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Study development and characterization of micro torque transducer applied on screw elements analysis

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The measurement of torque in threaded elements currently is an important step in fixing of components, because knowing the torque applied can ensure the life of this component, ensuring that the same will not be failed for lack of grip or excess. Micro torque measurement to the control becomes more critical, Yes because working with very low torques, until 1 N.m, It is necessary that the instrument has greater sensitivity to be able to measure with accuracy required. The development of a micro torque measurement system, where he studied and developed a micro torque transducer, Since the design of the shaft and the design of the concentration of efforts, using the help of the software of computer simulation by finite element analysis Ansys Academic, to ensure that this work on elastic and with a uniform distribution of forces in the specified region. After the shaft machining, was installed as sensor element four precision strain gage, to form a wheatstone bridge, where converted to mechanical tension due to the torque generated in electrical signal. Being possible to correlate the mechanical deformation in ?? with the electrical signal generated in mV/V. With this micro torque transducer mounted the metrological characterization, defined its properties and measurement accuracy. From the statistical evaluation of the results obtained during the tests, it was possible to quantify the uncertainty of measurement for the transducer, that can be used in further work carried out in this equipment.