BRANKAMP

PROCESS MONITORING

FOR FLAT DIE-, PLANETARY AND INFEED ROLLERS

MARPOSS

PROCESS MONITORING

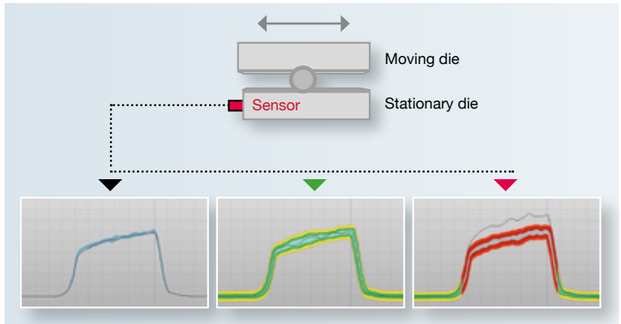
Pusher monitoring

Roll back monitoring

Absolute force monitoring

Die alignment sensor

Sorter controller



FUNCTIONALITY

The principle of process monitoring

▶ At each stroke, one or more sensors measure the occurring process signals (e.g. the initiated rolling force).
▶ The process signals are taught-in during good part production and limits (envelope curves, etc.) of faultless production are calculated automatically.
▶ If one of the monitoring limits (e.g. envelope curve) is exceeded, the part is sorted out, the pusher is blocked or the machine is stopped.

SENSOR POSITION

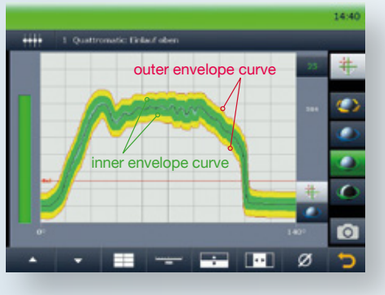
a variety of solutions available

The global measurement of rolling forces on the machine frame is easy to retrofit. To be close to the process measurement can be taken in the adjusting screws, however optimal is the integration of the sensors in the die holder in front of the adjusting screws.
Here, despite the process-oriented measurement of rolling forces, the adjustment work is not affected.

PLANETARY ROLLERS

with differentiated monitoring strategy

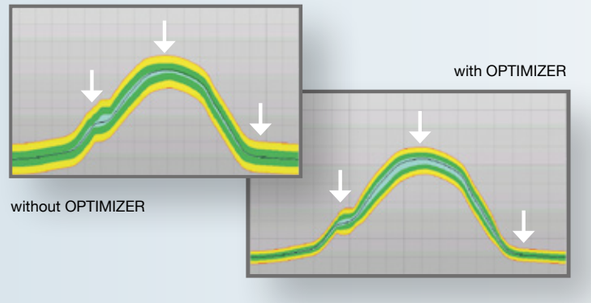
In planetary rolling, several parts are pushed in per roller rotation. Successive parts are therefore rolled with different roll segments. Each of these roll segments receives an individual envelope curve during monitoring. The monitoring accuracy is significantly increased and the influence of roll and machine is eliminated.



QUATTROMATIC

for optimum quality and productivity

Higher benefit through four envelope curves.
The inner envelope curve identifies small quality defects and sorts out scrap parts without interrupting production. The outer envelope curve stops the machine in the event of more serious defects, e.g. slipping parts.
Consequential damage to tools and machines are avoided.



OPTIMIZER PLUS

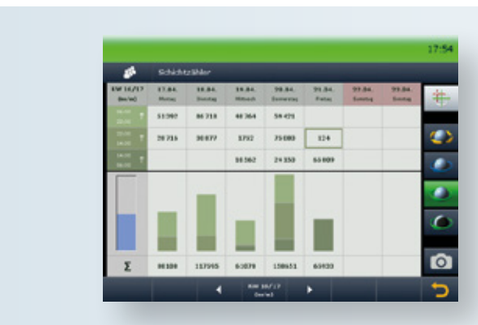
for automatic setting of the envelope sensitivity

The Optimizer Plus calculates automatically the optimal sensitivity of the envelope curve from the existing signal variation for each sensor and each point of the process curve. The operating effort is reduced and the monitoring accuracy is improved.

SORTING

for separation of good and scrap parts

A sorter behind the roller can be controlled to discharge individual scrap.
If the inner envelope curve is exceeded, the sorting flap is activated immediately.
This enables reliable sorting of the scrap parts even at high speed.
In addition, the flap monitoring option checks that the flap is moving correctly.



COUNTER

a variety of counters provide real-time information on the current production situation

Comprehensive counting functions indicate the current counter status, e.g. of orders, run time of tools, shift performances, quality controls, container status, maintenance intervals and produced good and scrap parts, indicate remaining run times and can trigger a machine stop when the specified number of parts are reached.

