



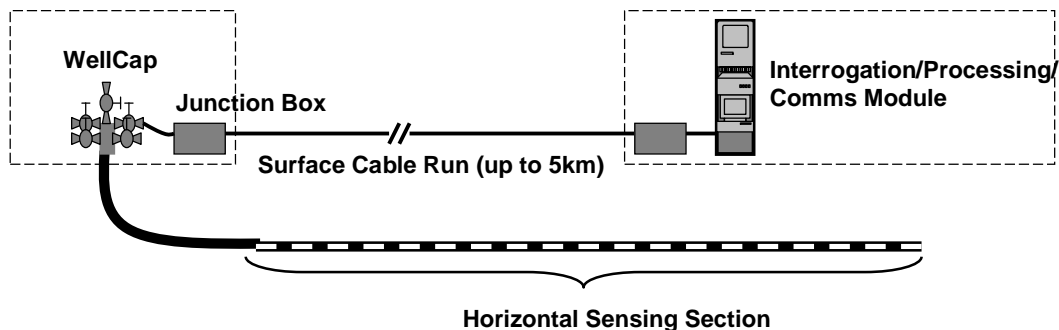
## Product Overview: LxIQ™ SAGD Thermal Monitoring System

### Introduction

Based in Canada, LxSix Photonics is a well monitoring services company with operations in Alberta. LxSix leverages a mature optical sensing platform to provide monitoring systems that deliver high quality data, reliably, in a number of markets. LxSix is pleased to introduce the LxIQ™ thermal monitoring system developed specifically for continuous, reliable use in the rugged SAGD environment. This system reports in real time, accurate thermal measurements across the horizontal wellbore section to provide SAGD operators an important new downhole tool to better manage steam operations and optimize production.

### Product Description

LxIQ™ thermal monitoring system is a turn-key solution- fully integrated, installed, commissioned, and interfaced to customer SCADA systems with available local on-call support and service. Reliability of the system is realized through a passive optical downhole section, resistant to high temperature and chemical effects that challenge competing technology, connected to a surface interrogation and signal processing unit located in the MCC.



The LxIQ™ thermal monitoring system is built upon a standard set of components that can be easily configured to accommodate a range of configurations and options to suit specific customer requirements. Experienced LxSix project managers work closely with customer teams to define the right solution, and then act as a single point of contact to manage all aspects and logistics throughout the project- from initial site survey through installation and follow on support.

### Downhole Instrumentation String

A steel-armored optical sensing cable is housed within a standard Coiled Tubing instrumentation string. Other sensing cables as well as optional thermocouple cables and bubble tubes are also available in the

instrumentation string which is delivered to the well site fully integrated, ready for installation. The CT instrument string is terminated at the hot end and wellhead using convention hardware and techniques.

## Surface System

The CT instrumentation string exits the wellhead and uses a standard wellcap to seal the sensing cable and optional components. The sensing cable is then terminated at a junction box which is connected to a transmission cable to the MCC. This cable is rated for both aerial and buried deployment, and is compatible with conventional cable routing and management hardware.

## MCC Cabinet

A standard instrumentation rack houses the sensor interrogation unit, electronics processor, and communications shelf. An optional switch module is available to allow a single unit to interrogate and process up to 16 instrumentation strings. The cabinet is rated for typical MCC environment, and comes with UPS and battery backup unit. Data is communicated over customer Ethernet connections or similar arrangement.

## System Specification

Parameter	Value
<b>Operating Performance</b>	
Temperature Measurement Range	50° to 230°C
Temperature Accuracy	+/-2.5°C from 150°C to 230°C
Temperature Resolution	+/-0.01°C
Update Rate	10s/channel
Typical Operating Lifetime	>5 Years
<b>System Configuration</b>	
Number of Channels/ Cabinet	Up to 16
Number of Sensing Points/Sensor Cable	40
Maximum Sensor Cable Length	1.5 km
Nominal Sensor Spacing	20m
Maximum Surface Cable Run	5km
<b>Surface Instrument Module</b>	
Cabinet Housing Type	NEMA Enclosure
Surface Power Requirements	500W (Integrated UPS w/Battery Backup)
Data Transfer Protocol	MODBUS over TCP
Surface Cable Operating Temperature	-40 to 85
Surface Cable Operating Humidity	0 to 100%
Surface Operating Temperature	0 to 40°C
Surface Operating Humidity	0 to 80% Non-condensing
<b>Environmental Conditions</b>	
Maximum Non-Operating Temperature (sensing cable)	300°C
Maximum Pressure (sensing cable)	5,000psi
Cabinet Storage Temperature	-20 to 50°C
Minimum Storage Temperature (All Cables)	- 40°C
Non-Operating Vibration	10grms 20-200Hz

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## Installation

LxIQ™ thermal monitoring system comes to the well site already integrated in the coiled tubing instrumentation string and is installed using a conventional CT injection rig. Installation crews are fully trained and certified for site operations, and adequately staffed to complete installation and commissioning of the full up system typically within 48 hours.

## Service and Support

LxIQ™ comes with an unconditional warranty against material defects for up to one year. A range of warranty and service options are available. The LxIQ™ system is unique in having diagnostic sensors integrated in tandem with the thermal sensors to enable remote system aging and health monitoring. This service is also available as part of the support service offering. LxSix is partnered with PetroSpec Engineering Ltd- a leading supplier of well instrumentation products and services in Edmonton, for installation and support of the LxIQ™ in Alberta.

## HSE

LxSix has a designated organization in place for regulating safety and environmental policy throughout the company. All employees are trained within this system and are fully aware of the impact of incidents on the operation of the business. LxSix follows the standard response priority of people, environment, property and business. Field trial personnel will undergo additional training specific to operational procedures unique to the particular installation as well as any additional training specified by the customer. Field personnel come to the job site fully equipped with necessary safety protective equipment.

## About LxSix Photonics

Based in Montreal, LxSix Photonics Inc. is an oil and gas technology company providing well monitoring systems and services in Alberta. LxSix leverages a unique optical sensing technology to provide reliable well monitoring solutions where traditional sensors are ill suited to meet environmental performance, or are unable to be configured in distributed sensing architectures cost-effectively. LxSix has released the LxIQ™ thermal monitoring solution targeting thermal bitumen recovery sector of the Canadian oilsands industry. The initial release is designed specifically for coiled-tubing conveyed horizontal SAGD well monitoring, to be followed soon by a vertical slickline solution. A higher temperature upgrade of each is planned in 2008, suitable for CSS wells and high pressure SAGD applications.

## Contact

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