The SignalFire system is a robust, short-range mesh network designed to give asset managers access to valuable process data. Easy to install and sensor-agnostic, the wireless telemetry system can interface with many sensor types such as flow, level, pressure, and temperature, in controlling devices such as pumps, valves, heaters, fans, and lighting.

Designed for challenging industrial environments, the SignalFire Remote Sensing System has been deployed in oil and gas fields, irrigation systems, water treatment plants, as well as a variety of other remote applications.

SignalFire’s break-through technology is also used in plants to allow plant managers to wirelessly transfer critical asset data from remote locations to gain greater control and visibility over process operations, while saving thousands in labor and system costs.

**BENEFITS OF WIRELESS:**
- **Installation Savings** – eliminate surveys, trenching, conduit and wire costs
- **Faster & More Accurate Data Delivery** – replace manual readings with more frequent measurements
- **Improved Operator Safety** – actuate valves and get data from safe location
MESH TECHNOLOGY

SignalFire’s unique two-way mesh technology provides the power and stability needed for reliable data transfer. We couple an innovative message-forwarding architecture with low-cost, high-power ISM-band radios, creating a simple, affordable system that’s easy to deploy.

Our mesh-based technology is ideal for applications calling for many assets widely dispersed (up to 3 miles point-to-point); transfer of simple data in small volumes; and occasional rather than real-time reporting frequency. This system’s use of long range radios solve the problem other wireless systems have with hills and buildings causing obstructions.

SMART TECHNOLOGY

• Wireless nodes install themselves automatically into the network configuration
• Offline nodes “time out” to alert the system controller when there’s a problem
• Nodes survey for and adapt to network changes
• Transmits diagnostic data

COMPATIBLE SENSOR TYPES:

• Analog 4-20 mA, 1-5 volt
• Modbus
• HART
• Digital I/O, Counter/Totalizer
• Thermocouple, RTD
• Other Analog and Digital Interfaces

TRULY WIRELESS DATA TRANSFER

In battery-operated mode, the nodes enable truly autonomous sensor operation. As the batteries power the nodes and the sensor, running power lines is not necessary. Solar power units are also available.
INDUSTRIES/APPLICATIONS

VERSATILE, SENSOR-INDEPENDENT TECHNOLOGY FOR MANY INDUSTRIES

While SignalFire’s roots are in O&G well pad automation, the technology is applicable for midstream/pipeline, refining, petrochemical, chemical processing, agriculture and water/wastewater facilities. SignalFire is not in the sensor business so it doesn’t matter to us which brand or type of sensor you are using, making retrofits a breeze. Here are a few example industries:

OIL & GAS FIELD

Onshore Well Pad Monitoring & Control - Due to the remote nature of this industry, onshore well pad operations are ideally suited to SignalFire’s wireless telemetry networks. Our system is sensor independent, battery-powered, and C1D1 certified for use with a wide variety of system sensors used in the oil field.

- Tank level monitoring
- Tubing, casing, line pressure monitoring
- Remote well shutdown
- Chemical injection/flow measurement
- Gas monitoring (vented, flared, bio gas)
- Temperature monitoring
- Oil and water flow measurement
- Pump performance monitoring
- Valve position monitoring & actuation
- Plunger lift monitoring & control

WATER & WASTEWATER

Precise systems management of a water treatment program is essential to reduce risks associated with under or over treating water, comply with current regulations, and improve plant productivity.

- Pump performance monitoring & control
- Lift station monitoring (sump level, pump runtimes/temp/vibration, AC power fail, flow blockage)
- Level monitoring (reservoirs, water towers, tanks)
- pH level monitoring

CHEMICAL PROCESSING

The chemical processing industry is another good fit for SignalFire products due to the vastness of the facilities, both inside and out. As in any processing industry, monitoring and control of numerous assets is needed on a continuous or scheduled basis. Adhering to safety standards and regulatory requirements require reliable data transmission.

- Tank level monitoring
- Chemical injection/flow measurement
- Batch processing/flow measurement
- Steam trap monitoring
- Pressure & temperature monitoring & control (process lines, cokers, heaters, boilers)
- Pump performance monitoring
- Valve actuation/pump control (pressure relief & shutoff valves)
SIGNALFIRE PRODUCTS

**SENTINELS**

Intrinsically Safe Modules for Hazardous Areas

The Sentinel provides power and a wireless link to industry standard sensors.

