Jost's News
Diverse Technology, Integrated Approach

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DANTEC News

Our systems supplied for fluid dynamics are designed to measure physical properties in air, gases, liquids and solid materials: Quantitative measurement data for velocity, particle size, concentration, temperature, combustion species, strain/stress and vibration. Our highly accurate products are applied in the fields such as Automotive, Aerospace, Wind Engineering, Hydro Dynamics, Combustion Technology, Process Engineering, Bio-medical, Pharmaceutical, Micro Technology, Spray Research, Electronics, etc.....

HOT-WIRE ANEMOMETRY or CONSTANT TEMPERATURE ANEMOMETRY (CTA)

CTA is a point-measuring technique appropriate for the measurement of time series in one, two or three-dimensional gas and liquid flows. CTA is particularly suitable for the measurement of flows with very fast fluctuations at a point (high turbulence) and the study of flow microstructures, where there is a need to resolve small flow eddies down to the order of tenths of an mm.

CTA is often applied in wind tunnel experiments during the design phase of buildings and structures located both on land and in the sea. Typical applications include flows around tall buildings, bridges, offshore oil rigs and research in aerodynamics and turbulence.

Features:

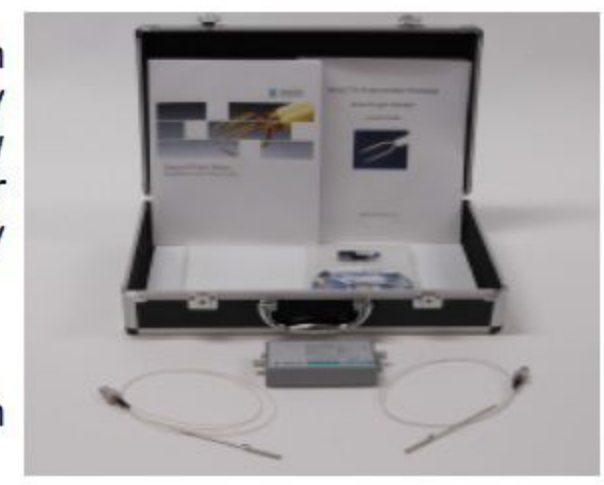
- Measures velocities from a few cm/s to supersonic.
- High temporal resolution: fluctuations up to several hundred kHz.
- High spatial resolution: eddies down to 1 mm or less.
- Measures all three velocity components simultaneously.
- Provides instantaneous velocity information.

Hot – Wire Probe array measuring on a model of a helicopter landing pad on a ship

Types of CTA Systems:

1) Mini CTA

The MiniCTA system is a versatile anemometer that can be used with Dantec Dynamics wire and fiber-film probes in airflows. It is especially suitable for moderate speed airflow & low speed water flow measurements. Dantec Dynamics Mini CTA system can be used for studies of simple flows with moderate velocities and limited frequency content.



Applications include:

Measurement of velocity and turbulence in low-speed airflows with wire and fiber-film probes.
Education, e.g. demonstration of classical fluid dynamics phenomena.
Multipoint measurements in e.g. studies of coherent structures.
Field measurements.

2) Multichannel CTA System:

The Multichannel CTA gives an efficient and affordable solution for mapping of velocity and turbulence fields in most air flows. Up to 16 points can be monitored simultaneously, reducing or eliminating probe traverse. This means reduced experimental time and lower costs.It consists of an instrument frame with 8 built-in MiniCTA anemometer boards whose outputs connect directly to E-series A/D boards from National Instruments.

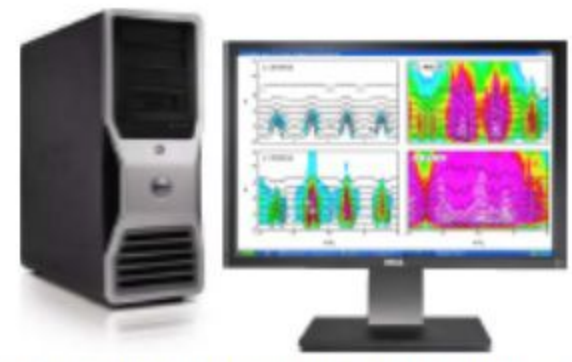
Two frames can be combined to cover up to 16 measuring points simultaneously. The Multichannel CTA system can be used with all Dantec Dynamics standard miniature Hot-wire probes without the need for any internal adjustments performed by the user. The decade resistance and the CTA servo-loop have been optimized for this probe type at the factory, and they can thus be switched into Operate without further notice.

Multichannel CTA with Reference Velocity Transducer

3) Streamline Research CTA system:

The Streamline system gives a complete concept of hot-wire anemometry for efficient, reliable and cost-effective flow analysis in air (or other gases) and liquids. Streamline is computer-controlled and is integrated with a fully automatic probe calibrator. The system is designed for high-precision measurements and is Dantec Dynamics' top-of-the-line CTA anemometer.

A temperature probe monitors the flow temperature.



Streamline Basic system computer from an international manufacturer

Hot-wire and hot-film probes for Constant Temperature Anemometry (CTA):

The CTA anemometer is today's most widely used instrument for measurement and analysis of the micro-structures in turbulent gas and liquid flows. The CTA probe program comprises a variety of probe types and probe configurations. There is a probe for almost any measurement situation.

The main probe features are:

- Fast response. Fluctuations up to 100 kHz or more can be measured.
- High spatial resolution. Eddies down to some tenths of a mm can be resolved.
- High dynamic range. Velocities from a few cm/s up to several hundred m/s can be measured with almost constant sensitivity.
- Continuous signal.
- Small disturbance of the flow, due to small sensor sizes

Probes for Hot Wire Anemometry.

Josts
Since 1907

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