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# Saved by the soil

Whether in farming or fighting a forest fire, we cannot live without it. Sauer-Danfoss hydraulics help put the soil to work | page 2





### A solid strategy

The buzz of activity is loud and clear at our production plants around the world. Sales continue to grow as OEMs turn to our components and system solutions to meet the fast-growing demands of their customers.

Our situation is positive. As we enter our ninth year since the merger of Danfoss Fluid Power and Sauer Inc., the strategy we have set is meeting the needs of our markets and strengthening our ability to serve our customers in the way they expect. This is clearly reflected in our overall result for 2007, which reveals a strong increase in net sales. By region, a softening in the North American economy is more than made up by dramatic growth in BRIC countries and strength in Europe. We are certainly showing good market share gains all over the globe because of our customer relationships and flexibility.

With rapid growth comes a series of challenges that call for all our professionalism as a market leader. Ongoing investments have already brought a series of operating improvements and capacity expansions - with more on the way to maintain and enhance the level of service we provide.

In March this year, our international strength was further enhanced when one of our major stakeholders, Danfoss, entered an agreement to acquire a controlling stake in our company. While we owe our current position to the united forces of Danfoss Fluid Power and Sauer Inc., we believe a more solid tie to the global Danfoss Group will help us prepare even better for future market developments. We welcome the move as a means of reinforcing our longstanding focus on the mobile equipment industry.

Stefan Koenig  
Vice President Sales & Marketing APAC Region

**Water supplies may be a long way off when a forest fire takes hold. The T-150 from Spanish EXITT makes use of a more readily available element – earth. Sauer-Danfoss hydraulics deliver the power.**

A jet of soil launched at a speed of 120kph [74.5mph] is proving highly effective in extinguishing fires that can swiftly devastate an entire forest and threaten the lives and livelihoods of surrounding communities.

"We have already tested it successfully with the Spanish army and fire departments in several regions throughout Spain. Currently, we are involved in real fire extinguishing in Zamora in the north of the country," says Diego Ruiz de Velasco, managing director of EXITT, the company behind the machine that promises to revolutionize fire-fighting in areas of dense vegetation.

Sauer-Danfoss worked with Spanish engineering company SENER on the design of the T-150 – the second prototype produced by EXITT –

and has supplied the entire electronically controlled hydraulic system. A lighter, more efficient model is currently under development, with the startup of commercial production scheduled for 2009. Some 10 to 12 machines are planned for production in the first year.

### Patented launcher

The patented mechanism at the heart of the machine is the launcher. Here a Sauer-Danfoss Series 90 250ccm axial piston variable displacement pump and Series 51 bent axis variable displacement motor transmit the enormous amount of power necessary to spurt out 150 metric tons [165 US tons] of soil an hour onto forest flames.

In areas where the nearest water supply is a long way off, the T-150 is an efficient alternative to fire-fighting equipment with water tanks that often need refilling. A closed circuit hydraulic system, comprising a Series 90 130ccm pump and 100ccm motor, drives the excavating tool that scrapes up soil from the forest floor. Another Series 90 130ccm pump and two 42ccm motors are used in a second closed circuit system for the



# The earth fights back





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cutting tool that clears trees and other vegetation from the machine's path. This facilitates access to the fire and removes combustible material that would otherwise help the fire spread.

"Apart from during emergencies, our machine can be used right round the year for forest maintenance, biomass harvesting and fire prevention strategies, such as creating new tracks for forest vehicles," adds Diego Ruiz de Velasco. "Our patented mobile cutting system is unmatched in the forestry industry. This adds enormous interest from the buyer's point of view."

### Simultaneous functionality

Numerous work functions distributed along the front and rear of the machine accomplish the main tasks, including the spade for clearing and preparing the ground and the mechanisms that regulate the launcher's position and the launcher feeder. Drawing on two Series 45 100ccm axial piston pumps and two PVG 32 proportional load-sensing valve groups, in five and six sections respectively, Sauer-Danfoss has designed a work system that combines smooth performance with simplicity. In this way, the work functions can operate simultaneously, with priority flow allocated as required. A series of cartridge valves, synchronized with the Series 45 pumps and PVG 32 valves, regulate the cylinders and two orbital motors - an OMSS 160ccm and OMTS 160ccm - involved in position-

ing the launcher. The orbital motors' smoothness, high starting torque and superb efficiency, even at low speed, are key benefits here. Incorporated in the motors, the negative hydraulic brake holds the launcher in position while it fires at the target. Working with the motors, two RR710 and RR210 gear boxes form a powerful, compact solution that is sufficiently robust for this heavy-duty application.

