

PRESS RELEASE AS OF 2015-10-22

Bound and determined to turn into Europe's most precise calibration laboratory

In modern metrology the Josephson-Effect describes the electrophysical phenomenon known as tunnel current between supraconductors. Josephson contacts are extremely accurate frequency-to-voltage converter and referred to as means to describe voltage in a most precise way. With respect to the latter Supracon AG, PTB – Physikalisch Technische Bundesanstalt and esz AG calibration & metrology jointly develop the World's first industrial AC/DC-Joesephson-Quantum-Voltmeter.

End of September 2015 the partners performed a bilateral comparison of two identical Josephson-Standards at esz headquarters in Eichenau, Germany. The main objective was to prove and confirm AC/DC measurement uncertainties in order to finalize a pending DAkkS (German Accrediation Body) accreditation.

The results are impressive: Supracon's and esz AG's Josephson-System realized a DC-mode conformity of 4,4 nV ($4,4 \cdot 10^{-10}$) and a few millionth in AC-Mode. The accuracy as seen exceeds capabilities of common techniques and working standards. Typically, the above bilateral comparison is performed among National Institutes and without a doubt considered an absolute breakthrough for an industrial calibration laboratory. esz AG successfully prove to operate at eye level with National Institutes such as PTB – a quantum leap towards Europe's most accurate and precise calibration laboratory.



Josephson-Quantum-Voltmeter at esz

Consequently, the follow-up project is the development of the World's first working Josephson-Quantum-Calibrator including resistance and electric current. Yet, again a joint research project among Supracon, PTB and esz, set to come to a successful end in late 2016.

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esz AG calibration & metrology are one of the leading metrology laboratories in Europe. Core competencies include calibration, repair, asset management and logistical service in the field of industrial measurement technology.

Customized solutions, a great performance portfolio as well as cost transparency highlight esz AG calibration & metrology. World leading and global operating companies count on the reliability of this metrology laboratory with head-quarters in Eichenau nearby Munich, Germany for over 35 years.