

Digital Solutions

Turn Drilling Data Into Better Performance.

BENTEC
Bold Engineering+Technology

Digital Solutions

Digital Technology Built Around Drilling.





Developed to solve real operational challenges at the rig.

Today's drilling operations generate more data than ever. Value comes from turning that data into better decisions, more consistent performance and safer, more efficient operations. BENTEC digital solutions connect people, equipment and operational data to give drilling teams greater visibility, automate repetitive processes and optimize critical drilling activities.

From individual performance applications and equipment monitoring to integrated rig control and drilling data systems, our technologies can be deployed individually or combined to support the digital evolution of new and existing drilling assets.

Digitalization should make drilling better, not more complicated.

BENTEC combines drilling engineering expertise with automation, software and data technologies to develop solutions around the realities of rig operations.

Whether the objective is to improve directional drilling, optimize equipment performance, reduce unplanned downtime, enhance operational visibility or increase automation, our digital solutions help to apply technology where it creates meaningful operational value.

Designed for integration into new and existing assets, we address a specific challenge today while providing a pathway towards greater connectivity and automation tomorrow.

- ✓ **Drilling expertise**
  Digital technologies developed around real drilling processes, equipment and operational requirements
- ✓ **Performance optimization**
  Turn operational data into actions that improve drilling consistency, efficiency and equipment performance
- ✓ **Flexible integration**
  Deploy individual applications or integrate multiple technologies across new and existing drilling assets
- ✓ **Future-ready operations**
  Build a digital foundation that supports increasing automation, remote operations and data-driven drilling

From Data to Action.

Connecting information, insight and automation across the drilling operation.

Every drilling operation is at a different stage of its digital journey. BENTEC digital solutions can address a specific operational challenge or work together as part of a broader digital environment, giving you the flexibility to introduce technology where it delivers the greatest value.

- Connect
- Visualize
- Analyze
- Optimize
- Automate
- Predict

Digital Solutions Across the Drilling Operation.

Integrated Rig Operations

Bring the drilling environment together.

SYNAPSE™ integrates equipment controls, drilling instrumentation, CCTV and automation into a streamlined operating environment designed around the driller.

SYNAPSE™ EDR captures, integrates and visualizes drilling data to provide the operational visibility needed for increasingly data-driven drilling.

Equipment Intelligence

Know more about your equipment.

rigCARE™ , rigCARE™ prevent and Condition Monitoring provide greater visibility into equipment condition and performance, helping maintenance teams identify developing issues and move towards more proactive maintenance strategies.

Operational Safety

Technology that supports a safer rig floor.

Anti-Collision System and Red Zone Supervision (FX-Control) use intelligent monitoring and control technologies to help reduce equipment interaction risks and personnel exposure during drilling operations.







Digital Solutions

SYNAPSE™

One Rig.
One System.
Total Control.



Applications

- Oil & gas
- Geothermal
- Onshore
- Offshore
- Rig newbuilds & retrofits

The Operating System for Modern Drilling.

SYNAPSE™ transforms the driller's cabin into a fully integrated operating environment where equipment controls, drilling instrumentation, CCTV and automation work together seamlessly.

Designed around the way drillers actually work, it streamlines complex operations and gives oversight while creating the digital foundation for automated and remote drilling operations.

Designed from the ground up by drillers, for drillers

- System redundancy
- No hardware or software license restrictions
- Remote ready

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Today's drillers operate across multiple disconnected systems

Separate controls, drilling instrumentation, surveillance cameras and equipment interfaces increase workload, reduce visibility and make automation difficult.

Operators are under increasing pressure to:
- Reduce operator workload
- Improve drilling consistency
- Enable remote operations
- Increase equipment visibility
- Future-proof rig control systems

Critical information is often spread across multiple systems, making it harder to maintain complete operational awareness and make informed decisions.

Why BENTEC?

One interface.
One operating system.
Unlike traditional driller's cabins or standalone cyber chairs, SYNAPSE™ brings every critical rig system together into one intuitive operating environment.

- Drilling controls
- Instrumentation
- CCTV
- Intercom
- Automation

- ✓ **One integrated operating environment**
- ✓ **Reduced operator workload via streamlined procedures**
- ✓ **Improved drilling consistency**
- ✓ **Greater operational oversight**
- ✓ **Remote-ready operations**
- ✓ **Future-proof digital infrastructure**



Designed to deliver

- ✓ **Complete rig oversight**
  Brings drilling controls, instrumentation, CCTV and communications together in one integrated operating environment
- ✓ **Smarter decisions**
  Real-time drilling data, trends, alarms, seamless communication and supervision help drillers make faster, more informed operational decisions
- ✓ **Built around the driller**
  Scientifically validated ergonomics, intuitive controls and flexible layouts reduce fatigue and improve operator performance
- ✓ **Ready for automation**
  Supports repetitive automated drilling sequences while providing the flexibility to integrate future equipment and applications, enabling agile development frameworks if needed
- ✓ **Future-proof by design**
  Browser-based interface eliminates dependency on proprietary hardware and software licenses
- ✓ **Maximum system availability and safety nets**
  Fault-tolerant redundancy protects operations from single-point failures across servers, screens, networks and your data

