

railway



innovative covering solutions





railway. innovative covering solutions

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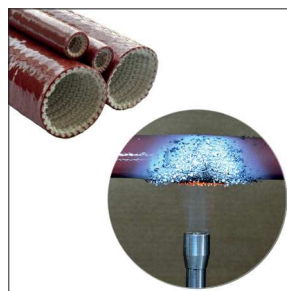
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Relats is a multinational Catalan family company with HQ near to Barcelona that is highly internationalized, which designs and produces a range of products with textile substrate systems for engines, brakes, push pull cables, rubber hoses and metal, among many others. With a presence in four continents across six manufacturing plants (in Catalonia, China, Mexico, Morocco, Vietnam and Romania). Relats Group works with companies that supply the main components of global brands in the automotive industry, aerospace, railway, electricity sector, electrical appliances and renewable energy.

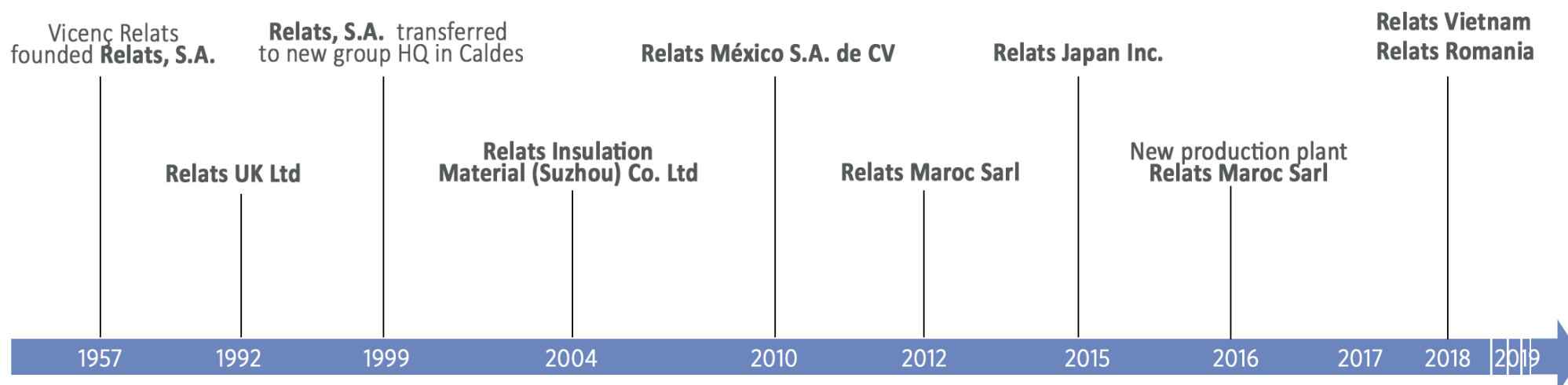
Leading manufacturer with global presence of:

- Electrical and thermal insulating sleeveings
- Mechanical protection and/or noise reduction covers (Self Closing TWS - PLAS family)
- EMI and heat reflective protective components
- Impact protection sleeves