PROCESS MONITORING SPECIAL

PATTERN BASED IDLE LIMITS

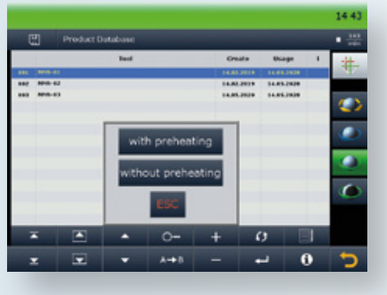
facilitate the operation of the devices

Idle strokes cannot be avoided, especially when rolling screws with washers.
Idle strokes must be automatically detected by the monitoring device on the basis of the rolling forces. Brankamp devices detect idle strokes by pattern-based idle limits.
Regardless of the sensor sensitivity, idle strokes are already detected during setup and the teach-in of idling is prevented.

MONITORING AFTER IDLE STROKES

with adjusted monitoring limits

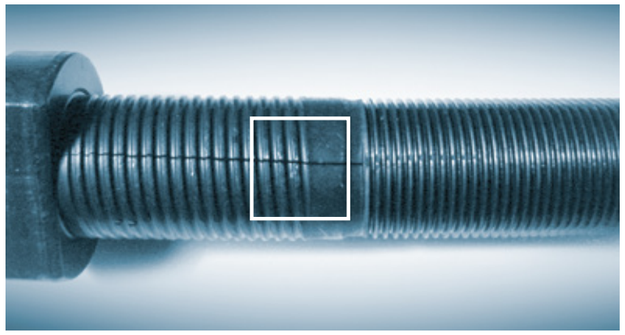
On many flat die rollers the lubrication conditions of the slide change during idle running. The consequences are increased forces when rolling the first screws after idle run.
This increased rolling forces only occur in the infeed area of the dies.
The Brankamp units automatically adapt to these partially changed rolling forces without reducing monitoring quality.



ROLLING WITH PREHEATING

require adapted reactor technology

High degrees of deformation or high-strength materials often require preheating. The monitoring system checks that the parts do not cool down inadmissibly on the way from the induction coil into the roll gap. If a feed jam occurs, the roll is stopped to prevent missing parts and to protect the tool.



ACOUSTIC EMISSION

Detection of hardness cracks

With cold formed parts cracks can occur during hardening. These cracks can be detected using Acoustic Emission (AE) during rolling or re-rolling and sorted out by a special monitoring method.

PUSHER MONITORING

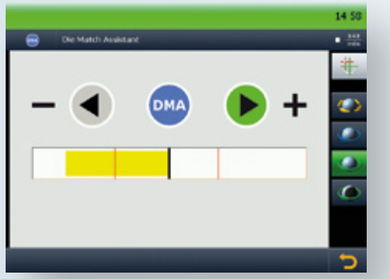
detects non-reproducible introductions

In addition to the tool setting, the quality of rolled parts depends largely on the insertion process.
The Brankamp Insertion Indicator (BII) immediately indicates to the operator any non-reproducible insertion processes. The operator is also given information on how to optimize the insertion process. Occasional slipping and rolling over is avoided.

ADM®

for automatic track control

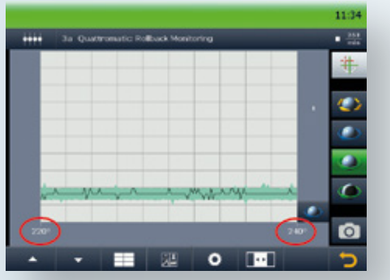
Adaptive Die Match (ADM®) with the patented track sensor is a technique that automatically adapts the track position to the process conditions. Whether the stroke rate is increased or the infeed area is adjusted, ADM® immediately readjusts the track position - automatically! Even very slight deviations from the ideal condition are electronically detected and automatically corrected.



DMA

Setting optimum track positions

The Die Match Assistant (DMA) is an objective measuring method with patented sensor technology for displaying the current track position. This allows the operator to check the track position even during dynamic operation and provides clear instructions for correction in the event that the track position is not optimal. Overrolling is avoided, tool wear is reduced and thus productivity is increased.



ROLL BACK MONITORING

protects machine and tools

If the rolling force exceeds an automatically determined threshold during the return stroke, the pusher must be blocked immediately.
With the roll back monitoring, serious damage to the tool and machine caused by returning parts is prevented.

RECORDING OF RUNTIMES AND PRODUCTION DATA

STOP & GO DIAGRAM

documents machine runtime behaviour

The detailed documentation of runtime and productivity of the machine during adjustable time periods (up to 90 days) creates transparency about the production process.

