Rolling with us pays off!

PROTOLON(IQ) – a smart reeling cable system saving the day.

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Prysmian Group

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Prysmian Group

Linking the future

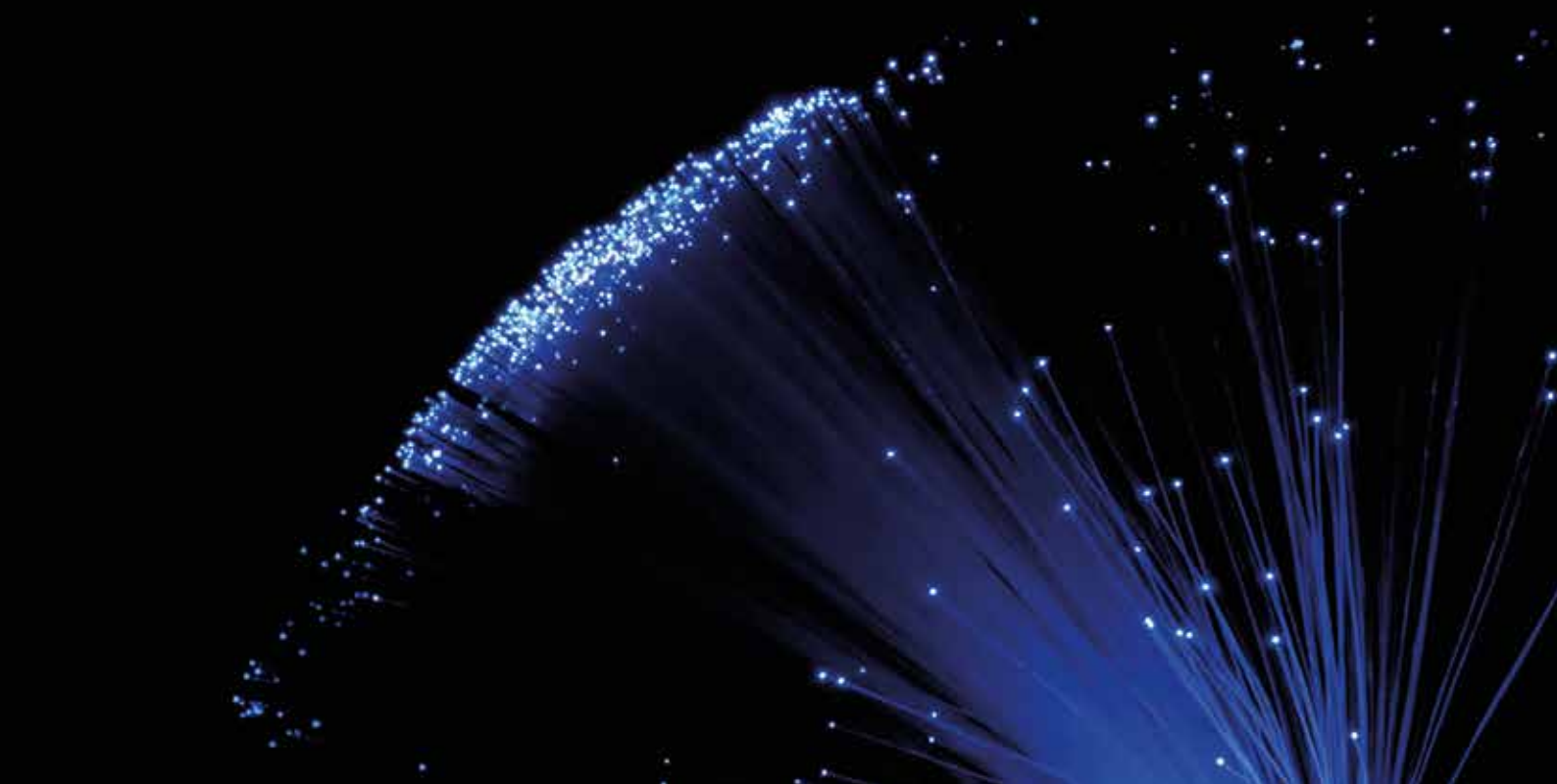
As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as a primary driver in the development of communities.

With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology. Through three renowned commercial brands – Prysmian, Draka and General Cable – based in almost 50 countries, we're constantly close to our customers, enabling them to further develop the world's energy and telecoms infrastructures, and achieve sustainable, profitable growth.