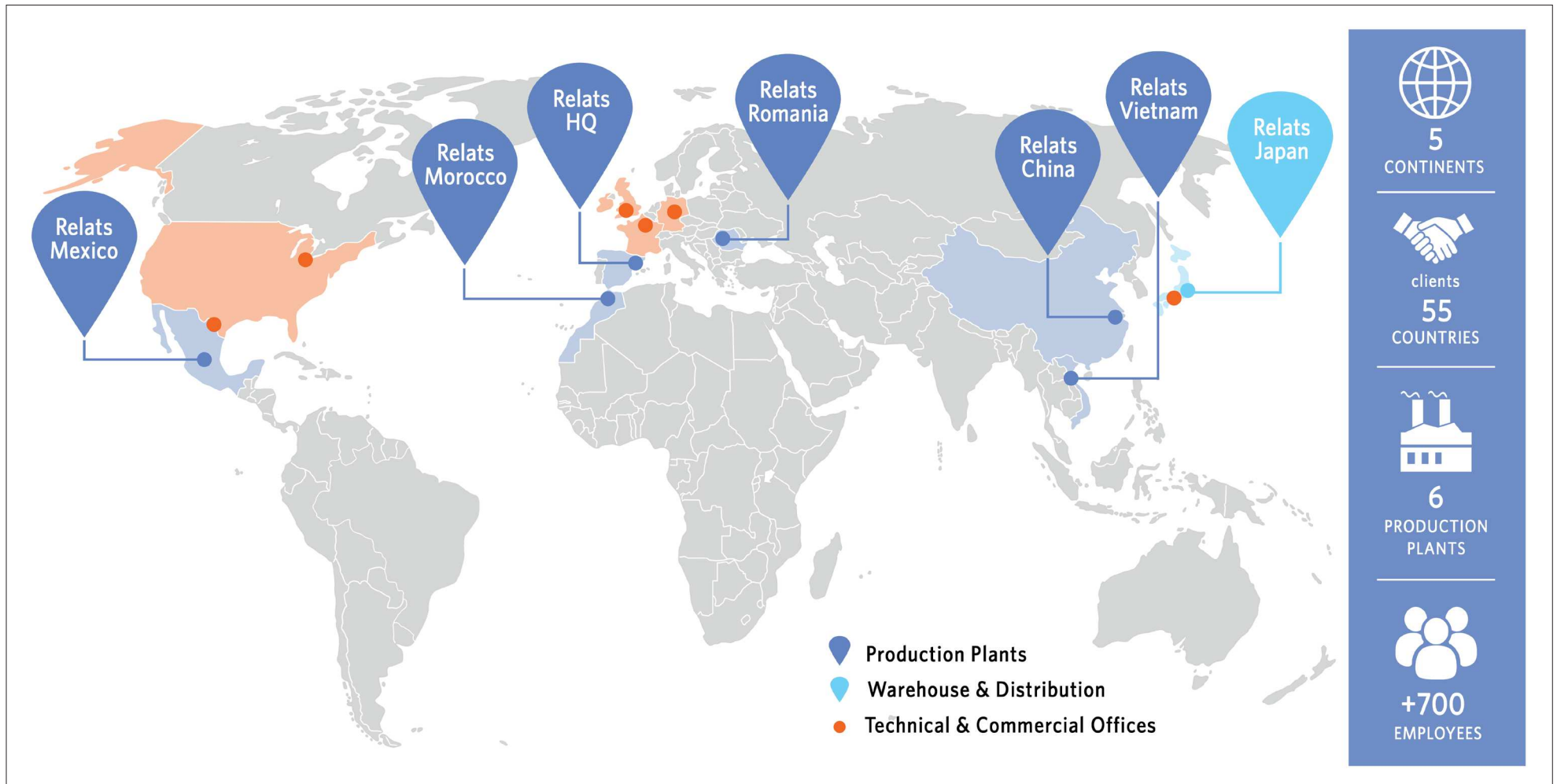


History & milestones





Worldwide presence:



