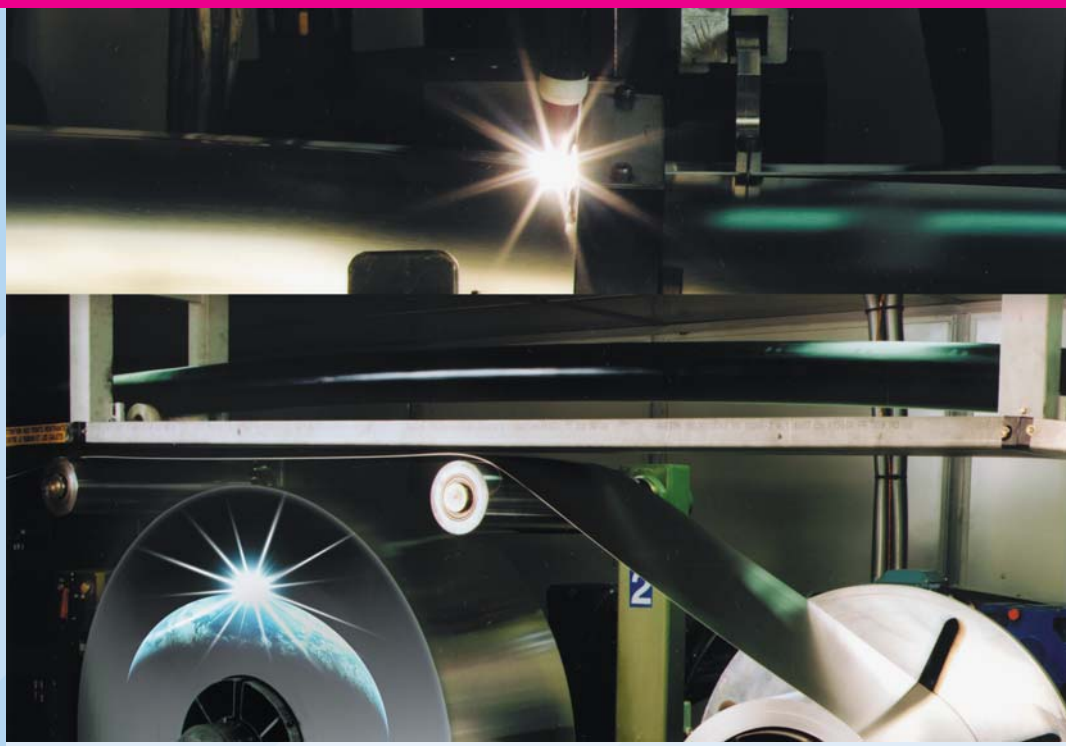
PRYSMIAN
CABLES & SYSTEMS



Smooth Welded Aluminium Sheath

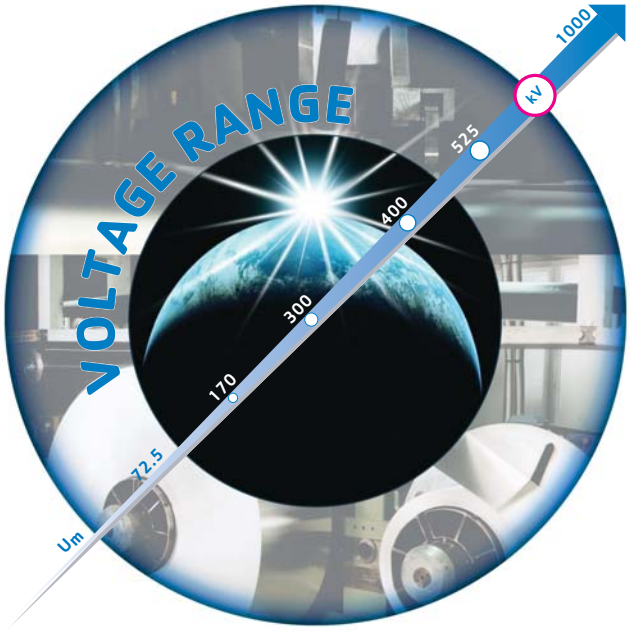
CABLES WITH SMOOTH WELDED ALUMINIUM SHEATH