Proven performance

- ✓ **Redundancy across screens, networks and servers**
- ✓ **Developed for specialist ergonomics and medical technology**
- ✓ **Scientifically validated through real driller observation, simulation and field testing**

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SYNAPSE™

Integrated Drilling Control & Operating System

Hardware

Cyber chair	Fully adjustable ergonomic operator chair developed with ergonomics specialists
Operator displays	Multiple redundant industrial touchscreen displays (i.e. 2 chair-mounted, 2 front-mounted)
Operator controls	Integrated joysticks, touch encoder and fixed-function safety controls
Communications	Integrated PA microphone and CCTV control
Control hardware	PLCs with dual hot-standby servers
Power protection	UPS-backed control architecture
Operating environment	ATEX Zone 2 compatible

Digital platform

Architecture	Browser-based interface
Visualization	Widget-driven, fully configurable operator interface
User access	Unlimited browser-based clients (no software license restrictions)
Rig integration	Equipment controls, EDR, CCTV, PA and automation
Drilling data	Real-time data, historical trends, alarm management and reporting
Automation ready	Supports automated drilling sequences and future application integration
Remote operations	Browser-based screen sharing and remote access
Redundancy	Built in redundancy across servers, network and operator displays
Connectivity	Offline capable with no cloud dependency
Scalability	Drag-and-drop widgets and simple integration of new equipment

Optional configurations

Assistant driller workstation
Additional operator screens
optiDRILL™ integration
Customer equipment integration
Project-specific ATEX configurations
Third-party integration

Key features

- Fully integrated cyber chair
- No need for hardware or software installation
- Multiple redundant touchscreen displays
- PLC-based control architecture
- Widget-driven interface
- Fully integrated drilling instrumentation
- CCTV and PA integration
- Remote browser access
- In-built redundancy

Benefits

SYNAPSE™ streamlines operations by unifying drilling controls, instrumentation, surveillance, communication and automation into one intuitive environment.

Designed around the driller, its ergonomic interface reduces workload while improving operational visibility and decision-making.

Built on a browser-based interface, license-independent architecture with built in redundancy, SYNAPSE™ provides a future-ready digital platform that supports automation, remote operations and long-term rig performance without relying on proprietary systems or cloud connectivity.

Digital Solutions

SYNAPSE™ EDR

Real-Time Drilling Intelligence. One Source of Truth.



Applications

- Oil & gas
- Geothermal
- Onshore
- Offshore
- Rig newbuilds & retrofits

Every Data Point. Every Decision. Connected.

SYNAPSE™ EDR combines drilling instrumentation, Electronic Drilling Recording and real-time visualization into one modern, web-based platform.

Designed to integrate virtually any certified sensor and third-party system, it provides complete operational visibility while creating a future-ready foundation for connected drilling operations.

120+
installations worldwide

- 17 years of deployment
- 200ms real-time refresh rate
- Browser-based & future ready

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Modern drilling operations rely on data, but too often that data is fragmented across multiple systems

Operators face increasing pressure to:
- Integrate diverse sensors and third-party equipment
- Meet demanding customer EDR specifications
- Improve operational visibility
- Share drilling data across the organization
- Future-proof instrumentation systems

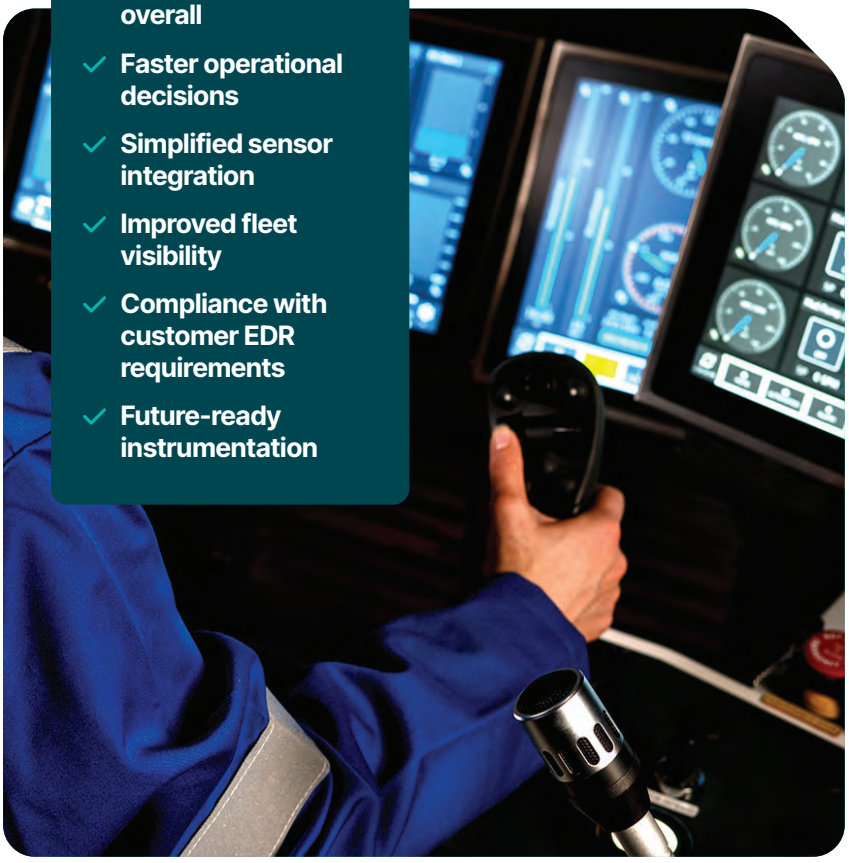
Disconnected data leads to disconnected decisions.

