow," said Hansen. "So we dismissed microwave towers on the basis of cost and complexity, and chose TSAT satellite systems from Infosat instead."*

Although the satellite system was initially more expensive, it paid for itself rapidly and has significantly reduced Terasen's annual

communications costs. The initial rollout involved 30 stations at two kinds of site: metering stations that tie into large commercial customers and compressor stations that increase or decrease pressure at specific points along the pipeline.

### REMAINING COOL UNDER PRESSURE

Terasen's SCADA system allows Terasen technicians in the gas control centre to check exactly what is happening with the temperature and pressure at critical pipeline junctures. From the centre, they can isolate a rupture and monitor equipment failures to avoid serious equipment damage and loss of service to customers. With the TSAT satellite system, operations managers can respond almost immediately to either situation, remotely adjusting temperature and pressure, starting and stopping processes, opening and closing valves to fine-tune gas flows to meet customer needs.

### REDUNDANCY PRODUCES FAIL-SAFE SYSTEM

The monitoring system aggregates multiple data points using sophisticated communications hubs in two geographically diverse locations. One of the reasons Terasen chose the TSAT system from Infosat was the fact that it offered them the option of owning private communications hubs. Terasen is the largest natural gas producer in the province and the payback over a five-year period for this capital expenditure made sense. The purchase and maintenance of private hubs is rare, due to their relatively high costs; however, the two hubs together provide the necessary self-sufficiency that Terasen's volatile product demands. If one hub goes down, the remote transmission units automatically switch to the operational hub. Re-routing to the other hub avoids a

total system failure.

This redundancy ensures 100% uptime and reduces the possibility of lack of pipeline control under emergency conditions.

#### UNEXPECTED BENEFITS

In the past, it could take up to three minutes to poll and report pipeline station status using the previous system. Now, polling takes significantly less time, which means Hansen's team can respond to problems more quickly or adjust volumes to meet extraordinary demands.

Terasen's SCADA architects had originally installed TSAT systems as their back-up system but now it is the other way around. "Today, the cost-effective, reliable TSAT system from Infosat now plays the primary role in gathering information, while the leased landlines act as our back-up system," said Hansen. The fact that the satellite system is actually more reliable surprised Hansen's team. The communications system now averages an almost 100% successful connection rate for the remote transmitting units—a rate far higher than ever achieved with the landlines. TSAT satellite systems are highly transportable. One can be commissioned in a matter of hours, not days. Infosat installed the entire initial system in just five weeks, simultaneously training Terasen technicians to ensure they could install and maintain new systems when required. They even set up some of the TSATs in the colder regions of the gas distribution system with heaters to remove snow. "The speed with which we can add new monitoring sites has been a major benefit to us, and the reliability of the system has been proven over time," acknowledged Hansen.

In almost three years of operation, not one of the TSAT stations has failed.

#### ABOUT INFOSAT

Infosat Communications, Inc is a subsidiary of Telesat Canada, the world's most experienced commercial satellite operator. With offices across North America, Infosat serves business and government with a wide range of fixed and portable satellite telecommunications products.

#### ABOUT TERASEN GAS

Terasen Gas delivers natural gas to homes and businesses throughout the province of British Columbia. The Company is focused on connecting its customers safely, efficiently and reliably to the energy and services they need. With more than 875,000 customers in 125 communities, Terasen Gas is the third largest utility in Canada and the largest natural gas distributor in the province.

**To find out how Infosat can help your business communicate and save money, contact:**

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