Rexroth
Bosch Group

ActiveCockpit –
Interactive communication platform
for manufacturing industries

Processing and visualization of manufacturing data in real-time

ActiveCockpit **Rexroth**

ActiveCockpit – What does it do?

To remain efficient, manufacturing processes must be monitored and faults and deviations managed. To do this users must have fast access to complete and comprehensive data. By providing transparent real time access to process data, ActiveCockpit enables them to react quickly with minimum effort – on the shop floor or from remote locations.

i 4.0
CONNECTED INDUSTRY

Industry 4.0:
Production departments and IT are growing together
With Industry 4.0 the next major step in industrial progress has reached the factory. The dialog between users, machines and products is playing an increasingly important role in the technical implementation process. The merging of manufacturing and company IT, the synchronization of processes and machines that autonomously make decisions in real-time, enable efficient and customer-specific manufacturing processes.

As a leading provider of i4.0 solutions, Bosch Rexroth is drawing on its own user experience in manufacturing – this also applies to the use of interactive touchscreens with the industrial software solution, ActiveCockpit. As a future-oriented platform for manufacturing, this solution provides all relevant data directly at the production location.

Bundling information for increased workflow efficiency
A glimpse at typical manufacturing processes demonstrates how many different data sources the user has to take into account: Information regarding stock and pending orders can be retrieved from the PC in the production planning department. Condition and quality data are documented manually on various boards. Users maintain their personal calendars individually. They also have to be able to operate the user interfaces of the line control and various machines as well as start processes manually.

In order to improve the handling of this great diversity of data, Bosch Rexroth equipped an Industry 4.0 assembly line with interactive touchscreens and the ActiveCockpit software in 2014 for the first time.

Via open interfaces ActiveCockpit continuously gathers, processes and filters all the manufacturing data from existing system environments and several data sources. The latest quality and manufacturing key figures are displayed in real-time on the touchscreen and can be directly analyzed on-site. So all the staff who are involved at the factory always have the current figures available which provide the basis for enhancements and new standards. Deviations from predefined production parameters are visualized by means of the key figures and immediately start the improvement process.

Transparent and user-friendly
The system can at all times display all the data that is relevant for manufacturing – from availabilities and production times to quantities. With the display and interaction capabilities of ActiveCockpit, all relevant information can be directly utilized at the assembly line. This does not only save time and costs, it also increases productivity and competitiveness.

ActiveCockpit is completely interactive: whiteboard, escalation, e-mail, explorer, and up-to-mobile functionalities facilitate more efficient decision-making processes.

Design Ottenwälder & Ottenwälder

In 2014 Bosch Rexroth won the Industry 4.0 Award for the best combining of man, machine and processes – as both the provider and user of an assembly line which had ActiveCockpit as its core component.

GERMAN DESIGN AWARD SPECIAL 2017

ActiveCockpit was awarded the "German Design Award – Special Mention" for Excellent Product Design by the German Design Council in the Human-Machine-Interface category.

ActiveCockpit – Optimize your production quickly and efficiently with real-time data

Improved overview and optimized basis for decision-making

Industry 4.0:
Production departments and IT are growing together

▶ Manufacturing data are combined and visualized directly on-site at the factory
▶ Optimizations can be quickly discussed within the team
▶ The clear identification of deviations in the manufacturing process enables quick decision-making
▶ Standardized meeting procedures: participants, structuring of key figures, automatic reports

Record deviations on-site

▶ Process deviations are immediately visualized on-site via an intuitive interface
▶ The data is automatically forwarded to the responsible employees, so the improvement process starts straight away
▶ Malfunctions can be registered directly on-site and shared with colleagues via ActiveCockpit, e. g. a photo of defective components
▶ Optimizations can be implemented more quickly in order to increase productivity

Checks during operation

▶ Staff members access their order list and update the processing status directly at the assembly line
▶ Cancellations and prioritizations are passed on to the responsible departments with one click via the memo function or via email
▶ Deviations from quality and safety standards can be instantly visualized via widgets
▶ Fast communication within the team

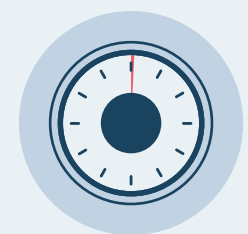**Previously**

Time Exposure

ActiveCockpit with Desklink

Desklink

ActiveCockpit

Time Exposure

ActiveCockpit links into manufacturing IT

ERP

MES

ActiveCockpit

Time Exposure

Customer value and benefits

The latest consistent key figures facilitate quicker and more efficient decision-making on the shop floor.