### Control center

Connected via CAN-bus, PLUS+1™ control technology is the nucleus of the front and rear hydraulic system, conveniently operated in the cab by a PLUS+1 Compliant JS6000 joystick linked to an MC050 microcontroller. A camera connected to a DP600 graphical display allows a perfect view of the machine's rear functions, which are controlled through an OX012 output module. Pressure, temperature and speed information is collected from the machine's eight sensors by an IX024 input module. All operational data is delivered to the DP600 display.



Because of the direct electronic communication with the 90L180 NFPE pump and 51V160 electro-proportional motor, the transmission automatically makes best use of the engine power available. That way the machine operator can spend less time on driving and more on extinguishing the fire.

Following the close cooperation with Sauer-Danfoss during the development of the prototypes, Diego Ruiz de Velasco did not hesitate to bring in Sauer-Danfoss again for the development of the first commercial machine.

"We chose Sauer-Danfoss initially because of their local presence and well-known prestige as a hydraulic supplier," he says. "We appreciate their positive, active approach. Their constant technical support during the design and production of our prototypes has been the best proof of their professional trustworthiness."

Tests so far have proven soil to be at least as good as water in extinguishing fire. The major advantage is its infinite availability. At EXITT, hopes are high that the concept will quickly become a "must-have" for all wildfire fighters around the world.

**Article 1.** For further information:  
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Sauer-Danfoss hydraulics are powering a world first in Brazil, the world's biggest producer of sugarcane. The Tropicana, from WCM Equipamentos Agrícolas in Brazil, is the only self-propelled sugarcane planter in the market.

cane sprouts after 11 to 15 days instead of the typical 45 days when planted by hand."

### Tough transmissions

Dan White has worked with Sauer-Danfoss since 1986, the same year he brought the first propelled hydrostatic sprayer to Brazil.

The transmission for the six-wheel drive on the Tropicana comprises two Sauer-Danfoss Series 90 100ccm axial piston variable displacement pumps and six Series 40 46ccm axial piston motors.

"I buy 80% of the hydrostatic transmissions for all my machines from Sauer-Danfoss," says Dan White. "We have never had any serious problems with them. And, when we have had some little thing, we have always been well attended to."

### Ease and efficiency

Two OMS 80 orbital motors are located on the sugarcane conveyor system to ensure the sugarcane is quickly and securely planted in the soil. A set of PRR63 26ccm gear pumps supplies oil flow to auxiliary functions.

Safe and reliable steering is guaranteed by a Sauer-Danfoss OSPC open center steering unit with priority valve. Responsive to GPS, the electrohydraulic steering system is ideal for ensuring precise positioning on the field. An optional light bar fitted on the planter makes it possible to continue the operation day and night.

The Tropicana is a clear step up from other mechanical planters that are pulled by tractor. Due to the ease of planting compared to traditional methods, replanting can take place more frequently to achieve maximum yield. With the Tropicana from WCM Equipamentos Agrícolas, Sauer-Danfoss has contributed to another groundbreaking design that will increase the efficiency and profitability of the world's farmers.

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# New sprout on the sugar plantation

The age of bioethanol as a renewable fuel has seen Brazilian sugarcane production grow to 500 million tons in 2007. By 2012, production is expected to reach 850 million tons – an astronomical task for an agricultural sector traditionally dependent on manual labor. But WCM Equipamentos Agrícolas has already come up with a helping hand. They call it Tropicana, the world's first self-propelled sugarcane planter. WCM has drawn on the Sauer-Danfoss team in Brazil to bring the development project to fruition. In addition to calculating the needs of the entire hydraulic circuit, Sauer-Danfoss has supplied the hydrostatic transmission, steering unit and components for the machine's outstanding work functions.