In our energy business, we design, produce, distribute and install cables and systems for the transmission and distribution of power at low, medium, high and extra-high voltage.

In telecoms, the Group is a leading manufacturer of all types of copper and fibre cables, systems and accessories – covering voice, video and data transmission.

Drawing on over 130 years' experience and continuously investing in R&D, we apply excellence, understanding and integrity to everything we do, meeting and exceeding the precise needs of our customers across all continents, at the same time shaping the evolution of our industry.



PROTOLON(IQ) – a smart reeling cable system saving the day.

Every hour of unexpected downtime in port operations can result in dramatic financial losses. To help you be prepared and avoid unforeseen failures, we've developed PROTOLON(IQ). This innovative reeling cable system detects and reports mechanical impact and sudden irregularities on the cable, enabling root-cause analysis and risk-based decisions. Hence, the sensing technology can dramatically reduce process interruptions and optimize asset utilization. Buckle up and play it safe.

What we offer

Our electric cables for heavy-duty and flexible applications, in particular for ports and mining, are designed to withstand harsh environment conditions and high mechanical stresses. Still, the forced motion of mobile reeling cables during the winding and unwinding phases, may result in high tensile loads and twisting. Excessive elongation of the cable can cause the tensile load to be transferred to the electrical conductors, with consequent damage, while prolonged tensile force can result in permanent cable deformation.

In order to foresee and avoid damages on the cable resulting in expensive downtime in your port or mining operations, we've developed the PROTOLON(IQ) System. It includes intelligent MV reeling cables measuring mechanical and thermal stress, a monitoring system and easy-to-use software.

By knowing the cable conditions, an effective pro-active maintenance of the cable and of the guiding elements can be carried out. For example, by identifying and changing malfunctioning rollers or by adjusting the electronic parameters of the automation system. It is also a great advantage being able to record dynamic events that induce elastic strain peaks, which can damage the cable by fatigue over time. Such monitoring can also prevent unexpected out-of-service events and substantially reduce unnecessary costs.

In short, by monitoring and being able to process data in real-time, you will be able to vastly prolong the lifetime of the cable, increase reliability as well as predictability and, thus, prevent downtime and lower your costs.

Why Prysmian Group?

Because, in short, we do it better – and we do it all! From start to finish, and beyond, whether we're talking research and design, creation and testing, installation and post-deployment – we have every aspect covered.

Best total cost of ownership

Unmatched reliability

Unrivalled technology

Superior performance

Flexibility in design

Seamless service

Simple upgrading

The cable

The PROTOLON(IQ) reeling cable is a highly flexible MV cable equipped with two fibre sensors running through the complete cable. One is measuring the temperature, while the other is checking the strain of the cable as it is elongated and compressed. All the collected data is then sent to the PROTOLON(IQ) Monitoring system.

MAIN FEATURES

- Monitors several cables in real-time and provides meaningful information on system conditions
- Enables condition-based and predictive maintenance
- Help minimize downtime and thus increases secure throughput
- Expand level of automatized activities

The monitoring system

The PROTOLON(IQ) Monitoring system is a powerful diagnostic instrument for the identification and localisation of potential problems. Its inherent high stability and reliability guarantee optimal security for the long-term surveillance of the cables.

Depending on the number of machines you want to monitor, you can choose to have Centralised or On-Board Monitoring. In the former one single monitor is located in a central control room to observe several different machines at the same time, whereas the latter has a monitor placed in, for example, the E-house of each machine, and only supervising that particular one.

The raw measurements sent from the cable are recorded automatically and can be stored in a database in order to be retrieved at any time. The database is accessible through a LAN network to remote computers, tablets and/or smartphones using the PROTOLON(IQ) Software.

The software

The raw data recorded automatically by the monitor can be retrieved at any time by the PROTOLON(IQ) software, for real-time or off-line processing and visualization.

