Shear sensor | SST-ISW

max. depth 2,000 m.

Sea & Sun Technology

The current shear sensor is used to measure the velocity microstructure. An axially symmetric airfoil protrudes from a conical metal protective cap. The airfoil is connected to a piezoceramic beam inside the cap. The average velocity, due to the profiling speed of the probe, is aligned with the axis of the airfoil. While the probe is insensitive to axial forces, the cross-flow (transverse) components of the turbulent velocity produce a lift force on the airfoil. The piezoceramic beam senses the lift force. The output of the piezoceramic element is a voltage proportional to the instantaneous cross-flow component of the velocity field. During in-situ operations, the interior of the cap is filled with water. Side holes at the top of the cap prevent air from being trapped inside the cap.

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Pressure resistance	2,000 dbar
Operating temperature	-3 …70°C
Sensitivity	in the order of 1 x 10^{-4} (Vms^2)/kg
Response time	4 ms at 1 m/s flow
Principle	Piezo element
Airfoil dimensions (tip)	3 mm Ø x 4 mm long (PNS3), 6 mm Ø x 10 mm long (PNS6)
Used for	MSS Probes

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