FormControl X

MEASURING AND AUTOMATION SOFTWARE

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focus on productivity

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AUTOMATION SOFTWARE

With FormControl X, creating complex measuring programmes is self-explanatory, as is automation of machining processes by implementing closed control loops. Measuring results can also be utilised for Industry 4.0 applications. This accelerates manufacturing processes and makes them more transparent, and the quality and manufacturing costs of the finished workpieces are optimised.

01 THE SOFTWARE
MODERN & INTUITIVE

FormControl X is a user-friendly measurement software for machining centres for automated quality control of workpieces in individual and series production. It enables maximum productivity and reduces scrap through monitoring measurements between and after machining, statistical process control based on the recorded measured values and reworking in the original clamping set-up.

MORE MANUFACTURING RELIABILITY AND PRODUCTIVITY!

– PC-based solution with modern client-server architecture

– Automation through statistical process control (SPC)

– Automatic alignment of the workpiece – perfect for automated series production

– Simple creation of measuring programmes via context wizard

– Automated measurement and evaluation of free-form surfaces and standard geometric elements

– Display of measurement results in a web browser, regardless of end device

– Intelligent measurement path optimisation for shortest measurement times

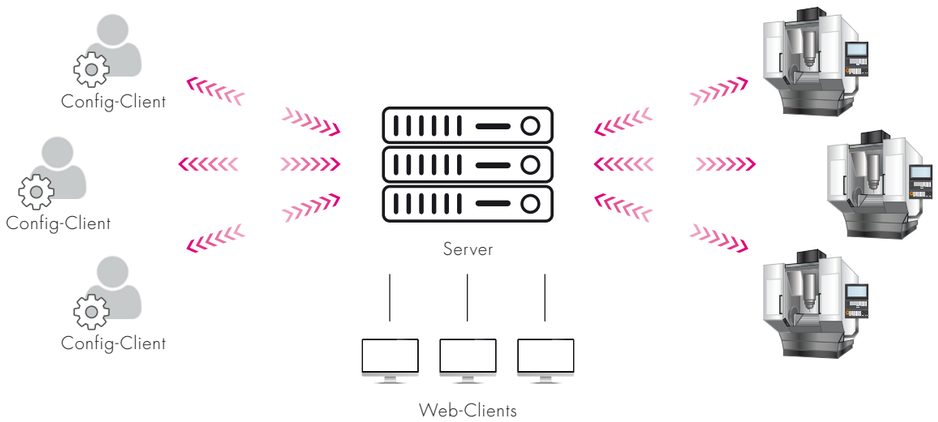
– Integrated collision control for preventing damage

– Output of measurement protocols as a document as well as in CSV and JSON format

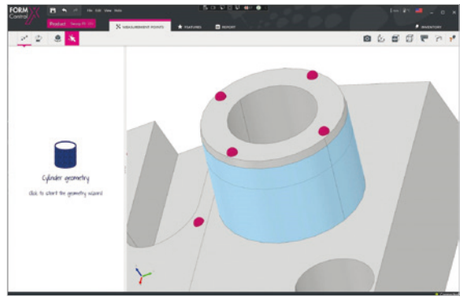
– Logging and documentation of final quality

CLIENT-SERVER ARCHITECTURE

FormControl X works on the basis of a modern client-server architecture. The measurement processes (jobs) are defined via the config client on the PC and transferred from the server to the machines. For evaluation, the recorded measured values are retrieved from the server and visualised via the web browsers of any end devices.

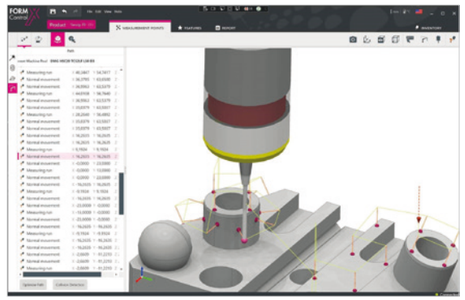


02 FEATURES & FUNCTIONS
SELF-EXPLANATORY & TIME-SAVING



USER-FRIENDLY JOB CREATION

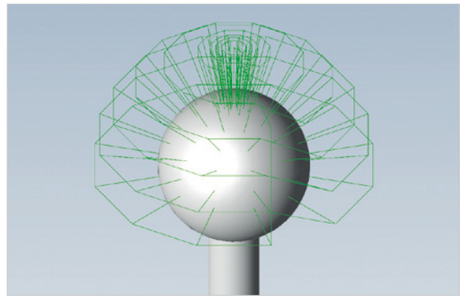
FormControl X is very easy and intuitive. Even complex projects can be configured and executed quickly. Jobs are created conveniently at the click of a mouse, and the context wizard in the CAD model automatically recognises geometry areas and suggests typical measuring points, evaluations or standard tolerances, and thanks to the modern client-server architecture of the software, all data of the defined jobs and measuring devices can be used across different machines. The intelligent measuring path optimisation offers great added value. FormControl X calculates the fastest possible measuring sequence for each job, meaning that the measuring time can be kept as short as possible.



MEASUREMENT AND EVALUATION OF FREE-FORM SURFACES AND STANDARD GEOMETRIC ELEMENTS

In the production of free-form surfaces, it is important that the actual workpiece contours fit the values stored in the CAD model as exactly as possible. With the help of FormControl X, deviations from the ideal shape are detected by measuring various points (programmed/actual value comparison).

For workpieces with standard geometric elements, FormControl X enables flexible measurement of the most important parameters. The integrated evaluation functions can be used to display distances and angles of geometric elements to each other or element-specific variables. Evaluation according to shape and position tolerances is also quick and easy.



