DEMİRER KABLO

HIGH VOLTAGE ACCESSORIES

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HV ACCESSORIES concept

Having 25 years of cable accessories manufacturing experience, following up latest trends and developments in materials and manufacturing technology and implementing them in its own production; today, Demirer Kablo is manufacturing HV cable accessories capable of fulfilling the most demanding requirements and highest expectations in terms of quality and long term performance.

- Use of silicon rubber prefabricated slip-on elements enabling short installation times, excellent electrical & mechanical long time behavior and low failure risk on-site
- Computer based field distribution calculation enabling optimal material utilization and minimum dimensions
- IEC compliant voltage and PD tests in factory enabling fault recognition before delivery
- Identical stress cones for all types of terminations & common design for GIS and transformer sealing ends enabling moderate mold costs, economic storage, fast delivery time, standardization and international compatibility

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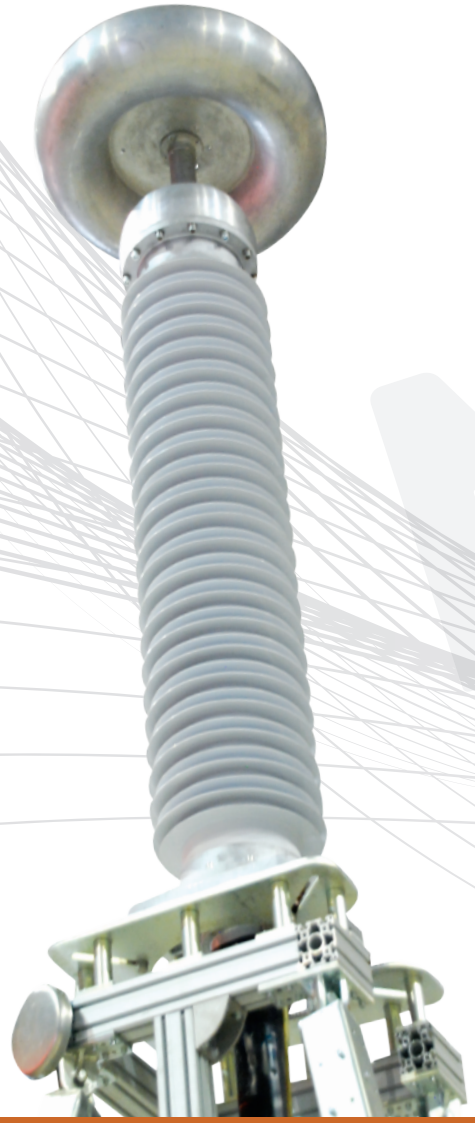
MATERIALS



- LSR insulating material
  - high flexibility over a broad temperature range (-50°C to 120°C)
  - dielectric strength >30 kV/mm
  - long term stable material
  - easy handling during processing

- LSR semiconductive material
  - excellent bonding between insulating and conductive material
  - high flexibility over a broad temperature range (-50°C to 120°C)
  - long term stable material
  - easy handling during processing

- Silicone elastomere
  - High temperature stability for use under continous load conditions
  - high flexibility from -50 °C to +180 °C
  - good mechanical properties
  - ozone and UV resistance
  - outstanding ageing behaviour
  - very good weathering resistance, even in aggressive environments, e.g. in industrial, desert and coastal regions
  - electrical properties independent of temperature
  - high dielectric strength, tracking resistance and arc resistance
  - durable and regenerative hydrophobicity and hydrophobicity transfer
  - in case of arcing: no melting, no evolution of toxic gases, burnt remains do not form conductive tracking paths but insulating silica

