Comparison of OFS and Other Flow Measurements

The Optical Flow Sensor, OFS-2000, is your solution for airflow velocity measurements in smokestacks and ducts for environmental and process control applications. The OFS has been extensively field proven and tested. It is patented, approved by the EPA for airflow monitoring (Method 14 equivalent), NIST tested, is Part 60 & 75 certified and has virtually no drift. Its technology has been relied on for over 30 years to make accurate atmospheric and environmental measurements. The OFS has demonstrated its performance through direct comparisons with various sensors, pitot tubes and especially in Part 60 & 75 RATA tests. The OFS2000 is currently being used for applications in many fields including the petroleum, aluminum, steel, incineration, cement, pulp & paper, boiler and utility industries.

Comprised of a transmitter, receiver, and electronics box, the instrument is installed perpendicular to the flow to "look" across the stack. Unlike costly ultrasonic installations, the OFS-2000 is placed on the same level (perpendicular to the duct or stack axis), not diagonally. Instead of point-source results like those from pitot tubes, the OFS-2000 provides a path-averaged measurement for more representative velocity readings. Most important, the OFS-2000 is non-intrusive and non-contact. The instrument is not directly exposed to the flow, which translates into better durability and lower maintenance. The Optical Flow Sensor affords the user a distinct combination of advantages that other methods do not offer:

- Low cost to acquire and maintain
- True path-averaged measurement for more representative results
- Simple installation, simple start-up – virtually 'plug-n-play'
- Large or small diameter ducts, pipes or stacks can be measured with same OFS-2000 model
- Very low upstream / downstream pipe diameter requirements (passed audit in 1d and 2d)
- Very large turndown ratio (up to 5000:1); single model has wide operating range
- Variety of enclosure and area classification options available
- Mean Time Between Failure (MTBF) of 5-10 yrs; Mean Time To Repair (MTTR) < 1 hour
- Extensive user base exists and extensive service support knowledge base is available
- Greatly reduced maintenance requirements (non-contact, not exposed or inserted into the measurement media)
- Built-in self-test, diagnostics & automatic calibration
- Built-in digital display & keypad
- Not affected by dirt on the windows or high opacity flow media (up to 95% opacity OK)
- Results independent of temperature, pressure, humidity, opacity and media composition (no measurement or compensation for these variables is required)
- Handles very high temperature (>1000 deg C) process flows with no effect on measurement
- Has internationally accepted Safety and Quality approvals
- NIST wind tunnel tested and traceable.
- EPA approved technology
- Full 12-month warranty
- No moving parts, no analog drift, solid-state construction
- Flexible communications options

- Universal power supply
- Highly accurate and representative (as demonstrated in the NIST test and user tests)
- Can be used in widest range of applications
- Reliable and innovative optical technology - advanced and proven
- Several OFS2000 model variations are available, e.g. flow + particulate (OFS2000P), flow + opacity (OFS2000V), and flare stack flow (OFS2000F)
- Non-intrusive to flow (does not create pressure drop or affect the flow field)
- Links to PC, PLC, CEM, or other data collection device
- Simple to operate

The table below summarizes the competitive differential advantages of OSI's OFS / optical scintillation technology compared to other technologies.

	Ultrasonic	Pitot Tube	OFS	OSi Advantage?
Sample Volume	Long Path	Point Measurement	Long Path	Yes over Pitot
Path Velocity Profile Variability	Multiple / complex	Point Only	Single Profile	Yes over both
Measurement Representativeness	Variable Profiles, Fair	Single Point, Poor	Single Profile, Excellent	Yes over both
Transducer Exposure *	In Sample	In Sample	Non Contacting, not in sample	Yes over both
Technology	Newer, Hybrid Analog / Digital	Old, Low-Tech, Analog	Advanced, All Digital	Yes over both
Installation Cost	High (2-point/2-level)	Low (1-point/1-level)	Moderate (2-point/1-level)	Yes over ultrasonic
Field Calibration	Annual / Semi-Annual	Annual / Semi-Annual	None Required	Yes over both
Suitability for Harsh Environments *	Poor	Moderate	Excellent	Yes over both
Siting Restrictions	High	Medium	Few	Yes over both
Maintenance	High	Medium	Low	Yes over both
Acquisition plus Operating Costs	High	Medium	Low	Yes over both

* Sight glasses may be used to totally seal off process gases for caustic, flammable or high pressure process flows.

The OFS has significant advantages over all competitors in all categories. There simply is no other sensor for flow measurement that meets such a wide range of applications.

Be sure to contact us on the web (http://www.opticalscientific.com), by email (sales@opticalscientific.com), or by phone (301-963-3630) for more information and to request a quote on the most versatile / high performance flow sensor in the world!