



November 4, 2009

## **Sauer-Danfoss Steering Unit Ensures Complete Vehicle Control**

**New OSPE electrohydraulic steering unit improves vehicle performance and comfort, and facilitates compliance with Machinery Directive 2006/42/EC.**

**NORDBORG, Denmark, November 4, 2009 – Sauer-Danfoss Inc. (NYSE:SHS)**

Sauer-Danfoss' new OSPE electrohydraulic steering unit incorporates a range of innovative features designed to meet stringent new safety legislation. Featuring proven OSP steering technology and an integrated electrohydraulic steering valve, the OSPE steering unit helps simplify hydraulic system architecture. The high level of integration minimizes the need for additional components and provides OEMs with a complete package – designed, developed, and tested for optimal performance. With a 'safe state', selectable reactive and non-reactive steering modes, Load Sensing and Open Center options, and variable steering ratio, the OSPE is the ideal choice for demanding off-highway applications.

"Today's vehicles require versatile solutions that increase productivity, reduce operator fatigue and provide a safe, comfortable working environment," says Tom Rudolph, Product Portfolio Manager. "With the new OSPE steering unit we are able to introduce a range of features that help improve vehicle performance and operator comfort, while facilitating compliance with the safety demands of Machinery Directive 2006/42/EC."

### **A 'Safe State' for Your System**

To comply with revised safety legislation and new standards, such as ISO 25119, the OSPE steering unit offers a defined 'safe state'. In the event of an electronic or hydraulic system malfunction, this option, activated by an external watchdog controller, can isolate the electrohydraulic section of the steering valve in order to protect the steering system. Another safety feature ensures that, in electrohydraulic steering (non-reactive) mode, the steering ports from the OSP will not be blocked. This is achieved with an extra connection from the hydrostatic steering unit to the cylinder. In contrast to other systems, this keeps the steering wheel fully operational and the driver in complete control.

"Recent European safety legislation has revised Machinery Directive 2006/42/EC and applies to all vehicles built in or shipped to Europe after December 29, 2009," says Rudolph. "This means that our customers must perform and document a hazard and risk analysis for all vehicle functions. The new OSPE steering unit has been designed to comply with this new legislation and provide the basis for a 'safe state' system architecture – for example, Category 2 (ISO 25119). As a result, OEMs can speed up steering system development and certification, reduce costs, and bring vehicles to market faster."

### **Selectable Reactive and Non-reactive Steering**

Whether driving on- or off-road, selectable reactive and non-reactive steering modes ensure that your vehicle will steer with a firm, automotive feel due to the OSPE's ability to automatically return to center. With two steering modes, the OSPE also enables reaction steering on vehicles with an auto-steering function. Furthermore, second generation "reaction" technology, RM (Reaction Motoring), is available in Load Sensing or Open Center. RM technology significantly

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improves the self-centering effect of the steering system, which increases vehicle stability at high speeds and provides additional operator comfort.

### **‘Quick Steering’ – No Compromise**

In combination with Sauer-Danfoss’ PVED-CL digital actuator and SASA steering sensor, the OSPE enables vehicle operators to fine-tune steering performance. The PVED-CL digital actuator incorporates steering software optimized for tractors and articulated vehicles, while the SASA steering sensor detects the absolute position and speed of the steering wheel. With this system, the operator can adjust the number of times the steering wheel is turned, from stop-to-stop, in order to adapt steering performance to suit specific working requirements or on-road driving conditions. It is also possible to adjust the steering ratio automatically, dependent on the speed of the vehicle. The result is a complete solution that not only provides additional flexibility in vehicle system design, but also helps improve productivity and reduce work-related fatigue.

“Using ISOBUS auto-guide messages, the PVED-CL actuator enables direct electric interface for GPS auto-steering systems, joysticks, electric mini steering wheels, or quick steering for agriculture and construction vehicles,” says Rudolph, “from tractors, combines, and sprayers, to backhoe and wheel loaders.”

### **About Sauer-Danfoss**

Sauer-Danfoss Inc. is a worldwide leader in the design, manufacture, and sale of engineered hydraulic, electric and electronic systems and components for use primarily in applications of mobile equipment. Sauer-Danfoss, with 2009 revenues of approximately \$1.2 billion, has sales, manufacturing, and engineering capabilities in Europe, the Americas, and the Asia-Pacific region.

More details online at [www.sauer-danfoss.com](http://www.sauer-danfoss.com).

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**PHOTO CAPTION:** The new OSPE electrohydraulic steering unit from Sauer-Danfoss combines proven OSP technology with an integrated electrohydraulic steering valve.

**SYSTEM ILLUSTRATION:** Example of a Category 2 (ISO 25119), system solution with OSPE as the core component.

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