

Dynamic calibration of pressure sensors using shock tube

5 August 2014

Scientists at NPL's Dynamic Pressure Sensor Facility have published a paper, Towards a shock tube method for the dynamic calibration of pressure sensors, in *Philosophical Transactions of the Royal Society A*.

The paper outlines the development of a plastic [shock tube](#), working at 14 times the pressure of the atmosphere (1.4 MPa). The tube is made from PVC-U tubing and provides a low-cost, light and easily modifiable basis for research into the dynamic characterisation of [pressure sensors](#). It provides pressure readings within a nanosecond-exceptionally quick for a mechanical process.

This will assist with research into improved car and aircraft engines that require [accurate measurements](#) of rapidly changing pressures. At present, the pressure sensors used are calibrated statically but [shock waves](#) can provide a known, rapid pressure step. There is a need to ensure that these dynamic measurements are giving true real-time pressure values, as they are essential for optimising the industrial process being controlled - saving money and reducing environmental impact. Metal shock tubes are used in the laboratory to generate shock waves but they can be expensive, unwieldy and slow to modify.

More information: Stephen Downes, Andy Knott, and Ian Robinson. "Towards a shock tube method for the dynamic calibration of pressure sensors." *Phil. Trans. R. Soc. A* August 28, 2014 372 2023 20130299; [DOI: 10.1098/rsta.2013.0299](https://doi.org/10.1098/rsta.2013.0299)
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