Pump drive control PDC

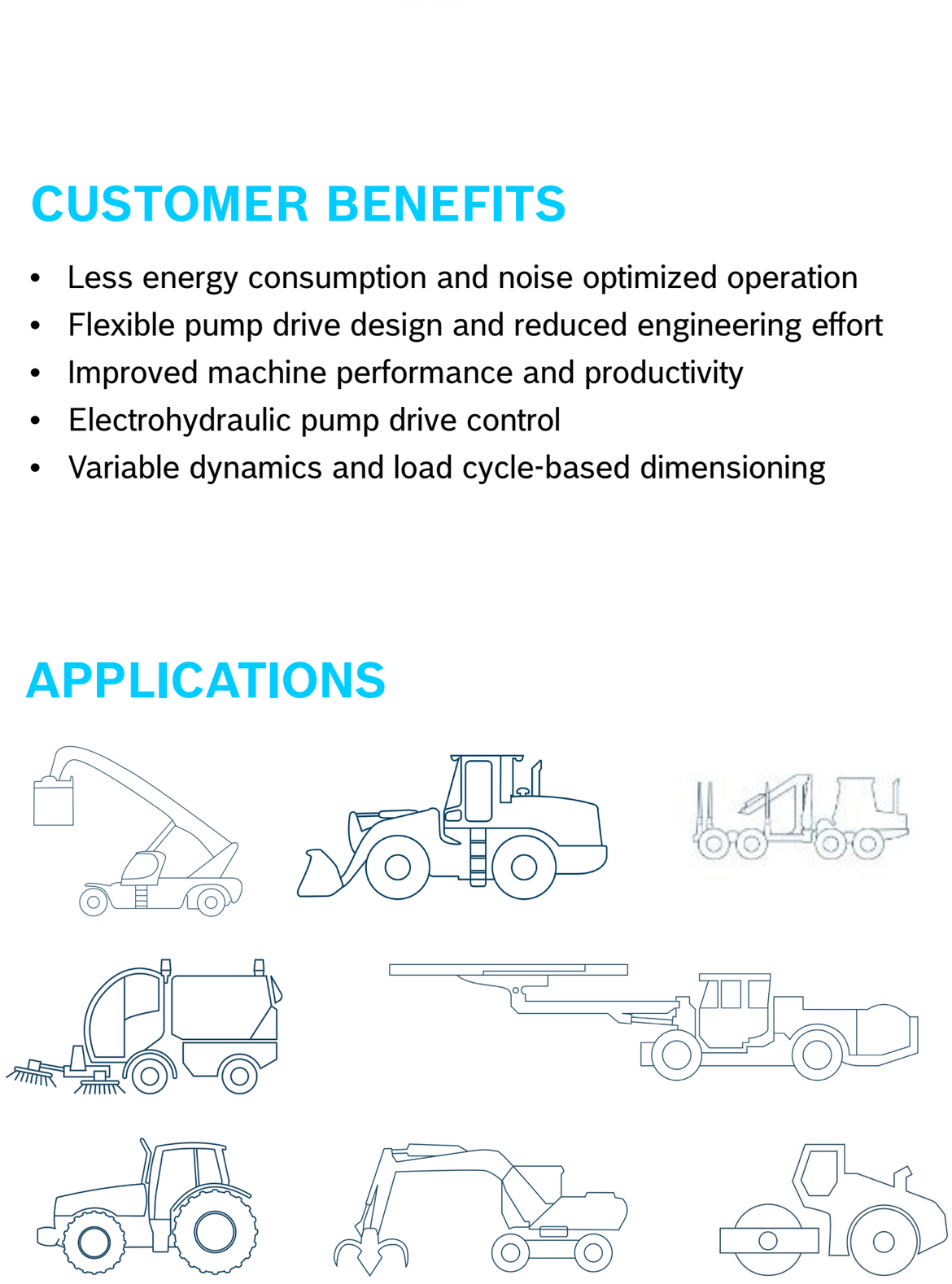
Application software for electric vehicles

The portfolio of eLION inverters, eLION motors and open circuit axial piston units with Pump drive control PDC from Bosch Rexroth enables flexible combinations for many applications. Thanks to the electronic pump control, a variety of functions are offered that improve efficiency and productivity, reduce the noise emissions of the pump drive and enable simple integration. This also enables downsizing of the electric drive. The application software Pump drive control PDC is suitable for a wide range of mobile machines with an open hydraulic circuit - from construction, agricultural and forestry machinery to municipal and material handling vehicles.

CUSTOMER BENEFITS

- Less energy consumption and noise optimized operation
- Flexible pump drive design and reduced engineering effort
- Improved machine performance and productivity
- Electrohydraulic pump drive control
- Variable dynamics and load cycle-based dimensioning

APPLICATIONS



FUNCTION AND BENEFITS

Less energy consumption and noise optimized operation
For battery-powered machines, reducing energy consumption is crucial for lower component costs and longer autonomy times. The control principle of an axial piston pump and its interaction with the hydraulic system are key factors for the energy efficiency of mobile machinery. In the case of electric pump drives, the inverter and electric motor must also be considered. Pump drive control PDC optimizes these components multidimensionally with a focus on efficiency, noise reduction and thermal load.

Flexible pump drive design and reduced engineering effort
PDC significantly reduces pump variance and enables a flexible combination of eLION components with PDC-controlled pumps. The application software provides a standardized communication interface for the high-voltage system and device control, which enables easy integration into the OEM machine. In the event of malfunctions or function updates, the software can be maintained via the BODAS service interface.

