ARTIS

GEMCMS | GEMCMV

MACHINE PROTECTION
COLLISION DETECTION

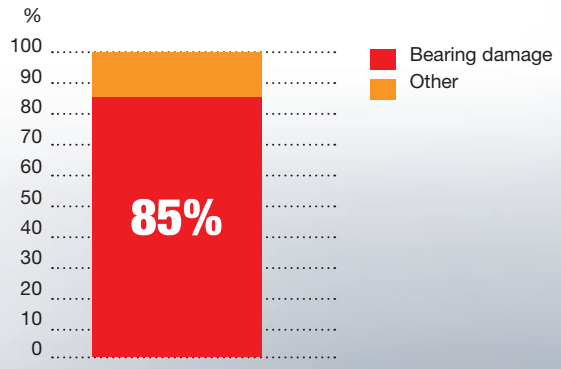
genior modular

MARPOSS

WHY MACHINE PROTECTION?

Nowadays, machines are more and more complex, dynamic and fragile.
Production downtimes cause high costs and loss of sales.
What is more, company image damage or loss of customers are imminent if planned deliveries are not made on schedule.

CAUSES FOR SPINDLE DAMAGE

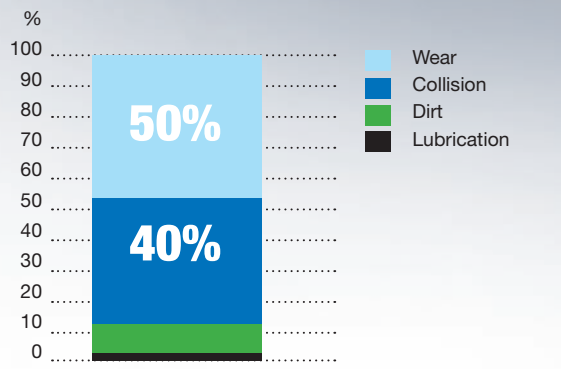


85 %

OF ALL SPINDLE DAMAGE IS A RESULT OF BEARING DAMAGE

Source: Maschinenmarkt 6/2009

CAUSES FOR BEARING DAMAGE



40 %

OF ALL BEARING DAMAGE IS CAUSED BY COLLISIONS

Source: Maschinenmarkt 6/2009

PROBLEM

- Collisions between moving axis and machine element
- Careless manual movement of the axes
- Incorrect entries
- Clamping of wrong tools
- Allowance fluctuations of the work-piece
- Incorrect clamping of the workpiece
- Tool overload (e.g. chip jam)

