Triton® DO82
Dissolved Oxygen Analyzer

Presented by;

ELECTRO-CHEMICAL DEVICES

Why choose a Triton® DO82?

- Easy to Use
  - Pre- Calibrated
- Easy to Calibrate
  - Single Point
- Rugged design
- Fast Response
- Not flow sensitive

What is the Triton® DO82?

- The Triton® DO82 is an Optical Dissolved Oxygen Sensor
  - Measures the Partial Pressure of oxygen in the water or air
  - The same O_2 measurement that is performed with galvanic or polarographic sensors.
- Uses the Optical Property "Fluorescence" to determine the amount of oxygen dissolved in the water or present in the gas.

What is the Triton® DO82?

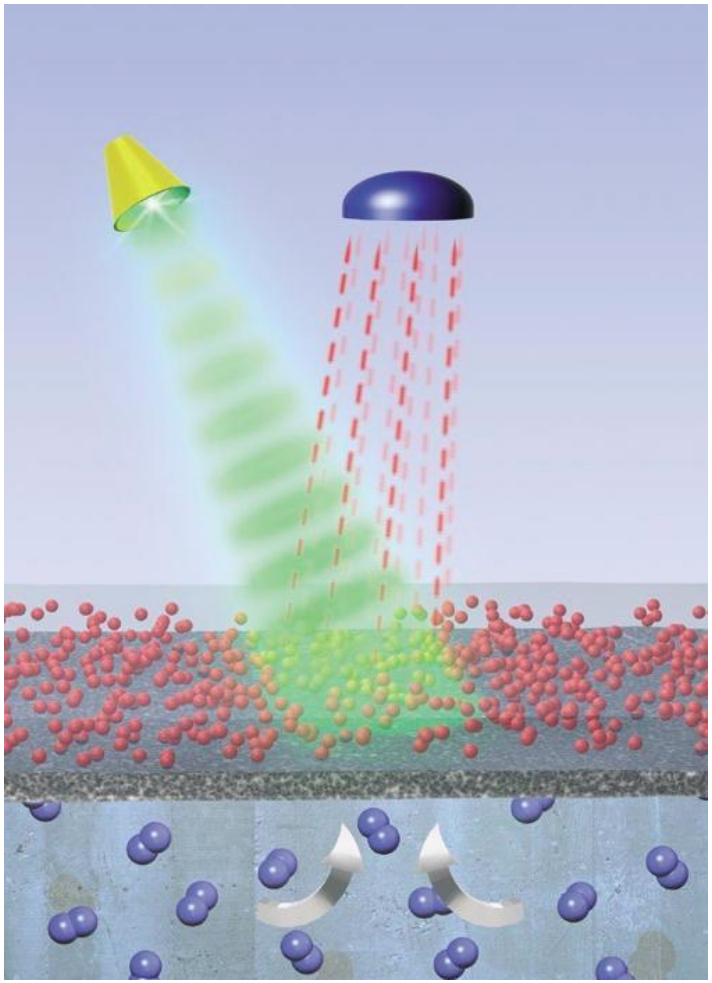
- The Triton® DO82 Sensor is a Smart Sensor.
  - Digital Communication
  - Calibration is stored in the sensor's memory
  - Integral Temperature measurement

Specifications

- Measuring Range
  - 0 - 20 mg/l (0 - 20 ppm)
  - 0 - 200 % Saturation
  - 0 - 400 hPa (0 – 400 mbar)
- Maximum Pressure
  - 10 bar (145 psi)
- Temperature Range
  - -5° - 50 ° C (20 ° - 120 ° F)
- Response Time
  - T90 < 60 seconds
- Accuracy
  - Max. error < 2% of measurement range
- Resolution
  - 0.01 mg/l or 0.01% SAT

How does it Work?

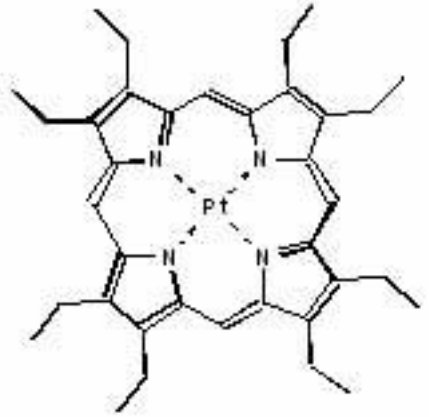
- Inside the sensor there is a Green LED light source that flashes rapidly.
- It Shines through a window on the inside of the membrane cap to the optically active layer.
- The layer contains organo-metallic (OM) molecules that Fluoresce red light when excited by the green light.
- A detector measures the intensity and response time (decay) of the Fluorescence.



