Low-Temperature Installation Solution for Brazilian Cable Reeling Frames

Overview

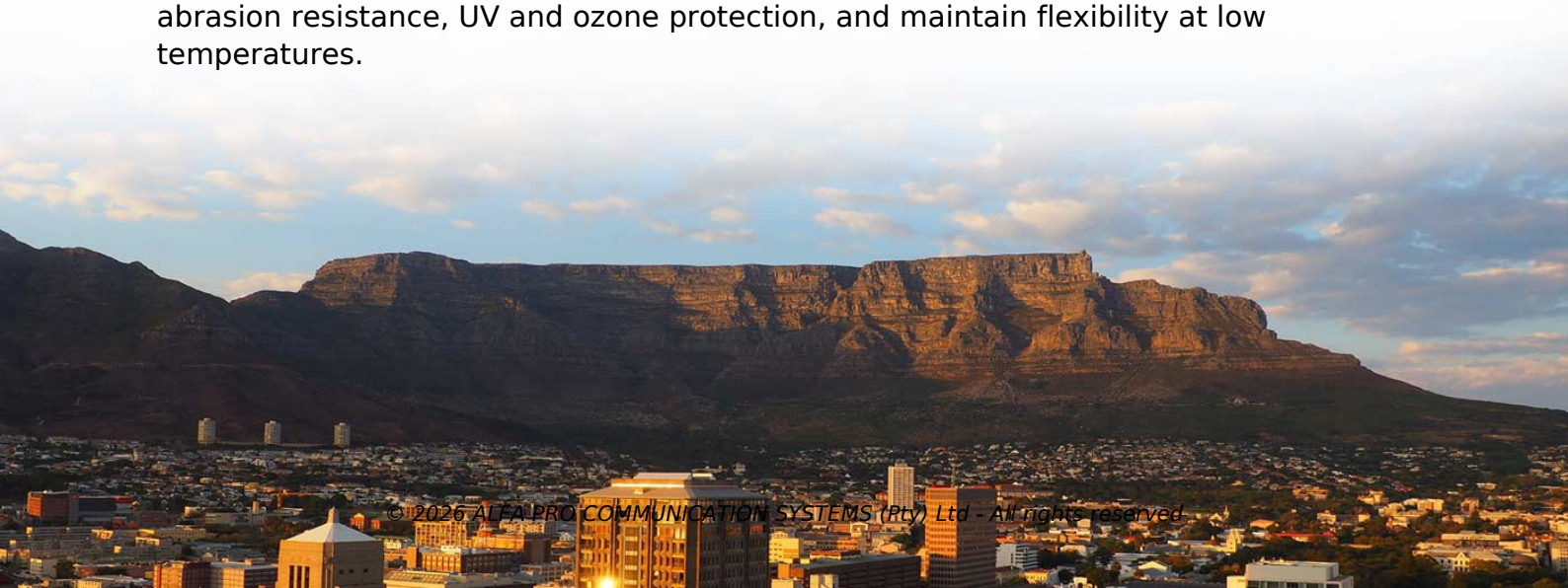
Hradil''s reinforced cables offer protection against rodents, temperature fluctuations, being run over by wheels, impacts, sharp edges, throw stone and a lot more.

Key Takeaways

Tratosflex-ESDB reeling cables with rubber insulation, compliant with NBR 6251, are suitable for low-temperature Brazilian cable reeling frame installations, operating reliably down to -50ºC.

Cable Selection for Low Temperatures

For Brazilian cable reeling frames, Tratosflex-ESDB cables are highly recommended due to their rubber-based insulation, fillers, and sheaths, which allow operation in extreme temperatures from -50ºC to +90ºC while maintaining flexibility and mechanical integrity during high-speed reeling operations (up to 300 m/min). These cables are designed to prevent internal twisting and conductor breakage, which is critical for reeling frames exposed to cold environments. Other options include low-voltage flexible reeling cables with EPR or PCP-based compounds, which provide abrasion resistance, UV and ozone protection, and maintain flexibility at low temperatures.