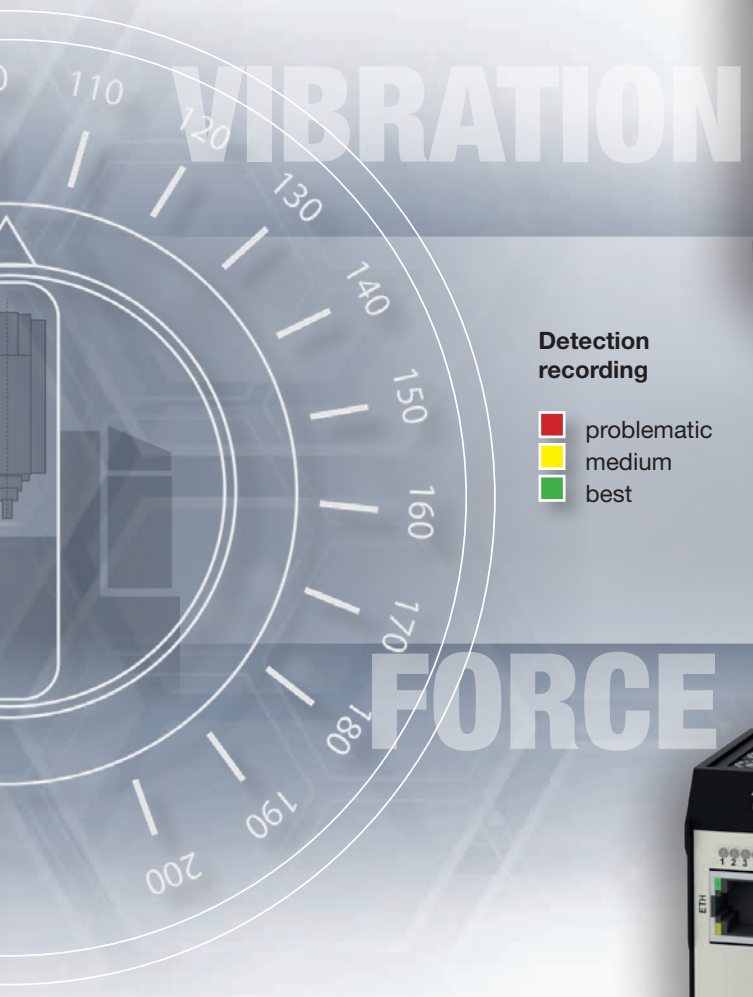
CONSEQUENCES

- High costs for repair and spare parts
- Possible loss of machine accuracy
- Unplanned downtimes
- Loss of production
- Increase of insurance rates and deductibles

REQUIREMENTS

- Fast collision detection
- Fast stop of the moving axis/axes
- Indication and logging of the event
- Evaluation of event and graphic data
- Weak point analysis based on the stored data

SOLUTION: MODULAR MACHINE SAFETY USING THE SUITABLE INTELLIGENT MONITORING SOLUTION



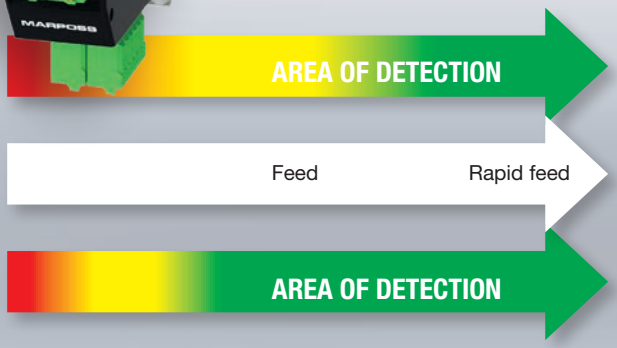
DETECTING DYNAMIC COLLISIONS AND CRASHES

Measuring accelerations in up to 3 axes

GEMCMV

Detection recording

- problematic
- medium
- best



GEMCMS

FORCE MEASURING (QUASISTATIC)

Detection at fast and low feed rate

BENEFITS

- For use with all machine types, robots, assembly units etc.
- Simple machine integration, independent of machine controls
- Choice based on requirements (GEMCMV or GEMCMS)
- Permanent monitoring – always active
- Event memory: date and time of limit violations
- Tracking and analysis of stored entries
- Fast alarm output for stopping the machine axis/axes
- Can be operated stand-alone or in combination with GENIOR MODULAR

