

ActiveCockpit – Interactive Communication Platform for Manufacturing Industries

Processing and visualization
of manufacturing data in real-time



ActiveCockpit – What Does It Do?

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





Industry 4.0: Assembly 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. The merging of the 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 Industry 4.0 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.

Amalgamating 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 at 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 manufacturing data from existing system environments and several data sources. The latest quality and manufacturing key figures are being displayed in real-time on the touchscreen and can be directly analyzed on-site. Thus, all staff members that are involved at the factory always have the current figures available, which can serve as a 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 provide all data that is relevant for manufacturing at any time – from availabilities and production times to quantities. With the display and interaction capabilities of the ActiveCockpit, all relevant information can be directly utilized at the assembly line. This does not only save time and costs, but also increases productivity and competitiveness.

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

ActiveCockpit – Optimize Your Production Quickly and Efficiently with Real-Time Data



Improved overview and optimized basis for decision-making

Meetings

- ▶ Manufacturing data is being amalgamated 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
- ▶ Standard procedures for meetings can be individually defined: attendants, structure of key figures, automatic creation of reports, registration of deviations on-site



Record deviations on-site

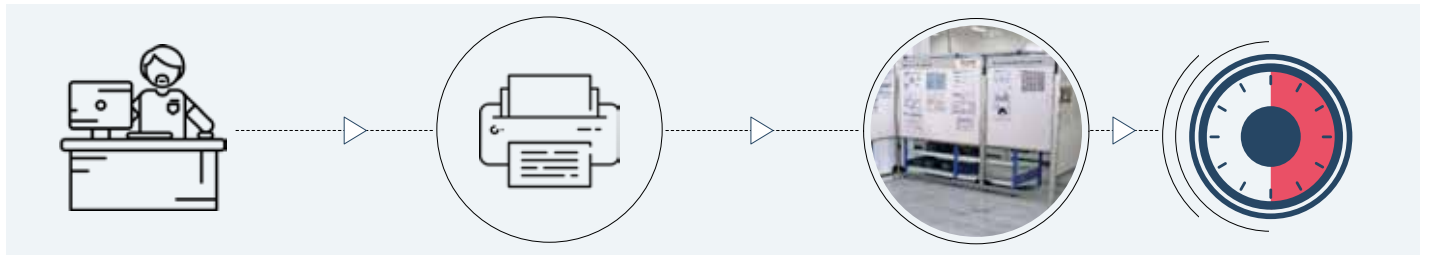
- ▶ Process deviations are being immediately visualized on-site via an intuitive interface
- ▶ The forwarding of data to the responsible staff members facilitates the immediate initiation of the improvement process
- ▶ Malfunctions can be registered directly on-site and shared with colleagues via ActiveCockpit, e. g. a photo of defective components
- ▶ Optimizations can be implemented more quickly in order to increase the productivity



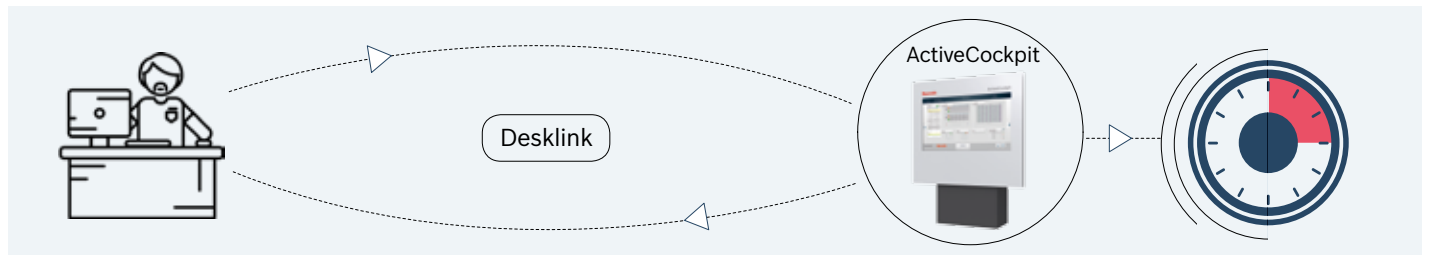
Checks during operation

- ▶ 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
- ▶ Deviations from quality and safety standards can be instantly visualized via widgets
- ▶ Quick communication with non-meeting staff can be accomplished, e.g. maintenance staff or management