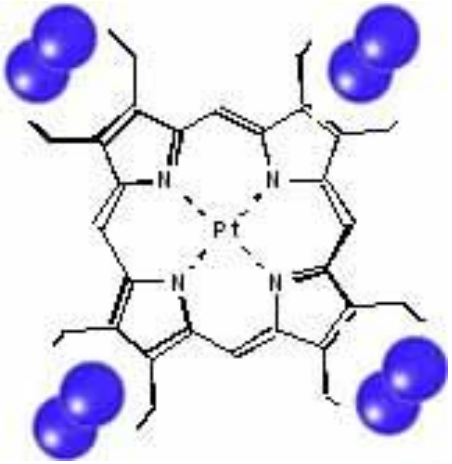
How does it Work?

- Oxygen exchanges freely between the media and the OM molecules in the cap.
  - A thin silicone coating protects the OM molecules from the environment.
- The OM Molecules catch and release the O_2 depending on the concentration present.
- When oxygen binds to the molecule, it fluoresces less.
- Hence the name of the technology Fluorescence Quenching.
- **No O_2 = High Fluorescence**
- **High O_2 = Low Fluorescence**

No O_2, High Fluorescence

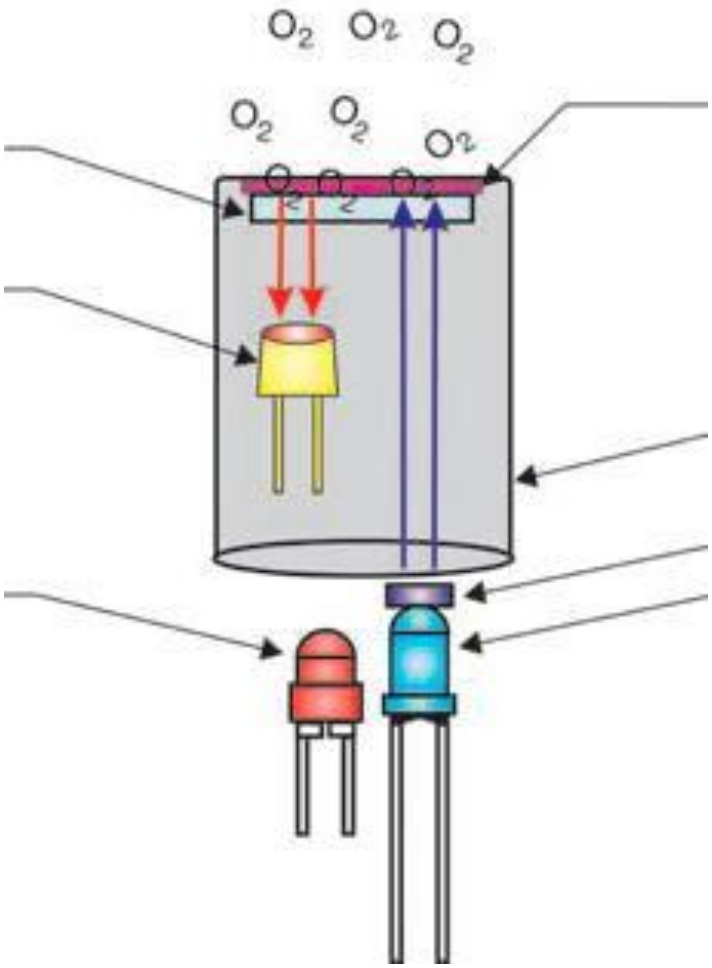


High O_2, Low Fluorescence



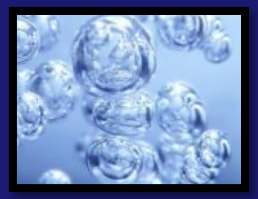
What other Methods are Used?

- Measure only the amplitude:
  - Bad stability
- Measure amplitude and phase shift:
  - Excellent range
  - Drift-sensitive due to electronic and optical filters.
  - Needs an extra Red LED for an internal reference!
- Measure amplitude and time (ECD):
  - Best measuring results.
  - No reference LED needed.
  - Improved Stability
  - But the method Limits the Range



What are they designed for?

- Municipal WWTP
  - Aerobic/Anoxic
  - Nitrification/ Denitrification
- Municipal Potable Water
- Fish Farming
  - High density requires aeration
- Monitoring of Aerobic or Anaerobic Chemical Processes
  - Food processing WWT
  - Chemical/Petro WWT



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