Whether you are an oil and gas producer, operator or field service provider, one of the top questions on your mind is “how do I collect and process data from all my remote equipment reliably, cost-effectively and in a way that shows compliance with regulations?”

At the same time you might also be wondering how you can aggregate the data from all your sites so you can have a consolidated view of your operations and identify trends and opportunities for optimization.

While a good SCADA system can solve the problem of extracting and collecting data from remotes systems, there are many challenges in choosing the right SCADA system. These include:

- Variety of equipment types and models that need to be monitored and controlled
- Remoteness of sites for installation and maintenance
- Communication availability, reliability, and costs
- Costs and complexity of integrating data from disparate systems
- How to interpret data into alarms and other actions that makes sense for your business
- Ability to access data from all sites and change equipment configuration remotely
While the problems are complex, a web-based SCADA system can help to solve these problems. Here are 8 items to consider when selecting a web-based SCADA monitoring and control system:

1 **CONNECTING TO ALL EQUIPMENT**

When looking at connectivity, there are two areas to consider: extracting the data from the equipment and relaying the equipment to a central location for operation decisions and metrics.

When choosing on-site equipment, consider whether it has been constructed and tested with the site’s specific physical conditions in mind. The equipment needs to be certified for the site (e.g. Class 1, Division 2 certification). To be cost effective, it must be robust enough to handle extremes or large swings in temperature. In addition, the equipment should be in environmental casing that is as rugged as the site requires or mounted in a physical enclosure if space allows.

Another point to consider is the number of components required on-site. As components and moving parts increase, so does the need for both preventative and reactive maintenance, and a higher overall risk of failure. Choosing multi-function devices helps to reduce the complexity of the on-site equipment architecture as well as the costs associated with equipment integration and installation. For example, many satellite messaging terminals already have an onboard computer that offers the flexibility to connect to various types of sensors and equipment without the additional costs of external controllers or RTUs. They are also programmable, allowing many decisions to be made locally without the costs associated with sending excessive data over-the-air.

2 **REPORTING**

There are many facets for data reporting to consider when looking at a SCADA system. These include sending regular operational information, checking equipment configurations, altering the configuration of equipment to increase or decrease the amount and type of data reported, and creating automated reports that are based on data across all sites and browsers.

All of the above reporting functions can be easily supported with a web-based SCADA system as long as there is a reliable communication infrastructure that meets required service level agreements in place. The communication backbone must support two-way communication for both reporting of data and reconfiguration of reporting frequency from a web-browser. It should also meet minimum latency requirements where response from query from equipment can be received in seconds rather than minutes or hours. Last but not least, the communication backbone should be flexible. Keep in mind that the communication links will move as sites move and evolve. Satellite messaging service can be sourced to meet these requirements and provide the additional assurance that all equipment across locations are operating to the same standard.

Another consideration when looking at reporting functions is that the system must be able to provide quick comparison of metrics, identify trends and generate reports using relevant data from different sites. Customizable reports are also very useful as they are more likely to simplify and quicken the decision-making processes that impact operating costs and capital expenditures.

3 **DIAGNOSTICS, ALARMS AND NOTIFICATIONS**

Many on-site SCADA systems cannot read alarms and events
which in some regions are required by regulators. Other systems may have the ability to gather alarms and events but do not have means to send this information and are merely archived locally. This adds the cost for staff to travel to the sites to collect data from hard drives. There are also risks of substantial loss of data if unmonitored SCADA equipment fails.

When implemented correctly, a web-based SCADA system with a strong communication backbone can continuously monitor and transmit equipment data and events, look for remote issues and generate alerts when the need arises. For example, this type of system alleviates searching through pages of equipment information to discover problems that may have already increased costs due to damage of equipment or slowed production. It can also detect and notify a manager right away if a power failure has occurred. With immediate notification, the problem can be rectified immediately and eliminate/decrease the need to make estimates or accept losses.

