TOX® Process monitoring

Making quality measurable



Process data always in view



Process monitoring in production is essential to ensure the highest quality and precision.

The TOX® Process Monitoring offers you comprehensive options for measuring, analysing and storing your production processes. Now you can reliably store data and seamlessly track component information. This is particularly important for the manufacture of high-quality products in large quantities.

Using TOX® Process Monitoring can optimally fulfill your quality requirements and efficiently monitor your production facilities. Put your trust in TOX® for reliable monitoring and reproducible precision!

Advantages:

- Comprehensive process data capture
- Real-time quality assurance
- Seamless traceability
- Data analysis and process optimization
- Easy integration

ProcessMonitor

Precise process monitoring requires various components that work together to ensure highly accurate data recording from the relevant sensors and their monitoring.









Pressing Monitors EPW

The TOX® Pressing Monitors provide precise process monitoring, in which the exact functional relationships between force and displacement are verified.





Clinching Monitor CEP

The TOX® Clinching Monitor offers precise process monitoring, in which the force values of several clinching tools can be displayed.

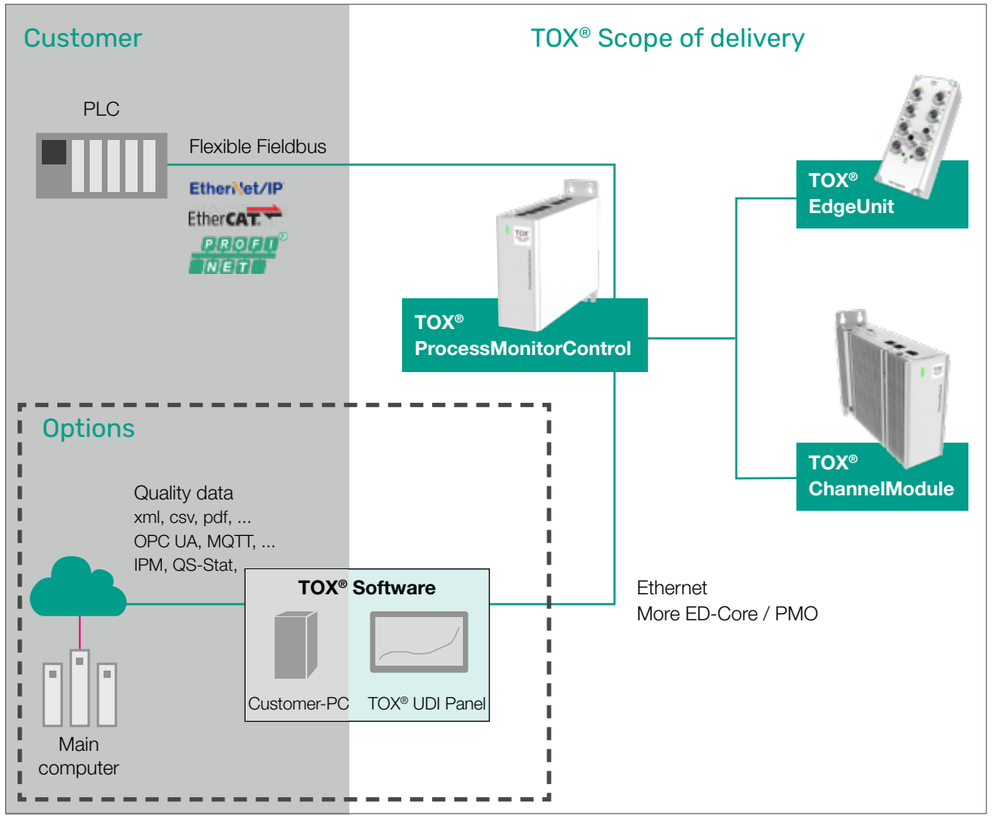


TOX® ProcessMonitor PMO
The system for more transparency and control.

Process monitoring is a crucial component of modern production processes. It makes it possible to precisely monitor and control all steps in production. By using advanced process monitoring software, companies can collect, analyse and optimise data in real time.

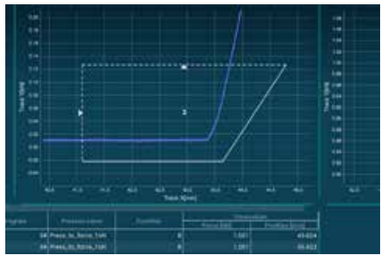
With the PMO you have access to many functionalities on a new standardized platform (similar the TOX® ElectricDrive). You can monitor processes on the production line and integrate the system into your control environment as well as connect it to a cloud, for example via MQTT or OPC UA. This allows you to document all quality data.
You can assemble your own customized process monitoring system from the individual components.

