

Application Note

Wind Tunnel Test Pressure Scanning – the benchmark standard in pressure measurement

SCANIVALVE DSA 3217 INTELLIGENT ETHERNET PRESSURESCANNER

- ✓ Intelligent Data Output
- ✓ Dedicated sensor for each channel (up to 16 channels)
- ✓ High Accuracy temperature compensated sensors
- ✓ Network-ready Ethernet for quick integration
- ✓ Fast data collection for efficient wind tunnel use
- ✓ Quick set-up minimizes tunnel downtime
- ✓ Integral valves allow easy calibration, isolation & purging
- ✓ Simple operation
- ✓ Proven long-term in-service operation
- ✓ Compact, shock-resistant, rugged and reliable



THE CHALLENGE

APPLICATION: WIND TUNNEL WALL PRESSURE TESTING

The Application details:

Adaptive wind tunnel walls are designed to be moved to simulate “free-air” conditions and reduce or remove the aerodynamic effects of wall-interference on a model. Further, allowing the walls to be easily moved allows a standard wind tunnel design to utilise models of differing sizes from 100% (such as a full-size car) down to models of 50% scale or less. Often a building model can be as small as 1:300 scale. This improves the flexibility and range of testing that a wind tunnel can achieve, thus enhancing its lifespan and flexibility and breadth of application.

The Measurement Challenge:

Accurate and effective pressure measurements within the walls of the tunnel are necessary in order to determine the effective velocity within the tunnel and often many hundreds of pressure tapping points are installed in the inner tunnel wall.

High speed, synchronous data collection is necessary from the huge array of pressure tappings to ensure integrity of the collected data. Often multiple scanners (we have seen over 2000 channels on some tests) of different ranges will be used axially along the length of the tunnel, positioned to measure the pressures radially around the walls for pressure distribution measurements to be made.

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Typical Users:

Wind Tunnel Users – Of interest to operators, Test Engineers and Aerodynamicists

THE SOLUTION

SCANIVALVE DSA-SERIES PRESSURE SCANNER EXCELS IN THIS APPLICATION

The Scanivalve DSA (Digital Sensor Array), series 3217 pressure scanners are used within the wall to collect the data. They are rugged, compact and reliable and this makes them easy to install in close proximity to the pressure tapings.

Multi-range calibrations offer application flexibility, each offering up to 16 channels of fully temperature-compensated pressure data, meaning that the system can be expanded quickly and easily with modular architecture.. High speed Ethernet data rates of up to 500Hz/channel maximise the amount of valuable data that can be gathered during a single test run. This data is collected in any desired Engineering Unit, presenting the test engineers with meaningful data for analysis. Shortening test runs can save the user significant time and cost.

Multiple DSA scanners can be run in parallel on the same Ethernet platform to enable synchronous data to be captured along the full length of the working section of the tunnel.

The Scanivalve DSA is the defacto standard at this level with many thousands of units installed globally. These scanners offer multi-range capability in the 3217 gas instruments with ranges from 10" H₂O up to 850 psi and multi-ranges in the same scanner.

The DSA 3217 series scanners use high stability, high reliability control valves to direct pressures for normal measurement mode / calibration mode / purge mode offering MTBF times of many thousands of hours. This enhances operational efficiency and profitability by ensuring minimal wind tunnel downtime during the test period.

For more Information:

Download the datasheet: <https://www.evomesure.com/product/scanner-de-pression-numerique/>

Or contact EvoMeasure at contact@evomesure.com