O2 Sensor Comparison

Important Considerations:

- Comparing Sensors – When comparing sensors it is important to distinguish between the Transducer Technology and the Sensor. The Transducer Technology is the means of converting one form of energy to another [paramagnetic, for example]. The Sensor is the application of the Transducer Technology in a product or device. The Sensor will generally utilize techniques [such as filtering or temperature control] to overcome some Transducer Technology shortcomings and/or provide new or improved benefits. Therefore, comparing Transducer Technologies can be somewhat misleading because it is not yet applied in a useful form; comparing Sensors [i.e. the actual device used] will usually provide a more useful comparison. However, it should be noted that it is highly desirable to maximize the efficiency of a transducer and minimize the electronic/software corrections.

- Gas Interference Effects – All Sensors are effected by various interfering gases. The amount and significance of the interference is very dependent upon the Transducer Technology and how it is applied. Fortunately, the effect of CO2 interference on the Sensors described here is generally not significant. Also, the interfering gases are usually low concentrations and intermittent in nature and can be invalidated in post-test data analysis. This makes these Sensors useful in making metabolic measurements. It should be noted that if an interfering gas is lingering in the environment the data may be compromised.

- Water Vapor Effects – All Sensors are effected by water vapor. These effects are usually negligible in a system incorporating an appropriate dryer in the sample gas stream before the Sensor. The use of the dryer to remove water vapor and a trap to remove condensation makes these Sensors useful in making metabolic measurements.

Manufacturer	AEI Technologies	Servomex	City Technology	Oxigraf
Model	N-22M	1111E	MOX-20	X3004
Transducer Technology	Zirconia Oxide	Paramagnetic	Metal Air Battery	Laser Diode
O2 range	0 -100%	0 -100%	0 -100%	2 -100%
Life	>10 Years	>10 years	1-2 years	>10 years
Response time	<100 msec	<3 sec	<750 msec	Fast
Accuracy	0.01% O2	0.1% O2	0.1% O2 (Est.)	0.1% O2
Sensitivity	0.01% O2	0.1% O2	0.1% O2	0.01% O2
Stability	0.03%O2/week	0.1%O2/week	0.2%O2/week	0.2%O2/24hrs
Size, Weight	Largest	Mid-size	Smallest	Mid-size
Cost	High	High	Moderate	High
Disadvantages	Slow warm-up	Position sensitive	Short life	Long term stability
	Large size	Vibration sensitive	Short storage life	

Conclusion:

AEI Technologies Zirconia Oxide transducer technology is by far superior to all other technologies in terms of accuracy and repeatability.

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