



TDX



Intelligent Diagnostics for Mobile Electronics and Machines of the Future

**BODAS-SERVICE 4.X –
MORE THAN MAINTENANCE AND REPAIR**
powered by Softing TDX

SPECIAL MACHINES WITH THE HIGHEST REQUIREMENTS

Mobile working machinery is an important segment of the entire vehicle market. Typically the machinery requires hydraulic drive technology, especially axial piston units, which make displacement with high pressure possible. The operating and environmental conditions in this segment are much tougher than for standard motor vehicles. For example, the ideal scenario is for excavators to be able to dig pits, cranes to lift

loads weighing tons, tractors to plow fields and forestry machines to fell trees on the narrowest of forest paths. This type of work requires special movement and drive solutions. One of the world's leading suppliers with a top technological position in this market and unique industry knowledge is Bosch Rexroth. The **BODAS (BOsch Rexroth Digital Application Solutions)** concept combines high-quality hardware components, standard software packages for the application as well as diagnostic and programming tools.

„We were looking for a scalable, open diagnostic software for our new controllers that would also offer easy access – in other words, something that would suit us 100%. And with Softing TDX, we found the perfect tool for that.“

Robert Stawiarski | Product Manager Tools, Bosch Rexroth AG

About Bosch Rexroth

Industry	Mechanical and plant engineering
Domiciled	Stuttgart, Germany
Employees	31,000
Web	www.boschrexroth.com

Softing Solutions

- Softing TDX.studio
- Softing TDX.workshop

Tool Functions

- Fast system analysis
- Flashing and diagnostics for commissioning and troubleshooting
- Visualization of parameters, measurement values and diagnostic error codes

Application Area

- System integrators
- Service repair shops
- Service technicians
- R&D departments
- Manufacturing plants of OEMs and Bosch Rexroth AG

Project Goals

- Greater efficiency through modular BODAS app concept
- Extendable and future-proof service solution
- Increased security and protection of intellectual property
- Regular updates as part of the maintenance and service package
- Authoring tool for configuring customer-specific service apps
- Different license models for different requirements

STANDING STILL IS NOT AN OPTION

Future requirements, such as the integration of additional electronics, extended software functionality, technologies for cloud connection or remote access of a distant BODAS service application, were the reasons why the new BODAS controller generation RC/40 was developed. The previous generation of RC/30 controllers combined both the

software and the data, diagnostic functions, security settings and parameters required during runtime on the hardware. With the separation of runtime data and hardware in the new series, Bosch Rexroth primarily wanted to implement a completely new approach to diagnostics and base it on the open UDS and ODX standards instead of on a proprietary approach in order to start the next generation of controllers with a future-proof concept.

FOCUS ON THE OPTIMAL SOLUTION

The main challenge for Bosch Rexroth in the development of the new generation of controllers was the selection of a suitable, flexible and extendable flash and diagnostic tester. In addition to covering the key features of scalability, openness and easy access, there were high requirements regarding flexibility and the recognition of the correct controller variant in the vehicle network. Furthermore, the desired solution had to be future-proof and easily extendable – the BODAS-app concept was the great vision. To be able to cover all these requirements in the best possible way, Bosch Rexroth decided in 2016 to use a multi-phase process to find the most suitable supplier.

„The special thing about our controllers is their compliance with the high safety and security standards, a feature that is highly appreciated by our customers. Softing TDX supports this flexibility completely.“

Leonhard Bizzarro | Product Manager Controllers, Bosch Rexroth AG

INTO THE FUTURE WITH SOFTING TDX

In 2018, Bosch Rexroth ultimately decided to use the modular diagnostic tool kit Softing TDX (Tester for DiagnostiX) as the platform for the BODAS-service 4.x application. This decision was preceded by a series of conference calls, workshops and loans to enable a detailed examination of the available functionalities. In this way, different perspectives of the off-highway world of Bosch Rexroth and the automotive diagnostics world of Softing could be brought closer and closer together. Relatively quickly, the modular provision of the BODAS-service functions using different service apps proved to be the perfect solution. The basis for this is the correct and dynamic composition of projects and content (service apps) during runtime. Three categories of apps are available to Bosch Rexroth customers – standard service apps, a dashboard app for fast startup, and custom apps that can be completely customized by users. The discovery app for network detection, including the detection of the controllers connected in the vehicle, as well as the flashing app for an ECU update are part of the basic functionality of every BODAS-service application. A suitable technical solution was found for the use of several electronic devices with different functionality with different applications. Finally, Softing TDX offers complete design freedom for the implementation of Bosch Rexroth's

graphic operating concept specifications with corresponding fulfillment of the company's corporate identity – from the icons and graphics, color scheme and operating logic to the naming of the tool.

FOCUS ON THE USER

Today, BODAS-service 4.x is used both by Bosch Rexroth itself and by manufacturers of mobile working machinery and system integrators. Two intuitive tools are available to the user through the Softing TDX diagnostics kit: An editor for generating individual input data, such as diagnostic content and sequences as well as repair instructions. At the same time, a state-of-the-art diagnostic tester is integrated for maintenance and repair of the BODAS controllers.

Users include, for example, technicians in maintenance and repair shops who can quickly call up diagnostic results, but also update software and parameters in the field. Application engineers commission and calibrate software functionalities, use the user interface for platform adaptation and compare parameters with current measurement values in acceptance tests. In R&D departments, complex software functions are validated and individual apps, i.e. controller-specific diagnostic functions, are created with corresponding documentation for performing additional diagnostic tasks. Finally, production plants use the command line interface to perform automated flash, calibration and diagnostic tasks.

„With the help of the flexible TDX technology, a solution has been created that realizes significant efficiency advantages for tool users themselves, while at the same time simplifying the maintenance and servicing of the entire solution at Bosch Rexroth.“

Julian Erber | Product Management, Softing Automotive Electronics GmbH
