

NUMERICAL MODELING OF THE CALIBRATION RESULTS OF A NEWLY DEVELOPED PRESSURE GAUGE BASED ON CARBON RESISTORS

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A new, cheap pressure gauge has been designed. This technology is especially useful in the vicinity of detonations, where destruction is possible or likely. The sensing part of the gauge is a carbon resistor. Carbon resistors are pressure sensitive, their resistance decreases with increasing pressure. In order to use this principle a gauge has to be designed with proper housing and the right choice of embedding materials. Especially important is the proper calibration of this gauge. This has been achieved in an especially deigned test stand, which essentially consists of a detonatively driven shock tube. At the end of this tube a set up of carbon resistor gauges and commercially available reference gauges is subjected to the generated plane shock front and the subsequent pressure decay.

Due to the clear and exact results of this measurements a numerical model has been generated using AUTODYN 2D. A discussion about this model and its performance is summed up in the paper.