



## **New Pencil Probes tested in the Shock Tube**

**Until recently, laboratories throughout the world were reliant on just one commercial manufacturer of pencil probes. It was only at the end of last year that a competitor launched its own sensors, thus providing an alternative source for the first time in years.**

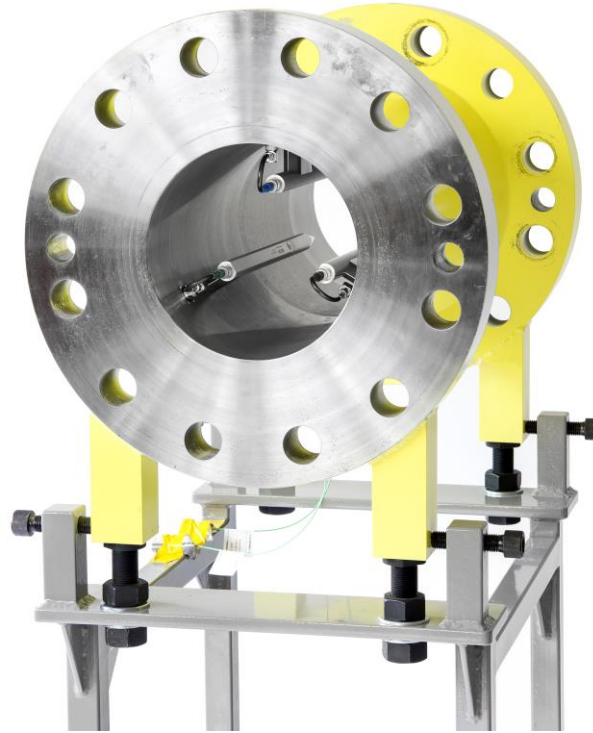
We have all experienced shock or pressure waves: the supersonic boom of an aircraft or noise from a firing range both belong to this category. It is shock waves which are also mainly responsible for the destructive effect of explosions, and they are thus of interest in the context of personal protection and armoured vehicles. Conducting practical tests to measure shock waves reliably requires spending a huge amount of preparatory time and effort adjusting and calibrating the pressure sensors. If this is not done carefully, the measurements will be imprecise and, as a result, of no use.

In order to test whether the new products could match the existing ones, armasuisse S+T and the Spiez Laboratory jointly conducted a series of comparison trials in the research shock tube in Spiez.

Five pencil probes produced by each manufacturer were arranged mirror-symmetrically in the shock tube in varying combinations and with different protective coatings and subjected to some 150 tests with shock waves at different peak pressures. In every case, an unbiased third opinion was provided by two interior ballistic pressure sensors, which were also installed in the shock tube.

Analysis of the entire series of experiments established that both manufacturers produce pencil probes which are capable of accurately measuring the pressure profiles of shock waves with an exceptional level of reproducibility; however, there are still major but rectifiable differences in their temperature sensitivity.

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Picture: A section of the shock tube used with three pressure lances fitted and the two reference sensors let into the wall of the tube.