Why BENTEC?

One Platform. Complete Visibility.
Unlike conventional Electronic Drilling Recorders, SYNAPSE™ EDR combines drilling instrumentation, data logging, sensor integration and real-time visualization within one fully customizable, browser-based platform.

Built on the proven SYNAPSE™ architecture, it provides:
- Customizable widget-based dashboards
- Certified sensor integration
- Cloud-ready fleet monitoring
- Broad third-party connectivity
- A clear upgrade path to the full SYNAPSE™ Operating System

- ✓ **One trusted source of drilling data**
- ✓ **More transparency overall**
- ✓ **Faster operational decisions**
- ✓ **Simplified sensor integration**
- ✓ **Improved fleet visibility**
- ✓ **Compliance with customer EDR requirements**
- ✓ **Future-ready instrumentation**



Designed to deliver

- ✓ **Complete operational visibility**
  Brings drilling instrumentation, PVT, trends, alarms and sensor data together in one intuitive interface
- ✓ **Customized around your operation**
  Build dashboards from pre-configured templates or create entirely bespoke layouts using flexible widget-based visualization
- ✓ **Connect everything**
  Supports virtually any certified sensor alongside WITS, WITSML, OPC UA, Modbus TCP, Profinet and third-party automation systems
- ✓ **Future-proof your rig**
  A web-based architecture with distributed IO-HUBs makes expansion, upgrades and additional instrumentation simple
- ✓ **Fleet-wide intelligence**
  Secure cloud connectivity enables desktop and mobile access to drilling data across multiple rigs and operations
- ✓ **Confidence through proven technology**
  Built on 17 years of deployment with more than 120 installations worldwide and backed by BENTEC's drilling expertise

Proven performance

- ✓ **120+ installations worldwide**
- ✓ **17 years of deployment**
- ✓ **Fulfills demanding IOC customer EDR requirements**
- ✓ **Supports virtually unlimited measurement channels at 200ms refresh rate**
- ✓ **Compatible with both BENTEC and third-party drilling rigs**
- ✓ **Built on the SYNAPSE™ platform with a seamless upgrade path to full rig control and automation**

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SYNAPSE™ EDR

Browser-based Electronic Drilling Recorder & Instrumentation Platform

Key features

- Web-based Electronic Drilling Recorder
- Fully customizable widget interface
- Distributed IO-HUB architecture
- Certified drilling instrumentation
- Pit Volume Totalizer (PVT)
- Real-time trending & alarms
- Cloud fleet monitoring
- Third-party protocol integration
- Upgrade path to SYNAPSE™ OS

Benefits

SYNAPSE™ EDR transforms drilling data into real-time operational insight through a flexible, web-based instrumentation platform.

Its configurable dashboards, broad sensor compatibility and extensive third-party integration provide complete visibility across drilling operations while simplifying compliance with customer EDR requirements.

Built on proven heritage and designed for future expansion, SYNAPSE™ EDR delivers a scalable digital foundation for connected drilling operations.

Hardware

Architecture	Distributed IO-HUB system connected via Ethernet
IO-HUB configuration	8 × 4-20 mA Ex-I + 8 × NAMUR inputs (minimum)
Operator displays	Industrial rig-rated displays in multiple sizes
Sensors	Certified pressure, flow, hookload, SPM / RPM, encoder, tank level and analogue inputs
Installation	New build and retrofit compatible
Operating areas	ATEX Zone 1 & Zone 2

Digital platform

Architecture	Browser-based interface
User interface	Fully configurable widget-based dashboards
Refresh rate	200ms real-time data
Channels	Virtually unlimited measurement channels
Trend charts	Up to 12 (+1) simultaneous channels
Core functions	EDR | PVT | Alarms | Data logging
Third-party integration	WITS | WITSML | OPC UA | Modbus TCP | Profinet
Cloud connectivity	Fleet monitoring for desktop & mobile
Upgrade path	Full SYNAPSE™ Operating System

