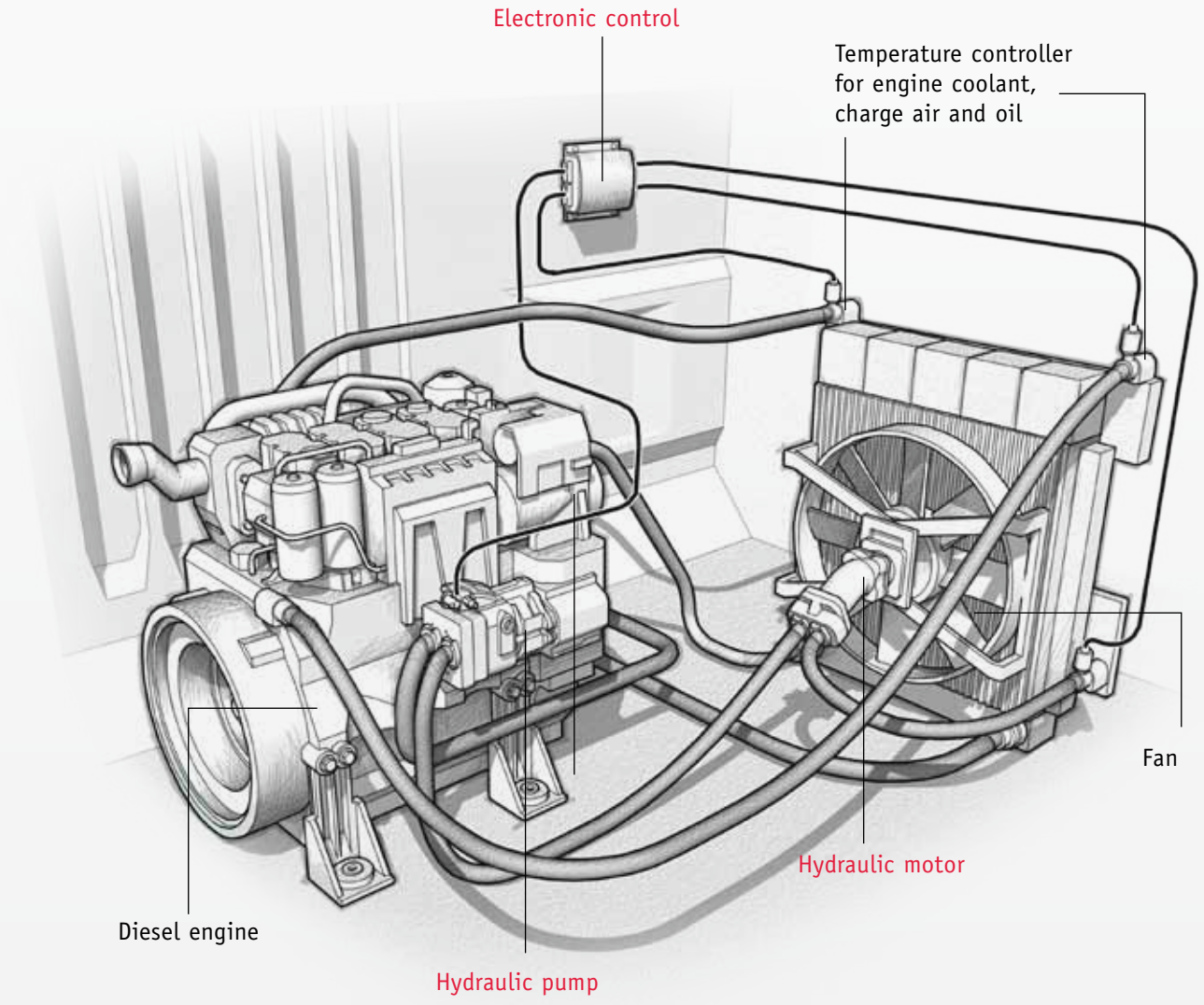
A cool head for optimal engine temperatures.



Maintaining optimal temperatures within engines during combustion is always important, no matter how small the engine compartment. This is no problem with a hydraulic fan drive, which provides the necessary flexibility in terms of component structure. In addition, modern control technology allows for fail-safe functionality and reversing operation.

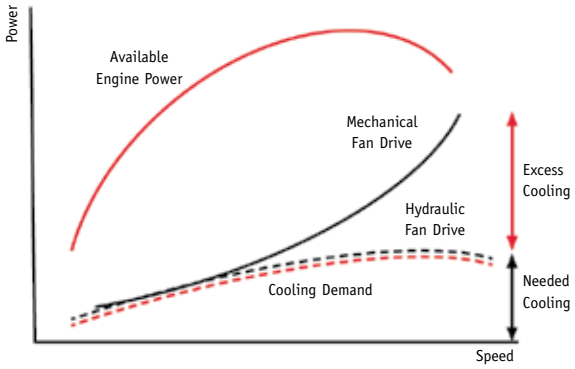
SOLUTIONS FOR A WORLD UNDER PRESSURE

HAWE HYDRAULIK

HAWE Hydraulik: Always in motion for you.

