WIND POWER

ON SHORE & OFF SHORE

WIND FARMS

Nexans Wind Solutions

Nexans

SUMMARY

Nexans
Wind Solutions

WIND POWER

Sustainability

Our mission is to Electrify the Future and work towards a new world of sustainable electrification - decarbonized, renewable and accessible to everyone.

Nexans' business operations and internal activities are committed to a range of Corporate Sustainable Responsibility (CSR) principals that focus on our people, our partners, our products and our planet for a more sustainable future.

These CSR principles draw on the Sustainable Development Goals set by the United Nations, which the Group adopted in 2008 when it joined the Global Compact. Here in New Zealand, our aim is to be consistent with Nexans' mission and purpose at a local level by being an innovative company and recognized as such by employees and customers. We consider our people and the planet as integral to our success and commit to delivering on our promises, mission, purpose and values.

By electrifying the future, Nexans is targeting the global investments and plans that will help us achieve our carbon neutrality target by 2030.

Recognised globally for its high achievements in advancing sustainability, Nexans' efforts are reflected in its global sustainable performance rating as follows:

- **CDP award "A-" Carbon Disclosure Project Rating**
  CDP is a not-for-profit charity that runs a gold standards global disclosure system for investors, companies, cities, states and regions to manage their environmental impacts towards accelerating the Rate of Change

- **ISS ESG Decile Ranking 1, Rating B**
  ISS Management is a leading provider of corporate governance and responsible investment solutions, market intelligence, fund services, and events and editorial content for institutional investors and corporations, globally.

- **EcoVadis rating 78/100 and Platinum Medal**
  EcoVadis is the world's largest and most trusted provider of business sustainability ratings, creating a global network of more than 100,000+ rated companies.

- **Sustainalytics ESG Risk rating 20.6**
  Morningstar sustainalytics provides high-quality, analytical Environmental, Social and Governance (ESG) research, risk ratings and data to institutional investors and companies,

- **MSCI Rating "A"**
  MSCI has over 50 years of expertise in research, data and technology enabling clients to understand and analyse key drivers of risk and return and confidently build more effective portfolios.

Our Focus

Nexans Wind Solutions offer a comprehensive MV collector cabling solution developed to enhance the security of generating capacity in response to the rapid increase in wind turbine MW size. Part of the wind offer is the addition of waterblocking in both the cable and conductor to further ensure cable integrity over the lifespan of the project, while extra-long single-core cables reduce the risk of joint failure by minimizing the need for joints.

The Nexans design requires fewer main substation trunk runs, resulting in shorter overall trench and cable lengths. This is achieved through the optimized design of dual or triple MV collector cable circuits installed in single trenches using a continuous trenching process. Additionally, the

Junction Cabinet plays a crucial role in facilitating effective system installation designs.

Our Value

- Comprehensive connectivity capabilities for wind farm plants
- CAPEX & OPEX savings to meet competitive Power Purchase Agreements and ROI targets
- Solutions that offer a long and reliable design life for wind assets, ensuring the security of lifetime business model expectations
- Collector system installation scope that includes a tangible system warranty
- Short lead time, safe and low cost installation design and process
- Compliance with the latest international standards to mitigate cable-related risks
- Minimal environmental impact through lower CO_2 emissions during the entire life cycle.
- Steel drum recycling to support circular economies in line with Sustainable Development goals
- Strategies for minimizing installation carbon footprint
- Benefiting from Nexans' expertise in energy management, data networking, and grid connectivity, including dynamic monitoring and management of cable systems
- Support with international development plans, including certification, local delivery, and local sourcing at an equal level of quality

Scope

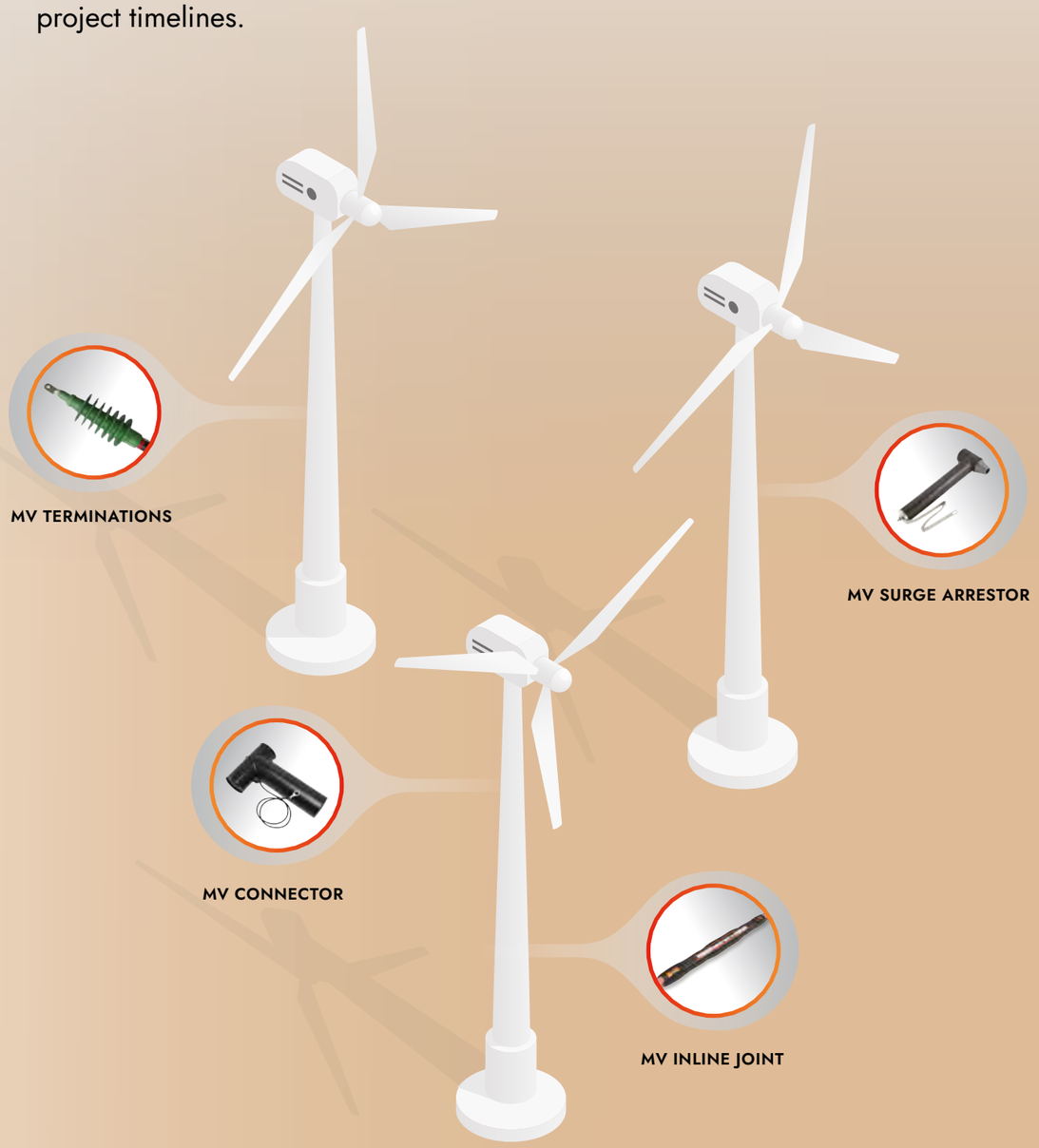
- Nexans Windlink wind turbine special application cables and accessories supply
- Nexans 11KV -33KV MV Collector cable supply between turbine tower RMU and Substation
- Nexans Earthing conductor supply
- Nexans fibre optic cable supply
- Nexans accessories including separatable connector terminations and substation terminations supply
- Nexans 11KV -33KV MV cable Jointing kits supply
- Nexans Junction Cabinet for jointing and transition solutions supply
- MV cable collector system layout and installation design
- 30-year design life
- Fast, safe installation schedules with minimal carbon footprint
- Dynamic condition and performance monitoring/control system for cable trunk runs