Product
evolution

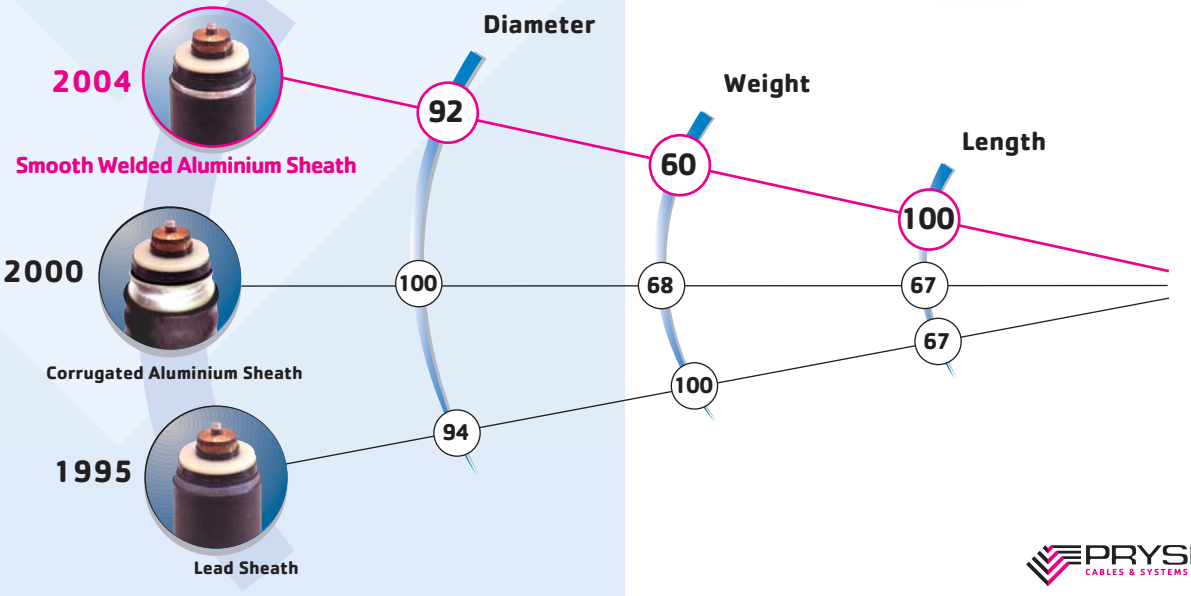
The metallic sheath plays a key role in the design of High Voltage underground cable systems, as it must satisfy essential electrical and mechanical functions to ensure the correct operation of a cable.
Cables with lead alloy sheath - the first solution adopted in the development of metallic shielding technologies - provide all necessary guarantees in terms of technical characteristics: mechanical protection, fluid and moisture tightness, and short circuit current carrying capability.
However, the main disadvantages of cables with a lead alloy sheath are weight - especially from the installation perspective – and, in specific instances, fatigue strain.
Cables with Corrugated Aluminium Sheath (CAS) - the first lead substitution technique adopted in the evolution of metallic shielding technology – have a significantly reduced weight when compared with cables having a lead alloy sheath. Conversely, CAS cables have the disadvantages of not only a lower transmission capacity, due to the presence of an air gap under the corrugations; but also a larger diameter and accordingly shorter delivery lengths.
Prysmian know-how and technological competence have led to the development of a smooth welded aluminium sheath design, an innovative solution, which effectively combines the benefits of both lead and corrugated aluminium sheaths yet minimizes their disadvantages, resulting in a cable with lighter weight, reduced diameter and bending radius – with a comparative longer length.
The smooth welded aluminium sheath also guarantees excellent electrical and mechanical performance, full fluid tightness and compliance with even the strictest environmental requirements.

Industrial
process

The smooth welded aluminium sheath consists of an aluminium tape, longitudinally applied over the cable core, shaped around it and welded. The outer polyethylene sheath is firmly bonded to the aluminium sheath resulting in a cable with a solid impervious water barrier and excellent resistance to fatigue strain.
The application and welding of the aluminium tape, and the extrusion of the polyethylene are carried out through a tandem process on the same line, which undergoes continuous video recorded inspection ensuring effective quality control.
Extensive tests have proven that the water-tightness and resistance to corrosion of the smooth welded aluminium sheath cable meets the most stringent standards.
Depending on the short circuit requirements, the welded aluminium sheath can be complemented with copper wires.