Adhering to standards and limits worldwide.

More stringent emissions standards and the establishment of mandatory emissions limits (Tier 4 final, Euro 6, US10) have created new and sometimes fundamental challenges in engine development for manufacturers of commercial vehicles and their suppliers. Modern engines already operate with maximum torque at low engine speeds. This creates heat within the system, which must be reliably and effectively dissipated. To achieve this, the engine combustion temperature must be optimized while consuming as little energy and space as possible for control functions.



The shift from the mechanical to the hydraulic fan drive.

In the past, the fan wheels used for this purpose were connected to the engine crankshaft with a fan belt and driven by the belt. The hydraulic fan drive is a much more flexible and efficient alternative to this mechanical drive. Drawing on its proven set of solutions, HAWE Hydraulik offers a hydraulic fan control system that smoothly adjusts cooling performance in line with requirements, thereby maintaining the temperature independently of engine speed.
In this process, the diesel engine drives a hydraulic pump, which supplies a hydromotor connected to the fan wheel. In other words, the rotation speeds of the diesel engine and the hydraulic pump, and of the hydromotor and fan wheel, are mechanically decoupled. Using a variable displacement pump ensures the rotation speeds of the fan wheel and the diesel engine are also decoupled. The fan never rotates faster than necessary, and it can be completely switched off during the starting phase or at very low external temperatures. This is a demand-actuated control that reduces operating costs and exhaust emissions. Compared with a load-sensing or electro-hydraulic control system, the use of an electro-proportional pressure regulator offers the benefit that there are no vibrations and the system does not escalate.

Achieving sustainability together.

Drawing on their industry knowledge and application expertise, specialists at HAWE Hydraulik work with you to develop the right power and optimal control system for your fan. Solutions are tested and optimized before use through modern simulation programs and high-performance test benches – because when it comes to conserving energy and protecting the environment, we are determined to make a difference.

Pictures: Fotolia, Wikipedia

Solutions for saving fuel and reducing operating costs.

Drawing on its proven set of solutions, HAWE Hydraulik creates reliable and robust products with modern designs, to offer you efficient, need-based control of your fan as a comprehensive space-saving and cost-effective solution.
See below for some examples of our solutions:

Continuously variable and need-based fan speed:

If the fan speed is continuously variable between a minimum and a maximum, regardless of the combustion engine speed, maximum fan speed is also possible at minimum engine speed. The fan speed can be reduced, if necessary, or the fan can be completely switched off, to prioritize other functions during peak demand periods, for example. The electro-proportional pressure regulator by HAWE Hydraulik is available for both axial piston pump types: the V40M and the V60N. The regulator presets the fan speed through the pressure setting.

Fail-safe functionality:

The electro-proportional pressure regulator was specially developed for fan and generator drives. In contrast to conventional systems, the pump is not intended to shut down in the event of a malfunction, but instead provides maximum performance to ensure system cooling and prevent failure or damage. For this reason, the pressure regulator has a falling characteristic curve, meaning that the pump provides maximum pressure in the event of a power outage.

Flexible arrangement of the components in the engine compartment:

If space requirements for the radiator increase, free positioning of the other components, such as the fan control, becomes important. Airflow in the engine compartment can also be optimized in this fashion. Through decoupling from the engine vibrations, damage to the fan blades is also reduced.

Also in reverse:

During operation of construction and agriculture machines, in particular, fans suck in a great deal of dust and other dirt particles, which can clog the radiator grill. For this reason, the fan is run in reverse at regular intervals to blow out the pollutants that have been sucked in and prevent clogging of the grill. The radiator remains free of particles and can operate at an ideal engine and combustion temperature.

Splitting up the cooler packet:

In a multi-cycle system, the three systems – intercooling, water cooling and oil cooling – can be decoupled from one another. In this case, three small fans are usually used instead of one large fan. They can be positioned even more easily in the engine compartment and the engine speed can be individually adjusted to correspond to current cooling requirements. Systems with one pump and three pressure control valves are just as viable as the use of three pumps.

Survey of system design parameters:

Please provide the below mentioned information about Your system to facilitate the control design:

Fan

- Desired number:
- Manufacturer and model name:
- Required fan power [kW]:
- Rotation speed [rpm]:

Fan motor

- Preferred flange (e.g. SAE-B 2-hole):
- Preferred shaft (e.g. SAE-BB):
- Reversing drive required: ☐ yes ☐ no

Diesel engine

- Manufacturer and model name:
- Rated speed [rpm]:
- Maximum speed [rpm]:
- Speed at maximum heat output [rpm]:

Pump drive

- Installation point (e.g. secondary drive of the diesel engine or transfer case):
- Preferred pump flange (e.g. SAE-B 2-hole):
- Preferred shaft (e.g. SAE-BB):
- Transmission ratio (pump to diesel engine):
- Maximum torque [Nm]:
- Direction of rotation: ☐ right ☐ left

Notes:

P Fan drive-00 EN 07/2014

If you have any questions, please get in touch. Our experts are always happy to help.

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