

# EXO Shows Off Its Strength with Rugged, Marine-Grade Materials



a xylem brand

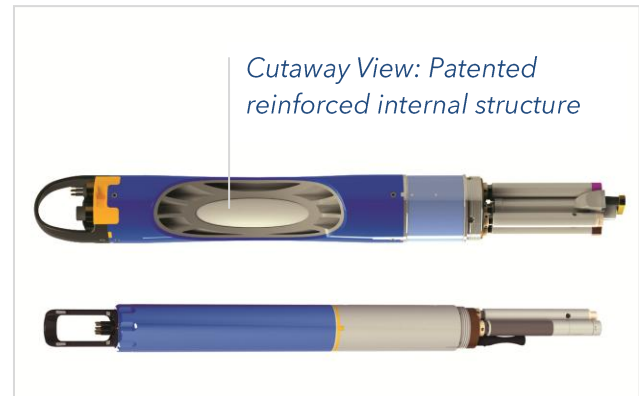
YSI Environmental Monitoring Systems  
Application Note A601

EXO water quality sondes break the sonde barrier in several ways, one of which is their unique use of materials. We have found plenty of new materials that are well-suited for various field conditions and long-term monitoring. These rugged and durable components will improve the reliability of the EXO instruments and reduce your total cost of ownership:

## Durable Polymer and Titanium

Highly durable, impact-resistant Xenoy™ polymer and Titanium help the instruments attain a 250-meter depth rating. These tough materials stand up to high pressures underwater without leaking and resist the corrosion of saltwater. Additionally, the materials perform reliably in higher temperatures, up to 80°C.

Many of EXO's polymer components are molded Xenoy resin. Xenoy was chosen because of its strength, impact resistance, chemical resistance, ability to form a good bond with numerous epoxies, as well as its molding properties (allowing us to fill both thin and thick wall parts). We've been using it for several years on field products with success. Its tough surface is well-suited for rigorous cleaning, such as scraping off barnacles. Xenoy is more environmentally friendly to mold than PVC and has better epoxy adhesion properties than acetal resin.



EXO1 and EXO2 sondes use unique combinations of polymers, metals and other rugged materials for strength and durability

Xenoy also allows us to mold the EXO2 sonde into an ergonomic shape for easier gripping while creating a unique, patent-pending reinforced interior structure. An internal honeycomb-like structure imparts superior strength against external water pressures at depths of up to 250 meters. The slimmer EXO1 has an internal stainless steel sleeve overmolded in polymer. Polymer is used as the exterior surface in place of metal in high-pressure underwater applications without being subject to corrosion like most metals.

Finally, a Lexan™ EXL alloy is added to the polymer for UV resistance and tests well against degradation from prolonged UV exposure.

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## Connectors that Resist Corrosion

Speaking of corrosion, EXO's wet-mateable metal connectors for sensors and cables resist corrosion when wet. We know that field conditions aren't neat and controlled like lab conditions. Moisture and dampness are ever-present when deploying and swapping instruments in the field. Robust connectors (aluminum-bronze alloy plated in gold) provide superior corrosion resistance. You can even drop an exposed four-pin sensor connector directly in the water and it will still work, although we strongly recommend you dry it as thoroughly as possible before plugging in.

## Tight Grips

Laser-welded joints on the sensor housings plus double o-ring seals prevent leaks in all water environments, from shallow to deep. All parts go through extensive pressure testing before they leave the factory. Other tough components include exclusively designed Neoprene and urethane rubber shields on the connectors.

EXO cables use an industry-standard design but have an improved strain relief that holds a continuous load of 20 pounds through the cable and connector only. An accessory strain relief increases the load limits even further.

Sapphire glass on optical sensor windows is hard and durable and bonds well to metal for a tight seal on the probe face. The sapphire glass's smooth surface also resists biofouling and stands up well to

regular sweeps from the anti-fouling wiper system.

## Anti-fouling Makes a Clean Sweep

Built-in antifouling systems protect the integrity of your water quality data. Active anti-fouling components include an important central wiper with large brush on the EXO2 to sweep away fouling organisms. This wiper has low power requirements, an optimal design for continuous monitoring.

EXO sondes and sensors also use several specially blended copper-brass alloy components to resist the build-up of biofouling on the equipment when submerged in highly productive waters. Copper is a passive anti-fouling agent and does not use harmful chemicals such as bleach to clear biofouling.

EXO sondes are small and lightweight, so they can be integrated into marine monitoring systems easily with few connections and cables. The robust materials rate the sondes and sensors to a depth of 250 meters---suitable for most surface water and ground water applications and many coastal and estuarine applications.

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