▶ Direct linking to back-end systems (ERP, MES) saves time and helps to avoid malfunctions
▶ Customer-specific web applications can be integrated as widgets

▶ Communication and information tool for all levels of staff
▶ Structured and documented team discussions
▶ Simple configuration thanks to intuitive web application
▶ Automatic report functionality helps to save time
▶ Compact design

ActiveCockpit –
Technical architecture

FRONT-END

Line 1
Multi-user device

Standard works

FUNCTIONS

Dashboard

Views

Meetings

Q-, S-Module, StaffManager, DeviationManager
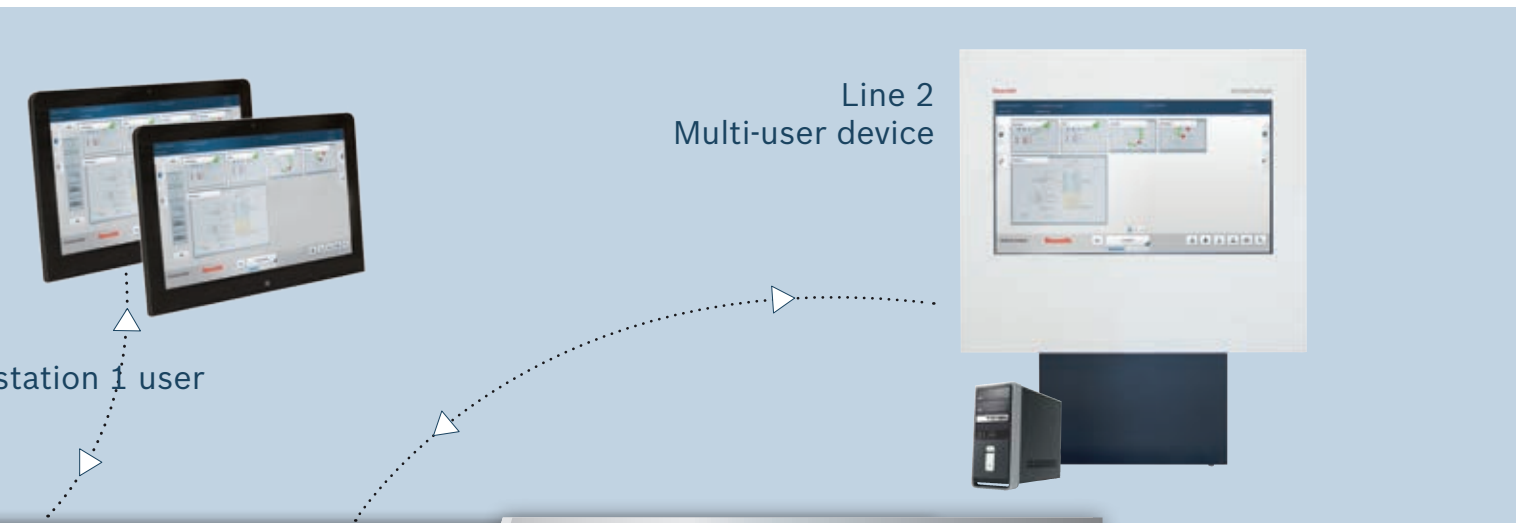
Notepad, whiteboard functionalities

BACK-END

Desklink
(included)

Digitization

Line 2
Multi-user device

station 1 user

Active Cockpit

i4.0 Interface
(optional)

SAP

ERP / MES

Webframe
(optional)

Automation/Connected

ActiveCockpit –
Far more than the basic configuration

ActiveCockpit starter pack

Dashboard

▶ All relevant data available on-site in digital form
▶ Display of information in many different data formats (e.g. Excel, PowerPoint, video)
▶ Accessible for all staff members

Meetings

▶ The operator can assign individual names to factories
▶ Documentation of meetings with freely selectable elements and individually definable structure
▶ Automatic creation of reports with all relevant information and appendices dealing with the discussed topics
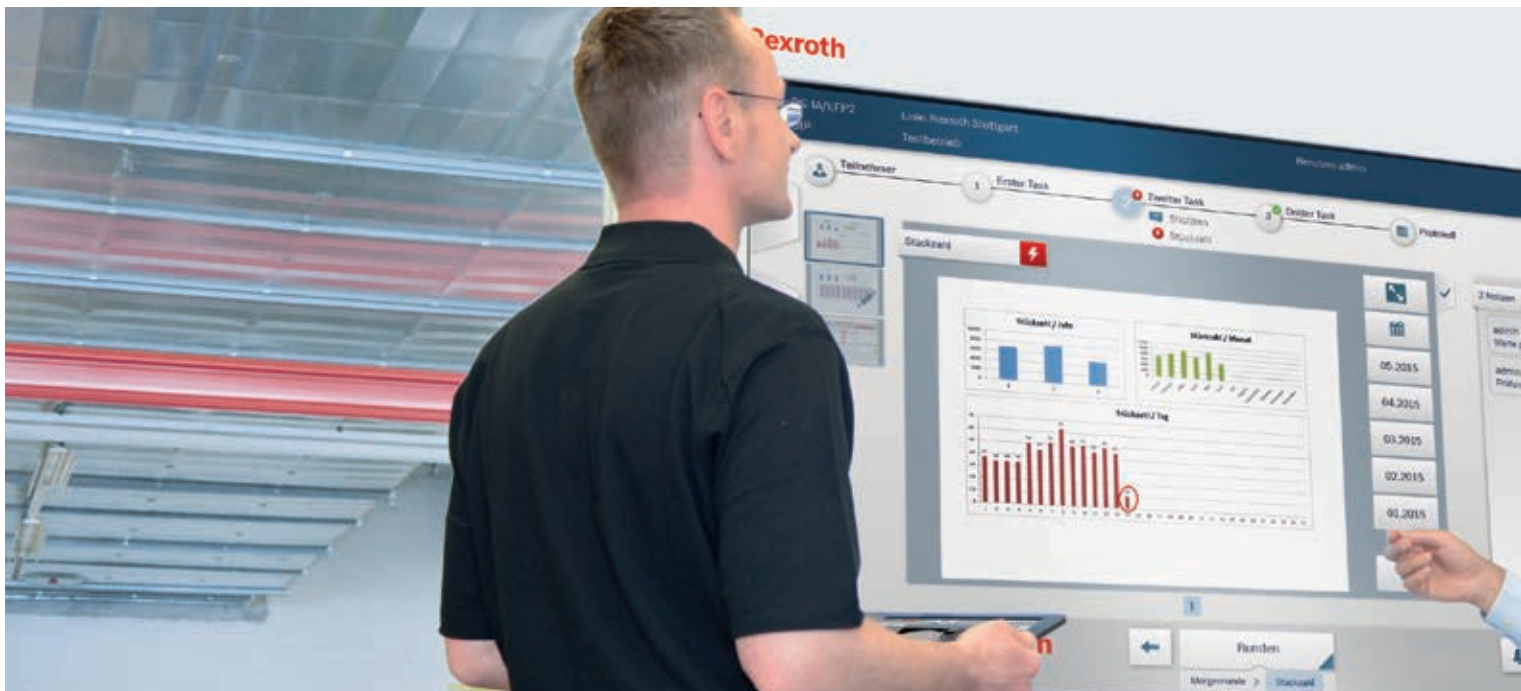
Views