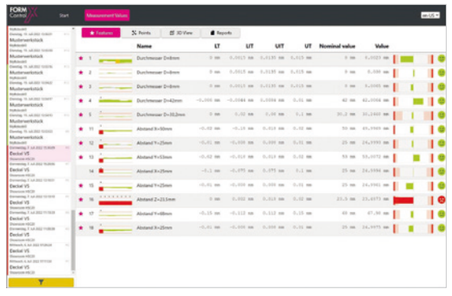
REDUCTION OF IDLE TIMES – ONLY ONE CALIBRATION NEEDED

FormControl X uses an intelligent mathematical routine that makes calibration steps during the measurement processes completely unnecessary. So calibration is only necessary when a new touch probe is used or after replacement of a stylus. Calibration compensates for the measuring behaviour of the touch probe in space, as well as the influences of the machine and control on the measurement.

Production monitoring made easy!

03 STATISTICAL PROCESS CONTROL (SPC)
RELIABLE PROCESS AUTOMATION

The foundation of intelligent automation solutions is process data that is evaluated live or very quickly and serves as a control variable for optimising the process. FormControl X is designed precisely for this purpose and adjusts based on the recorded measurement data so that the machining process always remains within the predefined limits.



– Automation of processes through statistical process control (SPC)

– Definition of warning and intervention limits

– Measurement results serve as correction value and basis for optimisation

– Alarm output to the operator or automatic rejection of NOK parts

– Automatic compensation of tool wear

– Assignment of measurement results and component is done by means of a unique ID

– Implementation of low-manpower, highly productive machining processes

– Continuous documentation of final quality

ALIGNMENT FUNCTION 3.0

After the workpiece is clamped, the alignment function allows creation of a reference between the physical workpiece and the CAD coordinate system. To do this, the position of the workpiece does not need to be changed manually, but instead FormControl X generates a new, modified workpiece coordinate system.

– Automatic adaptation of the reference points of the machining program to the actual position of the workpiece

– Enables automated machining of parts with small allowances

– Simple re-setting through automatic correction of the workpiece position in up to 5 machine axes

– Axis locking for application-specific alignment

– Fast rework due to elimination of time-consuming, manual alignment

– No scrap resulting from the machining of badly aligned workpieces

04 REPORTING & EVALUATION
EVERYTHING AT A GLANCE

Measurement data, which in many other solutions ends in a report of a single machining operation, can be used in FormControl X to evaluate entire series of machining operations. The recorded data not only helps you optimise the machining process, but also supports you, for instance, in drawing conclusions about the machining quality of different machines as well as the tools used.

– Graphical processing of measurement results for visualisation in a web browser

– Creation and evaluation of data series over a long period of time

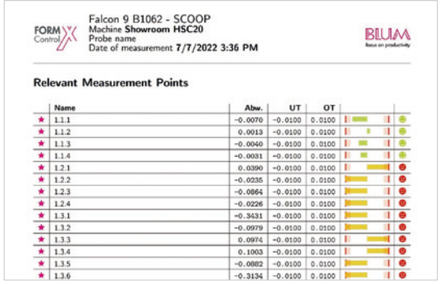
– Output of measurement protocols as a document as well as in CSV and JSON format

– Display of measurement data with deviations from programmed/actual values

– Colour coding of deviations from tolerance limits

– Symbolic representation of the measured value status for easy visualisation of over-/undersized dimensions

– Individual adaptation of the measurement protocols



FORM Control X

Falcon 9 B1062 - SCOOP
Machine **Showroom HSC20**
Probe name
Date of measurement **7/7/2022 3:36 PM**

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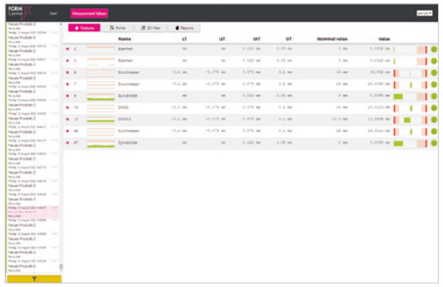
Relevant Measurement Points

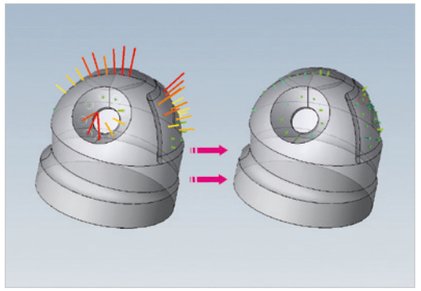
	Name	Abw.	UT	OT
★	1.1.1	-0.0070	-0.0100	0.0100
★	1.1.2	0.0013	-0.0100	0.0100
★	1.1.3	-0.0040	-0.0100	0.0100
★	1.1.4	-0.0031	-0.0100	0.0100
★	1.2.1	0.0390	-0.0100	0.0100
★	1.2.2	-0.0035	-0.0100	0.0100
★	1.2.3	-0.0064	-0.0100	0.0100
★	1.2.4	-0.0226	-0.0100	0.0100
★	1.3.1	-0.3431	-0.0100	0.0100
★	1.3.2	-0.0979	-0.0100	0.0100
★	1.3.3	0.0974	-0.0100	0.0100
★	1.3.4	0.1003	-0.0100	0.0100
★	1.3.5	-0.0882	-0.0100	0.0100
★	1.3.6	-0.3134	-0.0100	0.0100

Output of measurement protocols



Visualisation of the measurement results in a browser

BEST-FIT



FormControl Best-Fit mathematically orients the workpiece in space in such a way that the measuring points match the CAD model as exactly as possible. Thanks to the individualised weighting of the measuring points, systematic measurement errors are compensated.

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