

Dissolved Oxygen Sensor (Mettler-Toledo Thornton Long Life DO Sensor)

The dissolved oxygen sensor for ppb level measurements shall use a galvanic cell technology that does not respond to dissolved hydrogen present in power plant stator cooling and some nuclear water chemistry applications. The sensor shall provide measurement accuracy of $\pm 2\%$ of reading or ± 1 ppb, whichever is greater.

The dissolved oxygen sensor shall use a sealed flow chamber to prevent atmospheric contamination of the sample. The flow chamber shall have a small volume to assure high sample flow velocity for reliable response and to carry corrosion particles through to the outlet, eliminating the need for sample filters and their maintenance.

The maintenance interval of the dissolved oxygen sensor other than calibration shall be extremely infrequent, typically 2-4 years, before replacing membrane and electrolyte, greatly reducing radiation exposure of personnel in nuclear installations as well as lowering costs. Maintenance shall be simple and rapid with a drop-in membrane and electrolyte that can be replaced in 5 minutes on site.

The associated preamp and indicating transmitter shall measure from 2 or 4 dissolved oxygen sensors, as specified, with indication, alarm and output signals available for both dissolved oxygen and temperature. It shall be possible for other parameters (pH, ORP, conductivity, TOC) to be measured on the other channel(s) along with dissolved oxygen. The transmitter shall provide temperature compensation for the solubility of oxygen in water and for the oxygen permeability of the membrane.

The dissolved oxygen sensor shall be Mettler-Toledo Thornton model 357-110 Long Life DO Sensor for 4-channel 770MAX Transmitters or model 58037221 Long Life DO Sensor for 2-channel M300 Transmitters.

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