GEM**CMS** STAND-ALONE

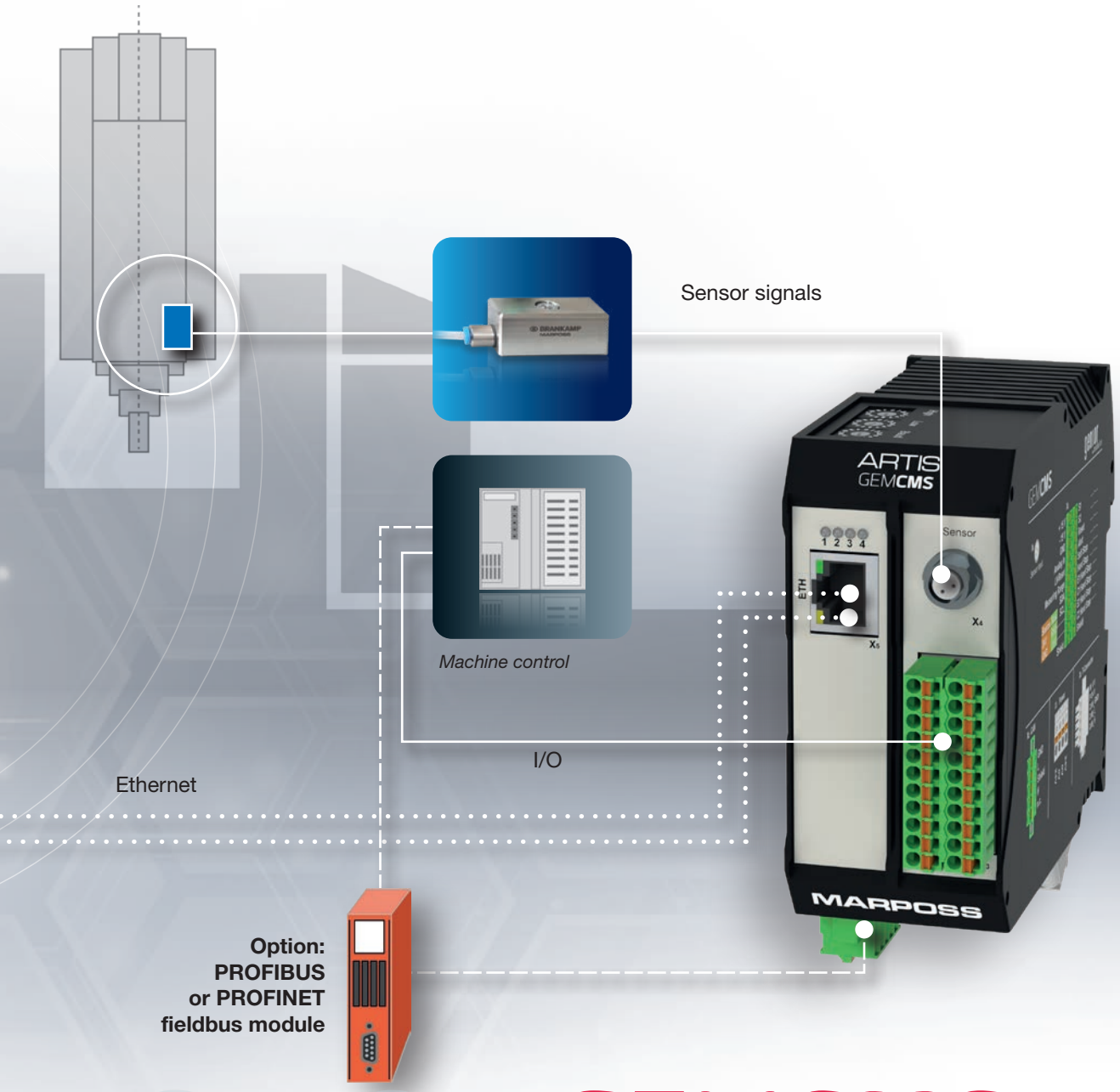
HMI

***IPC**4 • Simple operation*

The GEM**CMS** system is a first-class all-round protection for machines and lines. It is based on a further development of the thousandfold proven BRANKAMP CMS system.
GEM**CMS** detects both, dynamic and quasistatic collisions via the connected force sensors.
If the set emergency limit is violated, an alarm output is set in < 1 ms. This prevents or at least minimizes damage to machines and lines.

PROPERTIES

- Applicable as stand-alone module with piezo strain sensors
- Integrated charge amplifier
- 25 kHz sampling rate
- 16 bit resolution
- Physical I/O interface (3 inputs and 4 outputs)
- 3 different operation modes
- 3 different static limits for each mode
- Fast alarm messages (< 1 ms)
- Recording of configuration changes
- Event file with signal values



GEMCMS

SPECIAL FEATURES

- Compact module for simple integration into the control cabinet
- Sensor connection to the integrated charge amplifier
- Additional charge amplifiers allow sensor distances of more than 20 m
- Ethernet connection to WINDOWS or LINUX (SIEMENS TCU only) systems with installed GEMCMS visualization software
- Simple display and operation via the 4.3“ IPC4 system – similar to the BRANKAMP CMS system
- Use of tool-related limits (ToolPlus) via PROFINET or PROFIBUS fieldbus modules
- Secure storage of all events in the event memory

