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5 Ways to go deeper with your ROV Cable

5 Ways to consider

The ROV industry is going deeper than ever before. That's why developing and deploying ROV umbilical and tether cables has become an ever greater challenge, as we strive to meet a range of depth, weight and strength requirements set by the industry for all subsea activities.

Here are 5 tips to go deeper with your ROV cable:

1 Add More Steel to Your Armouring

A conventional design solution to help your ROV cable to go deeper is to add more steel to the armouring. Adding more steel increases the outer diameter, the break strength and the maximum working load of the cable. This also leads to an increase in the permissible maximum dynamic load and, consequently, in the acceptable dynamic acceleration factor. All of these increases would allow the ROV cable to go deeper. The downside is that adding steel also increases the weight of the cable, which already forms a major part of the load. As the length of the cable submerged in water increases, the benefits of adding steel to the armouring become increasingly marginal. Increasing the armouring diameter by 60%, for example, will only enable an ROV cable to go approximately 20% deeper.

2 Change the Transmission Voltage

A current method for taking ROV cables to greater depths is adjusting the transmission voltage. An increased voltage requirement for your ROV cable would lead to a decreased conductor area, which would decrease the weight of your cable and allow your ROV cable to go deeper. The conductor insulation must increase in size to cope with the higher voltage, however, which may have the net effect of increasing the cable diameter.

3 Adopt a Temperature Monitoring System

Decreasing the amount of copper used in the cable is another potential solution to the challenge. ROV cables usually work below the maximum current for approximately 98% of the operation time, as continuous full power is only required for about 2% of the time. Therefore, designing an ROV cable with a high conductor cross section is superfluous if it's only going to be necessary for a minimal amount of time.

An integrated temperature monitoring system (such as a Distributed Temperature Sensing (DTS) system), would allow you to work with a decreased conductor cross section by continuously monitoring the temperature of the system. The ROV operation could be adjusted in line with the cable's actual operating temperature. In turn, this would allow the operators to run the system safely at the maximum permissible power, temporarily reducing the current when the cable reaches the maximum allowed temperature in order to let it cool down.

4 Use Lighter Materials as Strength Components

Another creative solution is to replace the heavy strength component entirely with lighter material. Using high-tech aramid fibres as the strength component can decrease the cable diameter and make the cable substantially lighter than it would be with steel armouring.

A similar improvement can be achieved by replacing some of the metallic wires with lightweight rods, generating a hybrid solution with the robustness of steel armour but reduced weight

5 Change your ROV Handling System

Changing how you deploy your ROV will allow you to reduce loads during the deployment and recovery phase. Shock loads experienced during the recovery of the ROV may be a limiting factor in the cable design, and the use of Launch and Recovery Systems can limit the maximum loads sustained by the cable.

About DeRegt Cables

DeRegt delivers custom-engineered cable solutions for work class ROV's. Our global service network offers round-the-clock access to specialist technical and engineering assistance with repairs, testing, terminations and inspection.

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