XETICS LEAN – Smart Manufacturing

Production line methods with phone applications and services during production
XETICS GmbH – Overview

• Based in Stuttgart, Germany
• Founded in 2012
• Subsidiary of TRUMPF GmbH + Co. KG
• CEO: Dr. Philipp Dreiss

Product:

XETICS LEAN
Manufacturing Execution System and details planning

• Web based UI
• Cloud-compatible
• Application of mobile devices
• Integration of machines
XETICS GmbH

R&D-Cooperation Partner

Technology

Customer and Partner XETICS GmbH
IT and Industry

• In Germany still a lot of companies in production work without or with very old standalone softwares
• Since automatization started, more and more development needed on software side
• Companies realized, that IT and Software became more and more important
  • Optimization of production – better results
  • Visibility and Control – better overview
• „Industrie 4.0“ started as well as „Internet of Things“, as a revolution of industry
IT and Industry

• More and more information in production can be displayed due to technological development of Machines and Controls
  • New communication protocols invented and introduced

• „Smart Equipment“ researches started, like reconfigurability or self-diagnosis, self-healing

• Already available MES and ERP Systems are developed in the early 90s

• Revolution also started in ERP and MES System softwares, as well as other services (eg. Material management)

• XETICS Lean, as Cloud based MES System introduced
  • Cloud storage, no servers needed anymore
  • Data is visible online, no specific place is needed
  • Due to modularity, interfaces and extra modules can be added anytime
Process optimization with XETICS LEAN

**Processes**, running on equipment.

**Equipment**, on which processes are executed including messaging of states.

**Products**, manufactured by process execution on the equipment.

**Material**, consumed by processes.

**Material Flow** in carriages and container including location tracking.

**Storage**, containing material and tracking of consumption.

**Production Order** including tracking and tracing functionality of jobs for production of products.

Calculation and view of **KPIs**.

Planning board and **Scheduler**.
Dashboard & Equipment
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• State of Equipments (eg Machines) „realtime“
• Dynamic data from equipments available online in the cloud
  • Capabilities, Shift Plan, Tools
  • Dinamyc calculation of KPI-s available (OEE, Availability, Quality)
• Current job information available
• Tracking and Tracing available online
• Dynamic factory layout with current status of the Equipment
• Integrated identification of Equipment with Mobile Devices
Planning board and Scheduler
Planning board and Scheduler

- Production optimalization with specific algorithm
  - On-line, „real time“ calculation
- Automatic re-schedule of Equipment usages
  - Manual interaction also available
- Automatic plan saving within XETICS Lean
  - Priorities used by scheduler
  - Immediate re-order of jobs on User Interfaces
Mobile Device Integration
Mobile Device Integration

• Mobile devices (Android) used to identify Equipment
  • Control functions available on devices
    • Move-In / Move-Out within the Stations
    • Start Ramp-Up or Repair-Mode
  • Scanning Barcodes/QR-Codes
    • Identification of Equipment, User, Production Order
    • Start Move-In or Move-Out from stations
    • Show Warnings/Alarm messages

• Status information (iOS Devices)
  • Current status of Equipment
  • Warning/Alarm Messages displayed
  • Production Order, Product details
  • Up to date KPI values
Ideas to integrate in „Smart Cities“ concept

- Factory overview with real time machine information
  - Could be used within the topic parking slot detection
- Scheduler
  - Automatic reschedule of traffic lights based on traffic
  - Reschedule upon accident or road closure
  - Automatic cars and buses – preparation for automatic dynamic route planning
- Cloud Storage
  - Store current information of traffic, road constructions
  - Always up-to-date information available for traffic control
  - Easy to access interfaces for users (Web UI, Mobile Devices)