Nexans Wind Value Add **System Solutions**

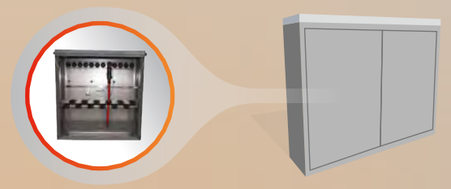
WIND POWER

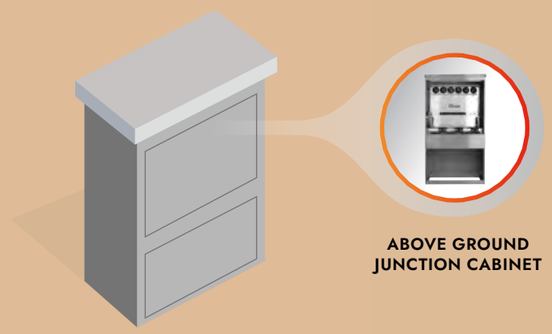
WINDFARM ON-SHORE

The Nexans Wind solution encompasses the complete electrical reticulation cable and accessory system, from the turbine tower to the substation. The implementation of Nexans' solution is driven by engineering expertise and application knowledge, supported by an extensive network of specialist consortium partners and sustainable solutions focused on safety, compliance, whole-of-life cost, and project timelines.



- REDUCED TRENCH LENGTH, LESS INSTALLATION TIME & LOWER COST
- SAFER INSTALLATION PROCESS AND BETTER FOR THE ENVIRONMENT
- LOWER WHOLE-OF-LIFE & CAPEX COST
- MORE EFFICIENT INSTALLATION PROCESS
- NEXANS NEW ZEALAND SYSTEM WARRANTY
- REDUCED INSTALLATION TIMES





WINDFARM OFF-SHORE

Nexans power accessories offer includes T-connectors, surge arrestors, pre-assembled jumper cables & a range of tailored junction chambers & frames.

Nexans New Solution

1200 mm² AL Conductor Development

Nexans New Plymouth factory manufactured its first production of 1200 mm² aluminum conductor in 2019.

We offer full local capability of producing 1200 mm² conductor for any large windfarm solutions. As the generation demands have increased in key projects it is beneficial to use large aluminium conductor instead of copper equivalent.

Advantages:

- Local Manufacture.
- Lighter to Cu
- Comparable ampacity to Copper conductor
- Cost competitive
- Standard Lugs/Termination Kits

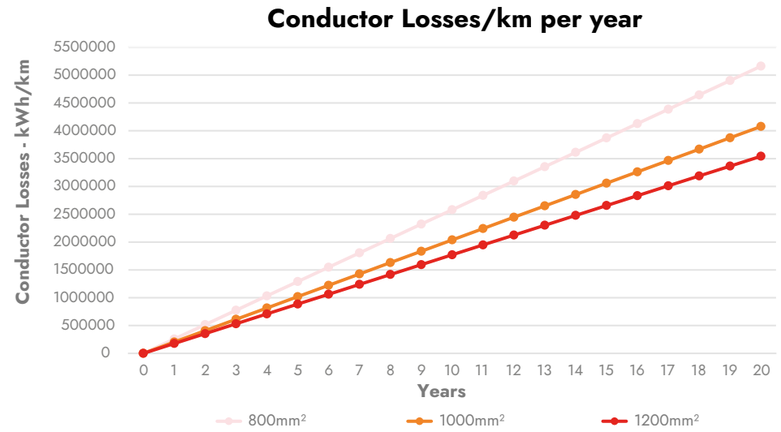
800 mm² Cu VS 1200 mm² Al Conductor Comparison

Conductor	Construction	Dimension	Weight (kg/km)	DC Resistance (Ω/km @ 20°C)	Cost
800 mm² Cu	Class 2 ≤ 53w (61w)	34.4 ± 0.3 mm	7198	0.0221	$250-$300/m
1200 mm² Al	Class 2 ≤ _ (88w)	41.0 ± 0.1 mm	3264	0.0247	$50-$60/m
Percentage % to 800 mm² Cu	-	120% ↑	45% ↓	89% ↓	20-25%

Economic optimisation of power cable size

The standard procedure for selecting a cable size typically focuses on determining the minimum admissible cross-sectional area required for a given load, which minimises the initial investment cost of the cable. However, this approach does not take into account the cost of energy losses over the lifespan of the wind farm. Cables operating at maximum temperatures experience higher energy losses compared to those with larger conductors running at lower temperatures. Therefore, it is important to consider the economic implications of cable losses when choosing the appropriate cable size.

Conductor Size	Cable loading	Conductor operating temperature	Conductor loss	Conductor Loses per year at 100% utilization	Ratio of losses with increase in conductor size
mm²	A	°C	W/A²/km	kWh/km/yr	%
800	762	90	0.0501	258028	100
1000	762	73.5	0.394	203849	79
1200	762	66	0.0341	177105	69



Nexans SOLUTIONS

Nexans is committed to electrifying the future not just through cables but with added-value products and services. We are dedicated to innovation, solving problems both locally and internationally, with a strong focus on customer satisfaction.