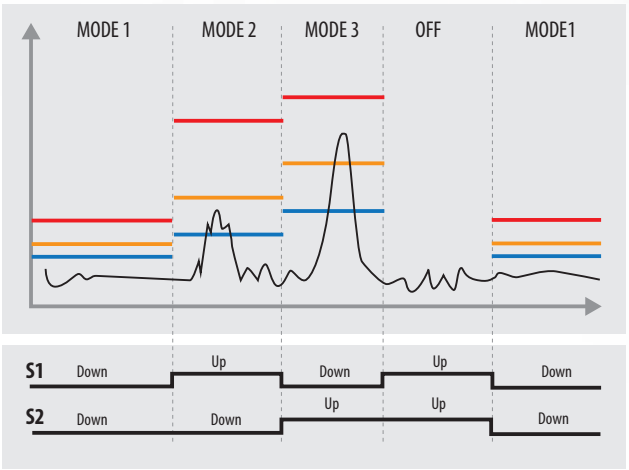
GEMCMV STAND-ALONE

VIBRATION

VA-3D MEMS

Machine control

< 1 ms fast output



GEM**CMV** *operating modes*

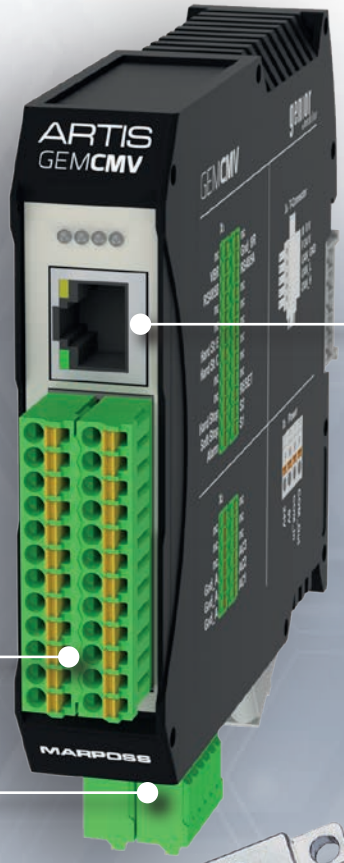
Warning
Soft stop
Hard stop

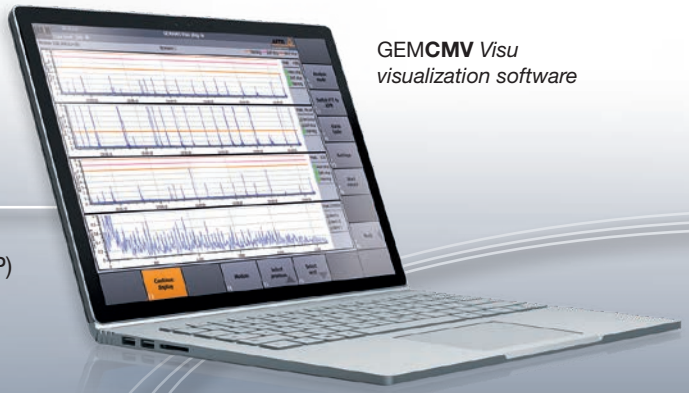
GEM**CMV** detects dynamic collisions via the connected acceleration sensors. If the defined hard stop limit is violated, an alarm output is set in < 1 ms. This prevents or at least minimizes damage to machines and lines.

SPECIAL FEATURES

- Compact module for simple integration into the control cabinet
- Sensor connection for 1- to 3-axes acceleration sensors with standard IEPE interface
- Ethernet connection to WINDOWS or LINUX (SIEMENS TCU only) systems with installed GEMCMV visualization software
- Secure storage of all events in the event memory
- 3 different operating modes
- 3 different limits per mode
- Fast alarm messages (< 1ms)