### High-tech sprouts

Within six months of the Tropicana launch in 2007, WCM sold more than 40 machines. Dan White, President of WCM, explains the Tropicana's popularity on the Brazilian market.

"Using manual planting methods, rows are dug and then several hours go by before the sugarcane is planted, which means the soil dries out. We have developed a self-propelled sugarcane planter with all the latest technology used in precision farming. The Tropicana digs the row, sprays in fertilizer, plants the sugarcane and closes the row as it goes.

"The two people operating the machine achieve the same as 120 people doing the job manually. And, because the soil doesn't dry out, the sugar-





# Reaping the technology field

**Gomselmasch is among the largest manufacturers of agricultural equipment in the Commonwealth of Independent States (CIS). Today, with advanced PLUS+1™ technology on its two new harvesters, the giant from Belarus is striding ahead on the post-Soviet market.**

Two harvesters - one for grain, the other for beets – are the first two Gomselmasch machines to take Sauer-Danfoss PLUS+1™ controls onboard. Both control systems have been developed and programmed in-house by one of the most qualified and experienced PLUS+1 programming teams in CIS. That puts Gomselmasch at the cutting edge in the post-Soviet age where electronics on mobile machinery have yet to become commonplace. The story of PLUS+1 at the factory in Gomel, Belarus, is a classic tale of one team leader who attended a PLUS+1 GUIDE customer training course and then, on his return, shared his new knowledge with his team. Within six months, the first PLUS+1 system for a Gomselmasch machine had been developed. After attending further customer training at Sauer-Danfoss, the team was equipped to optimize the system.

## The power of three

Both the KZ-14 grain harvester and the SKS-624 beet harvester rely on three PLUS+1 MC50 microcontrollers to manage key functions via ISO-BUS, a CAN-based data transfer standard on agricultural machines. Microcontrollers of Gomselmasch's

own design also tap into the network. Among the features appreciated by Gomselmasch is the ability to program the controllers in-house and to adjust the inputs and outputs on the PLUS+1 microcontrollers.

On the KZ-14 grain harvester, the PLUS+1 microcontrollers control the work functions in response to signals from the sensors. Thanks to the DSP high performance processor on all PLUS+1 microcontrollers, these signals are processed and analyzed in real time. In this way, the automatic controls maintain the required cutting height, and automatic reel speed synchronization ensures an optimum harvesting operation and loss reduction. A Sauer-Danfoss DP600 graphical display unit collects all system data and displays it in a user-friendly format.

The three PLUS+1 MC50-10 microcontrollers on the SKS-624 beet harvester operate and control

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the transmission plus the harvesting, clearing and discharge sub-systems. Optimal tuning of the operational procedures is enabled by pre-programmed component speed control - an ability that improves the quality of the harvesting operation considerably. The automatic pilot system makes the operator's work more comfortable and efficient.

## Know-how in-house

Easy to learn, the PLUS+1 control concept, including the PLUS+1 GUIDE programming environment, has given Gomselmasch new in-house knowledge. The result so far is two new machines developed from scratch within just two years.

Today, Gomselmasch is capable of developing new PLUS+1 control systems for its machines with a minimum of support from Sauer-Danfoss. Two more staff members have now been trained on the user-friendly system which, unlike others, requires no special programming skills or language. The next step lies in the application of GSM-GPRS data transfer for remote machine monitoring and fault correction – a new opportunity for the Belarusian company to optimize resources and explore the far-reaching potential of PLUS+1 controls to even greater extent.



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# Learn GUIDE online

**PLUS+1™ training at your convenience**



**Article 4.** For further information: [TheCircuit@Sauer-Danfoss.com](mailto:TheCircuit@Sauer-Danfoss.com)

Now OEMs can learn how to use the PLUS+1™ GUIDE programming environment anytime, anywhere with GUIDE Training Online – a new, free-of-charge e-learning experience that brings together theory with hands-on practice.

Designed for use with Sauer-Danfoss PLUS+1 microcontrollers, I/O modules and compliant components, GUIDE (Graphical User Integrated Development Environment) has set new standards for the design of mobile machine control

systems that secure improved machine performance and reduced time-to-market.