Interfaces available:
- HART
- Analog
- Digital
- Modbus
- Turbine
- Thermocouple
- RTD

Optional Class 1, Division 1 solar/battery module

- Powers sensor and radio for years with a internal battery
- Class 1 Division 1 intrinsically safe system
- Optional Class 1 Division 1 solar module with integrated charger, battery panel, and mounting bracket
- Costs less than 60ft of installed conduit
- Rugged design for demanding outdoor environments
- Up to ½ mile range
- Sensor independent
- ⅝” NPT conduit interface
- Automatically configures as a star or mesh network
- Simple to install and maintain

**PRESSURE SCOUT**

Intrinsically Safe Wireless Pressure Sensor

The Pressure Scout is a pressure sensor with integrated radio and battery. Available in various pressure ranges.

- Powers integrated pressure sensor and radio for years with an internal battery
- Class 1 Division 1 intrinsically safe system
- Rugged design for outdoor environments
- Up to ½ mile range
- ⅝” NPT process connection standard
- Rapid pressure sampling with configurable alarms and report by exception

**GATEWAYS**

Integrated Gateway and High-Gain Antenna

The Gateway is the central point of the wireless network. All data from remote nodes is collected at the Gateway.

Interfaces available:
- Gateway DIN Mount
- Gateway-In-a-Stick
- Ethernet Gateway

- Modbus interface (RS485 RTU or Modbus TCP with optional Ethernet Gateway Interface Module)
- Up to 3+ mile range
- Stores all sensor data in Modbus format
- Manages outbound communications
- Low power consumption
- Integrated high-gain omnidirectional antenna and Gateway electronics
- Supports wireless configuration of remote nodes and HART devices via PACTware or Radar Master

REMOTE SHUTDOWN SYSTEM

Gateway or PLC controlled asset monitoring and shutdown system

- No PLC programming required
- Simple table-based configuration logic
- Configurable failsafe features
- Up to 3+ mile range

A2 3-MILE RANGE NODE

Multiple-input modules for sophisticated data transmission over distances of up to three miles between nodes.

Interfaces Available:
- Analog (1-5V, 4-20mA)
- HART
- Modbus
- Thermocouple

- Powers sensor and radio for years with an internal battery
- Optional solar power package
- Costs less than 60ft of installed conduit
- Rugged design for demanding outdoor environments
- Up to 3-mile range
- Sensor independent
- ½” NPT conduit interface
- Automatically configures as a star or mesh

TANK LEVEL FLOAT STICK SYSTEM

Intrinsically Safe Wireless Tank Level Monitoring System

Complete tank level system, available with flexible or rigid magnetostrictive level probe with single or dual floats for level and interface measurements.

- Rugged oil field proven
- Complete wireless tank level monitoring solution
- Wireless configuration
**WIRELESS I/O MODULE**

**DIN Mounted Node for Wireless Network**

Operates as a pair in point-to-point mode for I/O mirroring applications or as a remote node as part of a SignalFire network.

- 4 analog inputs
- 4 analog outputs (0-20mA or 0-5V)
- 2 digital inputs
- 2 digital outputs (1 DPDT, 1 SPST)
- Acts as a repeater for other SignalFire wireless devices
- Wide range DC power input (10-30VDC)
- Low power consumption
- DIN rail mount with pluggable screw terminal blocks
- Status LEDs

**CHEMICAL INJECTION SYSTEM**

**Control & Diagnostic System Monitoring of Chemical Injection Volumes into Well**

Remotely calibrate the flow of chemical from the tank to the well to ensure a precise output during a specific interval.

- 5 Operating Modes
  - Timed – Inject on a timed schedule
  - Auto Volume – Specify a daily injection quantity (quarts/day)
  - Auto Production – Specify well production rate and desired chemical dosing PPM, requires flow rate data from a flow computer. Injection rates will automatically change with production.
  - Manual – Manual on and off
  - Temperature – Set temp limits to start or stop all injection based on ambient temperature

**OTHER INTERFACE MODULES**

SignalFire provides a variety of interface modules specifically designed for easy connectivity and communication with their suite of wireless networking products. Choose the best module for your system, or a SignalFire representative can help you design a system that meets your needs.

- Connector Breakout Board – to configure and connect to “Stick” products
- Remote Shutdown Device – for use with the RSD Stick
- Ethernet Interface Module – with Modbus TCP interface
- Gateway Output Module – with 8 analog outputs and 2 relay outputs
- Multi I/O Stick System – with 8 analog and 6 digital inputs, can be connected to a variety of devices, for use with Modbus Stick System
- Totalizer Module – stores the last 30 daily totals, ideal for flare monitoring