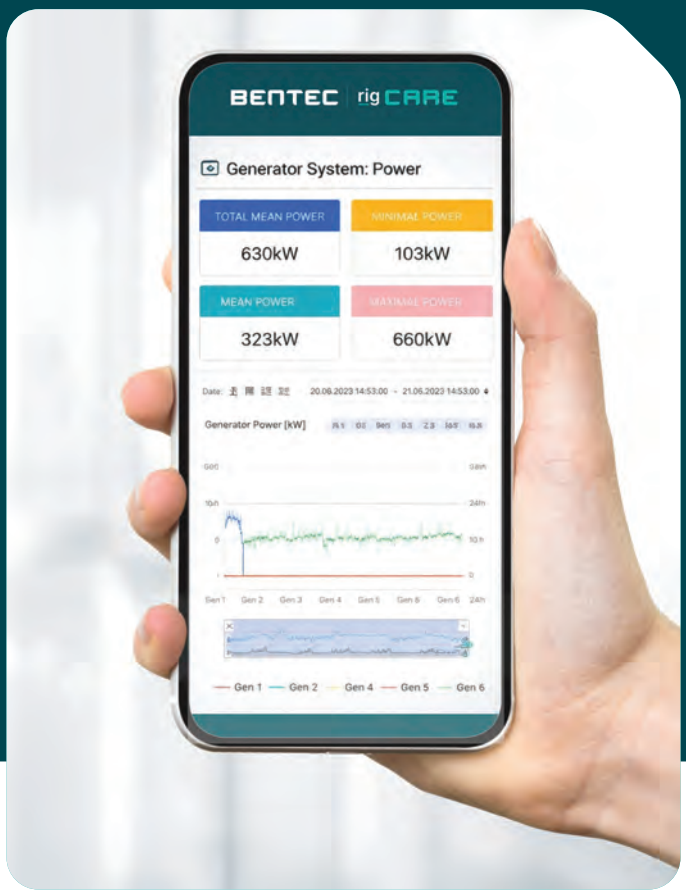
Optional configurations

Gas monitoring (CH_4 & H_2S)
Drill-line wear monitor (ton / mile counter)
CCTV integration
Additional IO-HUB modules
Additional operator displays
Customer-specific dashboard templates
Cloud fleet monitoring package

Digital Solutions

rigCARE™

Looking after your rigs, remotely.



Product range

rigCARE | rigCARE Prevent

Applications

- Oil & gas
- Geothermal
- Land rigs
- Offshore operations
- Rig maintenance & performance monitoring

Reduce Downtime. Improve Visibility. Respond Faster.

rigCARE™ is our web-based remote monitoring platform designed to visualize equipment health, status and performance in real time.

Developed specifically for drilling operations, it enables faster troubleshooting, improved maintenance planning and data-driven operational decisions, helping drilling contractors reduce downtime, reduce bottlenecks and maximize rig performance.

Up to **70%** of equipment issues can be resolved remotely without mobilizing service engineers

- Real-time equipment monitoring
- Remote troubleshooting capability
- Data-driven maintenance insights

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Equipment failures and technical issues on drilling rigs often require service personnel to be mobilized to remote locations, increasing downtime, cost and operational disruption

Operators and contractors are under increasing pressure to:
- Reduce equipment-related downtime
- Improve troubleshooting response time
- Increase visibility into equipment performance
- Optimize preventive maintenance activities

Without remote monitoring and diagnostics platforms:
- Equipment troubleshooting becomes slower and more reactive
- Downtime increases while waiting for technical support
- Maintenance planning becomes less predictable
- Equipment issues can escalate before being identified

Why BENTEC?

More visibility. Faster response. Greater uptime.

rigCARE™ is a cloud-based remote monitoring and equipment performance platform designed specifically for drilling operations. By combining seamless PLC connectivity with real-time visualization and remote diagnostics, it enables drilling contractors and OEM support teams to quickly identify, troubleshoot and respond to equipment issues from anywhere in the world.

It provides equipment-specific data visualization optimized for low-bandwidth drilling environments while supporting both BENTEC and selected third-party equipment under one unified platform.
- Real-time remote monitoring and diagnostics
- Faster troubleshooting response without unnecessary mobilizations
- Accessible from any mobile device or platform
- Integrated preventive maintenance functionality with rigCARE™ Prevent
- Cloud-based equipment performance analytics and reporting

Designed to deliver

- ✓ **Reduced downtime**
  Remote troubleshooting capabilities help resolve issues faster and minimize operational interruptions
- ✓ **Faster technical response**
  Enables instant collaboration between rig teams, maintenance personnel and OEM specialists
- ✓ **Improved preventive maintenance**
  Runtime- and job-based maintenance planning supports more proactive equipment management
- ✓ **Better operational visibility**
  Real-time monitoring provides greater insight into equipment condition and performance
- ✓ **Data-driven decision making**
  Advanced analytics support improved operational efficiency and equipment optimization
- ✓ **Flexible global access**
  Accessible across mobile devices and platforms from virtually anywhere in the world



Proven performance

- ✓ **Remote resolution capability for up to 70% of equipment issues**
- ✓ **Trusted by drilling contractors, service teams and maintenance personnel across every drilling environment**