Using satellite messaging communications with a web-based SCADA system provides all of the above benefits and allows operators to verify operating conditions by downloading historical data, changing alarm limits and equipment configuration remotely and across all operations, without driving to sites.

4 REGULATORY COMPLIANCE
The ability to prove regulation compliance is a must for all energy companies. A web-based SCADA system with a reliable communication system allows a business to gather any information in a timely manner without requiring personnel to drive to remote sites. It also enables an accurate and comprehensive view as to whether all sites are in compliance from a single portal.

For remote sites where cellular or radio links are not available or are not easy to put into practice, a web-based SCADA system integrated with satellite messaging communications also allows personnel to change configuration and alarm thresholds remotely for completeness of data and the gathering of any missing data.

A web-based SCADA system can also act as a central repository for regulatory data and eliminate the use of disparate systems with different access portals. Web-browser access ensures everyone from operations to maintenance can access the data from a smartphone, tablet or PC.

5 SECURITY AND ACCESSIBILITY OF DATA
There are many aspects to consider when thinking about accessibility of data. First, data needs to be sent from the remote sites using a strong communication backbone that does not require a time intensive implementation.

Once data from remote sites is successfully being transmitted, the secure access of reports and alarm data from a central location ensures that operations, third-party companies and head office can easily access any required information. Since web-based SCADA systems are connected to the internet behind a password-protected interface, operators can access SCADA information via smartphones, tablets and PCs.

The system also proves to be valuable for auditors and regulators as they have complete access to mandated information. Web-based SCADA systems allow all sites within an organization to store historical and regulatory information in a single location. It also creates an easy way to produce an information trail during audits.
6 EASE OF USE
A web-based SCADA system can help to ease the challenges associated with incorporating new and legacy systems by unifying the configuration and reporting to a single interface.

Within the infrastructure of a web-based SCADA system, different equipment protocols can be implemented that take care of the reporting, diagnostic and alarming functions. This eliminates the need to train various personnel to work with the multiple systems. It also reduces the time it takes to extract data and reconfigure equipment. Web-based SCADA systems also provide more flexibility when choosing on-site equipment as many of the operating functions can be standardized behind a web interface.

7 INTEGRATION WITH OTHER BUSINESS SYSTEMS
SCADA systems hold vital business information such as production history data. It is important that all of this knowledge is accessible to other business systems such as accounting and maintenance.

A web-based SCADA system is flexible enough to input data into other business systems in multiple formats and automatically tracks the status of information transfer. The result is a significant reduction in the amount of time spent manually inputting data to the various information technology systems that support a business. Web-based SCADA systems are also more flexible in their data output formats and can be adapted to changing requirements much more quickly.

8 ON-GOING SUPPORT AND COSTS
Beyond the technology, it is important to consider the provider of the web-based SCADA system. Work with an expert who has the knowledge and experience in successfully transferring data from remote sites to the company’s ERP system, making it accessible to all relevant departments and employees.

A good web-based SCADA system with a strong communication backbone can solve the issue of accessing and integrating data from disparate remote sites with varying equipment into enterprise reporting systems. However, it is important to choose a provider that can meet the on-site and in-office demands. To find out more about web-based SCADA systems, read about *NetFlow – Remote Data Site Capturing and Monitoring*. To find out more about satellite messaging terminals and their uses in the remote monitoring and SCADA market, visit us at *skywave.com*.

**About CriticalControl** - CriticalControl Energy Services Inc. is a provider of NetFlow, a web-based SCADA system for the oil and gas industry. With NetFlow, customers can monitor and manage remote production and processing sites in real-time. NetFlow optimizes operator visits to sites, thereby minimizing production downtime.

**About SkyWave** - SkyWave Mobile Communications is a provider of wireless satellite and satellite-cellular data communications for the Machine-to-Machine (M2M) market. SkyWave’s M2M portfolio of communication terminals and network services enable applications that provide businesses with the capability to track, monitor, and remotely manage their fixed and mobile equipment. SkyWave delivers real-time information when you need it — to and from anywhere in the world.