



Variable Speed Hydraulics

by Regamotion®

Hydraulics is an obvious target when pursuing increased productivity and efficiency in vehicle design. Most hydraulic components, such as pumps, valves and motors, has inherently low efficiency which must be accounted for when designing with a traditional architecture.

The Regamotion® approach to tackle this challenge is to combine the best properties of electric and hydraulic technologies and offer complete electro-hydraulic system solutions for mobile applications.

Our solutions builds on hydraulic pumps connected to servo motors with integrated speed and torque feedback for flow and pressure control. When required, the system can easily be equipped with cylinder position or pressure sensors for closed loop control made directly in the rugged pump motor controller.

The pump motor controller can also handle multiple hydraulic valves. Both proportional and on/off, for a stand-alone system.

Regasense® is our sister brand under which we develop and manufacture in-cylinder position sensors for mobile machinery. Some of our original sensor designs dates back 25 years and has been proven to deliver top performance in harsh environments ever since.



PROPERTIES

Hydraulic systems can be designed in many ways and we love to talk about different possibilities with our clients. The table below will give you a rough idea of the systems we work with but don't hesitate to ask if you have other ideas.

System property

System voltage	24-80 V _{DC}
Pump power	0,5 - 50 kW
Pump motor type	PMAC or AC induction
Control mode	Pump speed or torque
Feedback types	Cylinder position, pressure etc.
Valve control	PWM, current or voltage PID



REGASENSE®
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Direct Driven Hydraulics (DDH)

Variable speed hydraulics, and more specifically so called direct driven hydraulics (DDH), where the control valves are omitted, is gaining traction in many areas. In electric and hybrid architectures the driving force is often the increased energy efficiency. Studies show a theoretical total system efficiency of up to 76,7%* using this type of solution which is a great improvement from a traditional architecture.

Besides the increased efficiency, improvements that can be made in system performance, makes this type of solution interesting also for productivity reasons in many types of machines.

- **Vehicle/CAN integration**
- **Embedded motor controller software**
- **Motor and valve control**
- **24V-80V systems**
- **Performance tuning and analysis**
- **Ideal solution for agriculture, forestry and municipal machinery**

*Direct driven hydraulic drive for new powertrain topologies for non-road mobile machinery - T.A. Minav et al. (2017)