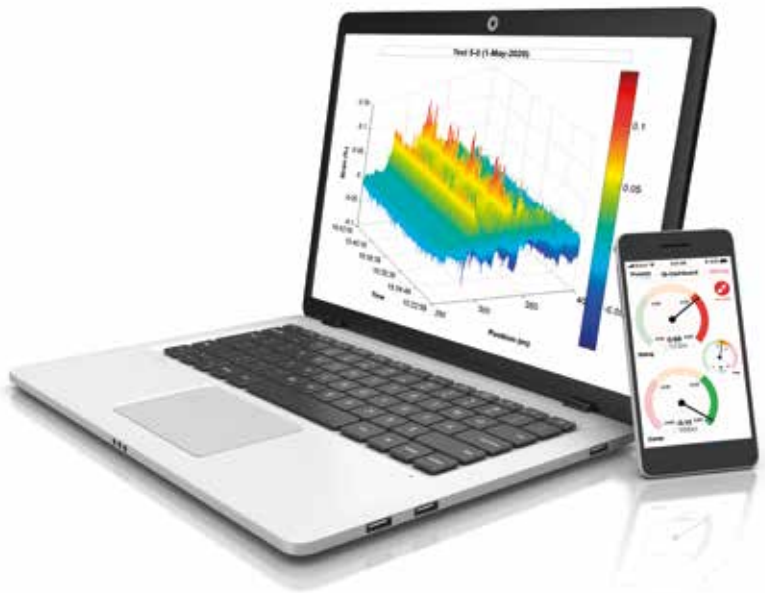
The graphical interface is user-friendly and simple to understand. The take-off point is a simple dashboard on the smartphone or tablet indicating the status on the highest stress points and where they are located along the cable.

The software is available in multiple languages, switch-able at run-time. Access is password protected and different types of users can have different credentials. Different privileges enable different views and actions into the system, allowing for different user roles and technical skills.

The software can be set-up to restart operations after a power outage without human intervention. Optionally the software can be predisposed to send warning and alarms via e-mail or SMS as well as to be put in communication with third party control systems, such as the SCADA architecture or the reel control drives.

The software is used for:

- Configuration of the monitored structure (data sources, zones, alarms, etc.)
- Management of the measurements and system status (start, stop, fingerprint, etc.)
- Visualization and acknowledgment of events and alarms
- Search for stored historical alarms
- Visualization, analysis and export of real-time and historical temperature/strain 3D charts
- Database compression and archiving



Tailor-made service models

– from “TÜV-service” to “no-worry” package

As an option you can programme the software to send warning and alarms to Prysmian, making it possible for us to analyse and offer you relevant advice and/or cable service.

In addition, we offer commissioning tests during 2–3 months to establish warrantees that the cable and reeling system are installed and work efficiently and as expected together.

SUCCESS STORY #1: THE AUSTRALIAN EXPERIENCE

Location: An open-cast iron mine located in the Port Hedland shire in Western Australia.

Application: reeling cable installed on a stacker-reclaimer

Travelling distance: 1,000 meters

Challenge: Before the customer had to replace the very expensive reeling cable almost every year. Now they wanted a long-term, and less expensive solution without tampering on any other quality.

Solution: In December 2016, Prysmian delivered and installed a PROTOLON(IQ) system including an 11/11 kV cable. Three days later we started to measure the stress level of the cable. Few weeks from the installation we detected a twist on the cable, developing from the 500 m mark, long before it was visible from the outside.

During six months the monitoring system gradually revealed how the strain grew and a visual inspection confirmed how the cable was twisted massively, first in one direction and then in the opposite. With these fact at hand, the recommendation was to re-adjust the guiding system of the reel and to periodically measure the effect on the cable stress level with the PROTOLON(IQ) system. The mechanical deformation stopped and the cable is in operation since 2016. The customer is very satisfied with the PROTOLON(IQ) system and its very short payback time of less than two years. Since then, three more machines on the same site have been equipped with the PROTOLON(IQ) cables.

THE RESULTS

The recent installations are confirming that thanks to the PROTOLON(IQ) system it is possible to:

- Measure and keep the mechanical stress under control during operation
- Report in real time if the cable goes beyond the critical range of strain/compression
- Take pro-active actions before reaching a critical point leading to expensive downtime

SUCCESS STORY #2: THE SINGAPORE EXPERIENCE

Location: The Singapore container terminal

Application: A reeling cable on an automated gantry crane

Travelling distance: 270 meters

Challenge: The cable in place developed kinks which led to production downtime.

Solution: PROTOLON(IQ) 6/10 kV cable together with the monitoring system. The monitoring of the mechanical and thermal stress of the cable is on-going 24/7. Should anything happen to the cable it will be detected almost in real-time and proper measures can be taken. It has been in continuous operation since May 2019, with no flaws detected.

Linking the future

Prysmian Group

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