TOX® ProcessMonitor Core - System Overview



The system components of TOX® ProcessMonitor PMO

TOX® Software
Intuitive operation, smart process data and complete integration for Industry 4.0



TOX® UDI Panel
Touch panel with integrated PC for process data in realtime



TOX® ProcessMonitorControl Core
Control intelligence for real-time process processing



TOX® EdgeUnit
Decentralised data acquisition device



TOX® ChannelModule
Centralised data acquisition device (in cabinet)



TOX® Software
Operation and control

In modern production, not only precise joining processes are crucial - but also the ability to control them transparently, comprehensibly and intelligently. With our powerful software solutions and process monitoring systems you will get the most out of application.

The TOX® Software offers a intuitive user interface, powerful data-interfaces and a fast integration in higher level control systems. It enables complete control, parameterization and monitoring of all TOX® system components – from the drive system up to the position of the tool.

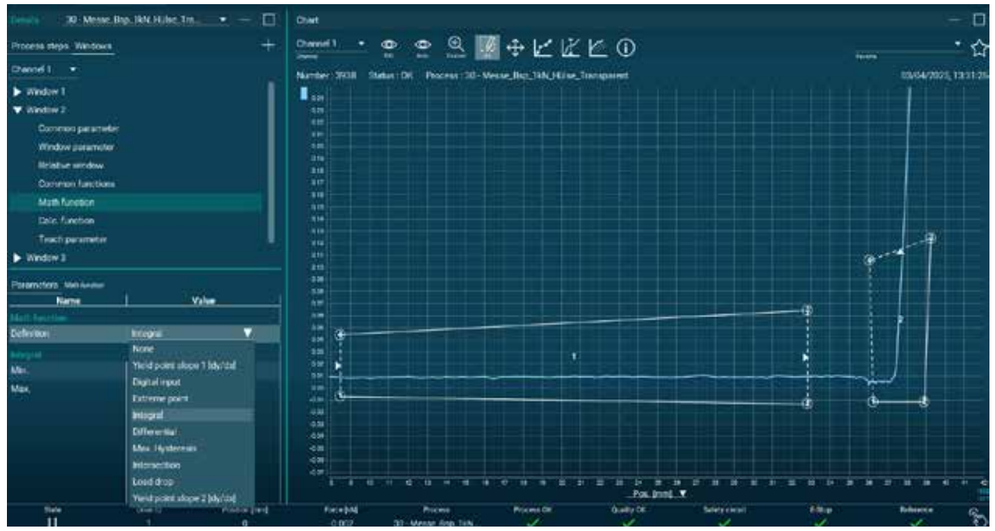
The TOX® Software also collects all quality data from all connected TOX® systems. This data can then be saved to your PC/server or to your cloud.

Advantages

- Modern UI design look-and-feel
- Customizable dashboards, as they are widget-based
- Intuitive operation
- Easy installation and parametrization
- Integrated windows technique for many applicationen



The TOX® Software can be installed on a line-PC or on the TOX® UDI-Panel (independent of operating system).



Communication within the network

The middleware functionality of the software gives you the freedom to share your process and quality data in any form: For example, via the cloud or with communication protocols such as MQTT and OPC UA. Archiving on the local hard disk or in the network is also possible. In this way, you always have the upper hand over your data and ensure the traceability of each individual cycle.

User groups and authorization

Internal company specifications and guidelines on the part of legislators establish strict rules with regard to access levels and change histories. Therefore, the TOX® Software has user groups with different authorizations. For example, machine operator, fitter/service technician, maintenance staff, expert, TOX® Service. Each access level has controlled user rights management and customizable dashboards with appropriate widgets.

Features and configuaration

The software has freely definable window and envelope technology. Mathematical functions like kink point detection, integral or hysteresis, incl. calculation functions (+, -, ÷, > …) complete the features to monitor processes at any time. Due to the intuitive UI, programming knowledge is not even required.

Intuitive user interface

The look-and-feel of the user interface corresponds to that of everyday mobile devices, which means that the user can already work independently with the software after a short training period. Thus, the TOX® Software offers an easy start and high usability without time-consuming training.

TOX® UDI Panel
Touch panel with integrated PC

The TOX® UDI Panel is a touch panel with an integrated PC and the TOX® Software on a Linux operating system (TOX® OperatingSystem). It is ready to digitally connect your processes for Industry 4.0. It combines system operation with the storage and processing of process data.

The UDI Panel, specially developed for TOX® systems, provides you with the relevant information you need for the safety of your processes at all times. The data is made available to other applications and stored via various network protocols (e.g., MQTT, OPC UA). Process configuration and the display of work results can be performed directly on the UDI Panel using the intuitive TOX® software.

