aerosensor

*aero***sensor** Fluid Dynamic Probes

- 20+ years' experience in F1 Aerodynamics
- High accuracy probes for range of functions
- Additive manufacturing – individual probes, complex arrays, bespoke geometries…
- Design services available, including FE
- Range of materials: stainless steel, titanium, Inconel…
- Fast, responsive service –standard probes can be delivered in as little as 2 weeks

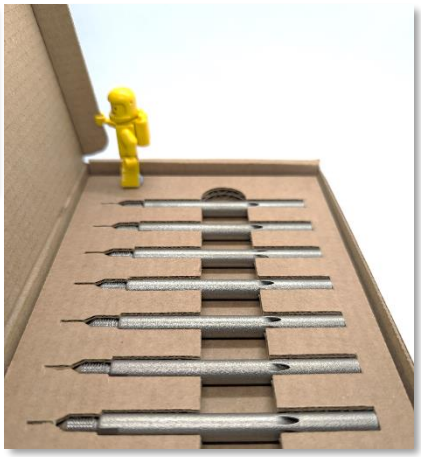
*aero***sensor** Kiel Probes

- Accurate total pressure at a range of angles
- Additive manufacturing = bespoke geometries
- Modular, removeable, re-usable
- Range of materials

Kiel probes are designed to measure the total pressure with insensitivity to wind yaw and pitch angle. Used in a wide range of applications, they have become particularly popular used in arrays known as “rakes” in Formula One.

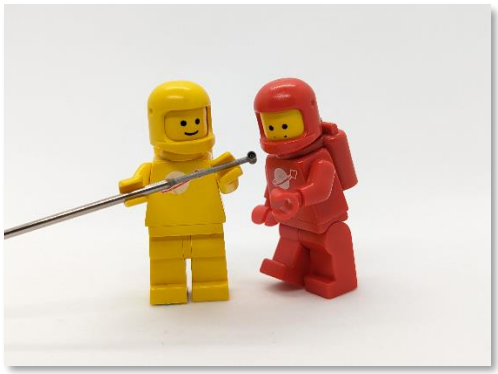
We can provide anything from individual probes, large quantities of removeable Kiels for an array, or a fully designed rake which combines other sensors such as thermocouples.

*aero***sensor** Kiel Probe Key Facts	
Measured parameters	Total pressure
Dimensions	Minimum diameter 1.6mm
Speed ranges	Up to M1.0
Yaw / pitch angle range	±45°
Temperature range	Up to 1000°C
Material options	Stainless Steel, titanium, Inconel
Customizable options	Probe size Mountings & connectors (incl. removeable / reuseable) Stem shape / length / head alignment
Bespoke design services available	Arrays of multiple Kiel probes Combination with other probes and sensors



*aero***sensor** Micro-Kiel Probes

- Accurate total pressure measurement, minimum intrusion
- Probe head size as small as 1.6mm
- Additive manufacturing = bespoke geometries
- Range of materials



Through our ground-breaking work on additive manufacturing methods, we have developed techniques that allow us to build our tiny Micro-Kiel probes with a head diameter as small as 1.6mm. This allows accurate measurement of flows with minimal intrusion.

Due to their small size, these probes are one-piece with integrated probe head and stem.

*aero***sensor** Micro-Kiel Probe Key Facts	
Measured parameters	Total pressure
Dimensions	Minimum diameter 1.6mm
Speed ranges	Up to M1.0
Yaw / pitch angle range	±45°
Temperature range	Up to 1000°C
Material options	Stainless Steel, titanium, Inconel
Customizable options	Probe size Probe head / stem alignment (0° / 90°) Stem shape & length Mountings & connectors
Bespoke design services available	Arrays of multiple Kiel probes Combination with other probes and sensors

*aero***sensor** Multi-hole Probes

- Measure full 3D flow vector
- Probe diameter down to 6mm
- Additive manufacturing = bespoke geometries
- Range of materials
- Calibration data for each probe

Multi-hole probes allow measurement of the full 3D flow velocity vector. We have developed sintered solutions that both reduce the probe head size and increase the operating envelope. We can produce a 5 hole probe with a diameter as small as 6mm.

*aero***sensor** Multi-hole Probe Key Facts	
Measured parameters	Total, dynamic and static pressure, 3D flow vector
Dimensions	Minimum diameter 6mm
Speed range (in air)	Up to 68 m/s
Yaw / pitch angle range	3-hole +/-35° yaw only 4-hole +/-35° yaw / pitch 5-hole +/-45° yaw / pitch
Temperature range	Up to 1000°C
Material options	Stainless Steel, titanium, Inconel
Customizable options	3, 4, 5 hole, optional static ring Head geometry – spherical, conical, faceted Probe head diameter Stem shape & length Base mountings & connectors
Bespoke design services available	Arrays of multiple probes Combination with other probes and sensors

aerosensor Yaw Pitots

- Patented design for highly accurate measurement
- Head diameter down to 9mm
- Additive manufacturing = bespoke geometries
- Range of materials
- Calibration data for each probe

Our patented designs measure wind speed, pitch and yaw angle with improved stability over traditional multi-hole probes, and directly measure total pressure which can be used as a reference for scanners.

aerosensor Yaw Pitot Key Facts	
Measured parameters	Total, dynamic and static pressure, yaw and pitch Direct total pressure measurement (for use as reference)
Dimensions	Head diameter 9mm
Speed range (in air)	Up to 68 m/s
Yaw / pitch angle range	±30°
Temperature range	Up to 1000°C
Material options	Stainless Steel, titanium, Inconel
Customizable options	Probe head diameter Stem shape & length Base mountings & connectors
Bespoke design services available	Arrays of multiple probes Combination with other probes and sensors

*aero***sensor** Bespoke Probe Arrays

- Arrays of probes and other sensors to measure and visualise complex flows
- Completely bespoke to suit your measurement needs
- Range of materials
- Design services available

We can design, manufacture and calibrate complex multi-probe arrays and rakes, combining our probes with other sensors such as thermocouples. Tap into our expertise - contact us to discuss your requirements.

Make an Enquiry

Can we help you with a probe or rake design? Contact us at sales@aerosensor.tech (or via our website www.aerosensor.tech). Please include as much of the information below as possible. Even if your requirements aren't covered here, please ask us anyway! Feel free to send a sketch.

High level requirements	
Category	**Options / info**
Application	Motorsport, aerospace, turbomachinery, academia …etc…
Product type	Kiel 3-hole probe (with or without static ring) 4-hole probe (with or without static ring) 5-hole probe (with or without static ring) Yaw probe Array / rake
Fluid	Air / water / other
Speed range	Kiels max M1.0 Other probes max 68m/s in air
Pressure range	
Temperature range	Max 1000°C
Material preferences	Stainless Steel, titanium, Inconel, other…
Quantity	
Desired lead time	
Shape & Dimensions (feel free to include a sketch)	
Probe head diameter	Kiel minimum 1.6mm 3H / 4H / 5H minimum 6mm Yaw pitot minimum 9mm
Stem / mounting details	Stem shape / head alignment Stem length Base / mounting details …etc…
Pressure connector details	Tubulation diameter / length