

HYPRON[®]

THE BEST-IN-CLASS SOLUTION
FOR OIL, GAS AND CHEMICALS
ENVIRONMENTS





BRINGING PEACE OF MIND AND FASTER INSTALLATIONS WHILE PROTECTING INVESTMENTS

Current developments in the oil, gas and chemical industries, from demand growth, price fluctuations and changing locations to digitization, are driving the need for innovation and more efficient operations. Projects need to be executed cost efficiently and rapidly and downtime is out of the question - even in the remotest, harshest locations.

Oil, gas and chemicals such as hydrocarbons, acids and alkaline compounds pose a significant threat to buried and surface cables. In particular, cables might come into in contact with aliphatic or aromatic hydrocarbons. Historically, a lead sheath was used to protect cables from deterioration caused by hydrocarbons. However, lead is highly toxic to humans and the environment. Fortunately, Nexans HYPRON® technology offers a solution.

HYPRON®: TWO DECADES OF GLOBAL SUCCESS

HYPRON® technology is a standardized*, efficient and reliable solution for cables in all oil, gas and chemical applications. Since its launch 20 years ago, customers and partners have increasingly recognized HYPRON® technology as the best in class solution for oil gas and chemical applications.



This is underlined by the fact that over 5 000 km is currently installed worldwide in a number of high profile projects. In practice, the solution has proven easier to transport, store and install than traditional lead-covered cabling. Not only are the cables lighter than comparable lead-covered designs, they are also less costly and contribute to direct and indirect project savings. What's more, HYPRON® technology limits environmental impact at sites where cables are installed as well as during end-of-life recycling operation.

Did you know?





▶ **Over 5 000 km of HYPRON® technology has been installed in the main Oil, Gas , Chemicals production site worldwide.**

HYPRON® CABLES, SEVERAL KEY ADVANTAGES:

Up to 20% direct savings
compared to lead covered cables

- ▶  **Diameter reduction**
- ▶  **Weight reduction**

Up to 3 times additional cost reduction
considering a full TCO** approach

- ▶  **Less efforts to install**
- ▶  **Less drums due to longer lengths**
- ▶  **Less splicing**
- ▶  **Manpower costs reduction**
- ▶  **Lower transportation costs**

*EN 50288-7 design guidelines - **TCO : Total Cost of Ownership

HOW HYPRON® TECHNOLOGY WORKS

A multilayer inner sheath provides optimal protection against chemical fluids penetrating into cable cores. Aluminum-coated tape sealing ensures cables are watertight and resistant to inorganic and organic chemicals. In addition, two concentric co-extruded layers made of special chemical resistant polymers ensure the resistance against aliphatic and aromatic hydrocarbons ingress.

COMPATIBLE WITH ALL OIL, GAS AND CHEMICALS NEXANS CABLE RANGES!

HYPRON® technology delivers best-in-class products. This unique multilayer solution can be incorporated into all Nexans' cables and accessories, from power to data and from copper to fiber.

- ▶ **Medium voltage**
- ▶ **Low voltage and control**
- ▶ **Instrumentation**
- ▶ **Copper and fiber communication**
- ▶ **Thermocouple cables**

All cables are available in armored as well as non-armored versions, and offer the same levels of flame non-propagation and fire performance. Each product family is capable of supporting the biggest projects in the oil, gas and chemical industries and undergoes type tests ensuring performance beyond the design standard. HYPRON® cables are compatible with Nexans termination and splicing kits.