The UDI Panel is available in 15“ and 21” sizes for mounting on a support arm or as a built-in version. For pure visualization and control tasks, we also offer a 10“ version.

If your application does not require a display, the Universal Data Interface is also available as a control cabinet version, the TOX® UDI Module.

Advantages

- Available in 3 sizes
- IP66 version available
- Ambient temperature 0 - 40 °C
- For mounting on the support arm or as a built-in variant





10"



15"



21"



TOX® UDI Panel Handheld

The powerful handheld 10“ with shock-absorbing edges.



TOX® ProcessMonitor
Setup of the components

Take advantage of state-of-the-art monitoring technologies to make your processes more efficient and transparent. Our solution enables seamless integration and provides you with comprehensive insights into your production processes. With the TOX® ProcessMonitor you get a monitoring system that is not tied to specific machines and can therefore be flexibly applied to different processes or systems.

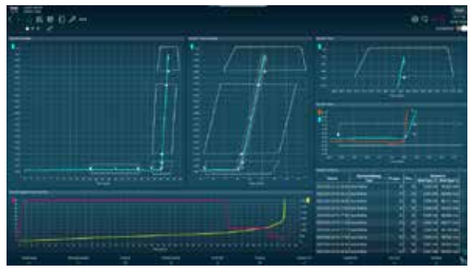
TOX® Software

The TOX® Software is necessary for the parameterization of the system. It includes all required functions for fast and simple configuration, parameterization, visualization and diagnosis of the servo drive systems.

- Flexible screen layout (dashboard)
- Intuitive operation
- Network based (Ethernet TCP/IP)
- Multiple login levels for user management and security
- Powerful functions
- Adjustable to customer-specific requirements
- Data backup, data export of quality data (xml, csv, json, pdf)
- Multilingual
- In-house engineering



Integrated archive



Freely designable dashboard

TOX® ProcessMonitor Control Core

Control intelligence for real-time process processing

- For 4 channels (e.g. 4 x force + displacement)
- TOX® OperatingSystem: hardened Realtime Linux®
- System: CoDeSys (multicore)
- Undervoltage supply protection through SuperCaps
- Compact design
- Fieldbus interfaces: Profinet, EtherCAT, Ethernet/IP



TOX® EdgeUnit

Decentralised data acquisition device

- With various I/Os and integrated strain gauge amplifiers
- Ambient temperature: 0 ... 50°C
- IP protection: IP 65
- 2x force input 16 Bit ADC (e.g. for external strain gauge)
- 2 digital inputs / 2 digitale outputs
- 2 analog inputs (e.g. for external displacement sensor, piezo force sensor)
- Encoder input (e.g. for TTL measuring probe)
- Integrated memory



TOX® ChannelModule

Centralised data acquisition device (in cabinet)

- For 2 channels (e.g. 2x force + displacement)
- Same housing as SystemControlCore / Advanced and UDI Module
- Up to 4 TOX® ChannelModules are possible in EtherCat bus.



TOX® Pressing Monitors
Efficient and compact.

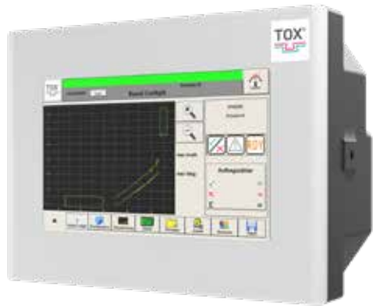
The TOX® Pressing Monitors offer precise process monitoring, in which exact functional relationships between force and displacement are verified. This technology is not only indispensable in fully automated production lines, but is also used at simple manual workstations, especially for quality control in incoming goods.



TOX® EPW 600

The TOX® Process Monitoring Systems provide precise process monitoring, in which the exact functional relationships between force and displacement are verified. These compact devices are particularly suitable for use at simple manual workstations. This system ensures continuous control and contributes significantly to quality assurance in your production.

- Monitoring of press-fitting and joining processes via force-distance curves
- Window technology for threading, hysteresis, pitch, block size/block force
- Input via touch screen
- Field bus interfaces: Digital I/O, EtherCAT, Ethernet/IP, Profinet
- Sampling rate: 1 kHz
- Export of quality data via SFTP, field bus or USB
- Easy to operate diagnostic tools
- Creation of statistics in the device
- Comprehensive range of sensors, all standard sensors can be connected
- Available in the sizes 7“ and 10.1“ and in built-in panel or wall-mounted versions



TOX® EPW 500

The EPW 500 is a cost-effective solution. It was developed specifically for manual workstations and small presses, such as the TOX® FinePress. With the EPW 500, you can optimise your work processes and increase efficiency without compromising on quality.