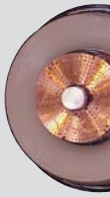
Benefits
Smaller Lighter Longer



PRYSMIAN CABLES & SYSTEMS

Total
Quality Commitment

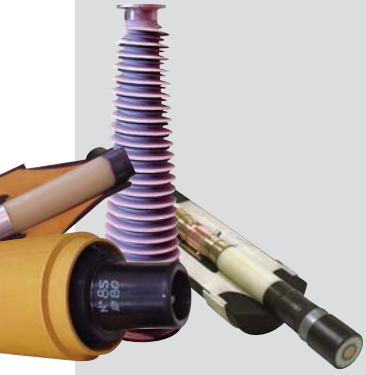
The Prysmian High Voltage Systems business unit is characterised by a competent and experienced approach to global turnkey solutions with improved research, engineering and manufacturing resources. Within the Pirelli Group, there are manufacturing facilities dedicated to the production of HV cables and accessories systems in 12 countries in all five continents and a single business unit, which gathers all critical functions in a co-ordinated management structure with common operative policies. The main advantages this organisation can offer are: great manufacturing flexibility, strong engineering capabilities to solve, develop and even anticipate the most innovative and demanding needs of the market, installation services with extensive experience, and **total quality commitment.**
The Prysmian brand has always been a guarantee for the supply of products and services based on worldwide common quality standards. Pirelli has a built-in multi-step quality assurance program, which covers the entire production process from cable design and raw materials purchasing, to final inspection and testing documentation.
Prysmian business locations and manufacturing sites as well as operation units are certified according to ISO 9001 and ISO 14001 Quality Management System standards for their specific activities and products, and environmental quality standards.



Standards and recommendations

National and international standards provide design guidelines for High Voltage cables, however most HV cable systems are custom designed to suit also the specific environmental parameters and operating requirements of a particular route and loading conditions, taking into account the thermal, thermo-mechanical and electrical performance necessary to ensure reliable system operation throughout service life, which naturally will vary considerably between different applications and locations.
Prysmian products are designed to meet the projected service duty and to comply with national and international testing requirements. Type approval references are given against each product type available.
Besides, international scientific bodies – like IEC and Cigré – develop relevant standards, technical recommendations and guidelines within their activities in the field of High Voltage. Prysmian relies on a long-standing tradition of participation and a strong presence within such bodies, acquired thanks to its undisputed expertise developed over scores of projects accomplished anywhere in the world.

References
Track Record



U_m (kV) up to and including	Length of cable manufactured (km, in excess of)		
420	150*	**Madrid-Barajas Airport** 400 kV - Cu 2500 mm² 37 km Red Electrica de España	**Vienna** 380 kV Cu 1200 mm² 32 km Wienstrom GmbH	**Turbigo-Rho** 380 kV Cu 2000 mm² 50 km Terna SpA
245	110			
170	360			

*For U_m class 420 kV, an additional 80 km are under manufacture (2006)

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ARGENTINA
Prysmian Energía Cables y Sistemas de Argentina S. A.
Fábrica La Rosa, Av.da Argentina 6784,
1439 Capital Federal
tel. +54 11 4630 2000
fax +54 11 4630 2100

AUSTRALIA
Prysmian Power Cables & Systems
Australia PTY LTD
1 Heathcote Road, Locked Bag 7042,
Liverpool Business Centre 1871, NSW
tel. +61 2 9600 0777
fax +61 2 9600 0747

AUSTRIA
Prysmian OEKW GmbH
Lembockgasse 47A,
1230 Wien
tel. +43 1 8667 70
fax +43 1 8667 7109

BRAZIL
Prysmian Energia Cabos e Sistemas do Brasil S. A.
Av. Alexandre de Gusmao 145,
09110-900 Santo André – SP
tel. +55 11 4998 4000
fax +55 11 4998 4811

CHINA
Prysmian Cables & Systems
1505-06, Tower A, City Center of Shanghai,
No. 100 ZunYi Road, Shanghai 200051
tel. +86 21 6237 1411
fax +86 21 6237 1195

EGYPT
Prysmian Cables & Systems
8 Abd El Azim Aoudallah st. Hegaz sq.,
Heliopolis - Cairo
tel. +20 2 2418 557
fax +20 2 6381 327

FINLAND
Prysmian Cables & Systems Oy
P.O. Box 13,
FIN-02401 Kirkkonummi
tel. +358 10 77551
fax +358 9 2982204

