A Breakthrough In Enhanced Oxygen Sensing Performance

The New DF-300E Series and E-Sensor
For years, you have depended on Delta F for advances in oxygen analysis. We have consistently introduced technological advancements starting with our unique non-depleting coulometric sensor and built upon the expertise and experience we have accumulated in over 30 years of pushing the boundaries of oxygen analysis. Now we have reinvented our sensor technology from the ground up to develop a performance breakthrough in oxygen analysis with the DF-300E Series and our unique new enhanced performance E-Sensor.

The E-Sensor - Enhanced Oxygen Analysis Performance
At heart the E-Sensor is the next evolutionary stage in Delta F’s unique electrochemical sensor technology. Intensive research to identify and resolve performance-limiting elements in the sensor led to a new proprietary carbon-based cathode system, new proprietary anode system, new electrode fabrication processes, new sensor assembly and conditioning processes, and a new high purity electrolyte formulation. These enhancements are all embodied in the E-Sensor to deliver unsurpassed analytical performance, dependability and reliability.

The E-Sensor’s new design and use of enhanced sensor materials significantly improves performance to deliver a price/performance breakthrough with:

- Faster purge down on initial start-up
- Faster recovery from upset
- Improved speed of response
- More stable baseline with improved temperature stability
- No need for customer “zeroing”
- Reduced fluid loss and accompanying maintenance
- Improved hardiness and acid gas tolerance

For more detailed information on our E-Sensor and its performance, download our E-Sensor technical bulletin from www.delta-f.com.

How Enhanced Oxygen Analysis Can Improve Your Process and Yield
There are many industrial processes where even the slightest presence of oxygen can have a negative effect on process yield or quality. The expanded DF-300E series of oxygen analyzers with E-Sensor technology has the flexibility to apply its price/performance advantages across a wide range of applications.

- **Electronics**
  - Production furnaces, chip fabrication, heat treating for silicon wafers, leadless soldering, ceramic production – oxygen control is key for greater yield and better quality yield with fewer defects and less scrap.
- **Metals/Heat Treating**
  - Metals processing, steel production, bright annealing, sintering, specialty welding – all require close analysis and control of oxygen levels.
- **Bulk Industrial and Specialty Gases**
  - Production of high purity gases, transportation of bulk industrial gases, gas cylinder certification, air separation unit control – requiring low level detection and control of oxygen.
- **Chemical/Petrochemical**
  - Control of undesirable oxidation during steam cracking of hydrocarbon feedstocks, quality assurance of polyolefin production, quality control and process performance enhancement of plastics such as polyethylene, polypropylene, polyesters and other polymers – oxygen analysis improves both quality and processing performance.

**Glovebox applications** – where materials processing and experiments must be carefully controlled and performed under low oxygen conditions - for example in bioresearch or nuclear applications.

**E-Sensor Benefit**
- Faster purge down on startup
- Faster recovery from upsets
- Faster speed of response
- Lower baseline/no customer zero
- Reduced water consumption
- Improved acid gas tolerance

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www.delta-f.com
The DF-300E Series of Analyzers
– The Right Analyzer for Your Application
In addition to providing enhanced performance, the DF-300E Series offers a wide range of analyzers to meet your specific application requirements. Each member of the DF-300E family delivers:

- Lowest available detection levels
- Elimination of false low readings and periodic sensor replacement
- Unmatched reliability and stability
- Fast response so you can react to problems immediately
- Compact and modular design to fit into your plant and process easily
- Affordable choices that easily justify implementation – including the availability of our E-Sensor and models with our solid state coulometric sensor

The DF-310E delivers:
- Accuracy: the greater of ±3 reading or ±0.02% Range
- Ranges from 0-0.5 ppm to 25%
- Instantaneous response to oxygen change
- Fast response: typically less than 10 seconds to read 90% of a step change
- Background gas compatibility including N₂, H₂, CO, freons, hydrocarbons, etc.
- Stab-EL™ option removes acids and ionic impurities from the electrolyte that could affect sensor performance
- Optional battery back-up for extended use and process protection

DF-320E – O₂ Analyzer for Hazardous Areas
The DF-320E is specifically designed for the rigors of harsh and hazardous environments. It can handle Class I, Div 2, Groups A,B,C,D, and ATEX Zone 2 certification, where potential explosions are a possibility – for example in natural gas lines or LNG storage, etc.
- Designed to handle Class I Div. 2
- Best analyzer for harsh or hazardous environments.

DF-330E- Solid State Coulometric Sensor
The DF-330E provide an ideal oxygen analyzer for many industrial applications where very fast response is essential. The DF-330E uses a unique solid state coulometric sensor with a solid electrolyte to deliver fast response across a wide measurement range.

DF-340E and the new DF-370E Designed for the Dirty Work
The DF-340E provides a tough, durable NEMA 4x version of the standard DF-310E that is protected by a dustproof, waterproof enclosure with the sensor in a Nema 7 enclosure

The DF-370E provides the same hard working, industrial strength analyzer, in a NEMA 7 enclosure with the option to also place a remote sensor in a NEMA 7 enclosure.

The DF-340E and DF-370E provide the ultimate in O₂ sensing for harsh and hazardous environments where enclosure is required.
Configuration and Installation

Delta F provides comprehensive assistance for a broad variety of application problems including measurements of semiconductor specialty gases. Depending on the model, Delta F analyzers can be configured to provide a wide choice of outputs for data collection and process control systems. Most Delta F analyzers can be configured for remote operation and all can be ordered with classified area enclosures. Contact your Delta F representative for an Applications Data Sheet and pricing information.