

FRIEND

Remote surveillance and diagnostic system

APPLICATIONS

- Equipment integrity monitoring
- Flow assurance risk evaluation
- Planning and scheduling of subsea interventions
- Safeguarding best practices in equipment operations
- Subsea production system surveillance
- System-wide production performance evaluation

FEATURES AND BENEFITS

- Provides flexibility and choice of production optimization
- Condition- and campaign-based maintenance, invoked by condition monitoring
- Expert assistance for production testing activities
- Field data interpretation and evaluation, plus optimized equipment utilization
- Interactive analysis tools and operational performance indicators for equipment operational assistance
- Online web portal with access to real-time data from field startup (equipment signature)
- Periodic validation of performance and status
- Production-specific reporting
- Around-the-clock help desk and access to our technical experts on duty
- Web access to project document library and equipment management

MONITORING PORTFOLIO

- Multiphase metering systems
- Pumps and subsea process systems
- Subsea trees and production systems
- Swivel and marine systems

Real-time performance and condition monitoring of subsea equipment

Subsea oil and gas wells represent some of the most complex and expensive field production investments that an operator can make. As a result, it is critical to keep these systems running at their best, as well as proactively address any operational challenges before they become issues that may curtail production, significantly impact the surrounding environments, or require complex and costly intervention.

Condition monitoring based on real-time data is an integral part of the operational support that OneSubsea provides for a portfolio of its products and systems.

The OneSubsea FRIEND* remote surveillance and diagnostic system provides valuable diagnostic information that enables proactive support for operational challenges and early detection of potential equipment upsets, thereby:

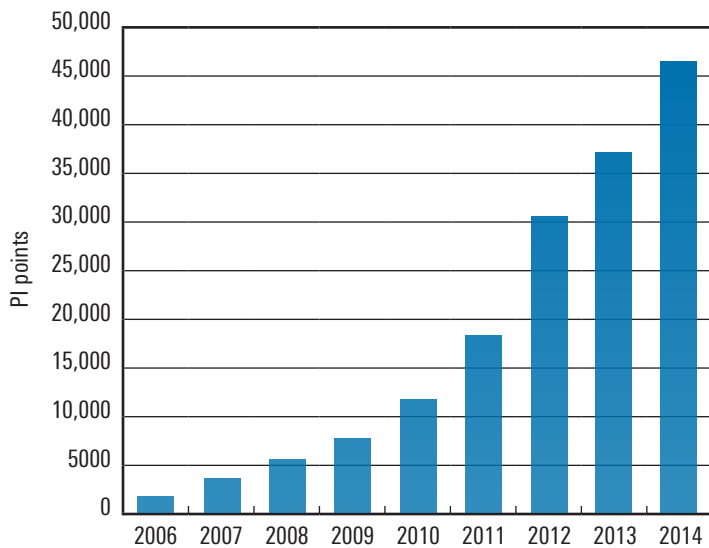
- Avoiding interruptions to production
- Extending equipment life
- Reducing operational costs
- Safeguarding equipment uptime
- Reducing unplanned interventions



Expert advice, always available

The FRIEND system features a real-time historian database that makes event-driven data collection and trending of historical data possible. In addition, the system's automated alert feature continuously monitors equipment performance for suboptimal process and system conditions. OneSubsea has support engineers on staff 24/7 who are immediately notified of any alarm conditions or causes, and can quickly act to mitigate or even prevent an upset condition and keep the equipment running at the desired level of output, integrity, and reliability.

This information enables OneSubsea to provide a proactive service through an integrated working methodology – securing best practices in operation and maintenance of the subsea products we supply.

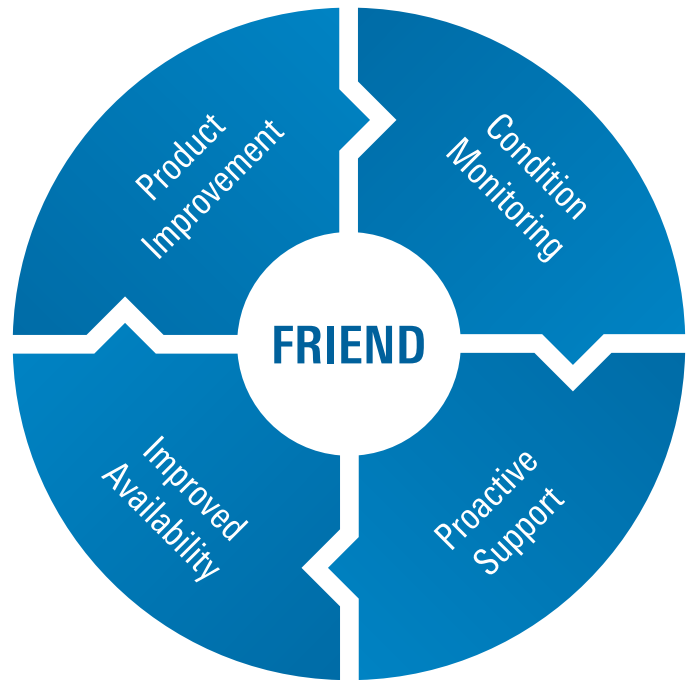


Since 2006, the FRIEND system has grown considerably in application, monitoring more than 40,000 quality data points from over 100 subsea systems worldwide, and achieving an availability uptime of 99.82%.

A cycle of continuous improvement

In addition to notifying the operator of suboptimal operating conditions, the FRIEND system also generates frequent reports (monthly reports are typical) that detail the ongoing operation of subsea equipment. These reports evaluate the equipment's operability as related to meeting predetermined KPIs, identify any unexpected events, highlight areas of concern, and suggest operational improvements. Preventative maintenance actions also are proposed.

This reporting provides a continual performance improvement cycle, whereby the results of real-time condition monitoring spur proactive support activities that help improve equipment availability and run time. Improvements to the operation and reliability of subsea equipment ultimately lead to improved well efficiency and reduced nonproductive time (NPT) and safety risks.



The FRIEND system allows for regular feedback and ongoing improvements to the operation of subsea equipment, which leads to improved KPIs, reduced downtime, and suggestions for operational adjustments that improve well production.

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