Bandweaver

MONITORING SOLUTIONS FOR
Power & Utilities

SMART MONITORING SOLUTIONS FOR THE INTELLIGENT GRID

› Informed decision making from integrated monitoring at all points on the network and critical infrastructure

Bandweaver has worked together with customers and partners for more than 10 years to develop condition monitoring solutions for the intelligent grid.

When used alongside a proactive maintenance approach, our state of the art sensing systems and intelligent software provide the operator with the right information at the right time to make decisions that help you to reduce planned and unplanned maintenance, avoid catastrophic failure and effectively manage your risk.

› **MORE THAN 1,250 INSTALLATIONS WORLDWIDE**

› **10,000KM OF INSTALLED FIBER BEING MONITORED**

› **MTBF* OF OVER 31 YEARS FOR KEY COMPONENTS**

*MTBF - Mean Time Between Failures
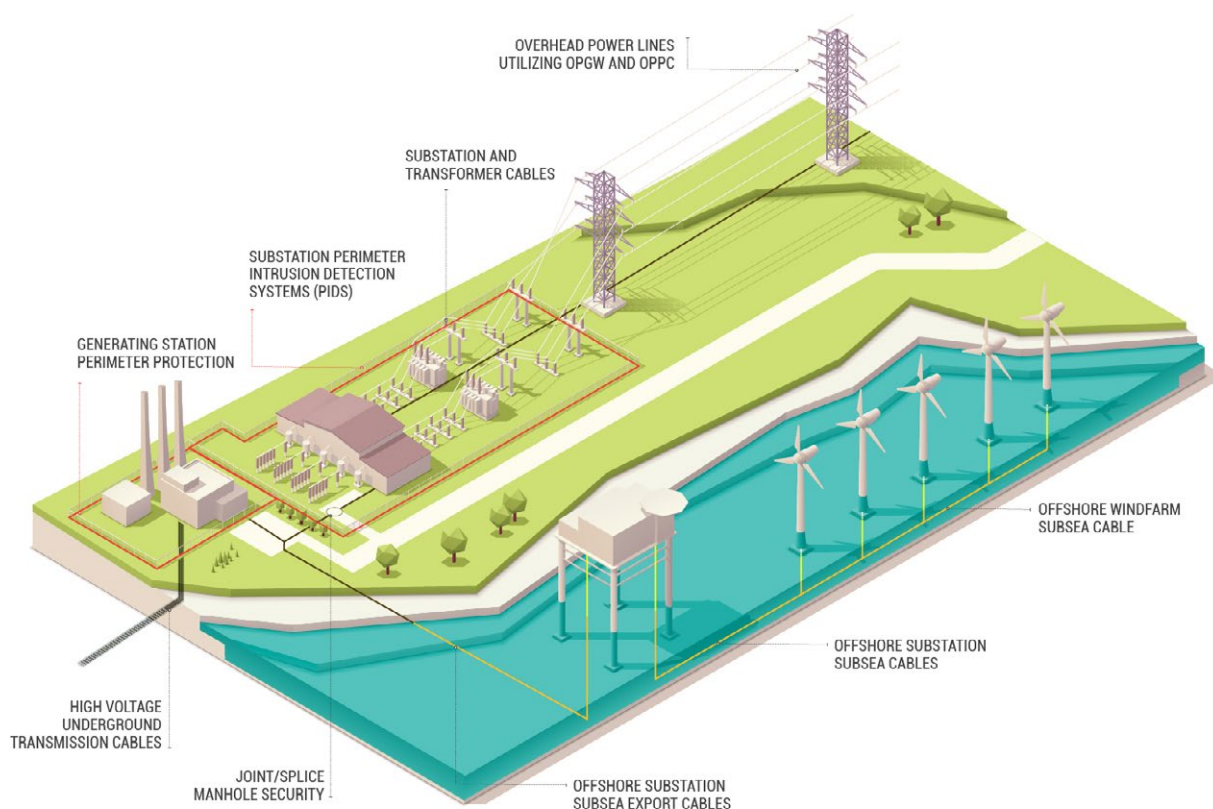
THE BENEFITS OF INTELLIGENT CONDITION MONITORING