HYPRON® is designed by three components:



HYPRON® PERFORMANCES

TESTS	CABLE FAMILY	PROCEDURES STANDARDS
KEMA	Instrumentation	Cable Oil resistance and ageing in IRM 903 / IEC 60811 Fire test propagation / IEC 60332-3-22 (A)
DNV	Low voltage	Cable Oil resistance and ageing in IRM 903 / IEC 60811
TÜV	Medium & Low voltage	Cable Oil resistance and ageing in IRM 903 / IEC 60811 Fire test propagation / IEC 60332-3-22 (A)



ADDITIONAL TESTS	PROCEDURES STANDARDS	RESULTS
Crushing resistance	Nexans international procedure : 10 days / 4000 tons on cables / 400 tons per day	No cut, cracking, tear, punch Electric resistance integrity Good capacity to keep its initial design and dimensions
Accessories (epoxy resin junctions)	NF M 87-202: 28 days	Electric properties compliance Physical integrity compliance

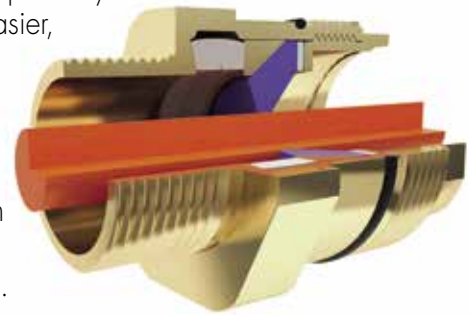


CMP CABLE GLANDS

We recommend using CMP cable glands. Nexans and CMP are joining forces and sharing expertise to deliver unique connectivity solutions dedicated to performance and quality.

Triton T3CDS cable glands from CMP deliver a unique concept in cable sealing techniques incorporating the patented Compensating Displacement Seal system, CDS™. The combination of cables designed with the HYPRON® technology ensures the complete compatibility and makes the installation process easier, safer, and more reliable.

Introduced to effectively handle all types and sizes of armoured cable construction taking the concern out of the mind of the operator, letting the product do the job instead.



Did you know?

- ▶ **CMP cable glands are designed and fully approved in accordance with EN 60079-0,1,7,15, 31 & IEC 60079-0,1,7,15, 31 and comply with Annex 11 of ATEX Directive 2014/34/EU.**
- ▶ **This allows the product to be CE marked and coded with an ATEX Category 2 gas and Category 1 dust marking (labeled 2G, II 1D).**

BENEFITS & FEATURES

- ▶ All cables designed with HYPRON® technology feature a flame proof inner seal which benefits from the full performance of our Compensating Displacement Seal (CDS) system. Armour termination is compatible with all types (wires, tapes & braids).
- ▶ The deluge seal (Shell deluge tested DTS01 : 9) has a proven 'O' Ring arrangement which is concealed and protected after installation. The outer seal closure range accepts all cables designed with HYPRON® technology.
- ▶ The products feature two impressive operating temperature options: -60°C to 130°C or -20°C to 200°C.

PRACTICAL INSTALLATION BENEFITS

- ▶ Assembly consists of three sequential steps and is fast and easy, with face-to-face installation every time. 'Right First Time' installation meets the highest expectations and reduced downtime brings peace of mind.
- ▶ All glands have a uniform hexagon profile.
- ▶ Regardless of cable construction, there is no risk of damage to the cable inner sheath, even though CDS sealing system is fully tightened every time.
- ▶ EMC Noise Reduction levels for radiation emissions comply with current European guidelines (approx. 50db attenuation when terminated with screened cable). The technology complies with Low Voltage Directive 73/23/EEC.
- ▶ Several options are available on request.



FROM DESIGN, THROUGH INSTALLATION TO OPERATIONS, SERVICES AND SOLUTIONS TO SUPPORT YOUR SUCCESS.

Cabling can be a critical factor in refineries' performance, longevity and cost-effectiveness. That's why Nexans aims to support each customer from the initial steps to the installation.

Nexans offers a full range of cabling-related services, from consulting to installation support and maintenance.

We support you at every stage of your projects. From providing technical training to help you identify and purchase the best cables and accessories for your project to helping develop your know-how in order to help you to better cope with challenges.

We offer a variety of programs, such as DEFINE the best solution technically and commercially BUY procurement optimization, which offers a single point of contact, and CERTIFY accessories training.

DEFINE

Defining requirements

Nexans engineers work with you on identifying the correct cable specifications for your needs.