What is PEP Eco Passport?

The PEP Eco Passport is a comprehensive environmental impact assessment tool designed to provide a transparent and detailed overview of the environmental performance of our products throughout their life cycle. It encompasses the entire value chain, from raw material extraction to manufacturing, product use, and end-of-life disposal or recycling.

Nexans recognises that sustainability is a collective effort, and our PEP Eco Passport is a testament to our dedication to fostering positive change. By providing valuable insights into the environmental aspects of our products, we aim to drive responsible consumption and contribute to a more sustainable future.

Nexans ANZ aims to cover 100% of its locally manufactured stocked products under PEP Eco Passports by end of 2024. This includes cables offered in the Residential, Tertiary & Commercial Building industry, Renewables and Power Distribution markets.

ULTRACKER

ULTRACKER is a dedicated platform that efficiently manages the drum fleet, enhances remote stock visibility, and helps prevent theft. This digital geolocalisation solution for cable drums is based on a combination of a hardware device, software services and engineering expertise.

The supply chain booster

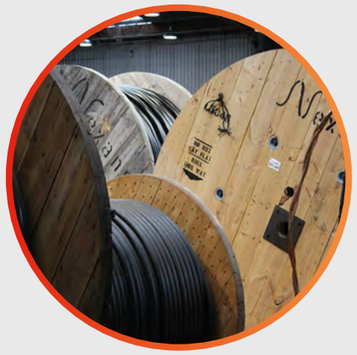
The ULTRACKER offer is a suite of solutions ensuring supply chain continuity based on Internet of Things (IoT), enhanced artificial intelligence (AI) and cloud services.

It improves Operating Working Capital (OWC) and enhances customer experience while increasing supply chain agility by boosting delivery performance, tracking deliveries, and reducing transportation costs.

ULTRACKER technology, developed by Nexans' Digital Factory, is powered by Microsoft Azure cloud services.

NEXANS WIND VALUE ADD SYSTEM SOLUTIONS

Environmental Drum Program



Launched in 2021, our Green Drum programme goes one step further in our commitment to sustainable practice. We partner with our wooden drum suppliers to ensure Nexans drums have PEFC (Programme for the Endorsement of Forest Certification) or FSC (Forest Stewardship Council) certification, meaning they are a product of sustainable forestry.

The Green Drum program creates value for our customers by ensuring that the drums used to supply their cables are part of a circular economy and made from sustainably sourced forestry materials.

With our commitment to sustainable development, we encourage our customers to become part of our Green Drum Programme that encompasses our existing drum recycling service. Nexans Green Drum refers to FSC or PEFC certification held by our suppliers. Forest certification provides a mechanism to ensure timber-based products reaching the marketplace have been sourced from sustainably managed forestry.

Green Drum works alongside our existing drum return process where we collect all our wooden drums and pallets no longer in use for re-circulation, helping to limit the amount of landfill waste.

Smart Cable Guard

Medium-voltage cable grids are the front line in delivering electricity to the end user. However, we are constantly demanding more from these often aging grids: to carry higher volumes, last longer, and be more flexible.

Smart Cable Guard is a proven sensor-based digital monitoring platform that lets you know exactly what is going on with your feeder cables at any time. Smart Cable Guard creates a digital twin of each monitored feeder cable and exchanges data and information instantly. These real-time insights support data-driven decision making in operations, maintenance, asset management and grid strategy.

- Monitors and analyses the status of your feeder cables 24/7
- Detects faults (including self-healing breakdowns) and weak spots
- Pinpoints faults/weak spots to within 1% of feeder cable length
- Reduces number and length of power outages
- Minimises downtime for repairs and maintenance
- Ready to be integrated via an API in your own monitoring and control systems, and asset management system or software.

Nexans Wind Cable Solutions

Wind Cable Solutions

Nexans MV Cable

1C & 3C, 16 mm² to 1,200 mm² Al or Cu to AS/NZS 1429.1. Available in a range of copper wire fault screen sizes, swellable water barrier tapes, a robust single layer or dual layer PVC/MDPE sheath. Other customer specified available upon request.

Construction

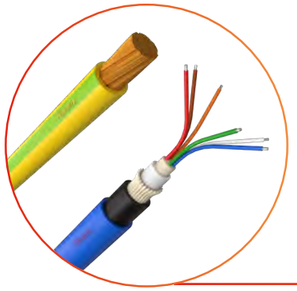
- 1 or 3 cores; stranded compacted AL or Cu conductor; TR-XLPE insulation, copper wire metallic screen, with composite PVC, MDPE protective oversheath.

Standards

- AS/NZS 1429.1

Voltage Rating

- 6.35/11 to 19/33 kV



Nexans Cables

Communication and Earthing

For wind farm projects Nexans can also supply a range of LV, communication cables and earthing cables.

Underground Junction Chamber

For on shore wind farms, the underground junction chamber provides a simple IP68 rated water tight value added solution for jointing of MV cables

Construction

- Burial type 316 stainless steel housing.
- Robust design with IP68 degree of protection (IEC 60529/AS 60529).
- Suitable for voltages up to 42 kV, 1250 Amps
- Suitable for cables up to 1200 mm²

Onshore Junction Cabinet

Designed, tested and manufactured for renewable projects, the junction cabinet acts as a disconnecting outlet between grid and application, or a branching and replicating outlet.

Construction

- Pedestal type powder coated AISI 304 stainless steel housing.
- Robust design with IP43 degree of protection (IEC60529/EN62262 ed1:2002-02).
- RAL 7037 coolcoat UV resistant coating.
- Suitable for voltages up to 42 kV, 1250 Amps

WIND POWER

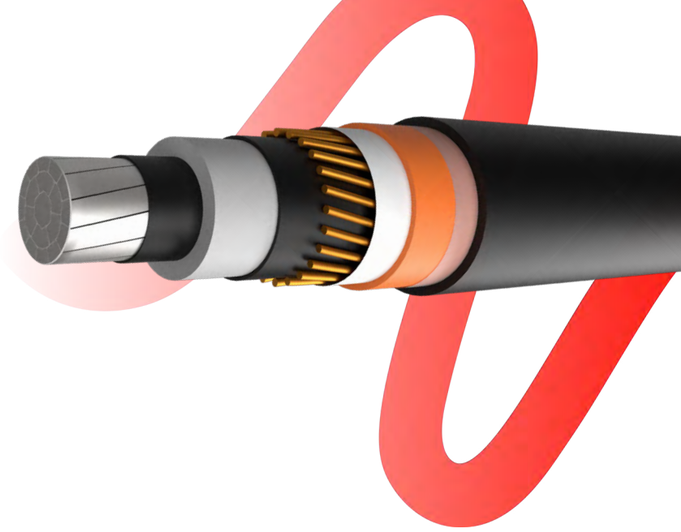
History Of Long-life Cables

Nexans has an impressive long history as pioneers for designing and manufacturing quality medium voltage cables in New Zealand.