GUIDE Training Online consists of four modules, encapsulating all the elements of Sauer-Danfoss' four-day, instructor-led training course. OEMs who have already purchased a GUIDE license and component starter kit can use their own hardware as a learning aid. Alternatively, course students can gain programming practice using the e-learning program's Virtual Lab feature.

"Because the training is online, we can efficiently update the information we have out there for customers and prospective customers," says Fred Bezat, Application Software Product Portfolio Manager. "It's great for students who can't arrange to attend regular classes or for occasional users who want to refresh and update their training."

To log on to GUIDE Training Online, go to [www.sauer-danfoss-plus-1.com](http://www.sauer-danfoss-plus-1.com) and click on the "Training" tab to register for the e-learning.

## Compact and capable flow control

**New cartridge valve sizes complete the range**

Sauer-Danfoss can boast the most comprehensive proportional flow control range on the market following the latest expansion of its cartridge valve family.

The 16 new sizes in the range have a smaller, more compact design with higher pressure capabilities and a maximum flow rate of 120 litres/minute [32 gallons/minute]. At the same time, Sauer-Danfoss has standardized cavity sizes and extended its use of heavy-duty robust coils. The proportional flow control valves are also PLUS+1™ Compliant, allowing ready integration in a Sauer-Danfoss PLUS+1 control system.

Working in conjunction with hydraulic integrated circuits (HICs), the valves regulate the fluid flow responsible for specific equipment operations. For mobile machinery OEMs, the new valves ensure precise control and smooth manipulation of everything from combine headers to forklifts to lawnmowers.

"Our portfolio of proportional flow control cartridge valves and robust coils meets the most stringent requirements of major OEMs," said Darren Magner, Product Portfolio Manager. With the new additions, Sauer-Danfoss now offers proportional flow control cartridge valves with

  
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three standard cavity sizes. NO (normally opened) and NC (normally closed) options are available for priority pressure compensated, restrictive pressure compensated, restrictive spool non-compensated and restricted poppet non-compensated valves.

**Article 5.** For further information: [TheCircuit@Sauer-Danfoss.com](mailto:TheCircuit@Sauer-Danfoss.com)





# Open circuit package offers more

**Performance reaches a new peak for Sauer-Danfoss gear pumps and motors**

Improved efficiency, durability and reliability characterize the Sauer-Danfoss range of gear pumps and motors after the latest investments in new technology, quality control and processing capacity.

The focus on efficiency has brought the transfer of Group 1 and 2 gear pumps and motors to the Sauer-Danfoss production plant in Slovakia, where defects per million are around 250 – a quality level matched by the plant at Lawrence in Kansas, U.S.A., which produces the compact D series cast iron gear pump.

Following the Group 1 and 2 transfer, Sauer-Danfoss' Italian site will double its production of Group 3 components by the end of 2008. OEMs can also expect to benefit from investments in new hobbing and shaving machines and a new test rig. With pressure plates that provide high efficiency at all speeds, Group 3 gear pumps are well known for their reliability in the mobile market.

In addition to the optimized production efficiency, the performance of the gear pumps and motors themselves has been raised to a level that meets the latest OEM demands for reduced fuel consumption and noise emissions. The electronically controlled fan-drive motors, in particular, provide excellent power control, minimizing power consumption to that necessary to maintain optimum engine and hydraulic temperatures. High-strength materials deliver the durability that consumers expect.

Applying its extensive application know-how, Sauer-Danfoss ensures the reliability of the components and provides OEMs with key technical support that speeds up the process of finding the right solution and reduces system and total life-cycle costs. The recent improvements mean Sauer-Danfoss now has the capacity to meet all needs.



