BODAS AFC - Version 30
Fan control for hydrostatic fan drive systems

Customer benefits
▶ Adaption of the fan control to the respective application via parameterization
▶ Support of one hydraulic circuit with various configurations of pumps, motors and valves
▶ Consideration of up to 6 temperature values plus analog and digital input and output functions
▶ Communication via CAN J1939 (standard/proprietary) incl. diagnostic messages
▶ Improved control quality enables less fuel consumption and noise emissions
▶ Modular software concept for efficient project engineering

Functions and benefits
BODAS AFC30 is a software solution embedded in Rexroth controllers RC4-5/30 to control hydrostatic fan drive systems. It supports hydraulic configurations with variable pumps as well as with fixed pumps. When a fixed pump is used a pressure relief valve at the hydraulic motor is needed. A fixed motor is always used as hydraulic motor for actuating the fan. Each operating device can either be hard-wired to the Rexroth controller or it receives the signal via CAN. The BODAS AFC30 CAN protocol is based on SAE J1939 standard. With hydrostatic fan drives from Rexroth, equipment manufacturers gain more flexibility for the arrangement of components in the engine compartment. Hydraulic pumps, tubes, controllers and the fan wheel can simply be installed where free space is available. Thereby the existing space is efficiently used. This flexibility is an enormous advantage compared to direct drives using belts or drive shafts.

Emission standards and mandatory limit values for commercial vehicles and mobile working machines remain in the focus of legislators and regulatory agencies. An optimal combustion temperature of the engine via an efficient management of the cooling circuit is among others necessary to comply with these requirements. The required cooling capacity increases by 15 to 40 percent due to the changeover to Euro 6 or TIER 4 final. Furthermore the required space for the cooler rises by approximately 20 percent. Hydrostatic fan drives and fan drive controls from Rexroth contribute to meet these challenges and are an important part of modern engine systems. Intelligently controlled fan drive systems provide cooling capacity based on measured temperature values. Moreover they save energy through the demand-oriented actuation of the fan drive and as a result they reduce the operating costs by up to 5 percent in on-highway or off-highway applications.
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Technical data

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Concept A: variable pump and fixed motor

Cooling on demand
By reason of their power and torque characteristics, modern combustion engines demand a high cooling power even at low engine speeds. Hydrostatic fan drives from Rexroth decouple the rotational speed of the fan from the engine speed. Thus a stepless, proportional control of the fan speed dependent on the cooling demand is enabled. For a proper cooling demand AFC30 takes up to 6 temperature values into account. Compared to a not proportional fan control, fuel savings by up to 5 percent are achievable.

Reversing and standstill function
To prevent that dust and dirt which settle inside the radiator affect the cooling performance, the reversing function comes into action. The fan changes its direction of rotation at different intervals and the dirt gets blown out. Thereby the radiator remains unobstructed and the engine operates at ideal engine and combustion temperatures.

With the optional standstill feature, the fan rotor is completely shut down during the start-phase or when ambient temperatures are very low. The combustion engine therefore achieves its operating temperature faster and as a result the exhaust gas emissions and fuel consumption are reduced.

Additional functions
BODAS AFC30 offers many additional functions. Examples are the consideration of external requests (retarder signal), a fan speed limitation for over-speed protection or the after-run behavior for a controlled shut down.

Modular software design
The software is based on a modular design which allows customer extensions if functions are demanded which exceed the serial functions of BODAS AFC30.

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