Production Plants



Relats, S.A. - HQ

2016. Relats' headquarters is extended with a new smart warehouse

Building before expansion:	7,300 m ²
Expansion:	2,400 m ²
Total:	9,700 m²



Relats China

June, 2017 - Expansion

Before expansion:	6,000 m ²
Expansion:	3,000 m ²
Total:	9,000 m²



Relats Mexico

October, 2017 - Expansion

Before expansion:	3,500 m ²
Expansion:	3,770 m ²
Total:	7,270 m²



Relats Morocco

May, 2017 - Transfer to New Production Plant

Current Plant:	4,500 m ²
New Plant:	10,000 m²



Relats Vietnam

June, 2018 - New Production Plant

Total: 7,250 m²



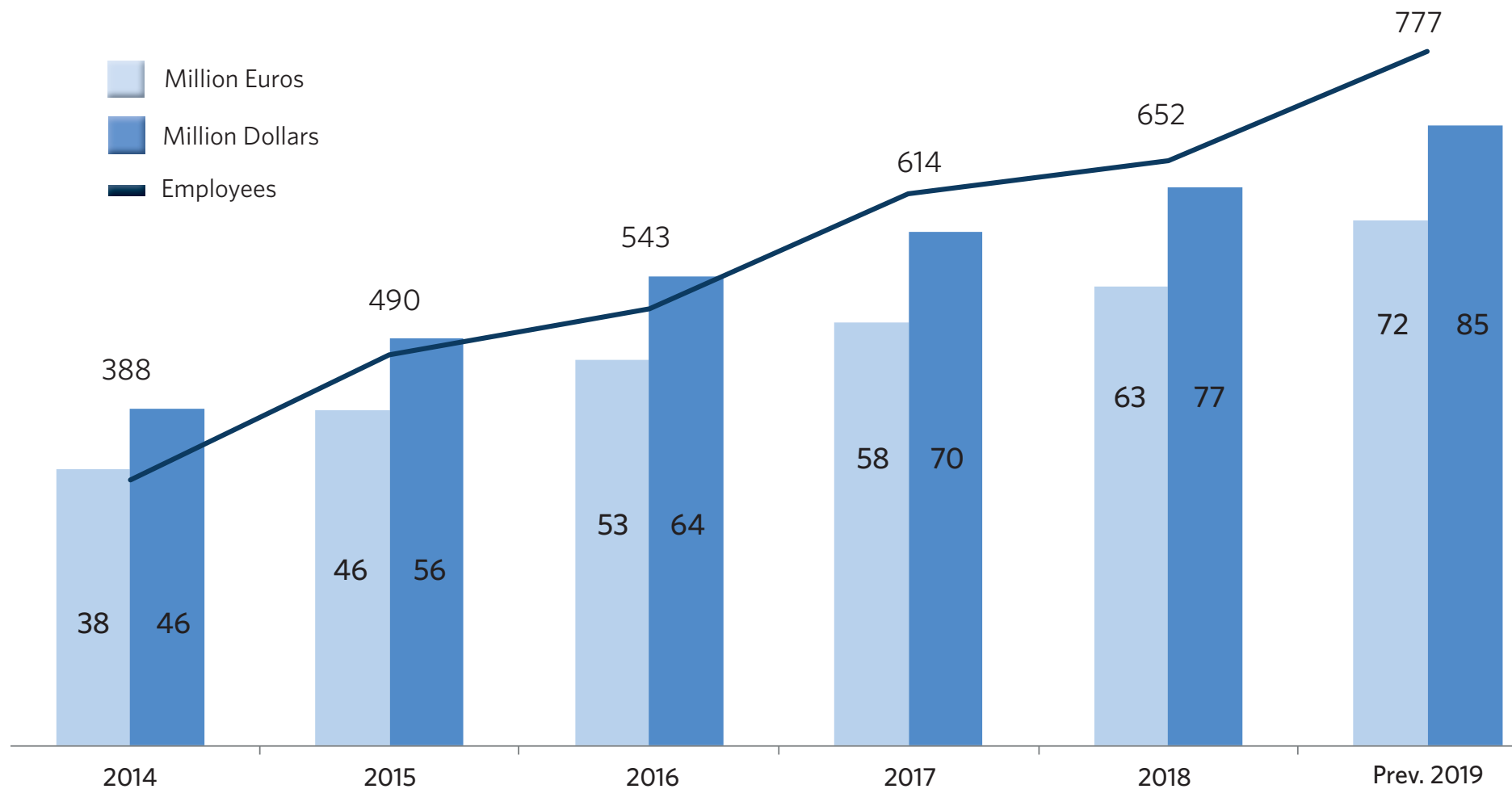
Relats Romania

October, 2018 - New Production Plant

Total: 4,250 m²

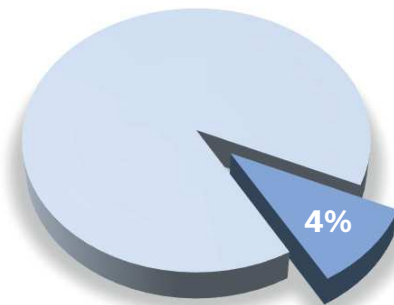


Turnover & Employees – Relats Group

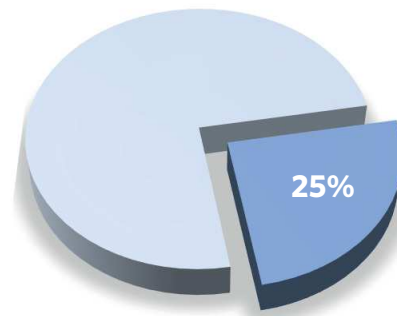


Constant innovation

R&D Investment vs Turnover
(annually)

