



Vortrag

Freitag, 2. Oktober 2026, 12:00 Uhr

Konsolidierung von klüftigem Festgestein für HDD: Fallstudie zur Querung des Revissermar-Gebiets

Vortragende: Jan Laenge, CEO DrillCon
Melina Almeida, Bauing. Tiefbau, Petrobras
Carlos Eduardo Chaves, Technischer Leiter, DrillCon

Lecture

Thursday, 2nd October 2026, 12:00 pm

Fractured Rock Consolidation for HDD: The Revissermar Mountain Crossing Case Study

Speakers: Jan Laenge, CEO DrillCon
Melina Almeida, Civil/Pipeline Engineer, Petrobras
Carlos Eduardo Chaves, Technischer Leiter, DrillCon

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Jan Laenge, CEO DrillCon

Melina Almeida, Civil/Pipeline Engineer, Petrobras

Carlos Eduardo Chaves, Technical Lead, DrillCon

Horizontal directional drilling (HDD) feasibility is highly dependent on ground conditions, and fractured rock can represent one of the most challenging scenarios. Rock discontinuities may lead to steering deviations, drilling fluid losses, formation-water influx, inefficient hole cleaning, borehole instability, and stuck or broken drilling tools. When fractured zones cannot be avoided, rock-mass consolidation can be used as a mitigation measure to improve drilling conditions and reduce these operational risks.

This presentation discusses a 753 m HDD mountain crossing in Rio de Janeiro, Brazil, designed to install a Ø22" carbon-steel gas pipeline beneath the Revissermar mountain, with approximately 117 m of maximum cover and a final bore diameter of 34". Geotechnical and geophysical investigations identified predominantly gneiss and granite with localized highly fractured zones. Due to the significant depth of the crossing, cement grout was injected directly into the pilot hole under pressure using casing and an inflatable packer, with drilling, grouting, and re-drilling performed in successive stages.

The consolidation strategy allowed the pilot hole and subsequent reaming stages to be completed without significant operational problems. The pilot hole reached the designed exit with only minor deviation, and the Ø22" pipeline was successfully pulled back in 6.5 hours, with a maximum pulling force of 32 tf. The case demonstrates how detailed subsurface investigations, targeted rock consolidation, and adaptive field execution can mitigate the risks associated with fractured rock and enable HDD construction under challenging geological conditions.