

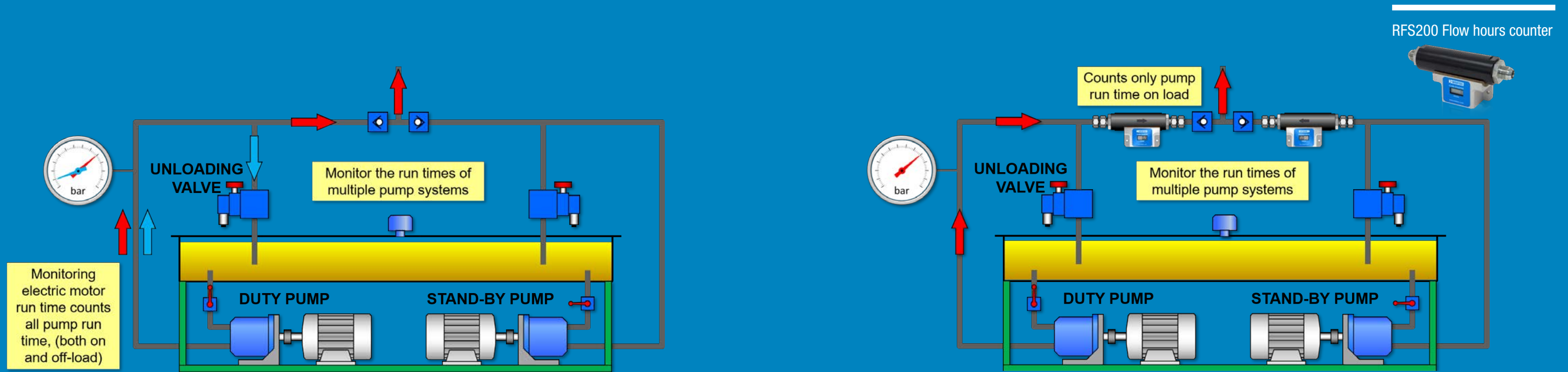


HYDRAULIC MEASUREMENT AND CONTROL

APPLICATION CASE STUDY

RECORD THE USAGE OF HYDRAULIC ATTACHMENTS





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Not too many years ago the only instrumentation fitted to a hydraulic power unit would probably have been a fluid thermometer, a sight glass and a pressure gauge. Nowadays however, we are able to reliably monitor not only system pressure and pressure transients, but also fluid flow rate, temperature, fluid cleanliness and water content, component vibration, efficiency and several other parameters besides. As industrial and mobile machinery has become increasingly sophisticated, such predictive maintenance of components has become both more readily available and cost effective as well as being more necessary. Not only are unexpected component failures likely to be costly, they may also be potentially dangerous and possibly environmentally polluting as well.

But there remain a few hydraulic components whose condition is difficult to monitor effectively - flexible hose condition is one example. As a result, hydraulic hoses together with the elements of simpler filters and air breathers, dynamic seals on cylinders etc. are recommended to be changed after specified periods of either time or usage. Although the passage of time is easily established, machine usage is not always so easily monitored. For a process machine operating continuously two or three shifts a day then usage can be determined reasonably accurately. The same is not the case however with a piece of farm or construction machinery which is only used intermittently or seasonally. In other words, in most cases, hydraulic systems still lack the equivalent of a car's mileometer - an instrument which tells us how much use the machine has actually had.

That situation can now be easily remedied however with the new RFS200 run-time monitor product from Webtec.

The principle of operation of the Webtec unit is by means of a variable orifice flow meter and magnetic switch which senses the position of a piston. Sensing flow rather than pressure means that trapped-in pressure or pressure created by reactive loads (or thermal expansion) when the system is shut down cannot generate a false usage reading. The unit can be installed in any part of the hydraulic system and is capable of operating with pressures up to 420 bar and flow rates up to 200 L/min.

Initially the product was market driven following a request from a customer manufacturing hydraulic attachments in the agricultural sector. Many such attachments are shared by co-operatives so a foolproof way of charging customers by usage was required. Another customer in the construction machine business needed to monitor usage for each attachment in order to apply an appropriate maintenance schedule. However, each attachment may be changed 30 times a day and keeping track of their usage any other way would be very difficult.

In the industrial sector, applications requiring high flow rates of fluid, often use multiple pump systems where individual pumps can be brought on line at the appropriate time in the machine's flow cycle. In some cases, additional pumps may be reserved purely as stand-by units which may only be used in the event of a failure of one of the

normal duty pumps. Such arrangements are common in process industries (such as steelworks applications for example), where a malfunction of the hydraulic system would cause major problems. Being able to keep track of each individual pump's usage would therefore be a significant benefit in planning a scheduled maintenance programme for pump overhaul or replacement. Component test rigs may also be an application where the unit may prove useful. Endurance testing often involves operating or cycling components for hundreds or thousands of hours so the unit's capabilities to accurately record up to almost 10 million hours of operation will cover all requirements.