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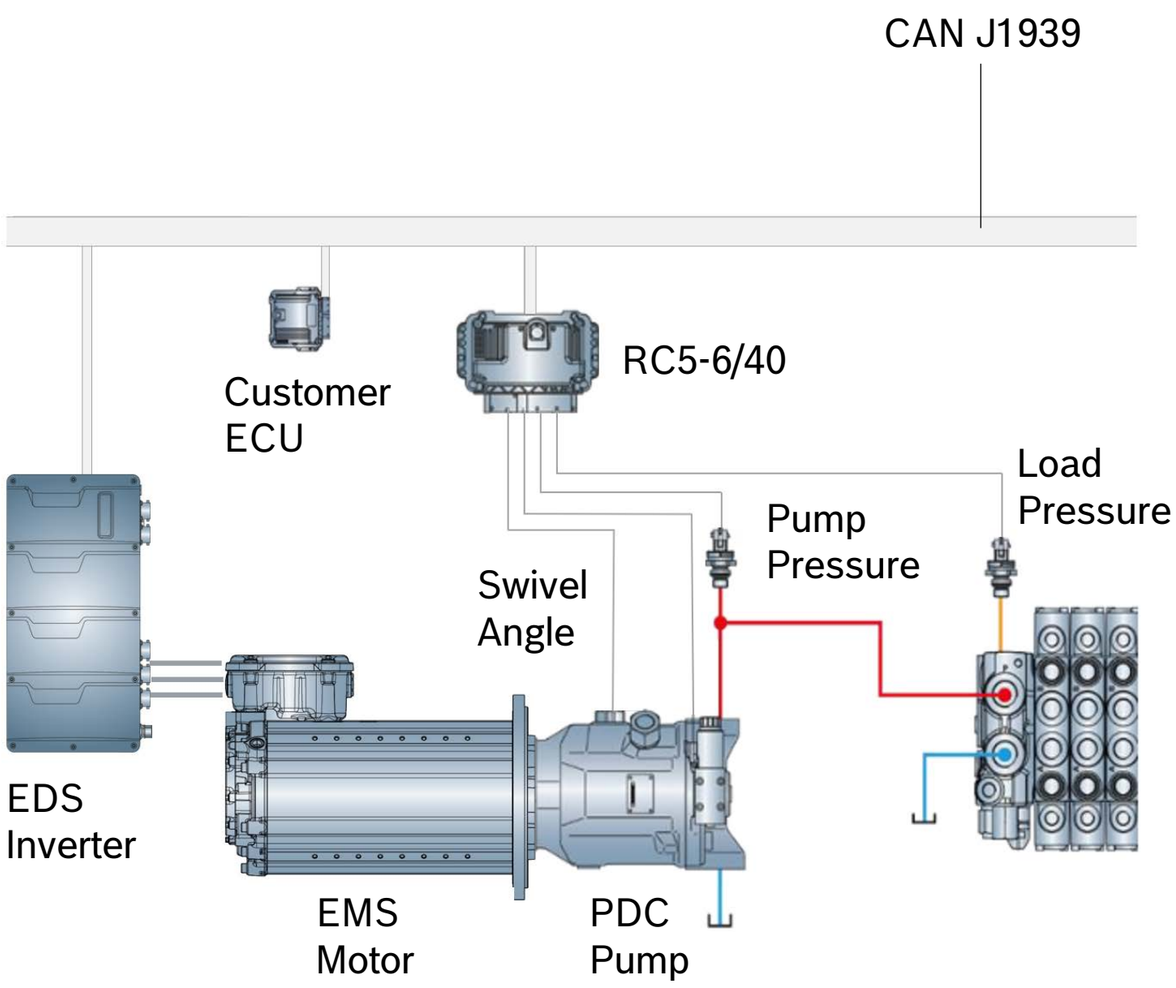
TECHNICAL DATA

Pump drive control PDC	
Electric motors	eLION EMS1 / EMP1
Inverters	eLION EDS1
Rexroth pumps	A10VO, A11VO, A15VO developed for PDC control
Powerless condition	Pump at minimum displacement volume; inverse logic on request
Rexroth sensors	Angle sensor Pressure sensor pump / LS (PR4 SENT)
Operator interface	CAN SAE J1939
Rexroth control unit	RC5-6/40
Safety standards	Developed for EN ISO 13849
Diagnostic interface	BODAS-service and CAN SAE J1939 (UDS)



Integration of the application software Pump drive control PDC

Improved machine performance and productivity
Electrified mobile machinery must be highly productive and optimized for the intended load cycles, while electrical power and energy are limited. With the new PDC from Bosch Rexroth, direct communication between the high-voltage system and the device control is possible. This allows the hydraulic power to be continuously and dynamically adapted to the needs of the systems and the available power. The software provides the hydraulic power supply, offers numerous functions and optimizes power consumption to ensure maximum system availability.

Electrohydraulic pump drive control
Pump drive control PDC consists of the functions of the PDC pump control and the electric drive control with the following features:

- Simple high-voltage system integration
- Operating strategies to increase efficiency and reduce noise
- Component and system protection
- Inverter and PDC pump control

All functions of the Pump drive control PDC are provided with predefined parameters to optimize performance in the electrical and hydraulic system (e.g. load sensing). The application software runs on the Bosch Rexroth RC5-6/40 control unit, which supplies the control current to the electro-hydraulic pump interface and controls the electric drive.

Variable dynamics and load cycle-based dimensioning
The application software Pump drive control PDC offers a wide range of functionalities and leads to a customizable machine performance with optimization of efficiency and noise. Thanks to dynamic torque and power limitation downsizing of the electric drive is possible with load cycle-based dimensioning.

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