Remote Diagnostic Services
Helping partners maximize up-time
Marine Service - our goal
To help our partners maximize trading days

We understand the serious implications of a vessel off-hire

- ABB secures availability with fast response time

We understand the value of money and time

- ABB secures reliability through top-notch design, advanced diagnostic systems and condition based maintenance
Our customers cannot afford delay in their operations

- Problems must be solved as fast as possible.

Not only about minimizing downtime, but also for safety

- Vessels operating in harsh environments don’t have much time to act when there is a failure.
Helping partners maximize up-time
RDS is all about fast response time

RDS reduces the repair time of installations, hence improving the availability and safety of operations

- Reduced need for on-site visit by providing remote access to the installed base and control system.
- Advanced diagnostic functionality simplifies the fault-finding process and reduces the time to identify and fix the problem.
- With RDS, an ABB virtual Service Engineer is always on board.
Experts on the other side of the line
Our knowledge is our most precious asset

Problem fixed within a call distance
- RDS Team is trained to support all ABB Marine Systems included in the agreement

If the solution exists, we know it
- Engineers at the RDS Center in Norway have direct contact to technical experts within the ABB network for each ABB product and system on board

All needed data brought up in a blink of an eye
- All incidents, work hours, requests and orders are logged and recorded for easy tracking
How does that work?
Understanding the concept

- The Remote Diagnostics system is built with so-called ‘diagnostics objects’ that are engineered to monitor certain physical assets in the power and propulsion chain.

- These diagnostics objects are designed to record all needed info related to the performance of assets being monitored and thus to provide the best fault-tracing, troubleshooting and condition-related info to the operator on board and at the RDS center.
Monitoring and diagnostic platform
DriveMonitor™ - The heart of the system

- A dedicated monitoring and diagnostic platform for collection, storage and analysis of data from onboard components, sub-systems and complete system solutions
- When connected to a remote system, a range of specialized remote diagnostic solutions are available to determine equipment status and, in event of a problem, identify the root cause
Software package installed on board

- Acts as a software-site-manager
- Its main purpose is to set up a secure communication with the Service Center and signal its availability for a remote maintenance section.
- VSE will automatically contact the Service Center from anywhere in the world to make remote connection possible
Review so far...
What are the real benefits?

“RDS reduces the repair time of installations, hence improving the availability and safety of operations”

We secure **availability** by

- Fast troubleshooting, which reduces the time required to identify and correct the source of a problem
- Providing immediate assistance in critical situations from a 24/7 global technical center

We secure **safety** by

- Enabling preventive maintenance, which detects potential issues before they escalate, degrade performance or cause system failure
- Rectifying single components failures as quick as possible

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Month DD, Year | Slide 9
Available solutions
Diagnostic for propulsion

MV and LV Frequency Converters
- Fault logging and handling
- Dataloggers upload
- Signals and Parameters long term monitoring
- Service Message – time based preventive maintenance

DCU application
- Alarms and events upload
- Continuous monitoring of critical signals
- Alarms and signals statistics

ACS6000 Drives
ACS800 Drives
ACS600 Drives
STADT Drives
DCU4,5,6 Application
Available solutions
Diagnostic for Azipod® systems

Azipod systems

- Azipod® XO
- Azipod® V (+retrofit)
Available solutions
Diagnostic for drilling systems

LV Frequency Converter
- Single inverter monitoring (different types of drives)
- Multi-drive level analysis
- Supply units and liquid cooling units

Drilling drive control application
- Alarms, events and signals statistics
- Monitoring a chain of command
Available solutions
Diagnostic for switchboards

MV Protection Relays
- Timesync
- Alarms and events log history
- MCB openings/closing count
- Power generation and distribution monitoring
- Transient recorders upload
- Power Quality Analysis (THD, Voltage Asymmetry, distortion)

Measurements available for
- Motors and generators
- Transformers
- Thrusters
Available solutions
Diagnostic for machines

Diagnostic for Machines – entire shaftline CBM

- Generator → MV Drive → PCU → MV Switchboard → Gearbox → Propulsion Motor

- LNG tanker case:
RDS agreements
What best fits your business

The RDS system can be offered as an integrated part of the delivery to newbuildings or installed as a retrofit.

Once the infrastructure is in place, three levels of support can be agreed upon:

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<tr>
<th>Troubleshooting</th>
<th>Preventive</th>
<th>Continuous</th>
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<tr>
<td>Gives access to on-demand assistance in diagnosing specific events and failures</td>
<td>Adds periodical system aidtis and health checks, including recommendations for further actions</td>
<td>Extends the latter two within continuous proactive condition monitoring, based on hourly system updates and the automatic transfer of events</td>
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- Provides assistance/guidance in taking corrective actions
Customer case 1
Drillship Dhirubhai Deepwater KG2, Transocean

Customer’s situation:
- Communication loss to Mud Pump 1A caused serious delay in operation.
- On board crew was not able to determine the root cause of the problem.

ABB’s response:
- With advanced data analysis, ABB identified the root cause and communicated with the crew on board, who in turn took respective actions and solved the problem in less than 24 hours.

"Without the RDS solution this system could well have been down for days and weeks, instead we were down less than 24 hours. It is very comforting to know that we have real time support only a phone call away.”

Craig Johnston
Electric Supervisor,
Transocean Dhirubhai Deepwater KG2
Customer case 1
Drillship Dhirubhai Deepwater KG2, Transocean

Extended downtime of equipment could have represented a significant production loss to Transocean

ABB helped the crew minimize the downtime and fix the problem in less than 24 hours
Customer case 2
FPSO Yùum K’ak’Náab, BW Offshore

Customer’s situation:
- Drive tripped due to component failure.
- Reduced cargo transfer capacity lead to delay in production.
- On board personnel not able to determine root cause of the problem

ABB’s response:
- Based on alarm and events participating crew was instructed to perform physical tests on specific parts related to the fault.
- The faulty part was detected and replaced with on board spare part.
- Problem solved within 5 hours
“The Remote Diagnostics Services provided by ABB is excellent.

The process of solving problems between ABB and on board personnel has been excellent, inclusive response time, reporting and auditable trail of problem solving process”.

Isak Arne Stensaker
Maintenance Supervisor,
FPSO Yuum K’ak’Naab
BW Offshore
Power and productivity for a better world™