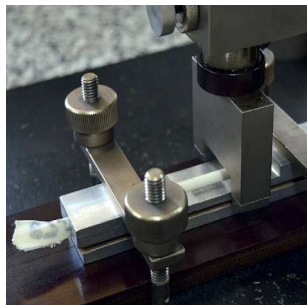


New Products vs Total Sales
(Products introduced in the market during last 4 years)



- 22 active patents, Avg. 2 new applications every year.
- Collaboration/agreements with technological centers, laboratories and universities.
- In regular consultation with European experts in our speciality.

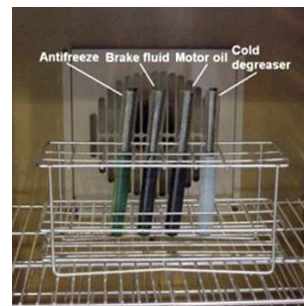
Laboratory capabilities in house



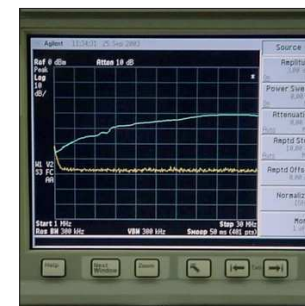
Mechanical tests



Thermal tests



Chemical tests



EMI testing



Physical testing



Crash tests

Production process



Braiding, knitting,
knitbraiding



Coating towers



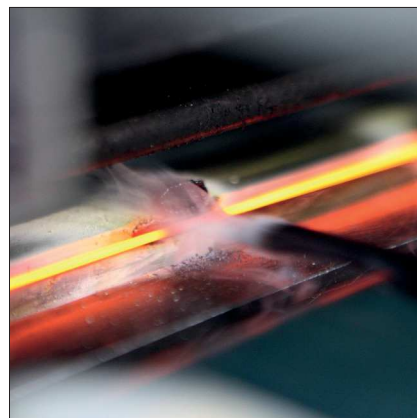
Silicone extrusion



Alu foil laminating



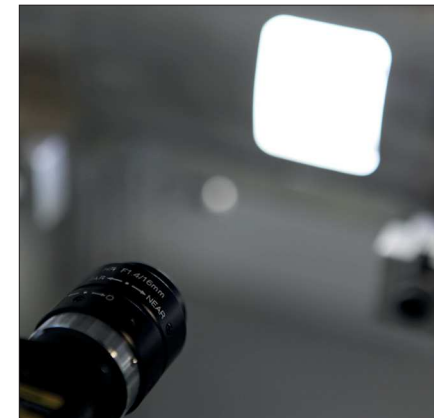
Flat knitting self closing
sleeves



Cutting: Thermal,
mechanical, ultrasonic cut



Heatshields laser cutting



Artificial vision quality
system

Self Closing

for bundling and mechanical protection of harness cables.

- PLA17 V0 RW; PLA17 AS RW

Mechanical Protection Braids

Monofilament or Multifilament braids (eg. PET or PA6.6) for mechanical protection applications (eg. hoses, fuel lines). Various expansion ratios available.

- PS V0 RW; PS O RW; NSG RW

EMI Shielding Sleeves

Sleeves offering shielding of electromagnetic interference on high voltage cables.

- Emi Shield PRO RW; Emi Shield RW, Dura Emi RW

Reflective Sleeves

Open or closed aluminium foil laminated sleeves for thermal protection.

- Revitex Sleeve AF

Glass Silicone Sleeves

for high temperature applications for example engine sensors or fuel lines.

