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Synthetic wires: Experience, Strength and Hope
Why synthetic?

• 1/8 weight, increased equipment loads
• Near neutral bouyancy (0.98 kg/dm³)
• Low maintenance
• Safer (handling, backlash)
• Non-iron sampling
• Cost and availability
Why not?

- Larger sheaves (bend radius)
- Vulnerability to damage
- Spooling problems
- Terminations (resin potted)
- Low load operations
Holdings

- Cortland 24mm plasma cousin trecnic coring RRS Discovery
- Cortland 28mm plasma coring RRS James Cook
- Cortland 16mm MFCTD
- Nexans 18mm MFCTD
Rolls Royce electro direct pull containerised winch with Cortland Vectran braided rope.

Containerised direct pull winch.

Top centre shows the spooling with the drum recessed into the container.

The electric drive units are located in a separate section at the rear of the container.

Right hand side view showing the 4 electric motors located inside the drum driving the slew ring.
Cortland rope specification:

- Length = 10000m
- 4 off Cu Conductor, 18AWG, Voltage rating = 600V
- Outer diameter = 15.25mm
- Bend radius = 275mm
- Weight in air = 225kg/km
- Weight in water = 30kg/km
- Breaking strength = 9900kgf
- Safe working load = 1320kgf
- Operating temp = -40degC/+80degC
Lebus electro-hydraulic direct pull containerised winch with NEXANS 18.5mm Aramid rope.

20 foot containerised winch located on RRS Discovery hanger top.

Portable control console with 50m cable with plug both ends for installation inside ships laboratories as required.

Portable clean CTD block.
Sheave made of Nylotron.
Aramid armoured CTD instrument cable.

Length = 8000m

4 off Cu Conductor, 0.82mm², 7x0.39mm, 3.3kV

Outer diameter = 18.5mm
Bend diameter = 750mm
Weight in air = 310kg/km
Weight in water = 40kg/km
Breaking strength = 130kN
Safe working load = 22kN
• Plastic sheath prevents salt crystals forming in Kevlar
• Prevents friction on powered rollers
• Direct pull winch
Coring ropes

- Less system load
- Floats in freefall
- Slack in sheaves/modified outhaulers
- Rope diameter changes while scrolling
Outhaulers
Scrolling
Vision

• 2 winches per ship
• Same synthetic wire on both
• Money not tied up in wires