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## Big flexibility for even bigger needs

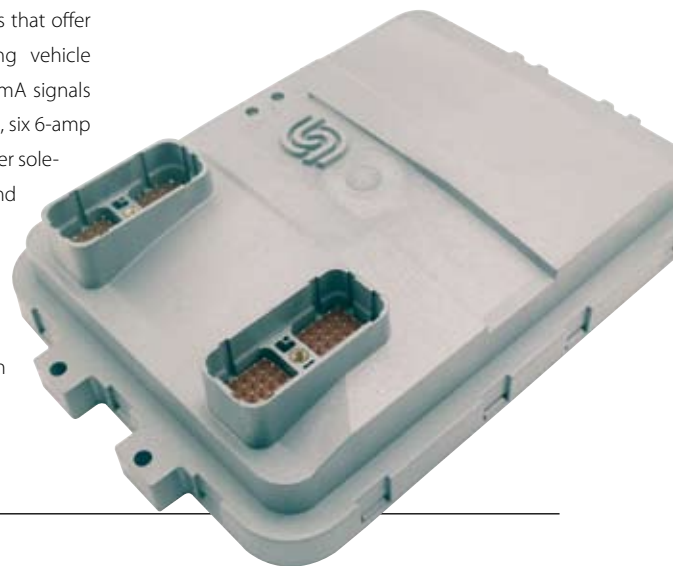
**New PLUS+1™ microcontroller for multiple connections in the smallest space**

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An all-purpose 88-pin microcontroller has joined the Sauer-Danfoss PLUS+1™ family, bringing even more flexibility to the design of control systems for off-road mobile machinery. Including 42 inputs, 32 outputs and two CAN 2.0B ports, the new MC088-015 is ideal for control systems that require many I/O connections in a limited space.

"Whether OEMs are designing small machines with short CAN-bus communication lines or with a large cluster of I/O needs, the 88-pin microcontroller combines maximum design flexibility with the potential to reduce overall installed costs," says Dan Ricklefs, Product Portfolio Manager.

The MC088-015 has three new features that offer even more options for differentiating vehicle design: four inputs that can read 4-20mA signals from pressure and temperature sensors, six 6-amp digital outputs for direct control of starter solenoids and other high-power devices, and 4MB of flash memory for data logging. As with the entire PLUS+1 range, the microcontroller is supported by the PLUS+1 GUIDE programming environment and is built to withstand harsh off-road conditions.



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# Feed for thought

## Innovation is never-ending on the new CNH Case New Holland forage harvesters - the result of dedicated teamwork with Sauer-Danfoss.

There is really only one option when a machine series comes to the end of its lifetime and the competition start taking over. And that is to develop a brand new series with the latest technology, fantastic customer benefits and an overall design that leaves the competition behind.

CNH Case New Holland had just that in mind when they asked Sauer-Danfoss to help in the development of a new generation of forage harvesters. The product of the companies' close cooperation was launched at SIMA 2007 in Paris - the FR9000 series, comprising five models in all with engine power ranging from 424hp to 824hp.

Guy Osselaere, Hydraulic Competence Centre Manager at CNH for harvesting equipment in Europe, comments on the series.

"We have built a completely new machine with a new hydraulic system that improves our costs while giving better performance and flexibility," he says. "Although the machines are bigger, the hydraulic system still needed to be compact and, at the same time, comfortable to operate."

## Less noise, high speed

Since the launch, the market response has been overwhelming - not the least because the features incorporated in the FR9000 series are based on a CNH survey of customer needs. Reduced noise on the road, less fuel consumption and an innovative hydraulically-driven crop flow system are among the major benefits that have caught the market's attention.

Sauer-Danfoss H1 147ccm and 165ccm axial piston variable piston pumps with servo control were an obvious choice to meet the demand for a top road speed of 40kph [24.8mph]. Supplying flow to a Series 51 160ccm bent axis motor, the large H1 pump displacement allows a reduction in the diesel engine's rpm. This, in turn, cuts engine noise - essential to meeting legal limits for noise emissions while travelling at the higher road speed.

"Speed is very important, particularly in those countries where farmers typically have small fields and are dependent on a lot of road travel," Guy Osselaere explains.

"We are very impressed by the performance of H1 in this application. It is also shorter and more compact and has less parts, which makes it more reliable."