Feature		Benefits
Precise, real-time and actionable information at all points on the grid	›	Rapid and focused decision making which improves custodianship over grid assets
Integrated thermal modelling of cables to industry standards (GIGRE & IEC)	›	Improved situational awareness, increased compliance, reduced risk of fines and lower insurance premiums
Proactive risk based maintenance, using accurately measured real-time information	›	Optimization of planned maintenance program and reduction in unscheduled downtime
Monitoring and alarms at all points on the grid, including associated perimeters, entry and access points	›	Improved security, lower potential for malicious or accidental Third Party Intrusion (TPI)
Smart condition monitoring leads to effective prediction and prevention of equipment failure	›	Reduced downtime leading to improved return on investment and delayed capital spending
Smart management of operating windows to predict and prevent operations in harsh environments	›	Maximization of component lifetime increasing return on investment and delayed capital spending
Utilize existing telecoms infrastructure for sensing elements	›	Ease of installation by lowering overall cost of ownership

POWER & UTILITY MONITORING APPLICATIONS

Application areas

› HVAC and HVDC underground transmission power cables

› Joint/splice manhole security

› Overhead power lines utilizing OPGW (Optical Groundwire) and OPPC (Optical Path Phase Conductors)

› Cable tunnels and cable bridges

› Subsea cables, offshore substations and wind farms

› Substation Perimeter Intrusion Detection Systems (PIDS)

› Generating station perimeter protection
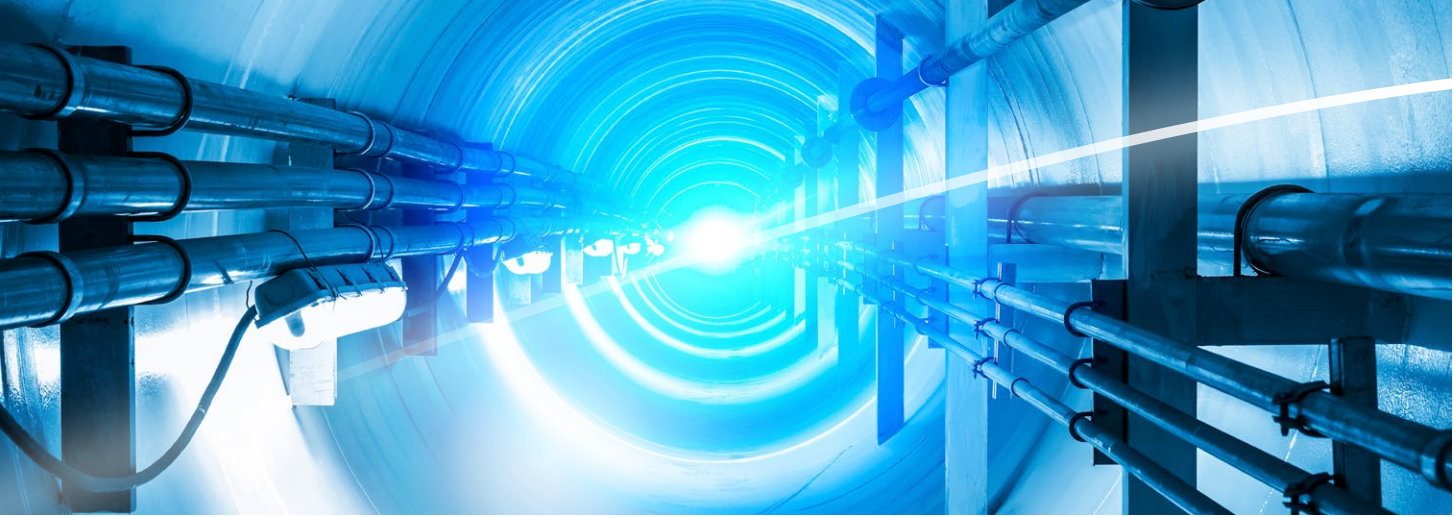
› Substation and transformer cables

SYSTEM APPROACH

› Bandweaver's extensive range of sensors and integrated smart software solutions, combined with our ability to interface with industry standard communication protocols, enable us to tailor the system to meet your specific needs.