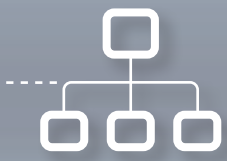
GEM**CMV**

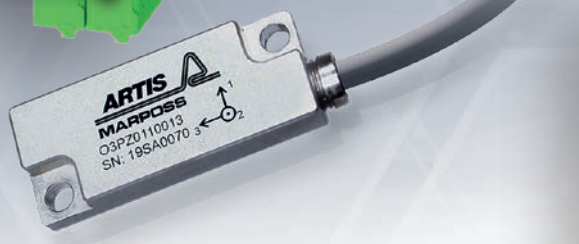


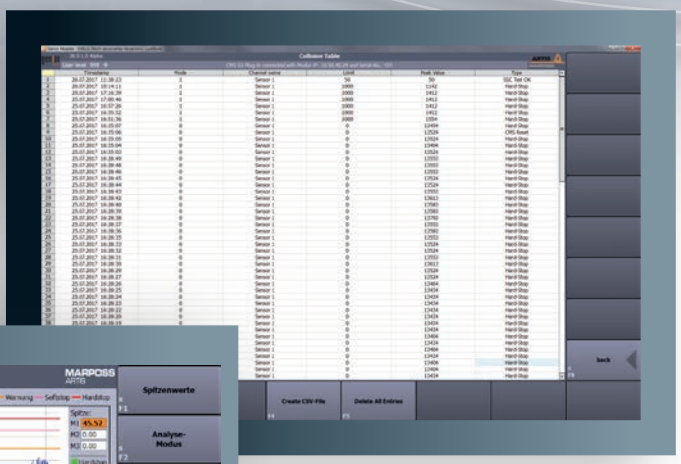


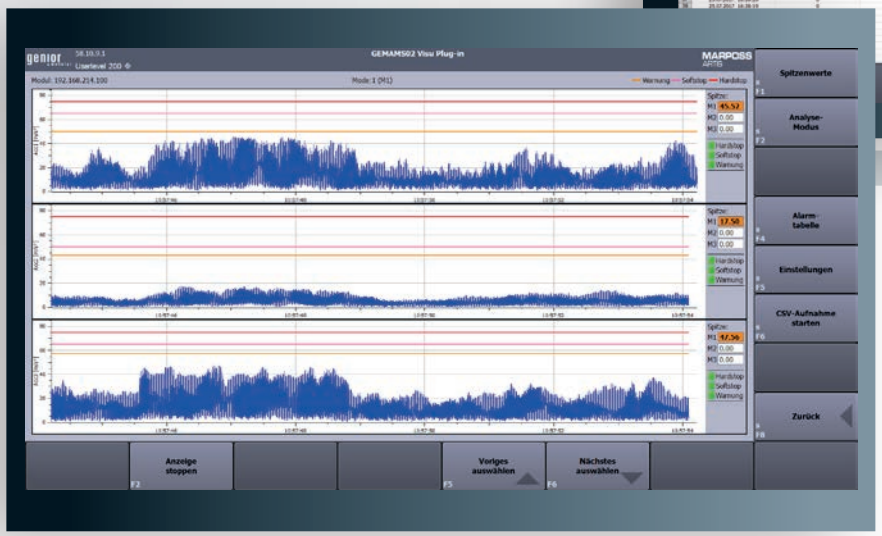
GEM**CMV** *Visu*
visualization software

Ethernet (TCP/IP)









Event memory
(blackbox)