As the largest power cable manufacturer in NZ and the only manufacturer of MV, we pride ourselves on delivering cable that has a life expectancy of over 50 years from our state of the art facility in New Plymouth, and have been since 1967.

In 1967, CANZAC cables were the first to manufacture the first-generation cross-linked polyethylene cables in the Southern Hemisphere and again were the first to introduce extruded semi-conductive screens to replace the taped version in 1973. In 1990, Olex Cables upgraded from steam to dry-cured triple extrusion and introduced the first-generation tree-retardant cross-linked polyethylene (TR-XLPE) in New Zealand. Eight years later, an X-ray 8000 dimensional controller was installed to the machine which scans through three layers of polymer to accurately measure layer thicknesses for consistency. After an improvement on the compound which was trialled in 1998, Olex Cables then went into full production of the second-generation TR-XLPE in 2005, reducing tree-growth even further. A new advanced hi-tech X-ray is installed the same year. Nexans Olex trialled the next generation of TR-XLPE in 2011 and went into full production in 2017, making Nexans NZ leaders in long-life cable.

Nexans MV Cable



Underground AC Medium Voltage Cable

General Construction

- Cable Standard: AS/NZS 1429.1
- Conductor: Aluminium or Copper
- Conductor Screen: SC-XLPE
- Insulation Material: TR-XLPE
- Insulation Screen: SC-XLPE
- Screen Wire: SDCU wire
- Oversheath layer: Single or Dual layer
- Cable Type: Underground AC application
- Voltage Rating: 6.35/11-19/33kV AC
- Number of Core: Single Core or Three Core

Fault Rating: Variable
Typical: 3.0 kA, 6.0 kA, 10.0 kA

Recommended cable range:
Al: 35 mm² to 1200 mm²
Cu: 16 mm² to 630 mm²

Oversheath Material: Variable
Typical: PVC, MDPE, LLDPE, HDPE or combination of materials in dual sheath configuration

Additional feature (on request):
· Waterblocking mechanism: Conductor, Screen
· Al foil laminate water barrier
· Fibre optic integration
· Armouring: SWA, AWA

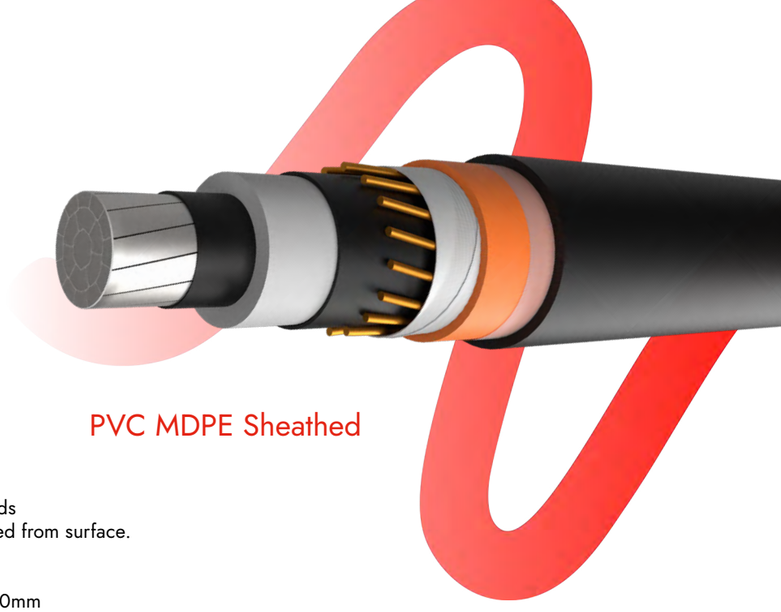
Voltage Rating	Conductor Properties			Conductor Size				Nominal Thickness			
	Material	Form	Class	Al		Cu		Conductor Scree	Insulation	Insulation Screen	Sheath
				min	max	min	max	min	nom	min	
kV				mm²		mm²		mm	mm	mm	mm
6.35/11 (12)	Al or Cu	Compacted	2	35-	1200	16	630	0.3	3.4	0.6	Variable
12.7/22 (24)	Al or Cu	Compacted	2	35	1200	35	630	0.3	5.5	0.6	Variable
19/33 (36)	Al or Cu	Compacted	2	50	1200	50	630	0.3	8.0	0.6	Variable

WIND POWER

Nexans MV Cable

General Construction

- Conductor Screen: SC-XLPE
- Insulation Material: TR-XLPE (X-90)
- Insulation Screen: SC-XLPE
- Metallic Screen Wire: SDCU wire
- Tape: WB tape
- Innersheath Material: PVC (5V-90)
- Oversheath Material: MDPE (PE)
- Cable Type: Single Core Cable
- Voltage Rating: 19/33(36)kV



PVC MDPE Sheathed

Installation Conditions:

- Cables in trefoil with screens bonded at both ends
- Ambient air temperature: 30°C, protected, spaced from surface.
- Ground Conditions:
  - Ambient ground temperature: 15°C
  - Depth of burial (Center of cable group): 1000mm
  - Ground thermal resistivity: 1.2 K.m/W
  - Duct Material: PVC Duct

3 kA Screen Fault Level

Cross-sectional Area	Nominal Thickness					Cable Component Diameter			Mass of Cable	Pulling Tension		Minimum Bending Radii	
	Conductor Screen	Insul.	Insul. Screen	Metallic Screen	Sheath	Conductor	Insul.	Overall		Conductors	Pulling Stock	Fixed	During install
mm²	mm					mm			kg/km	kN		mm	
95	0.5	8.0	0.7	36 x 0.85	1.0/1.1	11.43	27.8	36.5	1296	4.75	4.38	440	660
185	0.5	8.0	0.7	36 x 0.85	1.1/1.1	15.93	31.9	40.8	1687	9.25	4.90	490	730
300	0.5	8.0	0.7	36 x 0.85	1.2/1.2	20.33	36.5	45.1	2197	15.0	5.41	540	810
630	0.5	8.0	0.7	36 x 0.85	1.3/1.4	29.33	45.9	55.8	3533	20.0	6.70	670	1000
800	0.5	8.0	0.7	36 x 0.85	1.4/1.4	33.83	50.4	60.5	4224	20.0	7.26	730	1090
1000	0.5	8.0	0.7	37 x 0.85	1.5/1.5	38.15	55.1	66.2	5119	20.0	7.94	790	1190

