



KinematicsPerfect

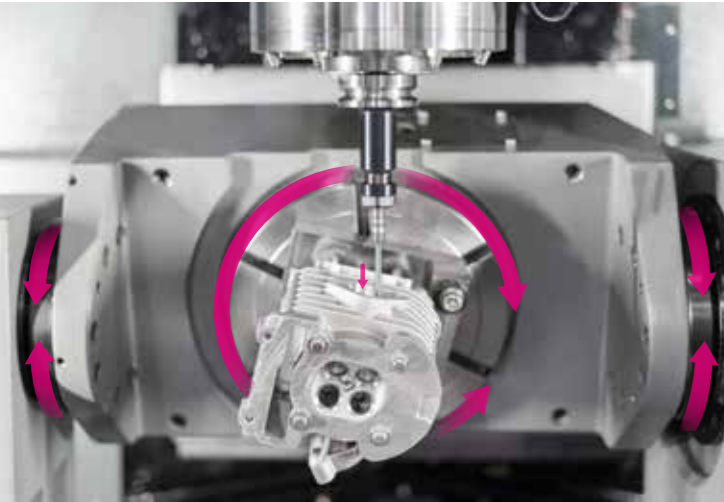
SOFTWARE FOR MAXIMUM MACHINE ACCURACY

BLUM
focus on productivity



01 DETECTING AND OPTIMISING KINEMATIC ERRORS

GETTING A GRIP ON ROTARY AXES



On multi-axis machine tools, the accuracy of the rotary axes is critical – ultimately, they are a decisive factor in the accuracy of a machine. Problems caused by collisions, wear or an incorrectly configured machine can negatively influence the cutting outcome. The KinematicsPerfect software is an effective tool for automatically measuring the kinematic accuracy of multi-axis machine tools, identifying influences and correcting inaccuracies.

02 FEATURES

CHECKS, DOCUMENTATION AND CORRECTIONS

KinematicsPerfect gives you a fully-developed software solution for measuring the kinematics of 4-axis and 5-axis machine tools. The NC-based measuring cycles enable precise checks, documentation and corrections of rotary axes on rotary and swivelling tables.

- QUICKLY CHECKS ALIGNMENT AND POSITIONING ACCURACY BASED ON MEASUREMENTS USING A CALIBRATION SPHERE
- DETECTS MECHANICAL GEOMETRICAL DEVIATIONS OF THE ROTARY AXES AS WELL AS BEARING DAMAGE
- IDENTIFIES MACHINE PROBLEMS CAUSED BY INCORRECT MACHINE SETTINGS, COLLISIONS OR WEAR
- VERIFIES THE KINEMATICS WITH/WITHOUT AUTOMATIC CORRECTION
- PERFORMS MEASUREMENTS DURING COMMISSIONING, SERVICE CALLS OR SERIES PRODUCTION BASED ON A THOROUGH INSPECTION OF THE MACHINE STATUS



03 PROCESS

STEP BY STEP TOWARDS GREATER PRECISION

The detection of kinematic errors in the rotary axes involves recording measuring points at a calibration sphere mounted on the machine table. With the aid of the supplied measuring cycles, previously defined points are approached from different probing directions and the spatial deviation calculated. Based on these values, the kinematic parameter tables can be automatically updated, which compensates the spatial error that occurs during swivelling movements.



Preparation of the machine including mounting the calibration sphere

Measurement procedure on the calibration sphere

Automatic correction of the machine kinematics or analysis of values on the PC

04 ADVANTAGES

MAXIMUM MACHINE PERFORMANCE

By perfecting machine accuracy, you stand to gain from a whole range of benefits for your production processes.

- PREVENT MACHINING ERRORS CAUSED BY THE SYSTEM BY ADAPTING THE CENTRE OF ROTATION OF THE ROTARY AXES
- CONTINUOUS AND LONG-TERM CHECKING AND LOGGING OF MACHINE KINEMATICS
- MAXIMUM MACHINING QUALITY DURING 5-AXIS MACHINING WITH INTERPOLATION
- PERMANENT GUARANTEE OF MACHINING QUALITY
- COST SAVINGS THANKS TO THE ABILITY TO PERFORM IN-HOUSE MEASUREMENTS AND CORRECTIONS
- PREVENT ERRORS CAUSED BY MANUAL MEASUREMENTS OF MACHINE ACCURACY
- VERIFY CRITICAL MACHINE ALIGNMENTS WITH THE HELP OF DEFINABLE ANGLE VALUES
- RECEIVE AUTOMATIC ERROR NOTIFICATIONS OF MEASURING VALUES OUTSIDE OF THE TOLERANCE
- RAPID REACTION AND CHECKING OF MACHINE STATUS IN THE EVENT OF A MACHINE CRASH

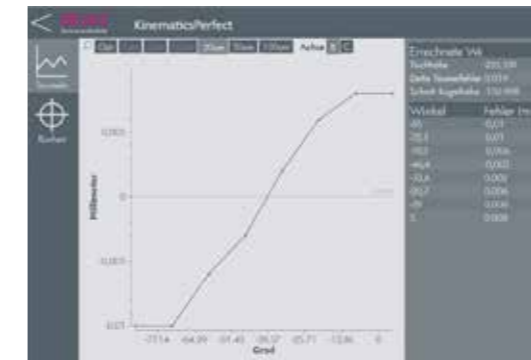
05 PC-BASED EVALUATION

ANALYSIS, VISUALISATION AND DOCUMENTATION

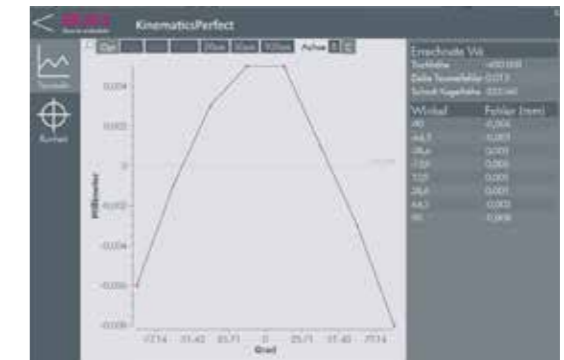
The KinematicsPerfect PC software provides enhanced options for analysing measuring data. It provides a simple way of evaluating the performance of the machine kinematics.

- ENHANCED ANALYSIS OPTIONS FOR OPTIMISING THE MACHINE KINEMATICS, DETECTING BEARING DAMAGE OR MECHANICAL GEOMETRICAL DEVIATIONS OF THE ROTARY AXES
- INTUITIVE, GRAPHIC DISPLAY OF MEASURING RESULTS ACROSS ALL AXES
- DISPLAYS ROUNDNESS DEVIATIONS ON A TABLE OR ROTARY AXIS
- EVALUATES CIRCULAR DEVIATION, DISPLAYS CENTRE DRIFT AND INDIVIDUAL MEASUREMENT RESULTS

EXAMPLES



Table/rotary axis: graphical representation and evaluation of B-axis



Table/rotary axis: graphical representation and evaluation of C-axis



Displays evaluation of circular deviation, centre drift and individual measurements of the B-axis



Displays evaluation of circular deviation, centre drift and individual measurements of the C-axis