- VSC25/40/75 RW; VSC99 RW; VSCTE RW; VSCTF RW; FIRE PRO SC RW

Glass Impregnated Sleeves

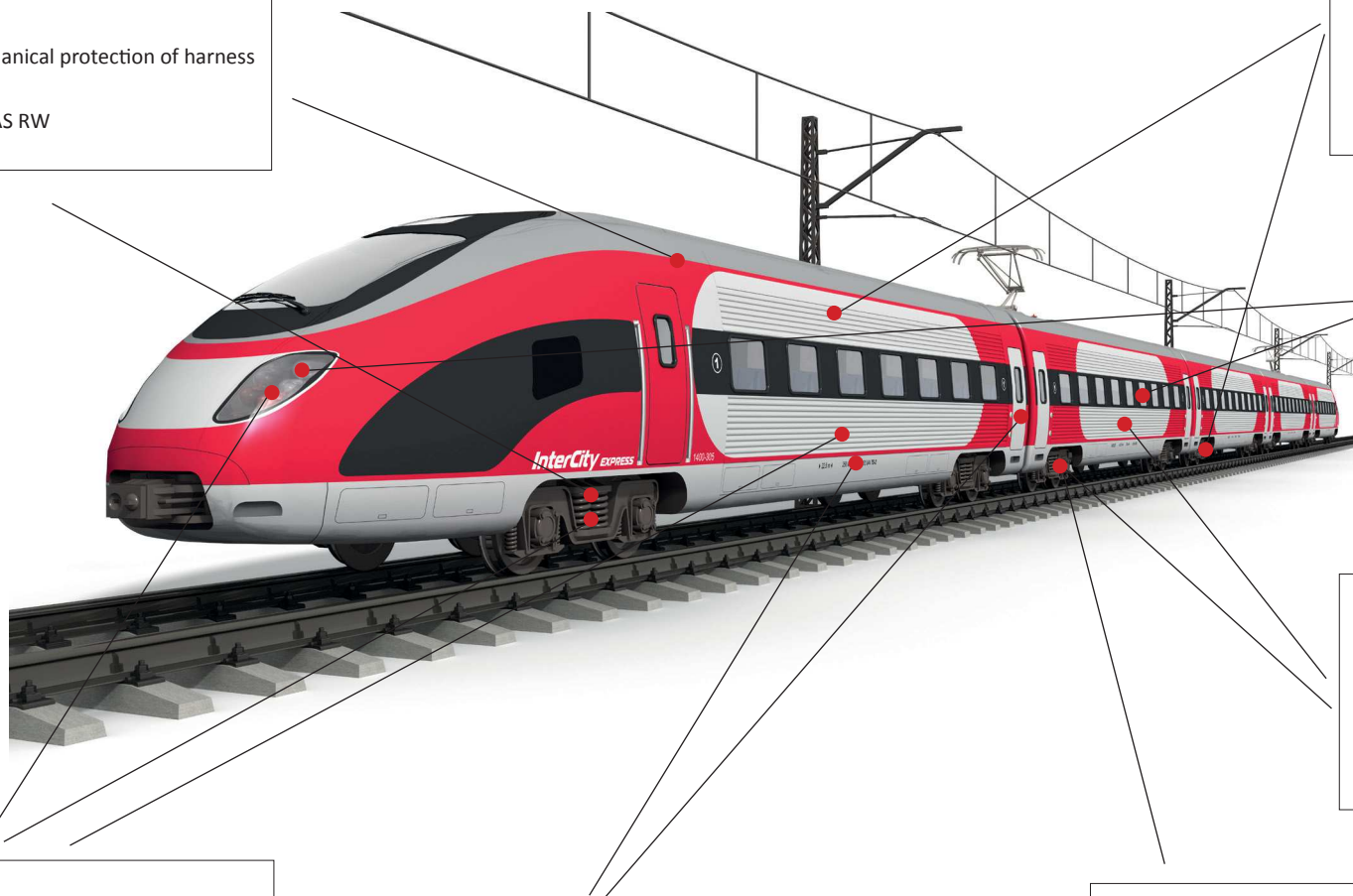
High oxygen index impregnated sleeves to provide insulation at high temperatures.