Monitoring Scenario	Fiber Technology	Smart Software
High voltage cable monitoring – detect hotspots and determining emergency cable ratings	DTS	RTTR
Monitoring for external intervention events caused by construction and marine events	DAS	Maxview
Substation equipment health monitoring Switchgear and cabinets	FBG	RTTR
Substation fire detection	FBG	FireLaser Module
Equipment room protection and transformer fire monitoring	FBG	FireLaser Module
Power generation plant fire monitoring	DTS	FireLaser Vivid
Coal conveyors, equipment rooms and cable tunnels	DTS	FireLaser Vivid
Overhead line monitoring (line galloping, cable sag)	DAS	Maxview
Cable Security (theft monitoring, unauthorized access)	DAS	Maxview

Bandweaver services

Bandweaver has the expertise and personnel to provide services with the following disciplines, to ensure the system performs to your needs:

› Front End Engineering Design (FEED)
› Project management
› System installation and commissioning
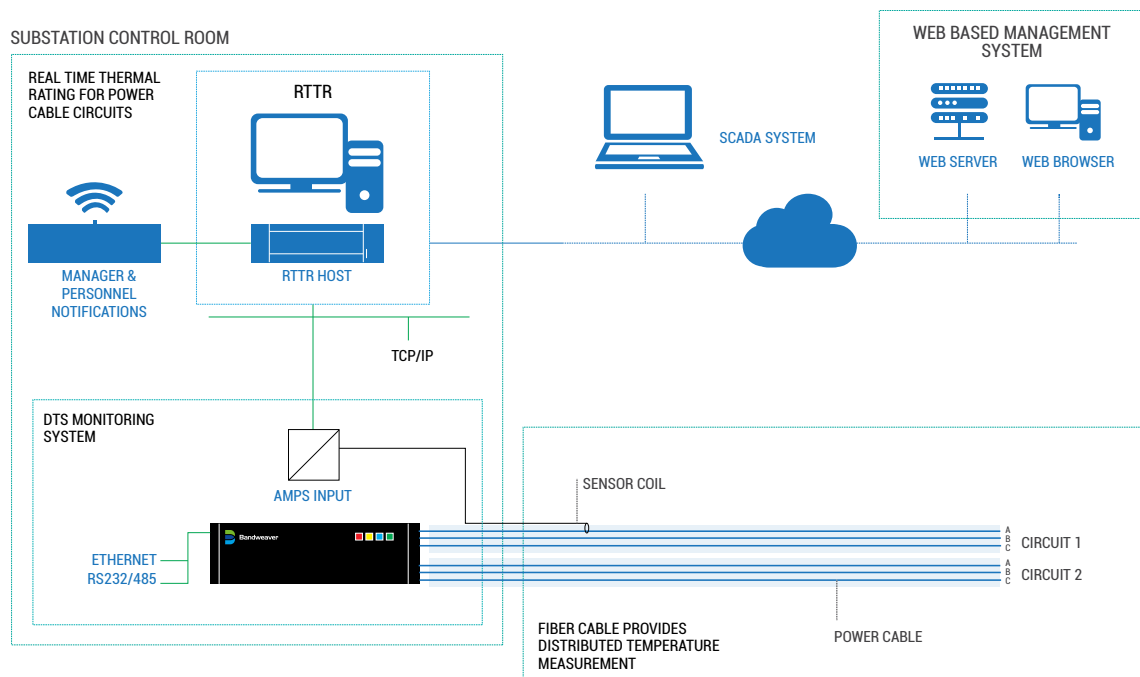› Product training
› Support and maintenance

REAL TIME THERMAL RATING (RTTR) SYSTEM

› At the core of the RTTR is the Dynamic Cable Rating (DCR) module based on the CIGRE approach and the IEC60287 standard. This predictive system combines sensing fibers along the length of the cable with intelligent software to provide critical real time information.

System features

› Monitoring of conductor hot spots using intelligent cable modelling accounts for the cable's installed environment

› Critical information for risk based asset management programs allows optimization of planned maintenance and reduced downtime

› Maximize cable lifetime through effective management of cable operating window

› Supports WAN work applications, with central DCR software to manage multiple DTS locations

› Bandweaver RTTR has the capability to read data from multiple DTS manufacturers