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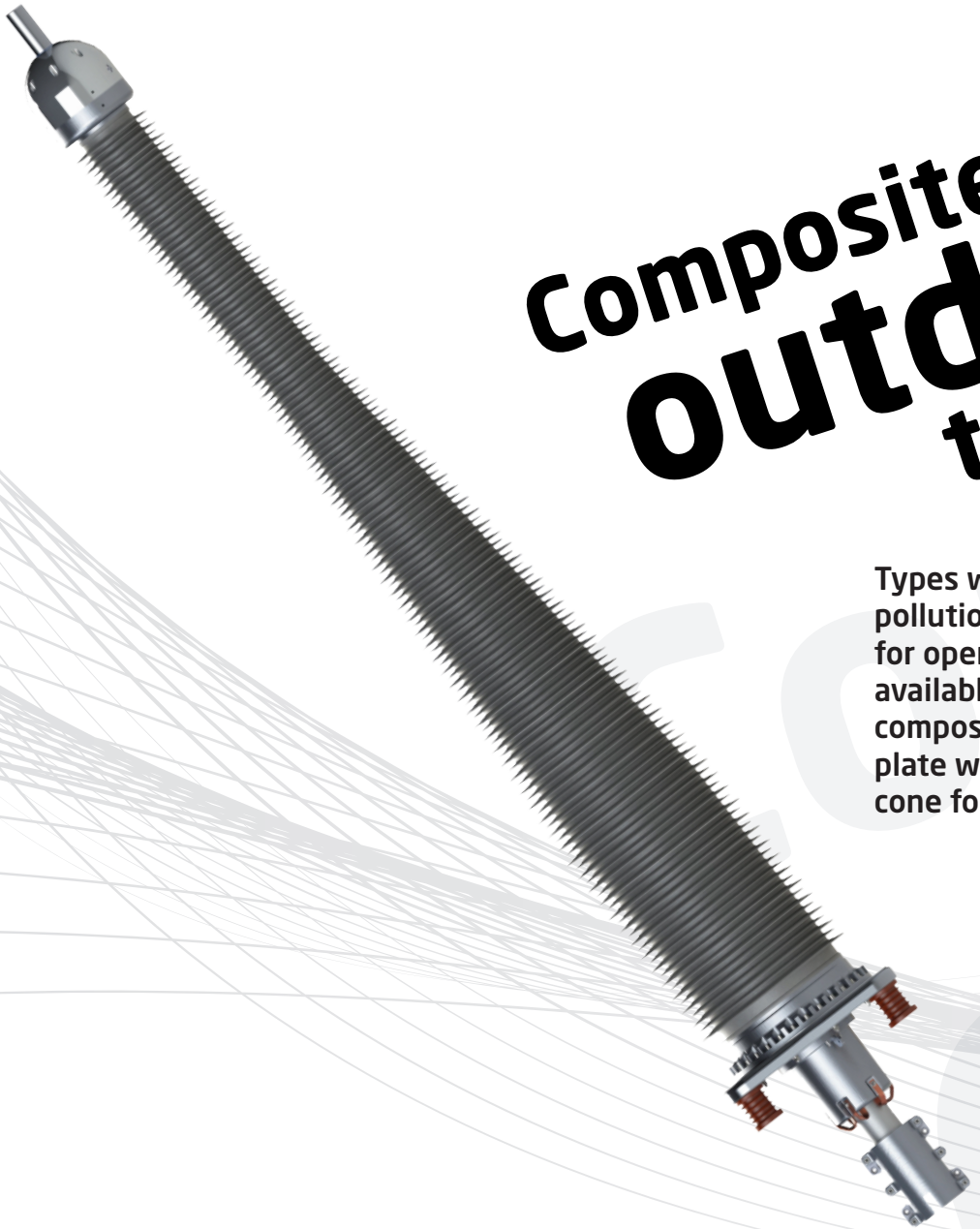

Composite outdoor termination

Types with various creepage distances depending on pollution class according IEC 60815 and requirement for operation under various outdoor conditions are available. Main components of the termination are the composite insulator with upper metal part, metal base plate with supporting insulators and premoulded stress cone for electrical field control.

