

The Engineer's guide to new products & design ideas



Pumps fit for the Tropics

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10: Bearings selection

'Precision' bearings could boost your productivity

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Testing the durability of power transmission couplings



Block concept shortens

hydraulic assembly times

The concept of the hydraulic control block enjoys clear advantages over the more conventional method where each hydraulic control element is piped individually.

Hydraulic control blocks can be designed with a small footprint, the screw-in valve technology minimising the risk of leaks and ensuring ease of maintenance. Moreover, both standard valves and tailored valve systems can be used in the construction of these systems, which are considerably quicker to assemble compared with more conventional approaches.

For example, Ruppel Hydraulik, a company specialising in the design and manufacture of electro-hydraulic drive systems and controllers, has developed a multi-valve control block for an item of construction machinery that can be connected up within a single day. In contrast, a conventional pipework design for a control console of this size would require around two person-weeks for completion, as Gerhard Ruppel, founder and owner of Ruppel Hydraulik, explains:

"The issue of assembly time plays an important role in our developments. A circuit has to be of optimum design

from both a technical and economic point of view, as well as in terms of energy. Our block concept is the best guarantee against downtimes a customer can have. There is also the added benefit of massively reduced assembly times."

While the control block approach is not suitable for all hydraulic installations, it is for a wide range of applications, including presses, construction machinery and deep-sea drilling rigs.

In one project recently carried out by Ruppel, the specification for an hydraulic safety system serving a cement mill called for rapid reactions to changing production conditions. When large pieces of rock need to be processed, the gap in the crushing gear has to be increased rapidly in order to avoid damage to the crushing rollers and drive.

Using conventional pressure limiting valves as shock valves failed, as they weren't able to react quickly enough. Instead Ruppel developed a control

block incorporating a pressure limiting valve from the Sun Hydraulics range, which features a particularly fast response time, allowing the adjustment drive to react very quickly to changes in the size of raw material presented to the crusher.

Indeed, within just 300ms, the system flow increases from 100 litres/min to 1,000 litres/min without any pressure spikes. All the functions required by the crushing machine manufacturer have been incorporated into a compact, application-specific block that can also cope with the harsh environmental conditions prevailing in a cement production environment.

www.ruppel-hydraulik.de

A block design can significantly reduce installation times for hydraulic control systems – in this case (for an item of construction machinery) from two weeks to a single day