FRANCE
Prysmian Energie Cables et Systèmes
France s.a.
Zone Industrielle du PORT AU VIN,
GRON, 89 100 SENS
tel. +33 3 8695 7769
fax +33 3 8695 7781

GERMANY
Prysmian Kabel und Systeme GmbH
Gartenfelder Str. 28,
D 13599 Berlin
tel. +49 30 3675 40
fax +49 30 3675 4640

HONG KONG
Prysmian Cable Systems Pte. Ltd.
Unit A, 18/F, China Overseas Building,
139 Hennessy Road, Wanchai, Hong Kong
tel. +85 2 2827 8308
fax +85 2 2827 7212

HUNGARY
Prysmian MKM Magyar Hungarian Cable
Works Co. Ltd.
Baràzda u. 38, H-1116 Budapest
tel. +36 1 3822 222
fax +36 1 3822 202

INDONESIA
PT. Prysmian Cables Indonesia
Gedung BRI II, Suite 1502,
Jln. Jend Sudirman No 44-46,
Jakarta 10210
tel. +62 264 351 222
fax +62 264 351 780

ITALY
Prysmian Cavi e Sistemi Energia Srl
Viale Sarca 222,
20126 Milano
tel. +39 02 6449 1
fax +39 02 6449 2931

KUWAIT
Prysmian Cables & Systems – Kuwait Office
Villa No 4 (next to Hyatt Regency Hotel),
Bidda - KUWAIT
tel. +965 575 7704
fax +965 572 5780

MALAYSIA
Prysmian Cable Systems Pte. Ltd.
Lot 2 Jalan Kawat 15/18,
40702 Shah Alam, Selangor Darul Ehsan
tel. +60 3 5518 4575
fax +60 3 5511 9590

NETHERLANDS
Prysmian Cables and Systems B.V.
Schieweg 9, 2627 AN Delft
P.O. Box 495, 2600 AL Delft
The Netherlands
tel. +31 15 260 5260
fax +31 15 261 3808

NEW ZEALAND
Prysmian Cables & Systems
71 Hugi Johnson Drice, P.O. Box 12162,
Penrose, Auckland
tel. +64 9 5251 260
fax +64 9 5251 262

NORTH AMERICA
Prysmian Cables & Systems North America
700 Industrial Drive,
Lexington, SC 29072 - USA
tel. +1 803 9511 130
fax +1 803 9511 092

ROMANIA
Prysmian Cabluri si Sisteme SA
Soseaua Draganesti, Km. 4,
0500 Slatina
tel. +40 49 435 699
fax +40 49 433 484

RUSSIA
Prysmian Cables and Systems
20/12, Str.1, Podsosenskiy Per,
Moscow 105062, Russia
tel. +7 095 933 7036
fax +7 095 933 7035

SINGAPORE
Prysmian Cable Systems Pte. Ltd.
No 4 Tuas Avenue 12. 3rd Storey,
639047 Singapore
tel. +65 6862 9866
fax +65 6862 9877

SLOVAKIA
Prysmian Kablo s.r.o.
Tovarenska 11,
812 61 Bratislava
tel. +421 7 5021 1111
fax +421 7 5296 1773

SPAIN
Prysmian Cables y Sistemas S.L.
Carretera C-15, Km. 2,
08800 Vilanova i la Geltrú (Barcelona),
tel. +34 93 811 6181
fax +34 93 811 6011

THAILAND
Prysmian Cable Systems Pte. Ltd.
555 RASA Tower 11th floor,
Phaholyothin Road,
Lardyao, Chatuchak,
Bangkok 10900
tel. +66 2 9370 316
fax +66 2 9370 318

TURKEY
Turk Prysmian Kablo ve Sistemleri A.S.
Buyukdere Caddesi No 117,
34394 Gayrettepe, Istanbul
tel. +90 212 3551 500
fax +90 212 2175 810

U.A.E. (Dubai)
Prysmian Cabels and Systems Middle East
P.O. Box 72125,
Dubai
tel. +971 4 345 7870
fax +971 4 345 7101

UK
Prysmian Cables & Systems Limited
P. O. Box 6, Leigh Road,
Eastleigh, Hampshire, SO50 9YE
tel. +44 2380 2955 55
fax +44 2380 2951 11

dega design group

Prysmian Cavi e Sistemi Energia Srl
Viale Sarca 222, 20126 Milano, Italy - tel. +39 02 6449 1, fax +39 02 6449 2931 - www.prysmian.com