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- Premoulded stress cone made of silicone rubber with LSR injection moulding techniques.
- All metal parts made of aging and corosive resistant aluminum alloy
- Stress cones 100% routine tested following IEC 60840 or IEC 62067
- Termination is assembled on support pedestal insulators to isolate cable screen from earth to enable various grounding applications of screen.
- Application range for conductor cross sections up to 3000mm².
- Connectors are bolted or compressed type.
- Type test certificates in accordance with IEC 60840 or IEC 62067 are available.
- Various grounding connections, arcing horn etc. are available on request.

Operation voltage	Type	Conductor Cu/Al max.	Diameter over prepared cable core min-max.	Diameter over sheath max.	Connection type Bolted/Compressed/Welded
Um (kV)		mm²	mm	mm	B / C / W
123	TO123CM	2500	40-100	125	B / C
145	TO145CM	2500	50-100	125	B / C
170	TO170CM	2500	55-100	135	B / C
245	TO245CM	2500	60-115	140	B / C
420	TO420CM	3000	80-140	155	B / C

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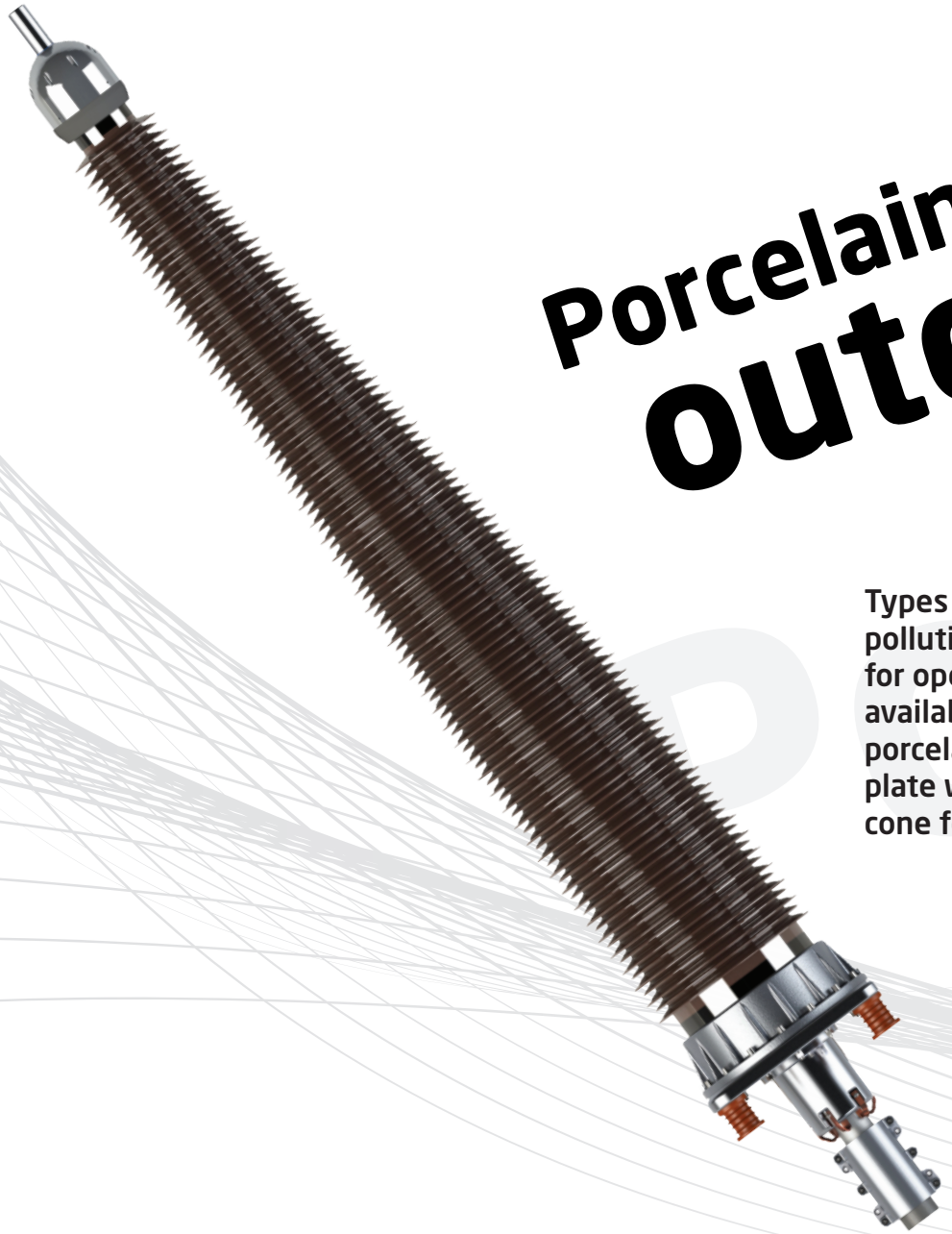

