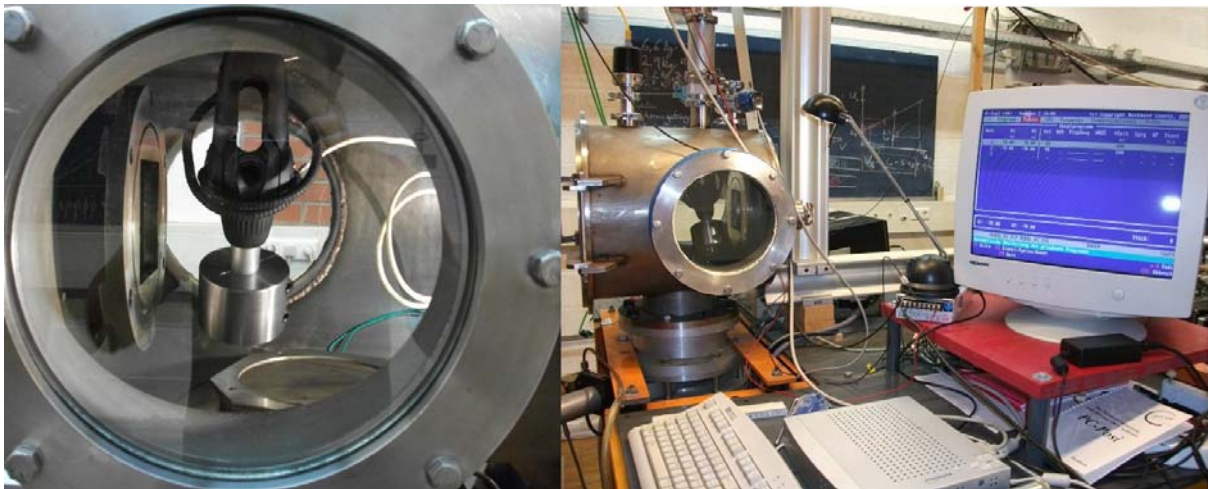


igus® robolink Function test in fine vacuum

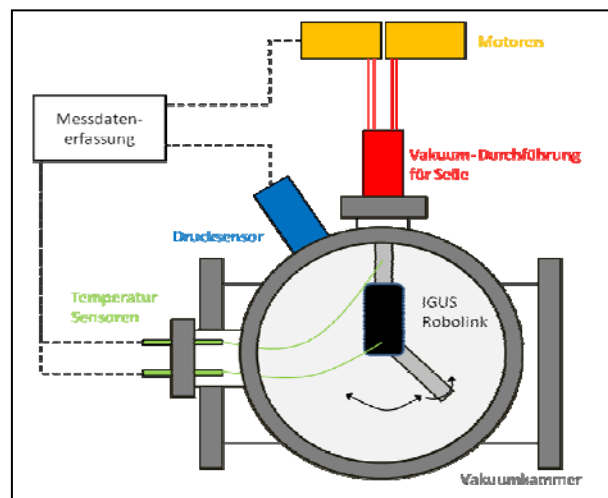


Test set-up

Robolink, drive with step motor Nanotec (holding torque 1.6 Nm), PC Posi controller from the company Lewetz (program: Robol_01); Step motor cards: Leadshine ND556; longitudinal movement by trapezoidal spindle 12x3 and Zedex100 dry gliding nut; path of the trapezoidal nuts (X/Y): 70 mm; speed 15 mm/s; vacuum feedthrough: (4x) Silver steel round bar conducted in sintered bronze bearings, sealing via (4x) slightly pre-tensioned o-rings, (leakage $\sim 2.7e^{-2}$ mbar l/s);
 - Vacuum chamber 200 l volume; Pirani pressure sensor / cold cathode (Penningvac PTR90), measurement recording NI-cRIO 9074 with card 9201; measuring resistance 0.56 Ω

Test procedure and results

Test 1: Evacuated chamber with no feedthrough led to the outgassing rate of the IGUS arm of $6.87e^{-2}$ mbar l/s.
 Test 2: Fine vacuum of $2e^{-2}$ mbar, 2 Nm torque load; operation for 12 hours. Voltage and current slightly decrease in the course of the 12-hour test.



Messdatenerfassung - Measurement data logging, Motoren - Motors, Drucksensor - Pressure sensor, Vakuum-Durchführung - Vacuum feedthrough, Temperatursensoren - Temperature sensor, IGUS robolink - IGUS robolink, Vakuumkammer - Vacuum chamber

In the aforementioned configuration, the igus® robolink arm can be used, according to our knowledge, under fine vacuum. Vacuum of higher quality can only be achieved by changing the material (e.g. aluminum, PEEK) and by improving the feedthrough.

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