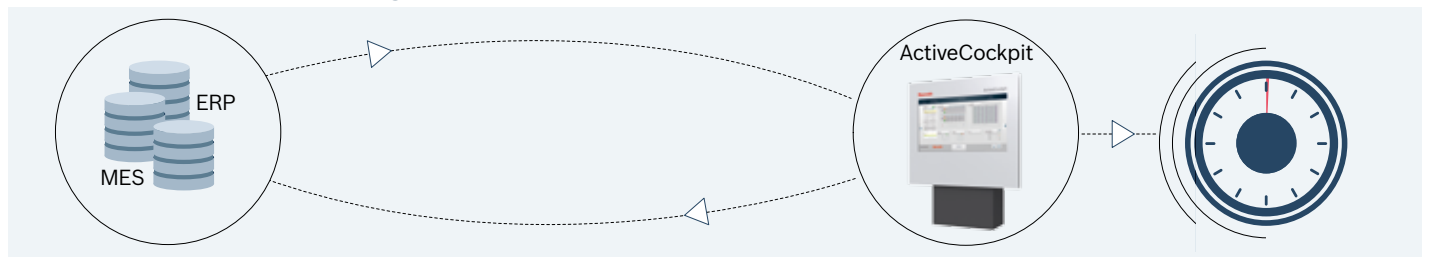
Today



ActiveCockpit with Desklink



Networked manufacturing IT with live data

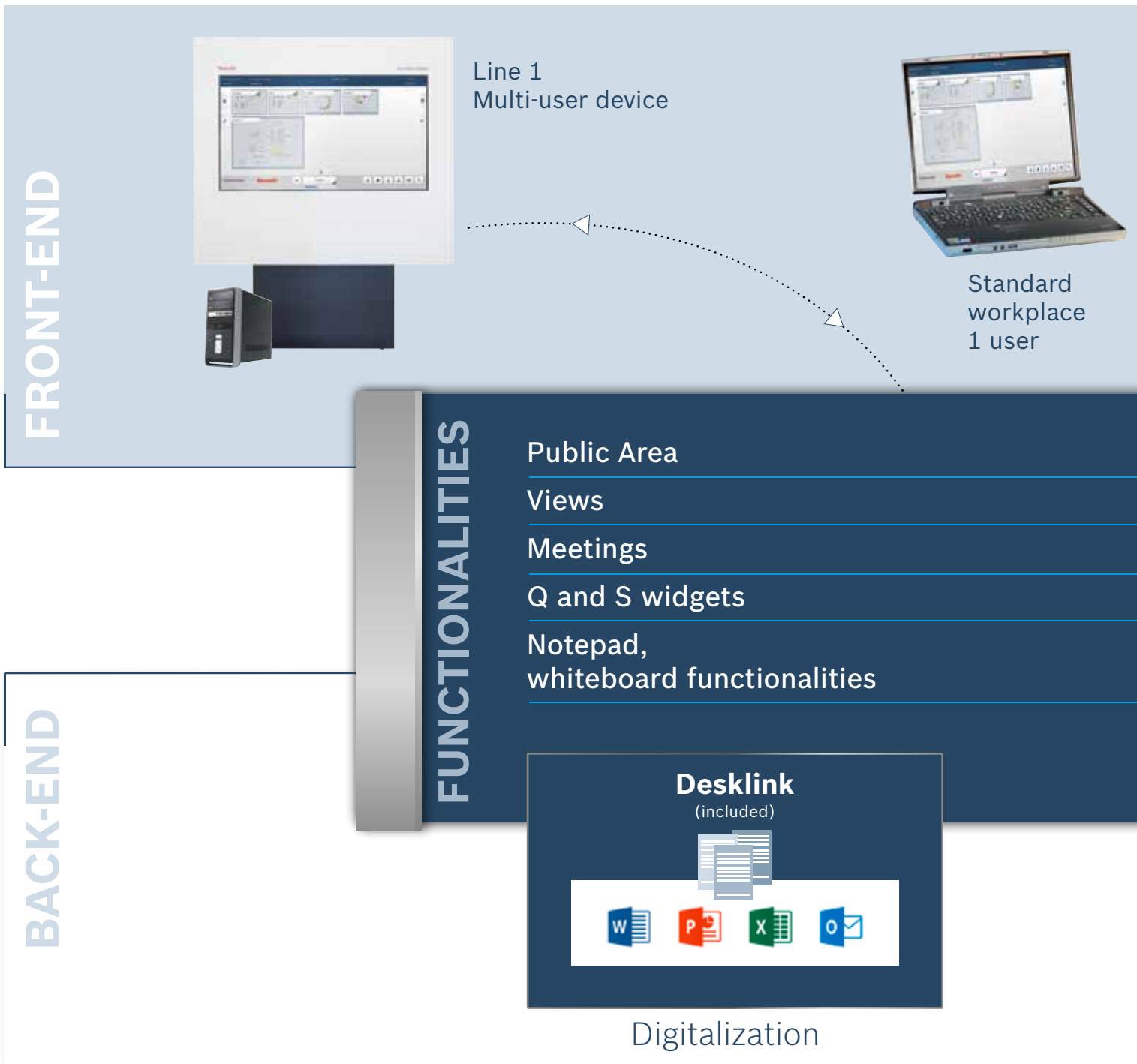


Customer value and benefits

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

- ▶ Direct linking of any back-end system (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
- ▶ Customer-oriented configuration thanks to intuitive web application
- ▶ Automatic report functionality helps to save time
- ▶ Compact design

ActiveCockpit – Technical Architecture





Line 2
Multi-user device



Active Cockpit

I 4.0 Interface
(optional)



Webframe
(optional)



Automation/Connected

ActiveCockpit Starter Pack – Far More than the Basic Configuration

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 – You can enjoy the benefits of a basic implementation right away!



Public Area

- ▶ 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

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 presented and used across departments. Documents can be updated via Desklinc
- ▶ Relevant information can be filtered and displayed without modifying the original file

Meetings

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

Notepad, whiteboard functionalities

- ▶ Memo function for the 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)

Q and S widgets

- ▶ Record and manage quality and safety deviations
- ▶ Display of current condition by means of a capital Q (quality) resp. 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

ActiveCockpit – Additional Functions According to Customers' Requests

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

Apps for future-proof solutions

In its Apps, Bosch Rexroth offers a wide range of additional functionalities such as

- ▶ **Deviation management:**