Porcelain outdoor termination

Types with various creepage distances depending on pollution class according IEC 60815 and requirement for operation under various outdoor conditions are available. Main components of the termination are the porcelain insulator with upper metal part, metal base plate with supporting insulators and premoulded stress cone for electrical field control.

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- Premoulded stress cone made of silicone rubber with LSR injection moulding techniques.
- All metal parts made of aging and corosive resistant aluminum alloy
- Stress cones 100% routine tested following IEC 60840 or IEC 62067
- Termination is assembled on support pedestal insulators to isolate cable screen from earth to enable various grounding applications of screen.
- Application range for conductor cross sections up to 3000mm².
- Connectors are bolted or compressed type.
- Type test certificates in accordance with IEC 60840 or IEC 62067 are available.
- Various grounding connections, arcing horn etc. are available on request.

Operation voltage	Type	Conductor Cu/Al max.	Diameter over prepared cable core min-max.	Diameter over sheath max.	Connection type Bolted/Compressed/Welded
Um (kV)		mm²	mm	mm	B / C / W
123	TO123PR	2500	40-100	125	B / C
145	TO145PR	2500	50-100	125	B / C
170	TO170PR	2500	55-100	135	B / C
245	TO245PR	2500	60-115	140	B / C
420	TO420PR	3000	80-140	155	B / C

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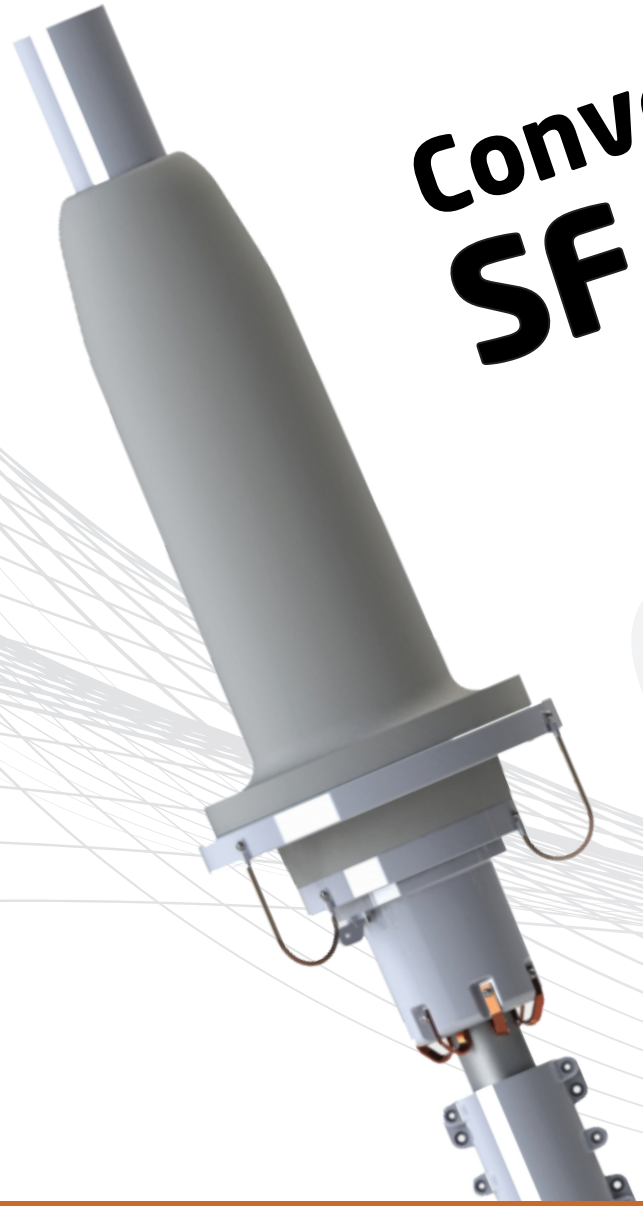
Conventional SF_6 / transformer termination