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Compliance with Brazilian StandardsAll cable installations in Brazil should comply with ABNT NBR 6251, which specifies construction requirements for insulated power cables from 1 kV to 35 kV. This standard ensures that the conductor, insulation, shielding, and protective sheath meet mechanical and electrical performance criteria suitable for industrial applications, including low-temperature environments. For cold installations, selecting cables with HEPR or EPR insulation is recommended, as defined in NBR 7286 and NBR 7287, ensuring chemical and physical stability at low temperatures.

Installation Guidelines

Proper installation is crucial for low-temperature performance: Reeling direction: Wind the cable on the drum in the correct stranding direction (Z-lay or S-lay) to prevent torsion. Minimum bending radius: Adhere strictly to the manufacturer's specified bending radius to avoid mechanical stress. Tensile load limits: Ensure copper conductors are not subjected to tensile stress exceeding 15 N/mm^2 unless otherwise specified.

Protection during installation: Shield the cable from external damage, especially in cold conditions where materials can become brittle. Partial unwinding: Avoid fully unwinding the cable from the supply drum; maintain at least two windings on the reeling drum during installation. Practical RecommendationsPre-condition cables: If possible, store cables in a temperature-controlled environment before installation to reduce brittleness.

Use clamps and grips: Employ Kellem grips or large surface clamps to secure cable ends without inducing torsion. Regular inspection: Monitor for micro-cracks or insulation hardening during initial operation in low temperatures. Consider fiber-optic integration: For control and signaling, select cables with integrated fiber optics rated for low temperatures.

By combining Tratosflex-ESDB or equivalent low-temperature flexible reeling cables, adherence to NBR 6251 standards, and careful installation practices, Brazilian cable reeling frames can operate reliably in cold environments while maintaining long service life and mechanical integrity.

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Article Content

Low-temperature / cold-resistant cables

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The installation of reeling cables has to be done carefully. They have to be protected against external damage during installation and operation.

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Wire Cable Handling and Installation Engineering Guide

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When installing cables under cold ambient conditions, various insulations and jacket materials become brittle and cables may be damaged if worked at too low a temperature.

Reeling Cables

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Common Cable Types Used in Brazil: A Comprehensive

PVC-Insulated Single-Core Cables: The Foundation of Residential Wiring When discussing cable types in Brazil for residential applications, PVC-insulated cables

Reeling installation of rigid steel pipelines at low temperature

The influence of low temperature during installation of rigid pipelines by the reeling method has been investigated. More specifically the resistance towards ductile tearing has been assessed for pipeline

South America Wire And Cable Market Size & Share Analysis

Key Report Takeaways By cable type, low-voltage energy cables held 39.32% of the South America wire and cable market share in 2024, while fiber optic cables are forecast to rise at a

Numerical Modeling of Low Temperature Reeling of Pipes

Abstract This paper presents an experimental/numerical study of low temperature pipe reeling, full-scale tests and small scale tests simulating the deformations and loads seen during reeling. The emphasis

Installation instructions for reeling cables

In case of complete extension of the cable at least 2 windings shall remain on the reeling drum. For fixing the other cable end Kellem grips or large surface clamp connections can be used. The

Reeling Techniques for Pipeline Installation

Reeling Techniques for Pipeline Installation 1) The document discusses reeled pipeline installation using specialized reel lay vessels. It describes the reeling process and why it is an effective installation

"Veins and Nerves" in Bitter Cold: A Guide to Cable Selection and ...

This article aims to provide detailed recommendations for cable selection and installation in low-temperature environments, based on simulated tests of cable low-temperature performance,

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Finite element analysis of cyclically-loaded steel pipes during deep ...

The effect of low temperatures on the reeling installation has been examined by Heier et al. (2013), whereas, the effect of geometric and material discontinuities at adjacent pipe segments on

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