C-THRU4.0

networking of all manufacturing areas

- C-THRU4.0 - the intelligent networking of all monitoring devices with the production management system
- C-THRU4.0 - online recording of current production data and interfaces to higher-level ERP/MES systems
- C-THRU4.0 - makes production processes more transparent, faster and more cost-effective

XBROWSER, XVIEWER & TUNING BOARD

Process Data Collection - Industry 4.0

XBrowser

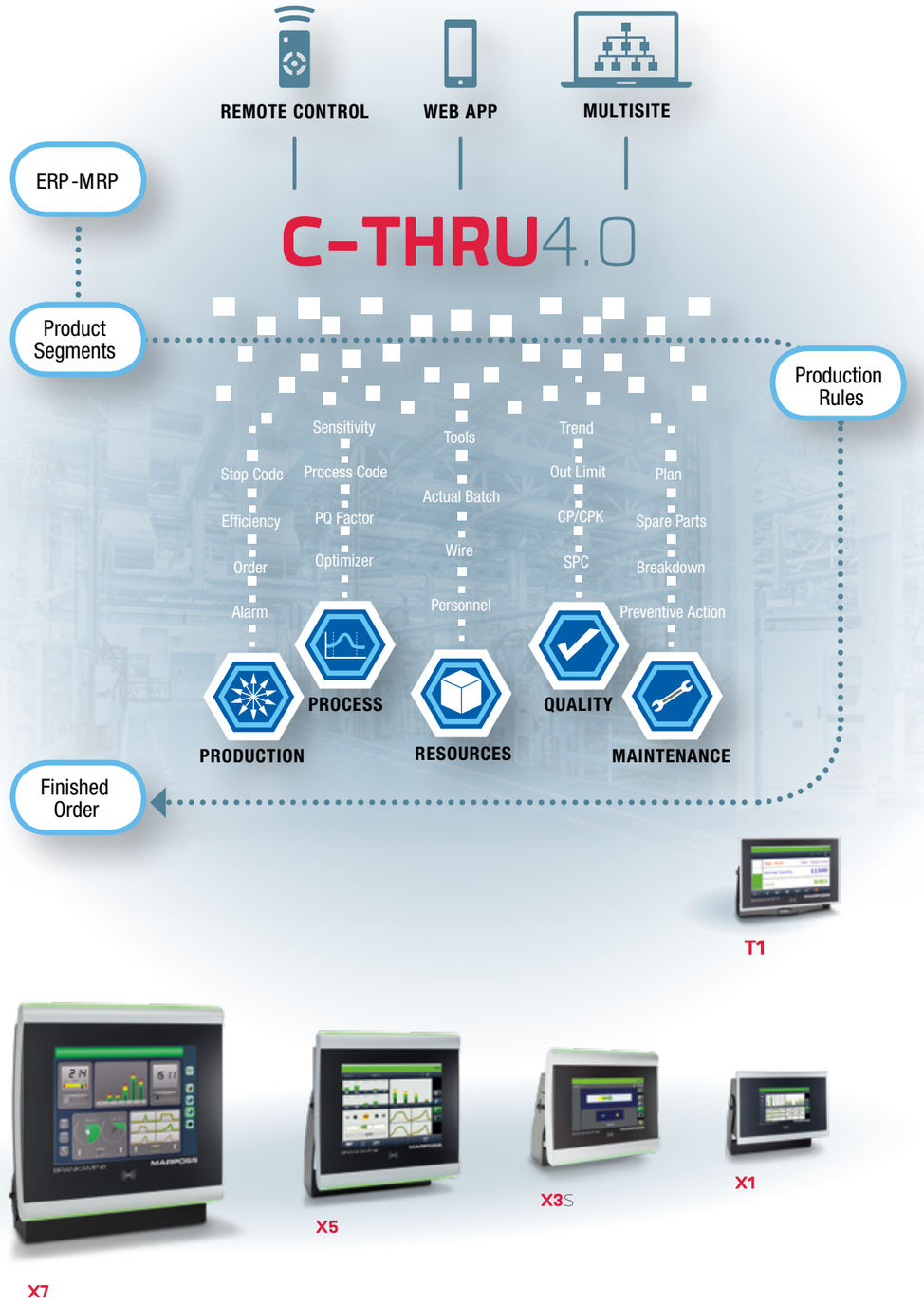
- all data at a glance
- settings of all networked devices can be controlled from the office
- tour of production is no longer necessary

XViewer

- stored data can be recalled
- conclusions possible in the event of production problems
- behaviour of machine and tool can be evaluated more easily at a later stage

Tuning Board

- all relevant process and monitoring data at a glance
- identify problems during production and immediately initiate improvement measures
- detection and improvement of unstable processes



www.marposs.com

For a full list of address locations, please consult the Marposs official website

ODN6B00EN14 - *Edition 04/2023 - Specifications are subject to modifications.*

Marposs has an integrated system for Company quality, environmental and safety management, with ISO 9001, ISO 14001 and OHSAS 18001 certification. Marposs has further been qualified EAQF 94 and has obtained the Q1-Award.

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