The termination is designed for direct installation in an SF_6 gas insulated switchgear (GIS) or in oil filled cable box of a transformer. Main components of the termination are pressure tight epoxy resin insulator with embedded electrode, metal fixing ring, metal cable gland and silicon rubber stress cone for electrical field control.

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- Premoulded stress cone made of silicone rubber with LSR injection moulding techniques.
- All metal parts made of ageing and corrosion resistant aluminium alloy.
- Stress cones 100% routine tested following IEC 60840 or IEC 62067
- IEC 62271-209 / DIN EN 50299 compliant insulators for GIS terminations and transformer terminations.
- Oil expansion tank necessary for installation in horizontal position
- Connectors are bolted or compressed type.
- Cable gland for proper cable fixing and adjusment appropriate for outdoor conditions.
- Additional adaptor for installation into older GIS housings available on request.
- Type test certificates in accordance with IEC 60840 or IEC 62067 are available.

Operation voltage	Type	Conductor Cu/Al max.	Diameter over prepared cable core min-max.	Diameter over sheath max.	Connection type Bolted/Compressed/Welded
Um (kV)		mm²	mm	mm	B / C / W
123	TI123CO/CS	2500	40-100	125	B / C
145	TI145CO/CS	2500	50-100	125	B / C
170	TI170CO/CS	2500	55-100	135	B / C
245	TI245CO/CS	2500	60-115	140	B / C
420	TI420CO/CS	3000	80-140	155	B / C

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Dry type SF_6 / transformer termination

Dry type termination is designed for highest voltage level and largest cross-section conductors. Voltage range up to 420kV with a cross section up to 3000 mm². The termination is designed according IEC62271-209 type tests following IEC 60840 or IEC 62067 are available.

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- Premoulded stress cone made of silicone rubber with LSR injection moulding techniques.
- All metal parts made of ageing and corrosion resistant aluminium alloy.
- Stress cones 100% routine tested following IEC 60840 or IEC 62067
- IEC 62271-209 / DIN EN 50299 compliant insulators for GIS terminations and transformer terminations.
- Application range for conductor cross sections up to 3000mm².
- Connectors are bolted or compressed type.
- Combination with different adapter and additional electrodes are avaible to fulfil the requirements of IEC 62271-209 and older switchgear/ transformer housings.
- Type test certificates in accordance with IEC 60840 or IEC 62067 are available.

Operation voltage	Type	Conductor Cu/Al max.	Diameter over prepared cable core min-max.	Diameter over sheath max.	Connection type Bolted/Compressed/Welded
Um (kV)		mm²	mm	mm	B / C / W
123	TI123DO/DS	2500	40-100	125	B / C
145	TI145DO/DS	2500	50-100	125	B / C
170	TI170DO/DS	2500	55-100	135	B / C
245	TI245DO/DS	2500	60-115	140	B / C
420	TI420DO/DS	3000	80-140	155	B / C

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joint insulated / straight through

Insulated / straight through joints are designed for connecting high voltage cables. All joints can be equipped with different types of water barriers and a number of protection housings including copper housing.