Registration and processing of deviations. Appropriate measures are defined in ActiveCockpit and forwarded to MES and ERP via the Industry 4.0 interface
- ▶ **Chart:**
For the clear and intuitive visualization of data in order to optimally track processes and quickly identify deviations
- ▶ **Personnel deviation:**
For the interactive creation of shift plans for staff members working at the manufacturing line
- ▶ **Process Quality Manager:**
Detect deviations and malfunctions during the manufacturing process as quickly as possible

Webframe

- ▶ Quick integration of third party app

Customer-specific services

- ▶ For its customers, Bosch Rexroth offers project-specific services that far exceed regular engineering services, such as the development of value stream designs



Number	Description	
3 842 553 500	Software package ActiveCockpit	
3 842 557 110	Software license ActiveCockpit 10 users	
3 842 557 111	Software license ActiveCockpit 1 device	
3 842 557 112	Modul Webframe	
3 842 557 118	Training ActiveCockpit	
3 842 557 119	Commissioning ActiveCockpit	

Customer-specific solutions	Solution according to offer	
	Interface Industry 4.0	Connection to ERP / MES
	Customer-specific app	Special app

Data security

- ▶ All data including e-mails are encrypted and transmitted via SSL
- ▶ The application benefits from the methods of „defensive coding“ – all inputs are checked beforehand
- ▶ A defined role and permission concept controls the access to the system and prevents data input faults
- ▶ All passwords are encrypted
- ▶ All user inputs are checked for correctness and malicious code
- ▶ Indirect data base enquiries prevent possible attacks („SQL injections“)



First ActiveCockpit live application

- ▶ ActiveCockpit can run 24 hours a day
- ▶ Quickly installed



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