- 128 measuring programs
- 10 windows per test program
- Ring memory for 1000 values with time stamp
- Display of the last 10 measurement curves
- 7“ color touchscreen

TOX® Clinching Monitor
Precise processes and quality.



TOX® CEP 600

The TOX® Clinching Monitoring offers precise process monitoring, in which the force values of several clinching tools can be displayed. These compact devices are particularly suitable for simple manual workstations.

- Monitoring the force progression of clinching and caulking processes via multi-channel system (2/4/6/8/10/12 force channels)
- Bar charts for monitoring minimum/maximum and warning limits
- Input via touchscreen
- Field bus interfaces: Digital I/O, EtherCAT, Ethernet/IP, Profinet
- Sampling rate: 1 kHz
- Export of quality data via SFTP, field bus or USB
- Easy to operate diagnostic tools
- Creation of statistics in the device
- Comprehensive range of sensors, all standard sensors can be connected
- Available in the sizes 7“ and 10.1“ and in built-in panel or wall-mounted versions

Your Partner for future-proof solutions. Globally networked. Regionally based.

Joining is tradition

For over 45 years, TOX® has been a leader in providing innovative solutions for sheet metal joining and drive technology. As an international family-owned business with its headquarters in Weingarten (Baden-Württemberg) we develop intelligent systems for joining, press-fitting, and clinching — from individual components to complex production systems.

TOX® stands for the highest quality, durability and depth of integration.







Technologies are our DNA

TOX® determines the ideal technology for the respective application in advance in its in-house test laboratory. Preliminary tests are carried out and analyzed using samples and test parts.

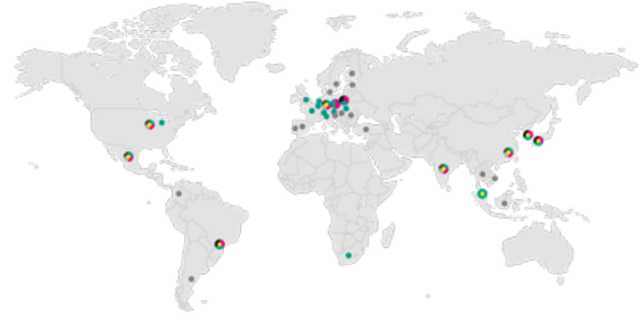
The results provide important parameters, such as the required pressing force or tool geometry, which are incorporated into the system configuration and processing technology. Final test reports verifiably ensure the quality of the joint.







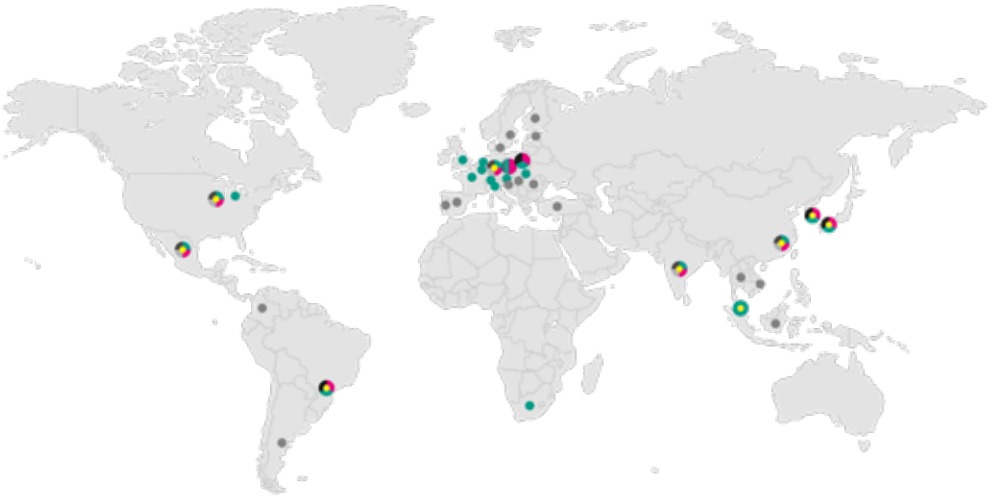




German Engineering meets global Innovation

Our headquarters and technology center are located in Weingarten (Baden-Württemberg). With 17 branches worldwide and a broad network of sales partners, we offer global proximity and comprehensive service.

Five production sites – in Germany, the USA, China, India and Mexico – ensure highest quality wherever our customers are.



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88250 Weingarten / Germany

Find your contact partner at:
www.tox.com

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