

CURRENT & FLOW

Products and Services Portfolio



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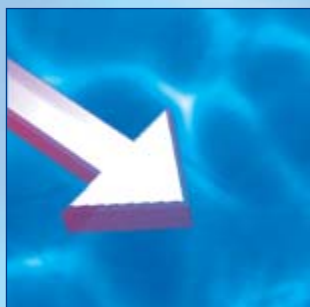
Measuring Currents - from Mountain Top to Ocean Bottom

Valeport was begun in 1969, making instruments for measuring the speed of the water in London's River Thames. Since then our product range has grown, but our expertise in current flow measurement remains.

Today, we offer several types of instrument, using either the traditional impeller mechanism, or the high accuracy electromagnetic type. Whichever type of sensor is used, we offer configurations suitable for use in a wide variety of applications, from hand held measurements in the smallest streams, through modelling experiments in the laboratory, to self-contained instruments for navigable rivers, estuaries, ROVs and the deep ocean.

Our impeller instruments use the simple premise of measuring the speed of rotation of a helix in the water. PTFE bearings eliminate the need for specialised lubricants and the magnetic contact closure minimises the moving parts in the system - this also allows the sensor itself to be remote from the measuring electronics (ideal in deep water applications).

The electromagnetic sensors use the Faraday Principle to measure the water speed. As a conductor (water) moves through an electromagnetic field (generated by the sensor), it generates a voltage that is measured by the sensor electrodes. Modern day signal conditioning electronics and filtering techniques allow highly accurate measurements to be made, and there is a choice of sensor shapes and sizes to suit the application. The solid state sensors and standard titanium / polyurethane construction provide excellent corrosion resistance, and depth ratings up to 5000m.



FAQ's

How do you calibrate the impellers?

For general purposes, we use a group calibration method. This means that samples of the impeller are taken to an independent testing facility, and all calibrated. An equation is then generated which fits all of these impellers to within the stated specification. However, since all the impellers come from the same mould, and use low-friction bearings on a precision machined shaft, we can state that any freely-running impeller will also be within this specification. The limits of the specification are chosen to allow the maximum margin for error; this method has been used for well over 30 years, and spot checks have so far failed to find an intact, free running impeller that does not fall within the specification. Of course, a more accurate specific calibration for any individual impeller can also be arranged.

What about the electromagnetic (EM) sensors?

There are two parts to this calibration - the hydrodynamic performance, and the electronics performance. The hydrodynamic performance is a function of the sensor shape, and again this is ascertained at an independent facility for each sensor type. The specific electronics calibration is performed in our own automated tow-tank facility.

What's the difference between current and flow?

Technically, flow is the speed of the water (in knots, m/s or similar). This is sometimes confused with flow-rate, which is a volumetric measurement (litres/second, gallons/hour). Current information includes a direction of flow, as well as the water speed. We therefore use the term flow meter to describe an instrument that gives a measurement of water speed, and current meter to describe an instrument that also gives the direction in which water is flowing.

What is the convention for current direction?

Confusingly, it is international convention that current data is given with the direction towards which the current is flowing, i.e. a Northerly current is flowing towards the North. This differs from both wind and wave data, which are given as the direction from which they are coming, i.e. a Northerly wind (or wave) is coming from the North.



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