RTTR System

SUBSTATION CONTROL ROOM

REAL TIME THERMAL RATING FOR POWER CABLE CIRCUITS

RTTR

MANAGER & PERSONNEL NOTIFICATIONS

RTTR HOST

TCP/IP

SCADA SYSTEM

WEB BASED MANAGEMENT SYSTEM

WEB SERVER   WEB BROWSER

DTS MONITORING SYSTEM

AMPS INPUT

ETHERNET RS232/485

Bandweaver

SENSOR COIL

A
B
C   CIRCUIT 1
A
B
C   CIRCUIT 2

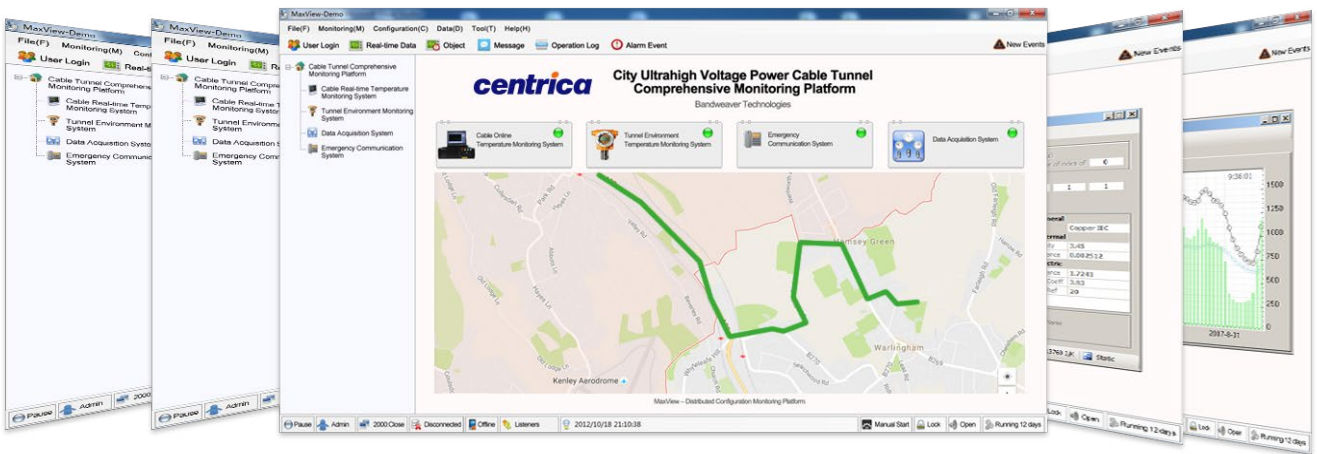FIBER CABLE PROVIDES DISTRIBUTED TEMPERATURE MEASUREMENT

POWER CABLE

DECISION MAKING AT THE SPEED OF SOUND

› Distributed acoustic technology detects incidents instantaneously, enabling immediate action to be taken.

Bandweaver's technology portfolio includes the **Horizon – Distributed Acoustic Sensor (DAS)**. This revolutionary technology measures acoustic signals and vibration events along the entire length of the network (100km per system) thus providing complete security and condition monitoring for your assets.

Distributed Acoustic Sensing (DAS) applications

› Security and threat prevention for both buried (3rd party drilling) and overhead (metal theft) cables

› Prediction and early detection of line galloping in overhead cables

› Instantaneous fault detection and detection of partial discharge events in both buried and cable tunnels

› Vibration and condition monitoring of substation and ancillary equipment

Advanced algorithms and intelligent software

The powerful combination of the Horizon DAS advanced event classification algorithms with Maxview's powerful visualization and data management software, provides you with valuable information in a timely manner to aid with critical decision making to more effectively manage your assets.

BANDWEAVER – A GLOBAL LEADER

› With more than 300 employees and facilities in 4 global hubs and 450 projects across 6 continents, Bandweaver is committed to providing you with state of the art, reliable monitoring systems to improve the efficiency and security of your assets.

Reliability and approvals

Bandweaver is ISO 9001 certified and undergoes a rigorous continuous improvement program and tests all of its products to leading international standards.

› Extensive environmental testing on all products

› Components to meet telecom standards
   > 31 years MTBF

› Products designed to minimize maintenance
   (e.g fan free design) and low total cost of ownership

VdS CE **EN54** TÜV ISO 9001 **Intertek** CCC

› **10,000 SQM STATE-OF-THE-ART PRODUCTION FACILITY**

› **CLASS 100 CLEANROOM AND TESTING FACILITIES**

› **MORE THAN 30 R&D ENGINEERS**

North America   United Kingdom   Dubai   China

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