GEM**CMV**
visualization

GENIOR MODULAR PROCESS MONITORING SIMPLE INTEGRATION

Modularity

MODULAR DESIGN

PERFORMANCE

PROCESS AND CONDITION MONITORING

GEM**TP**

GEM**CPU**

CTM V6 CTM**CPU**PN

GENIOR MODULAR UPGRADE

TOOL PLUS MONITORING

TOOL PLUS UPGRADE

PROFINET / PROFIBUS

GENIOR MODULAR UPGRADE

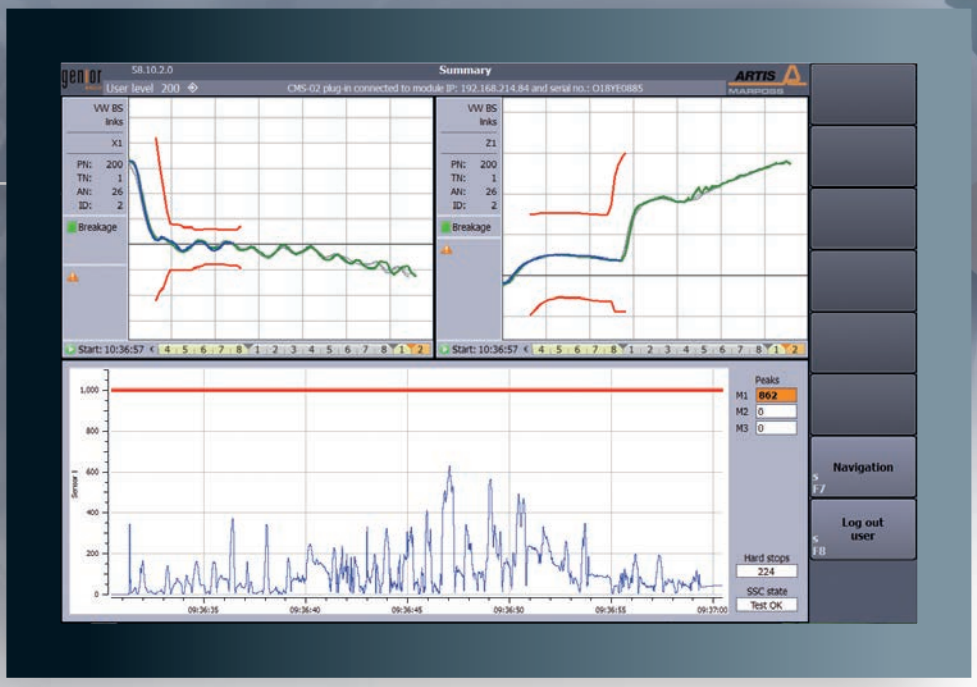
BASIC FUNCTION

Dynamic collision GEM**CMV**

Quasistatic and dynamic collisions GEM**CMS**

Vibration monitoring GEM**VM**

MODULARITY: SIMPLE INTEGRATION



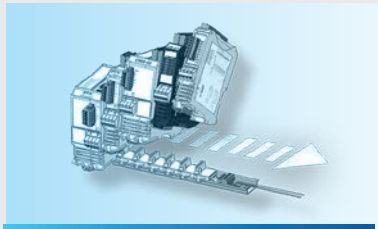
MultiView

MODULAR PROCESS MONITORING SYSTEM

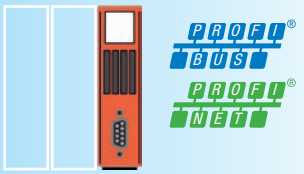
- All modules can be assembled on a standard mounting rail
- Module connection via T-connector
- Up to 10 measurement channels and up to 16 measurement signals per CPU can be processed in real time
- Visualization via a plug-in for GENIOR MODULAR MultiView for WINDOWS and LINUX (for SIEMENS TCU systems)