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Ready to improve rig uptime and troubleshooting response?
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Digital Solutions

rigCARE™

rig CARE | rig CARE Prevent

Specifications

Connected monitoring and diagnostics

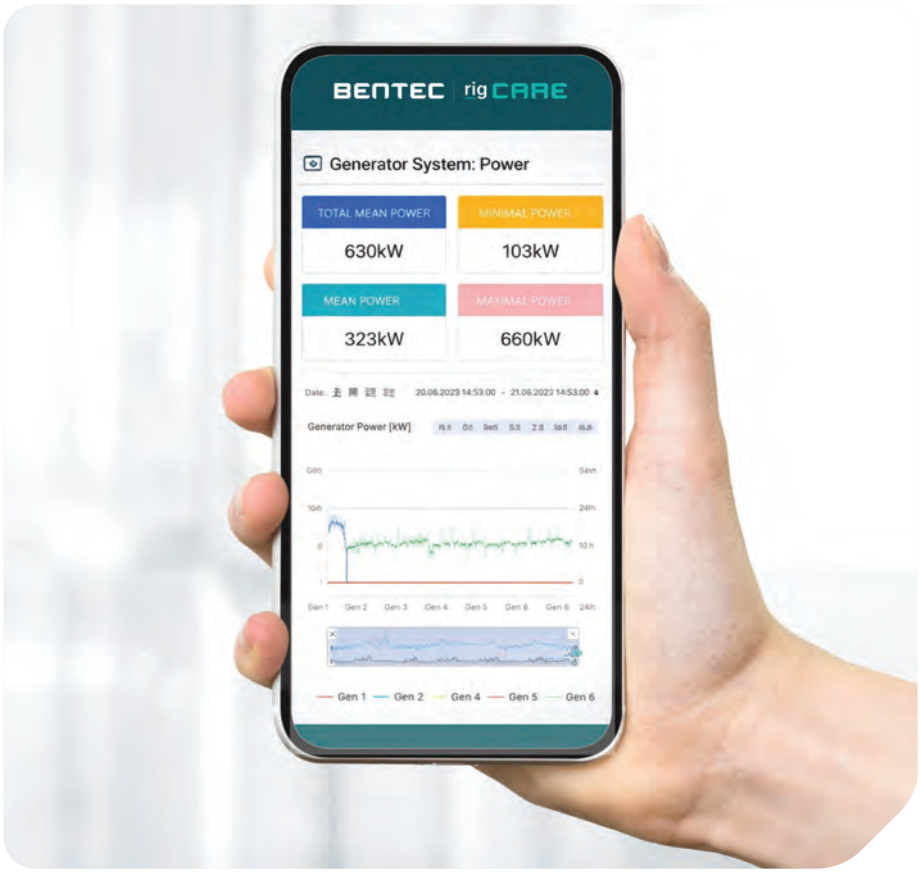
- Cloud-based platform with low-bandwidth optimization
- Real-time equipment monitoring and remote diagnostics
- Remote troubleshooting support
- Accessible across desktop, tablet and mobile devices
- Integrated PLC connectivity and equipment visualization
- Supports BENTEC and selected third-party equipment
- Multi-language capability through integrated LLM support

Equipment performance and analytics

- Active and historical failure-message logs, including system, subsystem, timestamp and status
- Failure-message statistics ranked by frequency and duration to identify recurring faults
- Automated issue reporting and performance analytics
- Running-hours tracking and utilization statistics for individual components
- Generator power and utilization monitoring across multiple gensets

Advanced asset health monitoring

- Battery Energy Storage System (BESS) monitoring, including state of charge, power and per-bank health
- Condition Monitoring System (CMS) with ISO 10816 vibration zones and multi-band shock counting
- Enhanced visibility into equipment condition to support predictive maintenance strategies



Preventive maintenance

rigCARE™ can be expanded with rigCARE™ Prevent, our preventive maintenance module. With rigCARE™ Prevent, operators can move from reactive maintenance to a more proactive approach through:

- Runtime-based maintenance planning
- Job-based maintenance scheduling
- Automated maintenance tracking and planning
- Improved equipment reliability and lifecycle management

The full rigCARE™ system can be further expanded with:

- Custom equipment integration packages
- Advanced analytics and reporting configurations
- Project-specific monitoring dashboards
- Enhanced remote support solutions
- Additional connectivity and data integration options tailored to operational requirements

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Digital Solutions

Condition Monitoring System

Detect Earlier. Plan Better. Reduce Risk.

Product range

BENTEC Condition Monitoring System



Predict Top Drive Failures Earlier. Reduce Downtime. Plan Smarter.

The BENTEC Condition Monitoring System is a vibration-based diagnostic solution designed to continuously monitor, analyze and interpret Top Drive system conditions in real time.

By identifying wear, anomalies and developing faults long before failure occurs, it helps drilling contractors move from reactive troubleshooting to smarter, condition-based maintenance strategies that reduce downtime and improve operational reliability.