▶ Quick preparation of data and documents, e.g. for improvement meetings
▶ Individual assignation of user permissions, e.g. read, edit, delete
▶ Information can be displayed and used on an interdepartmental basis, documents are updated via Desklink
▶ Relevant information can be filtered and displayed without modifying the original file

Notepad, whiteboard functionalities

▶ Memo function for communication with colleagues or escalation meetings
▶ Annotation functionalities via touchscreen (highlighting), comments directly within the ActiveCockpit environment
▶ Display and transmit relevant information (e.g. by taking photos of malfunctions with a tablet and transmitting them to ActiveCockpit for processing)

Lean production made easy: The ActiveCockpit starter pack offers a wide range of tools to permanently improve manufacturing processes and increase their efficiency. Easy to understand presentations of relevant data are transparently edited for maximum user-friendliness – so you can enjoy the benefits of basic implementation right away!

Q and S-Module

▶ Record and manage quality and safety deviations
▶ Display of current condition by means of a capital Q (quality) and/or S (safety)
▶ Annual overview of quality and safety conditions covering all months of the year
▶ Values can be transmitted back to ERP and MES systems via the Industry 4.0 interface

Desklink

▶ Fast digitization of data in various file formats, e.g. Excel, Word, PowerPoint
▶ Data is automatically updated
▶ Interactive status change for widgets

Further modules

Webframe

▶ Quick integration of third party apps

StaffManager

▶ Fast coordination and sharing of personnel capacities
▶ Export of data showing external personnel capacity require-ments, for processing in external systems as required

DeviationManager

▶ For assigning and tracking deviations
▶ Data import from MES via web service for simple processing
▶ Clear display of assigned deviations (status, priority, follow-ups) for the staff members

ActiveCockpit –
Additional functions according to customers' requests

The comprehensive digitization of processes is opening the way to networked architectures in line with Industry 4.0 standards. An open interconnected architecture means that ActiveCockpit from Bosch Rexroth can offer possibilities for implementation of embedded apps or integration with those of third parties.

Industry 4.0 Interface

▶ Real-time interconnection of ERP and MES back-end systems with your existing configuration via standardized interface
▶ All relevant data and integration options are customized for easy and safe networking

Modules for future-proof solutions

Numerous additional functions via apps – e.g.
▶ **Connector** for integrating self-developed applications into ActiveCockpit
▶ **Diagram** for real-time integration of data from back-end systems through to the clear and intuitive displaying of key figures
▶ **Process Quality Manager** for instant identification of deviations and errors in the production process

User identification

▶ Simple system login using employee ID card

Customer-specific services

▶ Bosch Rexroth offers project-specific services for users which go far beyond regular engineering services, such as the development of a value stream design module

Fast installation

▶ ActiveCockpit can be installed within 24 hours

Data security

▶ All data including e-mails are encrypted and transmitted via SSL
▶ The application uses "defensive coding" methods – all inputs are checked beforehand
▶ A defined roles and permissions concept controls access to the system and prevents data input errors

▶ All passwords are encrypted
▶ All user inputs are checked for correctness and malicious code
▶ Indirect data base enquiries prevent potential attacks ("SQL injections")

Bosch Rexroth AG
Postfach 30 02 07
70442 Stuttgart, Germany
www.boschrexroth.com

Find your local contact person here:
www.boschrexroth.com/contact

Further information:
www.boschrexroth.com/activecockpit