Pressure Measurement and Traceability at NIS- Egypt

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Abstract: Pressure sensors, transmitters and transducers are widely used for measuring and controlling the pressure. Tracing of measurement of such pressure sensing instrumentation is very important in many industrial applications. Calibrations of pressure instruments with acceptable uncertainty tracing to the SI units are required. This study aims to study the propagation of uncertainty from SI units through primary standard piston cylinder assembly (PCA) up to 500 MPa. The hierarchy of pressure measurements at NIS is based on using large effective area PCA in defining the pressure of 1 MPa. Primary standard PCA characterization and evaluation are presented then transferring the obtained results to other pressure traceability level is described. Calculation and propagation of uncertainty starting from primary standard to digital pressure gauges, digital pressure calibrators, pressure sensors and pressure transducers were investigated.

Keywords: Traceability; Primary; Pressure sensors; Pressure balance