Cross-sectional Area	Max. Conductor DC Resistance @20°C		AC Resistance @ 50 Hz 90°C	Fault Rating (1s Duration)		Capacitance to neutral	Maximum Continuous Current Rating			
	Conductor	Screen	Conductor	Conductor	Screen		Air Rating	Buried Direct	One Duct (in gound) (Nom.size)	Ducts (in gound) (Nom.size)
mm²	Ω/km		Ω/km	kA/sec		µF/km	A	A	A(mm)	A(mm)
95	0.0320	0.885	0.4105	8.98	3.0	0.176	287	244	224 (63)	211 (100)
185	0.164	0.885	0.2108	17.5	3.0	0.223	430	350	324 (65)	308 (150)
300	0.100	0.885	0.1292	28.3	3.0	0.267	573	459	421 (65)	402 (150)
630	0.0469	0.885	0.0625	59.5	3.0	0.357	903	681	627 (100)	618 (200)
800	0.0367	0.885	0.0502	75.6	3.0	0.400	1055	757	709 (100)	699 (200)
1000	0.0291	0.861	-	94.5	3.0	0.431	1200	842	787 (100)	776 (200)

4.5 kA Screen Fault Level

Cross-sectional Area	Nominal Thickness					Cable Component Diameter			Mass of Cable	Pulling Tension		Minimum Bending Radii	
	Conductor Screen	Insul.	Insul. Screen	Metallic Screen	Sheath	Conductor	Insul.	Overall		Conductors	Pulling Stock	Fixed	During install
mm²	mm					mm			kg/km	kN		mm	
95	0.5	8.0	0.7	37 x 1.03	1.0/1.1	11.43	27.8	36.2	1386	4.75	4.34	430	650
185	0.5	8.0	0.7	37 x 1.03	1.1/1.1	15.93	31.9	41.2	1789	9.25	4.94	490	740
300	0.5	8.0	0.7	37 x 1.03	1.2/1.2	20.33	36.5	46.2	2314	15.0	5.54	550	830
630	0.5	8.0	0.7	37 x 1.03	1.3/1.4	29.33	46.1	56.4	3654	20.0	6.77	680	1020
800	0.5	8.0	0.7	37 x 1.03	1.4/1.4	33.83	50.4	60.9	4329	20.0	7.31	730	1100
1000	0.8	8.0	0.9	54 x 0.85	1.5/1.5	38.15	55.1	66.2	5212	20.0	7.94	790	1190
1200*	0.8	8.0	0.9	41 x 1.03	1.5/1.6	41.0	58.0	69.7	5891	20.0	8.36	840	1250

*Screen rating 5.0kA/sec to comply to screen gap requirements of AS/NZS 1429.1

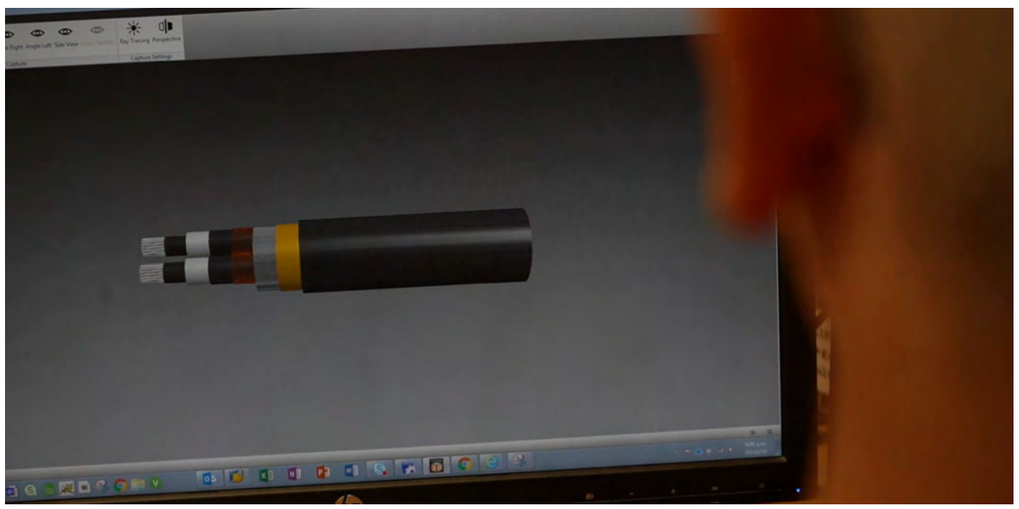
Cross-sectional Area	Max. Conductor DC Resistance @20°C		AC Resistance @ 50 Hz 90°C	Fault Rating (1s Duration)		Capacitance to neutral	Maximum Continuous Current Rating			
	Conductor	Screen	Conductor	Conductor	Screen		Air Rating	Buried Direct	One Duct (in gound) (Nom.size)	Ducts (in gound) (Nom.size)
mm²	Ω/km		mm	kA/sec		µF/km	A	A	A(mm)	A(mm)
95	0.0320	0.885	0.4105	8.98	3.0	0.176	287	244	224 (63)	211 (100)
185	0.164	0.885	0.2108	17.5	3.0	0.223	430	350	324 (65)	308 (150)
300	0.100	0.885	0.1292	28.3	3.0	0.267	573	459	421 (65)	402 (150)
630	0.0469	0.885	0.0625	59.5	3.0	0.357	903	681	627 (100)	618 (200)
800	0.0367	0.885	0.0502	75.6	3.0	0.400	1055	757	709 (100)	699 (200)
1000	0.0291	0.861	-	94.5	3.0	0.431	1200	842	787 (100)	776 (200)
1200	0.0247	0.529	0.03620	113	5.0	0.458	1277	904	795 (150)	814 (200)

Extra Long Cable Length

Long-run MV cable circuits on wind farms traditionally required the use of inline cable joints. MV collector cables on wind farms are subjected to varying wind and load conditions, imposing significant performance demands on accessories. In the past, these conditions have led to failures due to electrical breakdown of cable joints under extreme thermal stress on wind farms. The most reliable method to eliminate MV joint failure is to eliminate the need for joints altogether by using long-run single-core cables. Traditionally, the use of three-core cables has increased the risk of failure due to limitations in drum lengths and the necessity for multiple joints on extended trench runs.