We analyze potential sources of risk or damage and a wide range of parameters - operational, electrical, mechanical, temperature, fire safety, humidity, sun - and translate these into relevant cable specifications that balance efficiency, risk mitigation and cost-effectiveness.

We also help ensure tests are carried out as efficiently as possible and advise on selecting the correct accessories.

MAINTAIN

Optimized site operation

Nexans can help ensure your site operates as safely, smoothly and efficiently as possible with post-project follow-up services.

These include long-term management of spare parts and safety stock, as well as safe and compliant documentation storage and management.

We can also carry out a global preventive maintenance inspection of your site, to identify anything that might potentially reduce lifecycles.

We can also provide very rapid interventions: problems can be diagnosed and solutions proposed within 48 hours.

BUILD

Optimized site building

A varied services offering can help boost efficiency and safety as you build your site. We offer support in the areas of inventory and logistics, project management and monitoring and labor (including Personal Protective Equipment and achieving OHSAS 18001 compliance).

We can also take care of on-site supervision and support for drum unloading and handling, cable and drum inspection, field-testing of cables, long-term drum storage, cable laying, installation of accessories and installation in difficult-to-access areas or unusual site or climatic conditions.

RECYCLE

Transform waste into revenue

Nexans turns leftover and end-of-life cables into a source of revenue.

For over 35 years, we have been recycling end-of-life copper and aluminum cables and cable waste, taking care of everything, up to collection and transport.

This is done in a fully traceable and compliant manner, using the most state-of-the-art grinding and recycling techniques.

CERTIFY

Compliance

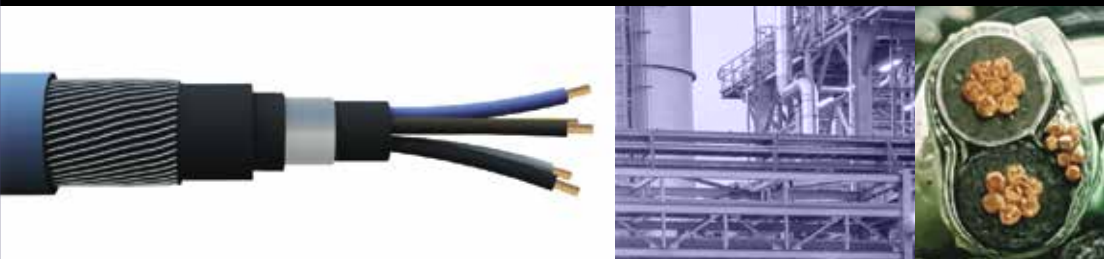
All our cables and accessories are fully compliant with all major national and international norms and standards and as a qualified, independent third party, we can also train and certify your installation and operations teams.

BUY

Procurement support

Nexans can help your procurement team optimize their time and results, meet project deadlines and minimize costs by managing vendor relations for you, or helping you select competent and reliable partners.

Based on extensive knowledge we can partially or completely take care of your procurement.



About Nexans

Nexans brings energy to life through an extensive range of cables and cabling solutions that deliver increased performance for our customers worldwide. Nexans' teams are committed to a partnership approach that supports customers in four main business areas: Power transmission and distribution (submarine and land), Energy resources (Oil & Gas, Mining and Renewables), Transportation (Road, Rail, Air, Sea) and Building (Commercial, Residential and Data Centers). Nexans' strategy is founded on continuous innovation in products, solutions and services, employee development, customer training and the introduction of safe, low-environmental-impact industrial processes.

In 2013, Nexans became the first cable player to create a Foundation to introduce sustained initiatives for access to energy for disadvantaged communities worldwide. Nexans is an active member of Europacable, the European Association of Wire & Cable Manufacturers, and a signatory of the Europacable Industry Charter. The Charter expresses its members' commitment to the principles and objectives of developing ethical, sustainable and high-quality cables.

Nexans, acting for the energy transition, has an industrial presence in 40 countries, commercial activities worldwide, is employing close to 26,000 people and generating sales in 2016 of 5.8 billion euros. Nexans is listed on Euronext Paris, compartment A.

For more information, please consult: www.nexans.com