

## Don't design – configure!

With a concept, Bucher Hydraulics and Jetter break with traditional development processes and, at unprecedented speed, offer OEMs (original equipment manufacturers) customized hydraulic systems for slurry tankers.



(Source: Bucher Hydraulics)

The complete article from Jetter and Bucher Hydraulics is published in the [March issue](#) of the CAN Newsletter magazine 2020. This is just an excerpt.

Precision farming is generally regarded as the ideal way for the targeted cultivation of agricultural land. For manufacturers of vehicles and implements, however, precision farming also means an increasing number of electronic components, the integration of new sensor technologies, and a number of variants and functions in their range of vehicles. Slurry tankers in particular, both as self-propelled and towed versions, represent a major challenge in terms of development costs and time. This is because a large number of possible options in the chassis, steering system, and slurry tank, as well as different distribution devices, must be catered for. The Nitrates Directive 91/676/EEC on groundwater protection and its German implementation in the form of the Fertiliser Ordinance (DüV) are also hovering over the industry as a constant worry.

It is uncertain how long this will remain just a matter of stricter documentation obligations and tighter rules for determining fertilizer requirements, as well as longer 'no fertilizing' freeze periods. The industry is therefore facing the additional challenge of being able to react quickly to statutory regulations at the same time that the number of variants for slurry tanker subsystems is increasing. Significantly shorter development cycles for hydraulic systems and their control, as well as retrofit solutions, are currently very important for slurry tanker manufacturers.



Figure 1: With the LVS hydraulic valve, designers can now create those implement control systems that, so far, have been difficult to master. LVS valve blocks can be configured for both fixed displacement and LS pumps. (Source: Bucher Hydraulics)

### Generic modular development

The approach of Bucher Hydraulics and Jetter has been to completely end the "serial" development process that starts with requirements specifications, then project planning, engineering, prototype procurement, test phase, and initial sampling: The design of the system solution was broken down into a number of individual modular solutions, taking into account all common variants and technologies on the market. This was true for both the hardware and the software aspects. For this purpose, an interdisciplinary team of Bucher and Jetter engineers defined more than 40 hydraulic subfunctions for the slurry tanker. For each subfunction (e.g. suction hose), the corresponding variants (e.g. multi-jointed suction arm) were assigned to it and the hardware and software elements for each of these variants were then developed and tested. A good 1,5 man-years was invested just in the source code for all the options. The "generic system solution for slurry tankers" contains around 1 400 parameters.

Each specific overall system for a particular slurry tanker now consists of a combination of selected and previously tested and optimized subsystems. Bucher Hydraulics has the right portfolio for a modular configuration of the hydraulic system, because the

control blocks feature a sectional design. With up to 22 sections, all the functions can be incorporated in one block. Alternatively, it is possible to distribute the functions over several blocks, e.g. on the drawbar, distributor or suction boom. The valves with functions specific to the slurry tanker also have a sectional design. They operate load- independently thanks to the pressure compensator that is connected downstream of the proportional directional control valve (flow-sharing principle). A very large selection of valves is available for special functions in the areas of steering, chassis, hitch, top cylinder, etc., which can be combined modularly in a variety of forms in the inlet or intermediate sections.

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