Alternatively, long runs of single-core cables have been considered the ideal solution. **Nexans has taken the initiative to develop the necessary manufacturing and testing capabilities to produce these extra-long MV cable lengths**. The relatively small diameter of single-core cables ensures that drum diameter does not limit drum length. Refer to the table below for maximum drum lengths of cable for each common conductor size, along with associated drum size and weight. Furthermore, reliability and cost are optimised when long-length single-core cables are installed in trefoil configuration with the Nexans Turnkey Solution.

1C 33 kV Cable maxium drum lengths and drum size			
Conductor size mm²	Max. drum length metres	Drum weight (kg)	Cable drum size mm (Flange x Width)
185	2,000	4,903	2500 x 1550
300	1,800	4,575	2500 x 1550
630	1,350	6,390	2800 x 1900
800	1,200	6,208	2800 x 1900
1000	1,200	7,512	2800 x 1900
1,200	1,000	6,890	2800 x 1900



Technical Design Services

Optimise your investment with the unparalleled experience and expertise of the Nexans NZ engineering support services team.

Technical and Engineering expertise

Nexans' extensive technical resources enable the design of cables tailored to meet the exact needs of each customer. While the standard range of cables may include a product that can perform the required task, Nexans is committed to ensuring that a cable's capabilities precisely match the installation requirements and customer specifications.

This might involve modifying a standard design for optimal performance or adding a new feature—an integral part of Nexans' service.

Nexans' technical support extends beyond the successful design and production of the cable. We also offer a comprehensive cable advisory service. Our experienced and respected technical staff, both in New Zealand and globally, are ready to provide expert solutions to all types of cable-related problems and inquiries.

Our Engineering and Technical support services include :

- Dedicated team member to your project
- Customised cable design
- Rating studies with an extensive range of technical data
- Cable optimisation and testing
- Cable failure analysis and testing
- Cable termination design solution and technical support

Customer Service

Having quality service and dedicated support are key enablers to your projects success. Our experienced team understand the unexpected can happen, putting the performance of your asset at risk. Your dedicated Nexans team member will work closely with you to ensure solutions for the ever-changing needs of your project.

Customer Support Services:

- 4hrs query turnaround
- 14-day claim investigation guarantee
- Proof of delivery 24hrs turnaround
- Targeted approach for your project
- Emergency after hours contact
- Project update management
- Same day order processing
- Manage to provide back-order reports
- Phone assistance available from 8am-5pm

Nexans
Power Accessories

WIND POWER

Nexans Training

All training courses are bespoke and can be adapted to your specific requirements.

Our training centres are fully equipped to provide training for jointers and engineers on all aspects of MV & LHV cable accessories.

Courses cover various cable constructions, cable preparation plus the installation of heat-shrink/cold-shrink and slip-on terminations, separable connectors and joints, including our Underground Junction Chamber.

Where applicable, products installed by our attendees are tested for AC withstand and partial discharge. Upon successful completion of the test, the candidate will be presented with a certificate of competency.

Nexans Power Accessories is fully committed to raising the standards throughout the different countries where we are present for cable accessory installation.

Program up to 72.5 kV

All our different training modules consist of 3 different parts:

Risk - Human Error

Nexans maintains the highest standards on quality and performance for its cables and accessories to ensure the best possible service lifetime of our customer's network.

All our products are subject to routine tests, like AC-withstand and partial discharge, prior to leaving our plants. We understand the importance of giving our customers a stable and infallible product that will last for decades. We make sure that our products can live up to those expectations.

When correctly installed the service lifetime of our accessories can go up to 50 years. Some of the EUROMOLD accessories launched 40 years ago are still on catalogue, and well sold. Most of these products being recognised as world references in terms of quality, technicity and durability.

Risk Reduction

To mitigate the risk of human error during the installation of any accessory, it is important our customers have qualified technicians working on their network.

It is critical that those technicians can provide the right credentials showing their competency in installing cable accessories.

Nexans Power Accessories is able to provide high standard competency installation courses at our training centres or on customer's site where applicable.

The weakest link

Yet, the weakest link in the chain exists where the accessory will meet the cable, installed by human interface. So it is important that the installation is performed with great professionality, knowledge and accuracy, respecting the rules of good craftsmanship.

Such robust and infallible installation skills can only be accomplished by well trained and certified technicians at our facilities. We assure that the trainee will benefit highly from our course modules.

Repair and other claims

The quality lies 100% within the skillset of the operator on site. Poor workmanship will cost you 1000's $'s in loss of revenue, time and cost to repair and other direct and indirect claims from your customer(s).

That's where our training facilities come in to place. With comprehensive training to help reduce the potential for failures to the minimum.

THEORETICAL TRAINING

To explain the why and how of the function of each component of the accessory.

PRACTICAL TRAINING

To instruct how to prepare your cable and install the accessory correctly.

EXAMINATION

To verify objectively the workmanship of the trainee.

Nexans
Power Accessories

Nexans offer a range of LV, MV & LHV cable accessories with over 35 years experience supplying high quality terminations, joints, clamps and connectors to Power Utilities, OEM's, Contractors, Renewable Energy, Infrastructure and Resources Markets.

Links & Lugs

Mechanical Shear Off

From LV to 72 kV -
1.5 mm² to 1200 mm²

Connectors & Surge Arrestors

EPDM Rubber

From 10 kV to 72 kV -
25 mm² to 1200 mm²

Joints

Heatshrink - Coldshrink

From LV to 72 kV -
1.5 mm² to 1200 mm²

Terminations

Heatshrink - Coldshrink - Slip On

From 10 kV to 72 kV -
25 mm² to 1200 mm²

Cable Leads

Testing options - Megger - HiPot - Partial Discharge

From LV to 72 kV -
1.5 mm² to 1200 mm²

Power Accessories
Value Add Solutions

We also offer custom cable leads, cable preparation tooling, testing, technical publications on the theory and installation of accessories as well as product awareness workshops and certified training on our products.

MV Cable Preparation Tooling

Nexans can provide expert advice on selecting the right tools for your needs. As specialists in the field, we understand the cable preparation and fixing solutions required by jointers and engineers, allowing us to assist you in choosing the correct tooling.

In addition to individual tools, Nexans offers the new MV Professional Jointers tool kit.