OVERVIEW

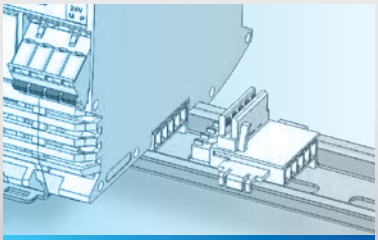
MACHINE INTEGRATION



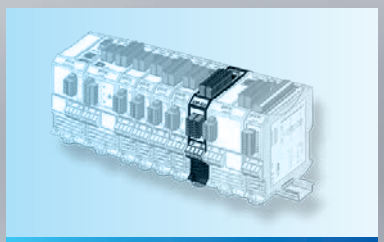
Modularity



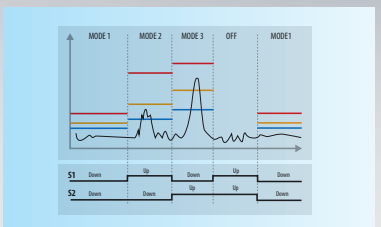
Fieldbus connection



Standard mounting rail



Module integration

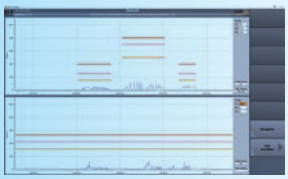


Definition of operating states

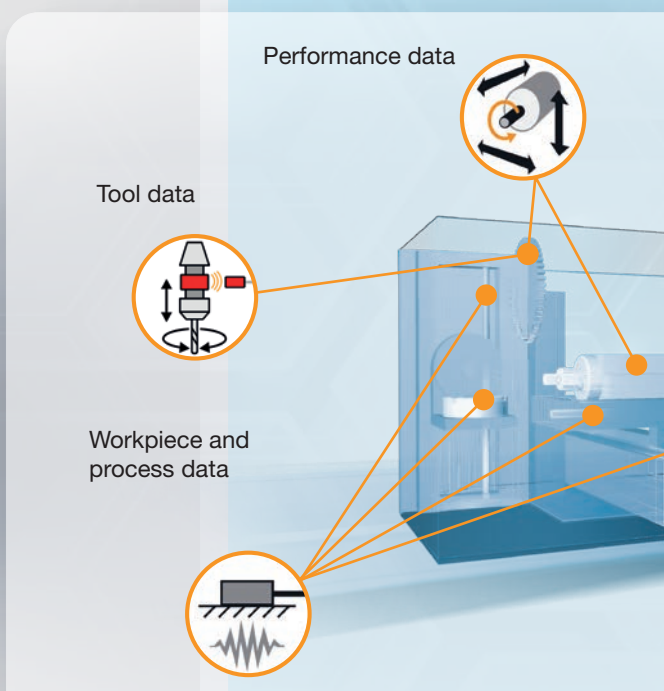
Signal handshake

Sensors

MONITORING STRATEGIES

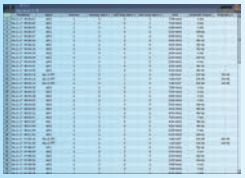


Tool and machine limits

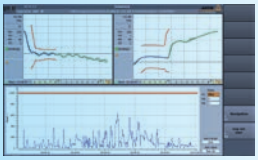


ToolPlus function

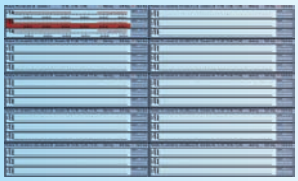
GENIOR MODULAR DATA MANAGEMENT



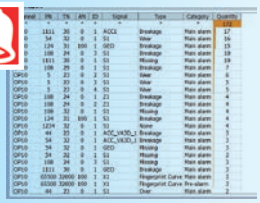
Event memory (500)



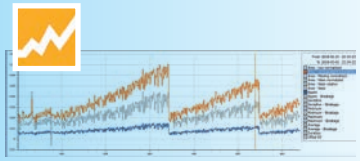
MultiView



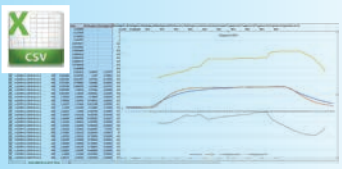
Online machine overview



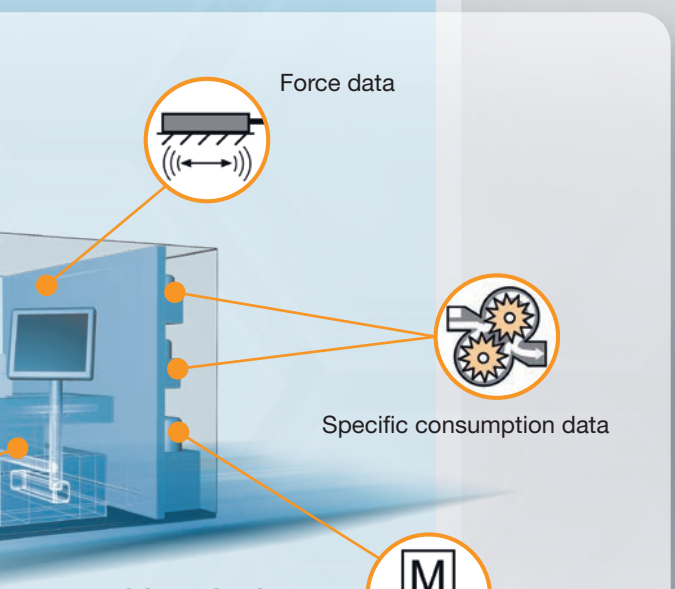
Alarm report



Trend report

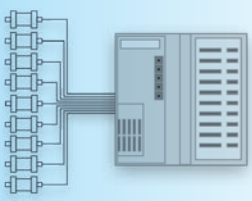


CSV export



DATA COLLECTION

Simple operation
4.3” operator panel



Digital torque

Specific data recording

For a full list of address locations, please consult the Marposs official website www.marposs.com

Monitoring Solutions GmbH
ODN6422EN14
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