- VSR10 RW; VSR10 Expandable Version RW

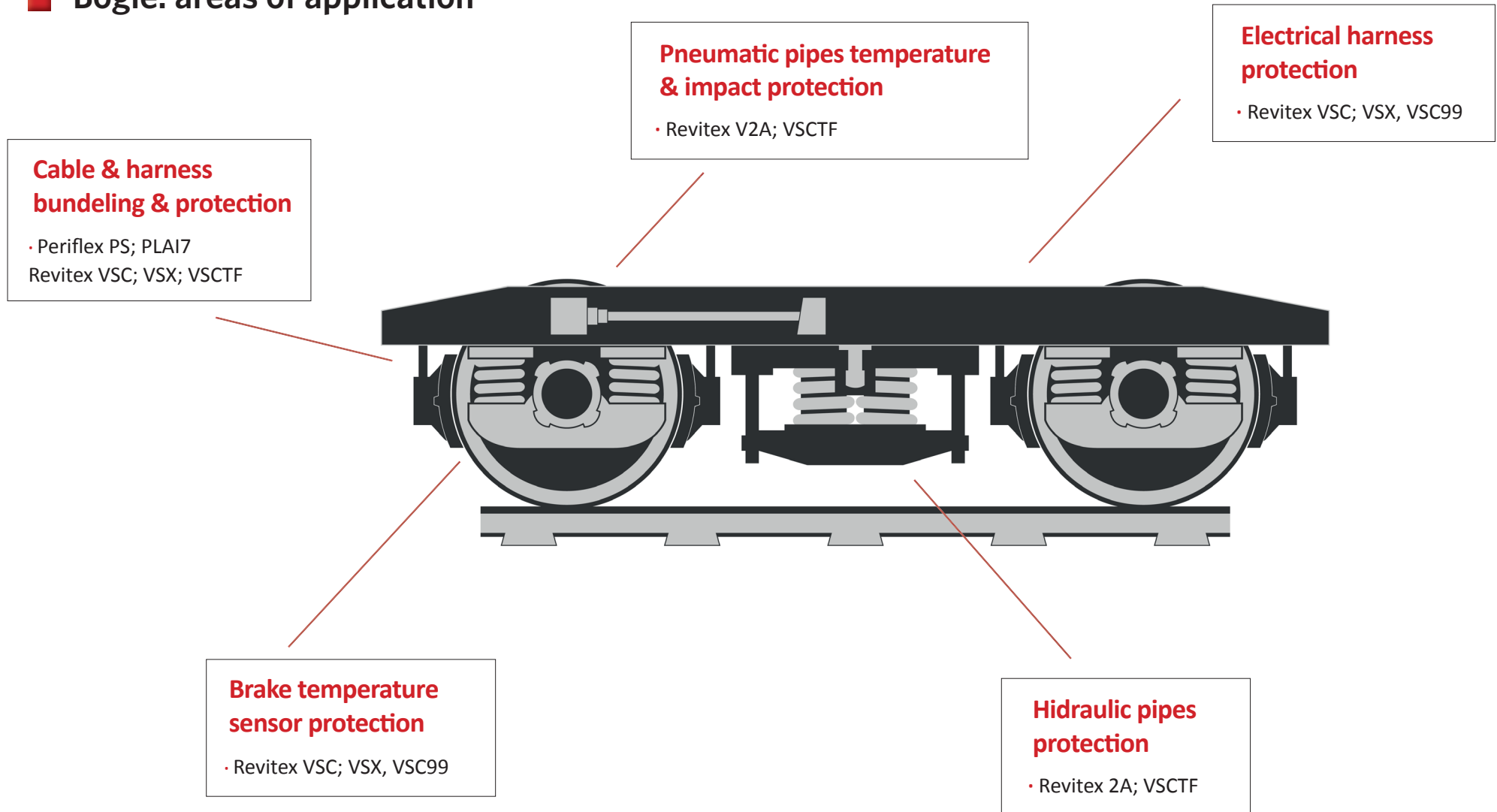
Heatshields



Aluminium foil laminated material customized heatshields for thermal protection, for example connectors or valves.