This kit includes a curated selection of tools used by our jointer trainers, supplied in a durable black utility hard case with high-density foam cut-outs to protect the tools, ensuring longevity.

Reusable pulling eyes

Nexans offers install-ready cable solutions for your project by supplying cables that are pressurized and equipped with reusable pulling eyes, all fitted in a consistent and controlled environment rather than on-site.

This service saves installers time by providing cables prepared in a controlled and consistent setting, avoiding the challenges of varying on-site conditions.

J-Frame

Offshore Junction Frame

Up to 42 kV - 630 A

APPLICATION: Manufactured for wind applications, the junction frame performs as a connecting point to the subsea array cables.

TECHNICAL CHARACTERISTICS:

- For application with IP67 ingress protection separable cable connectors up to 42 kV – 630 A, according to CENELEC HD 629.1
- Marine grade 316L stainless steel and A2/A4 grade fittings
- Robust design with ingress rotection rating IP54 category 2.

BENEFITS :

- Unique modular design for varying configurations
- A simplified interface management by creating a clear division of responsibility
- Creating a test and demarcation point
- Onshore prepared and tested pre-terminated leads allows for ready plug and play solutions, saving time, space and reducing complexity of installation

J-Chamber

Offshore Junction Chamber

Up to 42 kV - 630 A

APPLICATION: Developed, trialled and manufactured for wind projects, the junction chamber acts as a connection point between the internal tower cable and external subsea array cables.

TECHNICAL CHARACTERISTICS:

- For application with separable cable connectors up to 42 kV – 630 A, according to CENELEC HD 629.1. Higher current ratings on request
- Marine grade 316L stainless steel and A2/A4 grade fittings
- Robust design using screened separable cable connectors with IP67 ingress protection
- Short circuit tested acc. to DIN VDE 0278-626-1(HD 629.1 S2:2006 + A1:2008): 2009-07: Thermal short-circuit 25 kA/1s, Dynamic short-circuit 62.5 kA

BENEFITS :

- Suitable to be installed within the transition piece awaiting installation of the tower
- A simplified interface management by creating a clear division of responsibility
- Creating a test and demarcation point
- Onshore prepared and tested pre-terminated leads allows for ready plug and play solutions, saving time, space and reducing complexity of installation

ONJC-S

Onshore Junction Cabinet

Up to 42 kV - 1250 A

APPLICATION: For onshore renewable power parks, the onshore junction cabinet will be used as a disconnecting point for branching between grid and application.

TECHNICAL CHARACTERISTICS:

- Pedestal type powder coated AISI 304 stainless steel housing.
- Robust design with IP43 degree of protection (IEC60529/EN62262 ed1:2002-02).
- RAL 7037 coolcoat UV resistant coating.

BENEFITS :

- The cabinet design is specifically suitable to be installed in outside conditions.
- High accessibility for ease of installation.
- Ideal test and demarcation point.
- Time saving on installation and down time.
- Reducing cost of installation.
- Reduction of footprint.

UJC-S/D

Underground Junction Chamber

AUSTRALIAN MADE

Up to 42 kV - 1250 A

APPLICATION: For onshore renewable power parks, the underground junction chamber will be used as a connecting point for cable-jointing and branching applications. Designed and manufactured in Australia, the UJC is available in single and dual height.

TECHNICAL CHARACTERISTICS:

- Burial type 316 stainless steel housing.
- Robust design with IP68 degree of protection (IEC 60529/AS 60529).
- Suitable for voltages up to 42 kV, 1250 Amps
- Suitable for cables up to 1200 mm^2

BENEFITS :

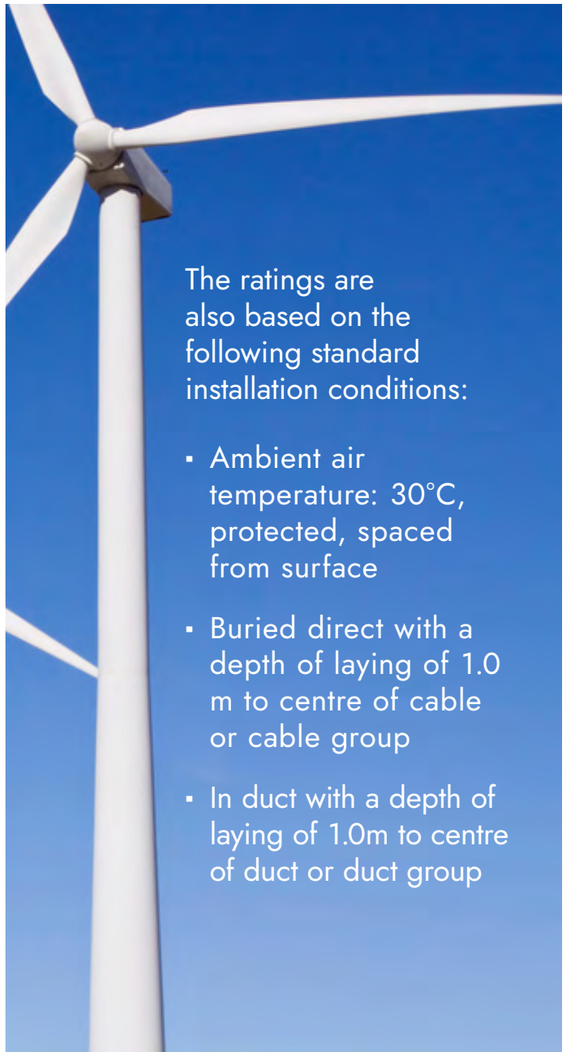
- Reduction of land footprint.
- Joining/branching cables with different cross-sections.
- High reliability of installation.
- Good test and demarcation point.
- Caters for installation of monitoring equipment.

Patent pending
PCT/IB2024/000263

Technical Considerations

Continuous Current Ratings

The continuous current ratings given in this brochure have been calculated in accordance according to IEC 60287 – "Electric Cables- Calculations of the current rating".



The ratings are also based on the following standard installation conditions:

- Ambient air temperature: 30°C, protected, spaced from surface
- Buried direct with a depth of laying of 1.0 m to centre of cable or cable group
- In duct with a depth of laying of 1.0m to centre of duct or duct group

WIND POWER

Based on the following standard operating conditions:

Maximum conductor temperature
90°C

Ambient air temperature
30°C

Ambient soil temperature
15°C

Soil thermal resistivity
1.2K.m/W

Since large scale wind and solar generating plants are commonly located in remote regions of New Zealand, **the local conditions may vary substantially from these base conditions.** In these cases the cable ratings may need to be adjusted according to the local conditions. A suite of established derating factors are published in a variety of documents including the Nexans HV Catalogue to assist. Specific attention must be placed on the accurate determination of soil thermal resistivity as this has the most significant impact on underground cable ratings.