- Premoulded joint body made of silicone rubber using LSR injection moulding techniques.
- Joint bodies 100% routine tested following IEC 60840 or IEC 62067
- Provided with different types of housing for protection during operation
- Connectors are mechanically bolted, compressed and welded type.
- Type test certificates in accordance with IEC 60840 or IEC 62067 are available.

Operation voltage	Type	Conductor Cu/Al max.	Diameter over prepared cable core min-max.	Diameter over sheath max.	Connection type Bolted/Compressed/Welded
Um (kV)		mm²	mm	mm	B / C / W
123	JI123B(0/1/2)/CN	2500	40-100	125	B / C / W
145	JI145B(0/1/2)/CN	2500	50-100	125	B / C / W
170	JI170B(0/1/2)/CN	2500	55-100	135	B / C / W
245	JI245B(0/1/2)/CN	2500	60-115	140	B / C / W
420	JI420B(0/1/2)/CN	3000	80-140	155	B / C / W

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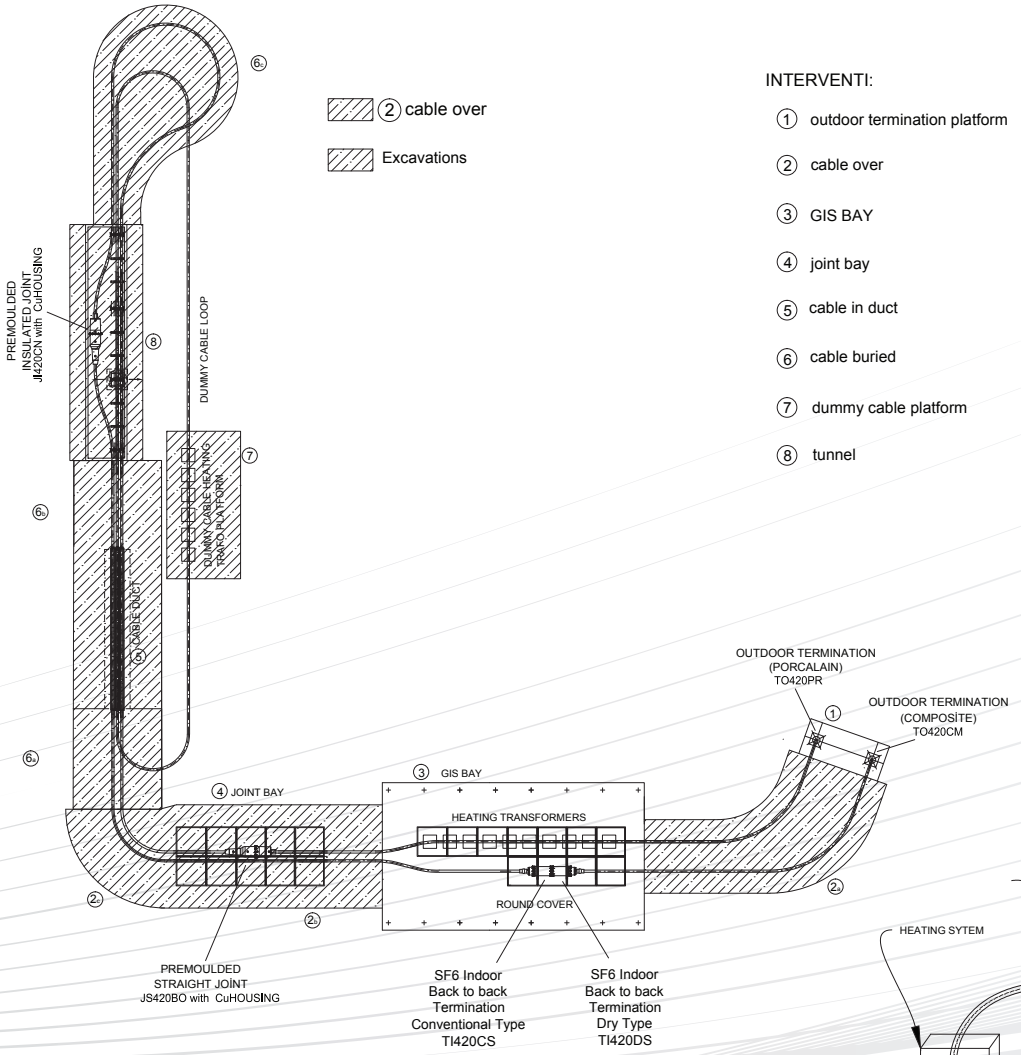
420 kV
Test Setup