- Heatshield


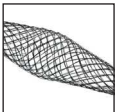



■ Bogie: areas of application





Product	Description	Material	Temperature	Abrasion	Fire Behaviour EN 45545
 PLAI7 V0 RW	Woven open sleeve made of flame-retardant fibers with unique wraparound qualities allowing easy cable bundling after wire harness assembly.	Monofilament and Multifilament Polyester	-70°C to +150°C	■ ■ ■ ■ ■	R22&R23 Hazard Level HL1, HL2, HL3
 PLAI7 AS RW	Woven open sleeve made of flame-retardant fibers and aluminium foil inside with unique wraparound qualities allowing easy cable bundling after wire harness assembly.	Monofilament and Multifilament Polyester and aluminium foil	-70°C to +150°C	■ ■ ■ ■ □	R22&R23 Hazard Level HL1, HL2, HL3



Mechanical Protection Braids

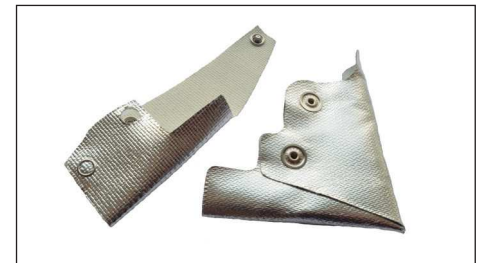
Product	Description	Material	Expansion ratio	Temperature	Abrasion	Fire Behaviour EN 45545
 Periflex PS V0 RW	Expandable braided sleeving made of flame retardant fibers mainly meant for applications of mechanical protection.	Monofilament Polyester	1:2	-70°C to +150°C	■ ■ ■ □ □	R22&R23 Hazard Level: HL1, HL2, HL3
 Periflex PS O RW	Highly expandable braided sleeving mainly meant for allowing easy cable bundling after wire and harness assembly.	Monofilament Polyester	1:3,6	-70°C to +150°C	■ □ □ □ □	R22&R23 Hazard Level: HL1, HL2, HL3
 Periflex NSG RW	Expandable braided sleeving mainly meant for applications of mechanical protection.	Monofilament Polyamide	1:2	-70°C to +150°C	■ ■ ■ ■ ■	R22 Hazard Level: HL1, HL2 R23 Hazard Level: HL1, HL2, HL3

Reflective Sleeves



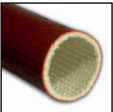


Product	Description	Material	Temperature	Thermal Efficiency (SAE J2302)	Fire Behaviour EN 45545
 Revitex Sleeve AF	Braided sleeving with aluminium foil which refracts radiation heat and provides excellent insulating properties.	Fibreglass and Aluminium Foil	-70°C to +200°C		Self-extinguishing

Heatshields


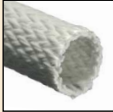
Product	Description	Material	Temperature	Thermal Efficiency (SAE J2302)	Fire Behaviour EN 45545
 Revitex End Fit V AF (Heatshield)	<p>Customized heatshields made of fibreglass substrate laminated with aluminium foil. Various types of substrates are available.</p> <p>Heatshields can be with button snaps, adhesive tapes (partial or full covering) and sown with glass or aramide yarns.</p> <p>Product designed for thermal protection of connectors and other components.</p>	Fibreglass and Aluminium Foil	-70°C to +200°C		Self-extinguishing
			-70°C to +250°C		
			-70°C to +300°C		






Glass Silicone Sleeves

Product	Description	Material	Temperature	Fire Behaviour EN 45545
 Revitex VSC25/40/75 RW	Sleeving made of a special silicone rubber coated fiberglass braid. This is a Class 200 electrical insulating sleeving available in three voltage grades.	Fiberglass and silicone	-70°C to +235°C	R22&R23 Hazard Level: HL1, HL2, HL3
 Revitex VSC99 RW	Sleeving made of a special silicone rubber thick coated fiberglass braid that guarantees a high dielectric strength.	Fiberglass and silicone	-70°C to +235°C	DNA
 Revitex VSCTE RW	Fiberglass sleeving, thick wall, coated with self extinguishing silicone rubber, that guarantees a high degree of thermal insulation.	Fiberglass and silicone	-70°C to +235°C	DNA
 Revitex VSCTF RW	Fiberglass knitbraided sleeving, thick wall, coated with self extinguishing and fire resistant silicone rubber, that guarantees a high degree of thermal insulation and fire protection.	Fiberglass and fire resistant silicone	-70°C to +235°C	R22 Hazard Level: HL1, HL2 R23 Hazard Level: HL1, HL2 HL3
 FIRE PRO SC RW	Self closing fiberglass and polyester sleeving coated with self-extinguishing and fire resistant special silicone rubber, that guarantees a high degree of thermal insulation and fire protection.	Fiberglass, polyester and fire resistant silicone	-70°C to +200°C	R22 Hazard Level: HL1, HL2 R23 Hazard Level: HL1, HL2