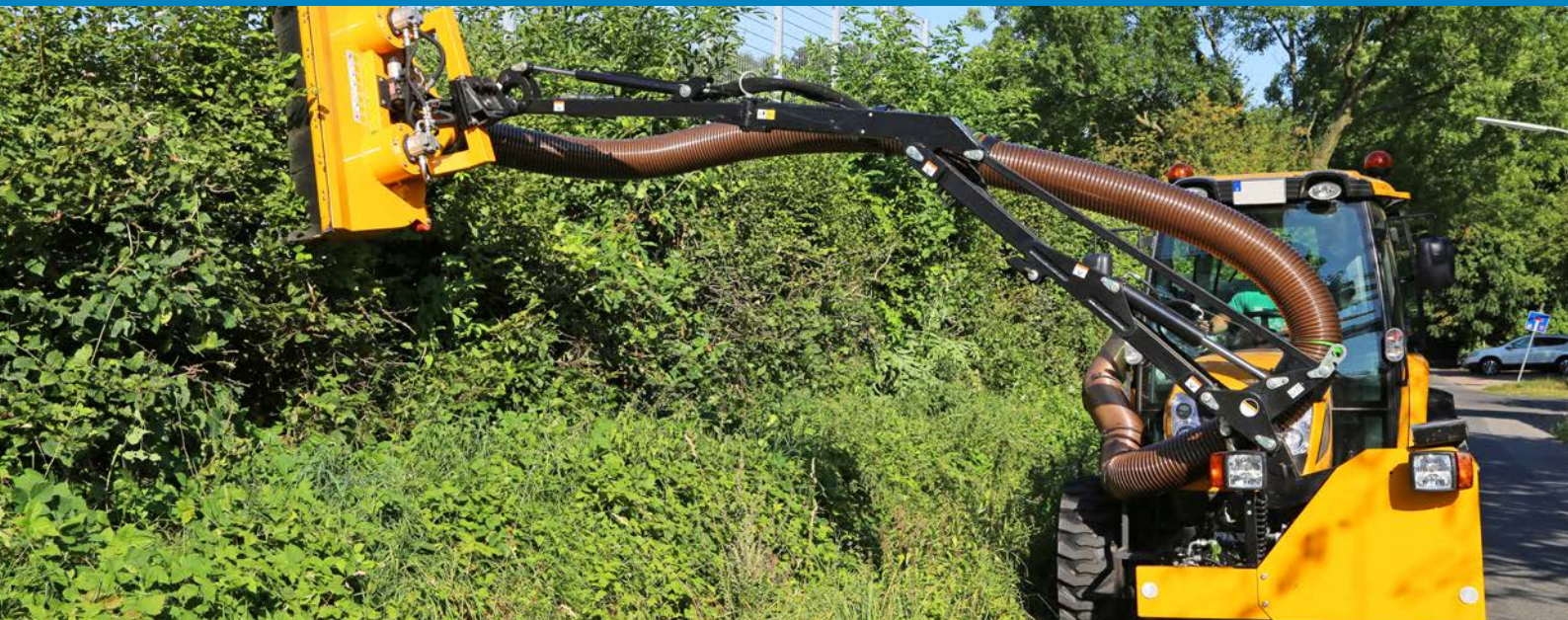
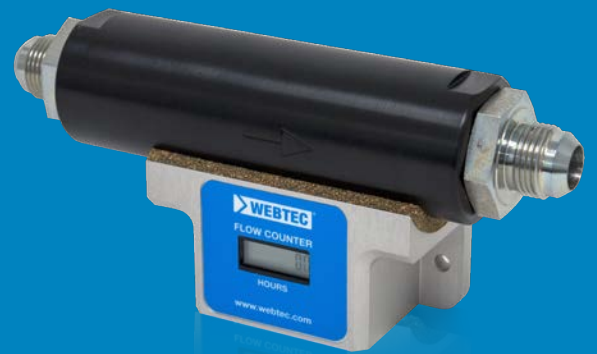
So, for little more than the cost of a tankful of diesel, the Webtec RFS200 unit can provide a useful device for:

- Recording the time that equipment is operational in the hire market
- Apportioning the use of shared hydraulic tools between multiple units
- Accurately monitoring the service interval of hydraulic components
- Providing run-time data for hydraulic component test rigs
- Creating accurate data on component lifetimes for use in preventive maintenance programmes

For more information on the RFS200 Run-Time Monitor, please visit www.webtec.com

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