Condition Monitoring
Energy Monitoring

• Condition Monitoring of machines and plants
• Analysis of energy consumption
• Organization of maintenance
• Quality assurance of produced products
LR SMARTOBSERVER at Planning Level

• Process optimization and process security of plants >> Reduction of downtimes
• Transparency in production
• Organization of preventive maintenance and service
• Predictable rate action of spares
• Lower repair costs
• Avoidance of costly consequential damages due to early damage detection
• Online / remote access to equipment delivered
• Quality assurance to the customer
• Organization of an energy-efficient manufacturing
• Data export for audit and certification
LR SMARTOBSERVER in Production Environment

- Visualization and evaluation of process data >> Data collection and diagnosis
- Timely recognition and prevention of unfavorable operating conditions
- Process monitoring (creation of analysis and trends)
- Avoidance of consequential damages by timely intervention
- Reduction of repair and maintenance costs
- Quality assurance of produced products
- Organization of maintenance and service
- Reduction of downtimes
- Management of favorites
- Reporting and altering
LR SMARTOBSERVER Features

Communication with intelligent sensors (IO-Link, VSE) for data analysis

• Continuous and intermittent state monitoring of process parameters (vibration, temperature, pressure, oil quality and quantity, electricity, speed (rpm), flow)
• Customized display of live status
• Management of limit value – tabular and graphical display incl. trends
• Alarm management for:
  – Maintenance
  – Warning limit / action limit
  – Alarm escalation
• Analysis of process data (correlation)
• Maintenance management
• Implementation in web server or alternative installation on machine
Application: Condition Monitoring for Fans

Customer benefits

- Organize cleaning of fans based on dirt
- Detect belt problems at an early stage
- Detect and avoid adverse operating conditions
- “Resonance Screening” – monitor and detect resonances

Typical system components:

- Fans with process sensors
- Evaluation unit with terminal box (option WLAN)
- Connectivity and data bases
- PC with LR SMARTOBSERVER
Application: Condition Monitoring for Pumps

Customer benefits:
- Detect wear of the pump
- Detect alignment errors at an early stage
- Timely maintenance via cavitation detection
- Avoid damage to the pump by trapped air
- Avoid consequential damage by timely intervention

Typical system components:
- Pump with diagnostic objects
- VSE with terminal box (option WLAN)
- Server and data bases
- PC with LR SMARTOBSERVER
Application: Condition Monitoring for Presses

Customer benefits:

- Monitoring of most important assemblies of press
- Early detection of changes towards the “good condition”
- Correlation of different measureands (press force, pressure, overload protection, ram tilting) enables conclusions to forming dies
- Recognition of mixing of lubricating and hydraulic oil
- Permanent monitoring of all oil-specific parameters
- Early recognition of bearings wear
- Visualization of forces working at retract and change of tools
System Bundles

- depending on data throughput and amount

<table>
<thead>
<tr>
<th>Database-system</th>
<th>Data quantities</th>
<th>Hard drive-requirements</th>
<th>System-requirements</th>
<th>Data-traffic maximum</th>
<th>Additional costs</th>
<th>Expert knowledge</th>
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<tbody>
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<td>50 Datasets / sec</td>
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Example Server Application Scenario

LR SMARTOBSERVER
- Condition Monitoring of machines and plants

Gateway: IO-Link Master
Datatransfer via
LR AGENT embedded

Cloud

SQL Server
LR SMARTOBSERVER

Navigate

Analyse

Monitor
Navigation
Cockpit – Display of Values and Process Diagrams
Cockpit – Grid for miniature instruments 12x12
Analysis of Values
**Alarm Management** with Historiography

![SMARTOBSERVER interface](image)

<table>
<thead>
<tr>
<th>Sensors</th>
<th>Timestamp</th>
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Displaying 1 - 15 of 69
Maintenance Management

Linked to alarm management
Maintenance

Organization by appointment

Organization by odometer
Reports
Configuration for Data Compression

Example of individualization of the SW surface
Data transfer to the LR SMARTOBSERVER software is done via the LR AGENT CP.

**PC – System requirements:**
- Windows 7 SP1, Windows 8.1, Windows 10
- Graphics card 1 GB, DirectX 10.1 compatible graphic
- Web browser Chrome, Firefox, Internet Explorer 11, Microsoft Edge

LR SMARTOBSERVER – Connection Overview
## Training Concept

### LR SMARTOBSERVER Basic Training QDS 200

| 2 hours | Introduction into the LR SMARTOBSERVER user interface, configuration of user-specific views and cockpits. |

### LR SMARTOBSERVER Advanced Training - QDS 202

| 1 day | Basic Training + Usage of LR Configuration Manager, implementation of users and user groups, access right management, e-mail and SMS configuration, integration of pictures into the user interface, data export, configuration of alarms and thresholds. |

### LR SMARTOBSERVER Expert Training – QDS 205

| 1 day | Up course to advanced training Databases and database configuration, system architecture, data-backup, replication of connected hardware, trouble shooting |
Thank you for your attention!
Contact

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