Applications

- Oil & gas
- Geothermal
- Land rigs
- Offshore platforms
- Top Drive systems

Early fault detection through continuous vibration and equipment health monitoring

- Real-time equipment diagnostics
- Predictive maintenance insights
- Reduced unplanned downtime

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Unplanned equipment failures during critical drilling operations can lead to significant downtime, operational disruption and increased maintenance cost

Operators are under growing pressure to:
- Reduce uncertainty around equipment condition
- Improve reliability and operational predictability
- Detect failures before they impact drilling operations
- Move away from reactive maintenance strategies

Without advanced condition monitoring systems:
- Equipment failures can occur without warning
- Troubleshooting becomes reactive and time-consuming
- Maintenance planning remains inefficient
- Critical failures can escalate into major operational events

- ✓ **Reduced unplanned downtime and NPT**
- ✓ **Earlier identification of developing failures**
- ✓ **More predictable maintenance planning**
- ✓ **Improved equipment reliability and asset life**
- ✓ **Smarter and more proactive maintenance strategies**

Why BENTEC?

More visibility. Earlier detection. Smarter maintenance.
The BENTEC Condition Monitoring System continuously monitors equipment condition using advanced vibration analysis, intelligent diagnostics and real-time data interpretation to detect wear and developing faults long before they become operational issues.

Integrated into the rigCARE™ ecosystem, it transforms hidden mechanical risks into actionable maintenance insights, helping operators prevent potential NPT, improve maintenance planning and extend equipment life.

It can be expanded with additional accelerometers, oil particle and moisture monitoring, oil temperature and pressure monitoring, advanced fleet dashboards, remote diagnostics support, and integration with customer maintenance systems to support more comprehensive equipment health monitoring and predictive maintenance strategies.

It combines advanced algorithms, AI-supported analytics and drilling equipment expertise to provide deeper, earlier and more reliable insight into equipment health.
- Real-time vibration-based condition monitoring
- Early fault and wear detection
- AI-supported diagnostic analytics
- Integrated cloud-based monitoring and reporting
- Supports predictive and condition-based maintenance strategies

Designed to deliver

- ✓ **Early NPT prevention**
  Identify developing equipment issues before they impact drilling operations
- ✓ **Smarter maintenance planning**
  Shift from reactive repairs to planned condition-based maintenance strategies
- ✓ **Increased equipment availability**
  Early intervention helps reduce failures and improve operational uptime
- ✓ **Improved operational visibility**
  Real-time monitoring provides greater insight into equipment health and performance trends
- ✓ **Reduced maintenance cost**
  Targeted maintenance actions help optimize resources and reduce unnecessary repairs
- ✓ **Better risk management**
  Improved diagnostics and trend analysis support more informed operational decisions

Proven performance

- ✓ **Field-proven condition monitoring for drilling equipment applications**
- ✓ **High-performance in harsh drilling environments and real-time operational conditions**



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Digital Solutions

Anti-Collision System

Safer Operations. Certified Collision Prevention. Smarter Control.



Product range

ACS

Prevent Collisions. Reduce Risk. Protect Operations.

The BENTEC Anti-Collision System is a safety-certified control system designed to prevent dangerous collisions during rig hoisting and lowering operations.

By continuously monitoring traveling block position, speed, hook load and braking capability, ACS automatically intervenes with controlled braking or emergency stops before safety limits are exceeded, improving operational safety, reducing downtime and protecting critical rig assets.

Applications

- Oil & gas
- Global onshore & offshore drilling operations
- Rig newbuilds & retrofits

ACS MK VII Certified functional safety to EN ISO 13849-1 Performance Level PL d

- Dynamic real-time braking calculations
- Redundant safety architecture
- Retrofit-ready for BENTEC and non-BENTEC rigs

Hoisting and lowering operations remain one of the highest-risk activities on a drilling rig

Modern drilling operations demand:
- Safer and more predictable hoisting operations
- Reduced risk of human error
- Improved operational uptime and equipment protection
- Compliance with increasingly stringent safety requirements

Without advanced anti-collision protection:
- Critical collisions can damage high-value equipment
- Personnel exposure and safety risks increase
- Unplanned downtime and repair costs escalate
- Manual intervention limits operational efficiency and consistency

Why BENTEC?

More safety. More control. More confidence.
The BENTEC Anti-Collision System (ACS MK VII) is a fully safety-certified system engineered to automatically monitor and control traveling block movement during drilling operations.

Unlike conventional limit-based systems, Anti-Collision System dynamically calculates braking distances in real time based on actual operating conditions including speed, hook load and braking capability.

