



UTC Series Application Note

All-in-One Industrial Computers for Information Visualization during Production

The Knorr-Bremse Group, Munich, Germany

Introduction:

The Knorr-Bremse Group, with over 20,000 employees worldwide, develops and produces modern braking systems for rail and commercial vehicles. Track vehicle braking systems are used in high-speed trains as well as locomotives, subway trains, streetcars, and freight cars. The core competencies of Knorr-Bremse's Munich site are the planning, developing, and producing of all-inclusive braking systems for various types of track vehicles.

When using Advantech's IPC-7 Series of industrial computers, the Center of Competence for Brake Control (CoC BC) experienced smooth operations. However, to address the company's changing computing demands, additional network interface and display requirements, and planned operating system upgrade to Windows 7 (64 bit), Knorr-Bremse adopted Advantech's UTC Series terminals. With their compliance to industry standards, appealing design, and sophisticated 16:9 widescreen format, these terminals provide the ideal system.



- Requirements
- Durable and trusted industrial computing terminals
 - WLAN connectivity and reliable performance
 - Highly stable system
 - Large display screen
 - Touchscreen terminals

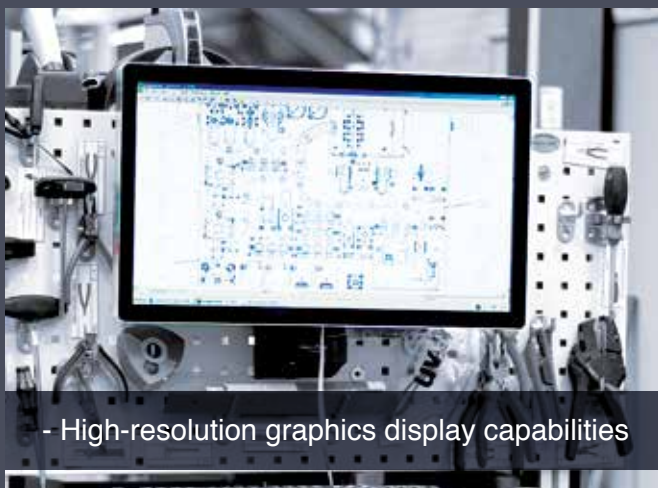
- Products Deployed
- UTC-515** with 15.6" touchscreen display
 - UTC-520** with 21.5" touchscreen display

- Benefits
- High system stability
 - Outstanding performance
 - Simple touchscreen operation
 - Compatibility with existing and new software tools

Configuration Management, Time Management, and Employee Guidance

In the production and final assembly departments, more than 50 employees work a double-shift schedule making complex braking systems for all types of track vehicles. Each system is configured specifically to the customer requirements.

The previous IPC-7 Series terminals were used to record time and conduct other relevant tasks. By contrast, the current UTC terminals are used for a range of applications, including managing the system configuration, Andon alarm system, time-management system, employee guidance system, and system application products.



The employee guidance system ensures that every worker is aware of the exact tasks pending, as well as the required components and procedures. All relevant instructions, drawings, and part lists are clearly displayed on the UTC terminals. The in-house information system is connected to the new UTC terminals and 64" display screens for communicating current in-house reports and

employee notices. These screens are also used to show all active Andon alarms.

Maximum Quality Assurance with the the Andon Alarm System

Inspired by the Andon System developed by Toyota, Knorr-Bremse has been developing its own alarm system since 2008. With this system, each assembly cell includes a UTC terminal with an alarm button. If a production-related issue occurs that workers cannot resolve without assistance, they must press the alarm button to access a selection menu of standard error notification messages.

For example, if a component or tool is missing or defective, or a work instruction is incorrect, the worker must select the most appropriate notification message to send via e-mail and SMS to the specialist responsible, as well as the quality assurance and production planning divisions. The specialist then contacts the worker directly to provide assistance and rectify the problem.

This strategy clearly boosts the assembly production rate because workers who encounter production problems no longer have to seek out the relevant person for assistance; instead, the specialist responsible contacts the worker directly. The system also logs all Andon alarm alerts for future analysis to facilitate further optimization of the production processes.



- UTC-520 installed on mobile tool cart



UTC Terminals Offer Stability, WLAN Connectivity, and Durability

After increased demands for durability led to the decommissioning of the IPC-7Series PCs, Knorr-Bremse began testing industrial computers produced by a range of suppliers. Subsequently, the project team, which comprised Dirk Gransow as the data management specialist and Andreas Koller as the production manager, together with the company managers and CoC BC personnel chose Advantech's UTC Series computers as replacement terminals.

The main reasons for this choice were the exceptional graphics capabilities, outstanding graphics card, and high performance of Windows 7 machines. These features ensured that Advantech's UTC Series of all-in-one computer terminals satisfied all project requirements, as listed below.

- 1 Durable and low-maintenance industrial computing terminals
- 2 High system stability
- 3 Outstanding performance
- 4 Standardized mounting racks
- 5 Large display screens
- 6 Simple touchscreen operation
- 7 WLAN connectivity and reliable performance
(cable-less solution support essential)
- 8 Compatibility with existing and new software tools
- 9 Sleek design
- 10 Swift service



Project Implementation

The introductory phase of the UTC project lasted from May 2014 to September 2014. This relatively short implementation period reflected the fact that most of the employees had previous experience with similar systems, eliminating the need for training.

The enhanced performance resulting from the system upgrade facilitated the implementation of additional applications and programs. Dirk Gransow was responsible for integrating software and implementing new systems, including the employee guidance system and Andon alarm system. Overall, the intuitive menu navigation and sensitive touchscreen operation reduced the time and effort required for employee training.



Summary

By upgrading to Advantech's UTC Series terminals, Knorr-Bremse was able to implement the visualization and documentation of each assembly cell by leveraging an integrated IT system. The employees were particularly pleased that the UTC terminal displays support both landscape and portrait orientation, allowing each worker to adjust their display setup according to their personal preferences and responsibilities.



UTC-520D/520E

21.5" 16:9 TFT LCD

Windows Embedded 7
Windows Embedded 8
Linux Ubuntu 14.04

Touchscreen

Five-wire resistive (flat glass)
Projected capacitive (flat glass)
Glass panel (no touch function)



UTC-515D/ 515E

15.6" 16:9 TFT LCD

Windows Embedded 7
Windows Embedded 8
Linux Ubuntu 14.04

Touchscreen

Five-wire resistive (flat glass)
Projected capacitive (flat glass)



UTC-510 (New)

10.1" 16:9 TFT LCD

Windows Embedded 7
Windows Embedded 8
Linux Ubuntu 14.04
Android 4.4.2

Touchscreen

Projected capacitive (flat glass)
Glass panel (no touch function)

UTC Peripherals



Smart Card Reader



RFID Reader



Barcode Reader



**Magnetic Stripe
Card Reader**