To this extent Nexans can assist with the selection of appropriate sites and interpretation of soil "dry out" curves that will be used in the accurate determination of cable current rating. The selection of thermally stable backfill materials is also a critical component of maximising the current carrying capabilities of underground cables. Nexans can assist to provide thermal modelling studies of complex underground cable systems, including multiple parallel runs, (utilising Finite Element Methods), to ensure the guaranteed cable system design throughput can be confidently met.

Nexans recommend that appropriate site soil surveys are done to determine the ground properties at the installation.

Although it is common practice to design cables systems for continuous rated load of a generating plant, useful gains in cable ratings can be seen when a varying load is considered, due to the long thermal time constant of an underground cable system. This is especially relevant for solar farms, where considering the daily load cycle instead of a continuous load for current rating calculations can achieve gains of up to 10%. Nexans can assist in identifying where these gains can be realized.

Other factors that affect the current rating of a cable include the MV screen bonding method.

Solid bonding reduces the current rating of a single core cable due to the heating effects of circulating currents caused by the induced voltage in the screens, however its impact is minimal if the cables are installed in a close configuration, such as trefoil or flat touching. Conversely, the current rating of cables installed in a spaced formation such as flat spaced can be severely impacted due to high circulating currents in the screens. The overall reduction is dependent on cable spacing, screen size, conductor size and can be as much as 40 %.

If, by virtue of the special nature of the installation, a spaced cable formation is required, special bonding methods may need to be employed to eliminate circulating currents, ie single point or cross bonding. This is usually only considered for cable systems employing large cables.

WIND POWER

Case Study

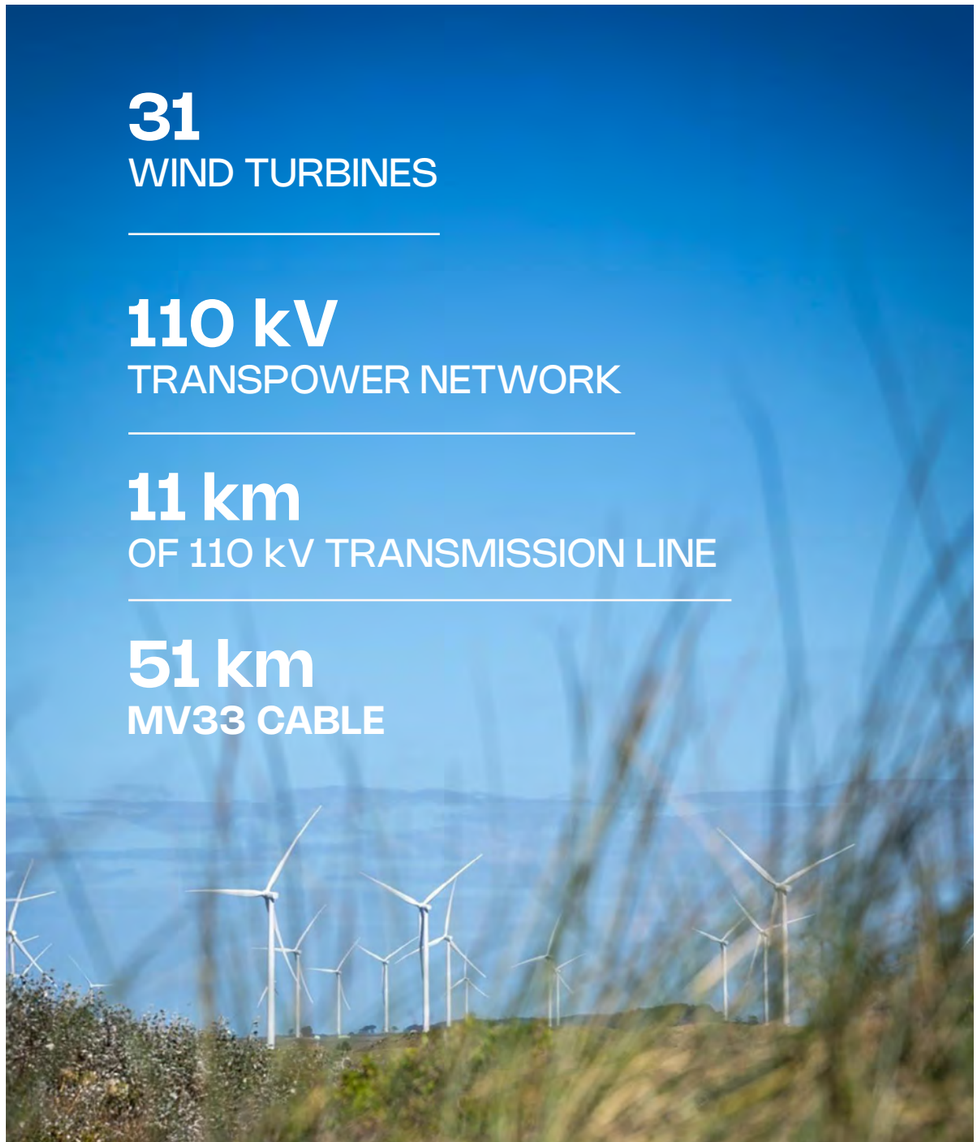
WAIPIPI WIND FARM

Nexans continues to support ElectroNet in providing robust cable solutions for the 31 turbines that make up Tilt Renewables Waipipi windfarm.

The Waipipi Wind Farm project is located approximately 6km south-east of Patea and 8km south-west of Waverley, in the South Taranaki, New Zealand.

Drillco were contracted by ElectroNet to perform the cable install, and worked closely with Nexans to fulfill the project's cabling requirements.

This project was completed on time and under budget.



NEXANS' KEY SUCCESS FACTORS

- **Technical consultancy with civil and electrical teams**
- **Nexans provided a storage solution and facilitated just-in-time delivery with the installer**
- **Unique suite of products**
- **Special cable design**
- **Our locality meant reduced wait times and the ability for our sales, technical and engineering teams to conduct site visit's, resulting in a stronger partnership with all involved in the project.**

Nexans supplied LV and MV power cables as well as fibre optics and aerials for the complete cable solution.

WIND POWER

ON SHORE & OFF SHORE

WIND FARMS

WE DELIVER THE BEST SOLUTIONS TO SUPPORT YOUR PROJECT NEEDS

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Nexans
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