Designed with a robust safety architecture and integrated rig interlocks, Anti-Collision System prevents unsafe movements before they become critical while supporting smoother, more efficient rig operations.
- Certified functional safety to EN ISO 13849-1 PL d
- Dynamic braking logic based on real-time operating conditions
- Integrated interlocks with rig and pipe handling equipment
- Retrofit-ready for both BENTEC and non-BENTEC rigs

Designed to deliver

- ✓ **Certified operational safety**
  Certified functional safety architecture helps protect personnel and high-value assets and releases stress from the driller during hoisting and lowering operations
- ✓ **Reduced NPT**
  Prevents collisions and equipment damage that lead to costly downtime and operational disruption
- ✓ **Smarter motion control**
  Dynamic braking calculations provide smoother, safer and more predictable hoisting performance
- ✓ **Extended asset life**
  Controlled braking and collision prevention reduce shock loads and structural stress on critical equipment
- ✓ **Flexible integration**
  Designed for integration on newbuild rigs and retrofit applications across a wide range of rig configurations
- ✓ **Future-ready safety architecture**
  Supports modern rig automation environments with integrated safety logic and system-wide interlocks



- ✓ **Safer and more predictable hoisting operations**
- ✓ **Reduced collision-related downtime**
- ✓ **Improved operational confidence and control**
- ✓ **Extended equipment life and lower lifecycle cost**
- ✓ **Certified compliance with functional safety requirements**

Proven performance

- ✓ **More than 250 systems deployed globally across drilling operations**
- ✓ **Certified functional safety architecture validated to EN ISO 13849-1 PL d**
- ✓ **Field-proven across newbuild and retrofit rig environments**
- ✓ **Designed for integration with modern rig control and automation systems**
- ✓ **Trusted across demanding operational drilling environments worldwide**

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Anti-Collision System

ACS



Specifications

Connection values	**Voltage**	230/110 V
	Frequency	50/60 Hz
Central unit	**Height**	78-3/4 in | 2000 mm
	Width	19-11/16 in | 500 mm
	Depth	31-1/2 in | 800 mm
HMI driller's place	**Height**	5-3/4 in | 146 mm
	Width	11-7/16 in | 290 mm
	Depth	3-5/32 in | 80 mm
HMI central unit	**Height**	13-1/16 in | 332 mm
	Width	11-21/32 in | 296 mm
	Depth	2-27/32 in | 72.2 mm
Total weight approx.		350 kg

Key features

The Anti-Collision System is designed to improve safety and efficiency of movements of the traveling block assembly during hoisting and lowering on a drilling rig.

- The system is based on a mathematical control algorithm and provides redundancy functions of all safety relevant equipment
- The design warrants optimum control of movements of the traveling block assembly, bringing it to an accurate and safe stop at the end of movements
- The system allows analysis of the kinetic energy of the hoisting system taking into account load, speed and position of the traveling block assembly and the capacity
- The Anti-Collision System avoids collision with the crown block and the rig floor and increases the tripping speed due to optimized breaking point within programmable working points
- Due to the continuously monitored hook load, Anti Collision System is able to react with braking in case of pipe sticking

The Anti-Collision System works in conjunction with the drawworks auxiliary braking system and emergency braking system and allows direct access via the operator panel.

PLC microprocessor calculate hook position, speed, hook load, and braking distance. Any differences in calculations of both microprocessors will cause an emergency brake.

Digital Solutions

FX-Control Red Zone Supervision



Real-Time Risk Detection. Smarter Safety. Safer Operations.

Product range

fx CONTROL



Reduce Exposure. Prevent Incidents. Improve Safety Behavior.

FX-Control Red Zone Supervision is more than a traditional CCTV or standalone monitoring system, it's a portal to your rig.

The system uses AI-powered camera technology and operational machine data to monitor hazardous rig areas in real time. By automatically detecting unsafe red zone breaches and triggering visual and audible alarms before risks escalate, the system helps reduce personnel exposure, improve safety behavior and actively prevent injuries before they occur.

Applications

- Oil & gas
- Land rigs
- Offshore rigs
- Industrial machinery & heavy equipment operations

Proven **41%** reduction in red zone breaches

- AI-powered hazard detection
- Real-time visual and audible alerts
- Remote visibility and reporting
- Data analytics and statistics

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Personnel working around moving machinery on rig floors and catwalk areas remain exposed to high-risk operational hazards.

Operators and drilling contractors are under increasing pressure to:
- Reduce injuries and near misses
- Improve HSE performance and safety behavior
- Reduce personnel exposure within hazardous zones
- Improve operational awareness and compliance

Without intelligent real-time supervision systems:
- Red zone breaches can go unnoticed until incidents occur
- Personnel remain exposed to moving machinery hazards
- Safety performance becomes reactive rather than preventive
- Visibility into unsafe behaviors and operational trends is limited
- Contractors increase the risk of failing luckily, instead of failing safely

Why BENTEC?

Faster reaction. Safer operations. In depth data.

FX-Control Red Zone Supervision combines AI-enabled camera technology with machine and operational data to monitor hazardous rig areas in real time. When personnel enter a monitored red zone during hazardous operations, the system immediately triggers clear visual and audible alarms, enabling people to exit the area before risks escalate.

