

IEC 62895 LN₂ 3-phase HTS power cable

Three-Phase HTS Power Cable

10–110 kV AC (43–572 MVA) subcooled liquid-nitrogen tri-axial three-phase HTS power



IEC 62895 & IEEE 1726

10–110 kV AC · 43 to 572 MVA

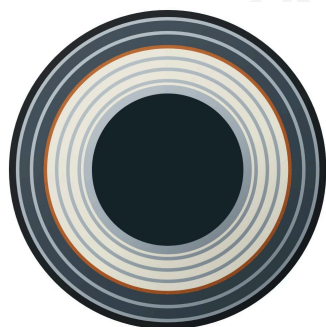
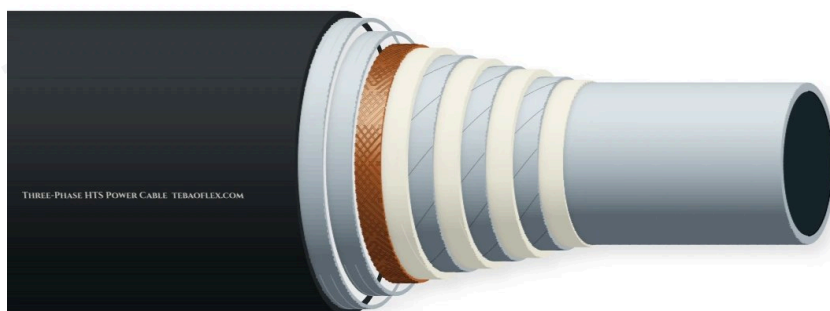
Subcooled LN₂ (67–77 K) · Tri-Axial

Application

High-capacity three-phase High-Temperature Superconducting AC power transmission cable (Three-Phase HTS Power Cable) built to IEC 62895 and IEEE 1726 with concentric Tri-Axial (or 3-in-1 Triad) REBCO 2G HTS phase layers, liquid-nitrogen-impregnated PPLP.

Typical uses: Urban Medium-Voltage Bulk Substation Interties (10–35 kV), Hyperscale Data-Centre & AI Campus 100+ MW Feeders, Steel Mill, Aluminum & Chemical Plant High-Current Ties, Congested Utility Tunnels & EHV Transformer Bypass Links

Construction



Cross-section, not to scale

- 1 Concentric Phase L1, L2 & L3 REBCO 2G HTS tape layers
- 2 Central hollow corrugated stainless-steel LN₂ former +
- 3 Lapped Polypropylene Laminated Paper (PPLP) cryogenic
- 4 Concentric copper neutral / earth fault screen
- 5 Double corrugated AISI 316L vacuum-superinsulated

Technical data

Typical values

Rated system voltage (U ₀ /U) & BIL	6/10 kV (75 kV BIL) · 14/24 kV (125 kV) · 20/35 kV (170 kV) · 64/110 kV	Continuous 3-phase AC current & power	2,000 A to 4,000 A rms (43 MVA at 10 kV up to 572 MVA at 110 kV)
Rated short-circuit fault current	25 kA to 40 kA symmetrical for 0.5–1.0 s (carried by parallel Cu)	50/60 Hz AC cryogenic loss	< 0.5 to 1.2 W/m per phase at rated current
Subcooled liquid nitrogen (LN ₂) window	67 K inlet to 77 K outlet at 0.3 to 1.5 MPa (prevents nitrogen bubble)	Thermal cycling & overload stability	Verified thermal ageing and short-circuit withstand per standard
Overall outer diameter (including PE)	125 mm (10 kV Tri-Axial) to 185 mm (110 kV Triad)	Minimum installation bending radius	1.8 m to 2.8 m (15 × cryostat OD) on Ø 4.2 m transport drums
External stray magnetic field (EMF)	Virtually zero (0 µT at 1 m) due to concentric Tri-Axial / HTS-shielded	Environmental & chemical durability	Resistant to moisture, industrial fluids and service ageing
Standards	IEC 62895 (HVDC/AC HTS), IEEE 1726, IEC 61788-26 & CIGRE TB 538		

Sizes

6 standard constructions

Tick the sizes you need and send this page to info@tebaoflex.com or WhatsApp +86 185 9591 3361.

Order designation	Design	Voltage · Power	Cryostat Ø mm	Rated I _{rms} kA	3-Phase S MVA	Min. bend R mm
Concentric Tri-Axial 3-Phase Medium-Voltage HTS Grid Cables (10 kV to 35 kV) 4 sizes						
☐ HTS-3P-TriAx-10kV-2.5kA	3-Phase Concentric REBCO	10 kV AC · 43 MVA	125.0	2.5	43	1,800
☐ HTS-3P-TriAx-10kV-4.0kA	3-Phase Concentric REBCO	10 kV AC · 69 MVA	135.0	4.0	69	2,000
☐ HTS-3P-TriAx-24kV-2.5kA	3-Phase Concentric REBCO	24 kV AC · 104 MVA	142.0	2.5	104	2,100
☐ HTS-3P-TriAx-35kV-3.0kA	3-Phase Concentric REBCO	35 kV AC · 182 MVA	156.0	3.0	182	2,300
3-in-1 Triad Cold-Dielectric High-Voltage HTS Grid Cables (66 kV to 110 kV) 2 sizes						
☐ HTS-3P-3in1-66kV-2.5kA	3-in-1 Triad REBCO Cores	66 kV AC · 286 MVA	168.0	2.5	286	2,500
☐ HTS-3P-3in1-110kV-3.0kA	3-in-1 Triad REBCO Cores	110 kV AC · 572 MVA	185.0	3.0	572	2,800

– Drum lengths of 300 m to 600 m are joined with low-loss (< 20 nΩ) cryogenic field splices for multi-kilometre routes.

Standards and approvals

- ✓ IEC 62895 & IEEE 1726 HTS Transmission Compliant
- ✓ CIGRE TB 538 Pre-Qualification Tested
- ✓ ISO 21013 Vacuum-Insulated Cryostat Certified

Certifications



Management systems: ISO 9001, ISO 14001, ISO 45001

Request a quotation

Send the size, length and destination. An application engineer replies within 2 business hours.

WhatsApp / phone

+86 185 9591 3361

Email

info@tebaoflex.com

Web

tebaoflex.com/cables/cryogenic-liquid-nitrogen-cooled-tri-axial-three-phase-high-temperature-superconducting-power-cable



Typical values for this cable type, based on IEC 62895 / IEC 61788-26 / IEEE 1726 / CIGRE TB 538. Values for your order are confirmed in the quotation. Subject to change without notice. Jiangsu Tebaoflex Special Cable Co., Ltd., Taicang, Jiangsu, China.