Glass Impregnated Sleeves

Product	Description	Material	Expansion ratio	Temperature	Fire Behaviour EN 45545
 Revitex VSR10 RW	Braided fiberglass sleeving impregnated with silicone varnish. Sleeving provides air space insultaion only.	Fiberglass and silicone	--	-70°C to +300°C	R22&R23 Hazard Level: HL1, HL2, HL3
 Revitex VSR10 EXPANDABLE VERSION RW	Expandable braided fiberglass sleeving impregnated with silicone varnish. Sleeving provides air space insultaion only.	Fiberglass and silicone	1:2,5	-70°C to +300°C	R22&R23 Hazard Level: HL1, HL2, HL3

EMI Shielding Sleeves

Product	Description	Material	Temperature	Lighthning Strike	Fire Behaviour EN 45545
 Emi Shield RW	Woven open sleeve. The material possesses unique wraparound qualities allowing easy cable bundling after wire harness assembly. The special construction provides lightning strike protection and high performance electromagnetic shielding; easy to make the electrical contact.	PPS monofilament and Tinned plated copper yarn	-65°C to +200°C	DNA	R22 & R23 Hazard Level: HL1, HL2, HL3
 Emi Shield Pro RW	Woven open sleeve. The material possesses unique wraparound qualities allowing easy cable bundling after wire harness assembly. The special construction provides lightning strike protection and high performance electromagnetic shielding; easy to make the electrical contact.	PPS monofilament and 4% Nickel plated copper yarn	-65°C to +200°C	10kA	DNA
 Dura Emi RW	Braided sleeving mainly meant for applications of electromagnetic and mechanical protection.	CuSn wires	-65°C to +260°C	DNA	DNA



Relats Products	EUROPEAN STANDARD			NAFTA STANDARD						BRITISH STANDARD			GERMAN STANDARD	FRENCH STANDARD			
	C EN 45545*			NFPA 130				SMP 800-C		Spread of flame	Reaction to fire	Smoke density	DIN 5510	NF F 16:101 CLASS I		NF F 16:101 CLASS F	
	Oxygen index	Gas toxicity	Heat release	Flame propagation	Fire propagation	Smoke release	Flame propagation	Gas toxicity	Heat release				Burning behaviour	Oxygen index	Glow wire	Smoke density	Gas toxicity
	ISO 4589	NF X 70.100	ISO 5659	ASTM E 162	ASTM C 542	ASTM E 662	UL 1685	SMP 800-C	ASTM E 1354	EN ISO 11925-2	BS EN ISO 11925-2:2002	BS 6853:1999	DIN 54837	ISO 4589	NF EN 60695-2-11	NF X 10.702	NF X 70.100
PLAI7	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓
PLAI7 AS	✓													✓			
NSG	✓	✓	✓	✓						✓	✓		✓	✓	✓	✓	✓
PS/PTG	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓
VSC	✓	✓	✓	✓		✓							✓	✓	✓	✓	✓
FIRE PRO SC	✓	✓	✓														
VSCTF	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
VSR10/VRX10	✓	✓	✓			✓			✓	✓		✓	✓	✓	✓	✓	✓
PLAS7				✓		✓		✓	✓								
EMI SHIELD	✓	✓	✓														
SLEEVE AF	✓	✓	✓														

* EN 45545 HL3 (maximum grade) certified: PLA17, NSG, PS/PTG, VSC,VSR10/VRX10, VSCTF, EMI SHIELD and SLEEVE AF - Rev. 0516

Railway Customers

ALSTOM

BOMBARDIER
the evolution of mobility

 **AnsaldoBreda**
A Finmeccanica Company

SIEMENS

 **SEPSA**

 **merak**


KANGNI

 **HUBER+SUHNER**
Excellence in Connectivity Solutions

 **Downer**

Talgo

STADLER
Cleverer Lösungen auf der Schiene

 **中国中车
CRRC**


KNORR-BREMSE

Quality and Environmental Management



railway. innovative covering solutions

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