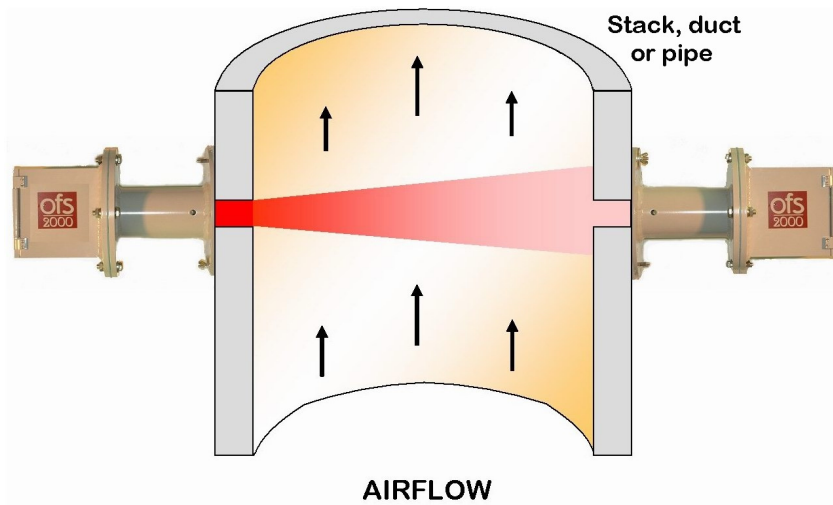


# Flow Sensor for Combustion Air



- **Flexible technology** – measures flow in virtually all duct or stack configurations, regardless of turbulence pattern
- **Path averaged measurement** - more representative than point measurements
- **Non-intrusive design** – will not interfere with flow; isolated from stack media; ultra-low maintenance
- **Simple, inexpensive installation** – no angled ports required
- **Measurement independent of:** pressure, temperature, & air / gas composition (dust, vapors, density etc.)
- **NIST (Bureau of Standards) Tested** - Calibrated in NIST Wind Tunnel
- **High turndown ratio and linear** – over full range.

## APPLICATIONS:

- **Combustion Air and Flue Gas velocity**
- **On Line continuous control of Primary and Secondary Air**
- **Replace inefficient equipment (venturi and Pitot tubes)**
- **On Line continuous control of air flow to individual burners**

*For many reasons the OFS-2000 is an ideal monitor for combustion air. We would be pleased to discuss your application and setup a demonstration. Please contact us for more info...*



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The OFS-2000 is a patented, advanced, continuous flow measuring system for large and small stacks or ducts (from 6" to 30 feet ID). The instrument is isolated from the air or flue gas flow. This non-contacting method ensures reduced maintenance over traditional flow sensors. The optical scintillation technique measures the movement of turbulence found in flow streams, which provides a highly accurate path-averaged air velocity measurement without obstructing or altering the flow.

The OFS consists of an optical transmitter and optical receiver which are easily installed on opposite sides of a duct or stack. These sensors reside outside the stack walls, behind heated quartz optical windows, for easy access and complete isolation from the potentially corrosive media being measured.

***Osi is an ISO-9001 certified company.***



## NIST (Bureau of Standards) Calibration & Testing Overview

Optical Scientific Inc. submitted an Optical Flow Sensor (OFS) to the National Institute of Standards and Technology (NIST) for wind tunnel test and calibration during April 19 – 24, 2001. The test and calibration of the OFS (SN 0900002) was performed in the 1.5-m by 2.1-m rectangular test section NIST Dual Test Section Wind Tunnel. In this tunnel, the air speed is measured by the NIST Standard (laboratory standard Pitot-static tube). The test results are below:

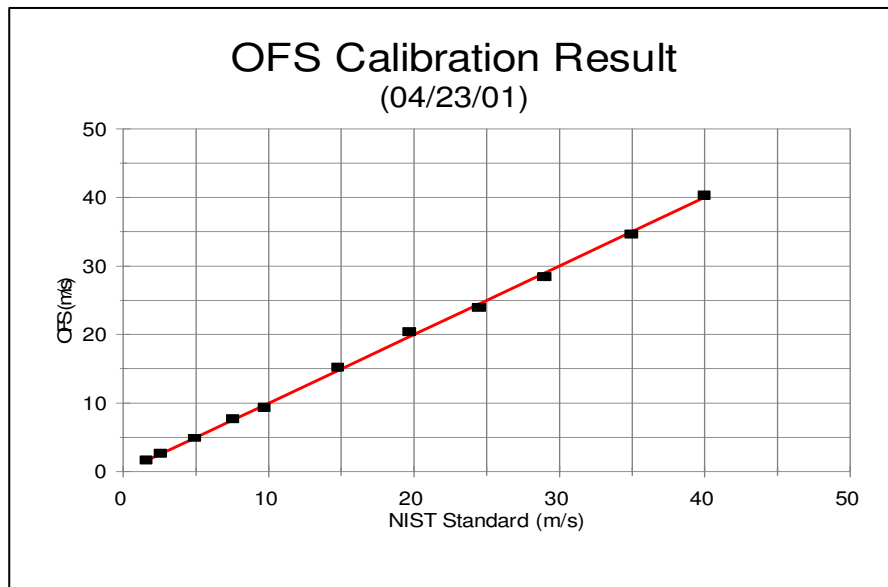
NIST Air Speed, m/s	OFS Output, m/s	OFS Accuracy m/s (%)	Reproducibility Uncertainty m/s (%)
1.59	1.58	-0.01 (-0.56%)	0.12 (7.73%)
2.58	2.67	0.09 (3.39%)	0.10 (3.86%)
4.94	4.90	-0.04 (-0.84%)	0.14 (2.84%)
7.59	7.69	0.10 (1.35%)	0.07 (0.96%)
9.75	9.41	-0.34 (-3.50%)	0.07 (0.72%)
14.80	15.23	0.43 (2.90%)	0.17 (1.16%)
19.70	20.37	0.67 (3.40%)	0.15 (0.80%)
24.50	23.86	-0.64 (-2.60%)	0.12 (0.51%)
29.00	28.42	-0.58 (-2.00%)	0.22 (0.77%)
35.00	34.53	-0.47 (-1.34%)	0.63 (1.80%)
40.00	40.35	0.35 (0.88%)	0.33 (0.82%)

The Standard Deviation of the OFS Accuracy is **2.35%**.

The Standard Deviation of the Reproducibility Uncertainty is **1.05%** (from 2.5 m/s to 40 m/s).

Lower Reproducibility Uncertainty indicates better repeatability of the instrument.

### OFS Test Results at NIST Wind Tunnel (April 23, 2001)



### OFS Measured Air Speed vs. NIST Standard at NIST Wind Tunnel

Note: A detailed report and summary of the NIST test results are available upon request.