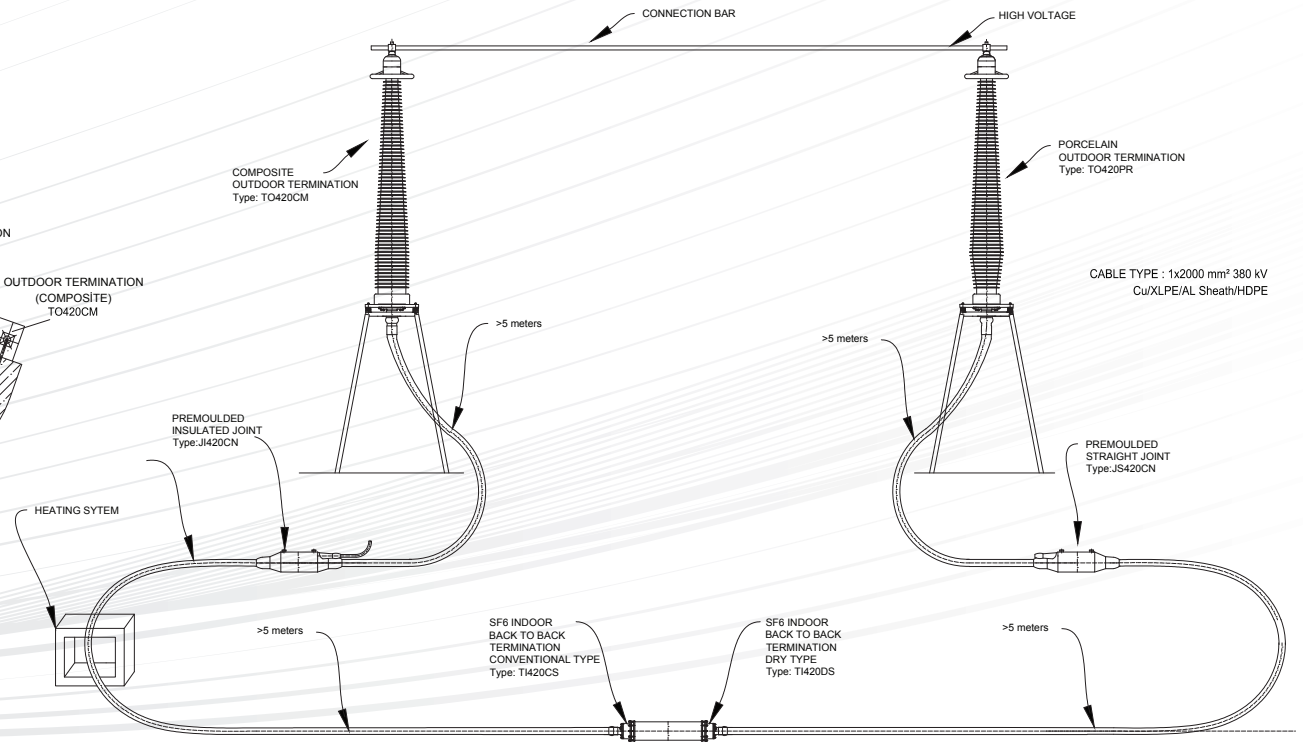
PQ Test Setup:

"420 kV prequalification test according to IEC 62067-2011 for a complete system (cable and accessories) 420kV 2500 mm², energized, to be completed by end of 2017."



Type Test Setup:

"420kV system type test performed according to IEC 62067-2011 successfully"

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