It delivers real-time operational awareness directly to personnel at risk while also providing remote visibility, advanced analytics and behavioral trend monitoring for HSE and operations teams.
- AI-powered real-time hazard detection
- Integrated machine and operational data monitoring
- Visual traffic-light safety indication system
- Audible alarm for red zone infringements
- Remote visibility and cloud-based statistics reporting
- Designed for harsh drilling and industrial environments
- Customizable / multi camera installations

Designed to deliver

- ✓ **Reduced personnel exposure**
  Helps to keep personnel out of hazardous red zone areas during active operations
- ✓ **Improved rig floor safety**
  Real-time alerts enable immediate reaction before risks escalate into incidents
- ✓ **Behavioral safety improvement**
  Trend monitoring and visibility support long-term improvements in safety culture and operational behavior
- ✓ **Enhanced operational awareness**
  Provides crews and supervisors with clear visibility into hazardous area status and activity
- ✓ **Future-ready safety technology**
  Combines AI, computer vision and operational data to deliver next-generation rig floor safety supervision
- ✓ **Remote visibility & analytics**
  Enables office-based HSE and operational teams to monitor trends, statistics and safety performance remotely



- ✓ **Reduced red zone breaches and exposure**
- ✓ **Fewer incidents and near misses**
- ✓ **Improved HSE compliance and operational awareness**
- ✓ **Safer behavior around hazardous equipment**
- ✓ **Greater confidence in rig floor safety management**

Proven performance

- ✓ **Proven 41% reduction in red zone breaches**
- ✓ **Detection response time under 2 seconds**
- ✓ **Detection accuracy down to 10 cm / 4 inches**
- ✓ **Field-proven across active, harsh environment drilling operations**

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Ready to improve rig floor safety and reduce red zone exposure?
Speak to a BENTEC expert

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FX-Control Red Zone Supervision

fx CONTROL

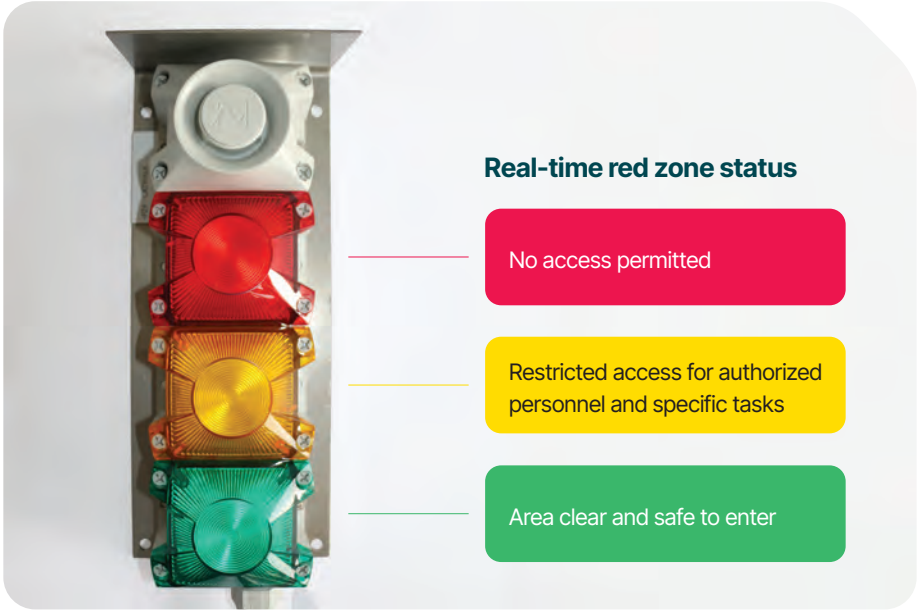
Key features

AI-powered real-time hazard detection for drilling operations

- AI-enabled edge-based camera technology
- Real-time visual and audible alarm system
- Supports up to 4 cameras per monitored zone
- Supports up to 6 traffic light indicators
- Remote web-based visibility and reporting
- Integrated OT / IT security and encrypted communication
- Designed for harsh offshore and onshore environments

FX-Control can be expanded with additional operational data monitoring, low-bandwidth CCTV streaming, energy and carbon emissions monitoring, advanced reporting dashboards, remote visibility tools, and project-specific camera, traffic light or integration configurations to support broader operational and HSE objectives.

- **Transmit / visualize real-time data.** Connectivity to / from third party systems (WITSL0 protocol)
- **Strong cybersecurity.** Peer to peer encryption. OT & IT Firewall
- **CCTV video transmission.** Enables rig site POB reduction (FX-CCTV, optional)
- Analytics for performance improvements / machine learning (FX-CBM, optional)
- Carbon emission monitoring (FX-CEM, optional)



Customer-specific configurations

FX-Control Red Zone Supervision is a fully configurable safety solution designed for both onshore drilling rigs and offshore assets.

The system can be tailored to individual operational requirements, allowing customers to monitor up to four cameras across critical red zone areas. Integrated visual traffic light indicators and audible alarms provide clear, real-time status updates to personnel, helping improve situational awareness and reduce exposure to hazardous areas.

The combination of real-time monitoring, automated status control and historical reporting helps improve safety compliance, enhance operational visibility and support data-driven decision-making.



Advanced monitoring and reporting

- Historical trend analysis enables users to review red zone activity over selected time periods
- Statistical reporting provides insights into personnel movements, zone access events and status changes
- Drilling and machine data can be integrated and recorded to influence zone status automatically, including parameters such as standpipe pressure

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