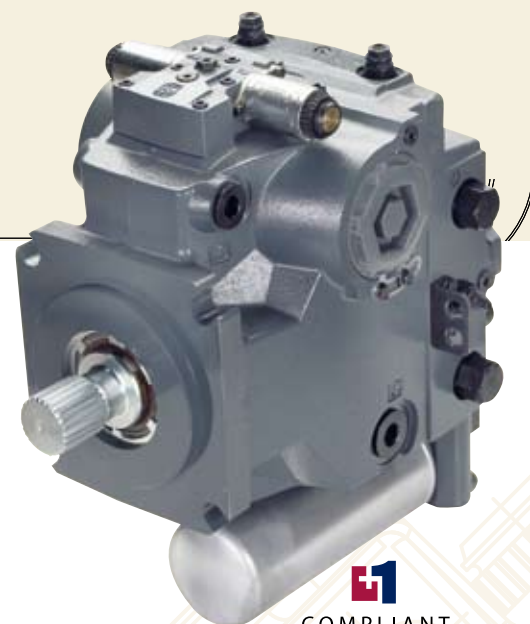
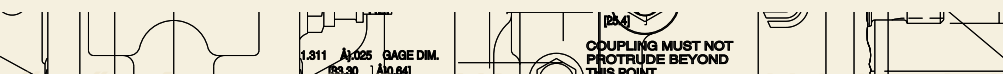
## In line with emission standards

With engine rpm lowered, farmers can look forward to 25% less fuel consumption and lower emissions overall, bringing the harvesters into line with international emission standards when travelling on the road. Precision steering is easy with an OSPC 185 steering unit, Group 2 11ccm gear pump and electrohydraulic proportional valve with PVEP actuator, which creates the possibility for automatic row guidance.

Series 90 100ccm axial piston pumps and motors power the header and roll drives, responsible for pulling grass or corn into the machine and feeding







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it to the knives for precise chopping into 6mm to 40mm pieces. In the Series 90 motor for the feeder drive, an integrated stop block is capable of stopping the motor within 70 milliseconds. Not only does this protect the knives when metal is detected in the crop, it also prevents sharp objects from getting into animal fodder.

### Two-minute changeover

From the cutting drum to the blower that discharges the forage into a trailer, CNH has optimised the entire crop flow using its patented Variflow system. A distinctive attribute of Variflow is its time-saving capacity to switch from corn crushing to hay cutting within just two minutes. The harvester's overall work functions make use of various orbital motors, a load-sensing Series 45 75ccm axial piston pump and seven customized hydraulic integrated circuits

(HICs), which also take care of the hydraulics' lubrication needs.

For the reverse knife sharpening mechanism, pick-up drive and high-flow implements, Sauer-Danfoss worked with CNH to develop one of the first PVG Hybrids. This integrated component brings together the sheer power of the Sauer-Danfoss PVG valve with the smaller, finely-tuned capabilities of an HIC -

### Displacement size 147/165ccm – single pump

Feature		Unit	Frame size	
			147	167
Input speed	Minimum for full performance	Min-1 [rpm]	1200	
	Rated		3000	
	Maximum		3100	
System pressure	Rated	Bar [psi]	450 [6525]	400 [5800]
	Maximum		480 [6960]	450 [6525]
	Minimum low loop		10 [150]	

a cost-effective, flexible solution with high flow and proportional control. The reverser and pick-up drive both run on Group 3 gear motors.

The forage is discharged from the harvester via a spout, an orbital motor driving the spout's rota-

tional movement. On the end of the spout, a flipper ensures the forage is discharged accurately into the trailer, aided by a specially developed Sauer-Danfoss proportional directional valve.

### Continuing cooperation

The Sauer-Danfoss hydraulics on the FR9000 series have been fully integrated with the CNH in-house control system, again highlighting the joint teamwork that has gone into the development. And, Guy Osselaere confirms, the teamwork has not stopped with this series launch.

"We are now working on a system using Sauer-Danfoss PLUS+1™ controls for a special machine version that integrates the harvester with the trailer," he says. "Today, on our CR9080 combine harvesters, we are also using the H1 165ccm pump for the benefits it provides in relation to reduced noise and fuel consumption."





**RMH Lachish Industries in Israel is bringing mixer feeders into the computer age. Sauer-Danfoss has provided the intelligent system that makes the new self-propelled Mixellent a unique addition to the farmer's toolbox.**

# Precision feed till the cows come home

Dairy cattle have never had it so good with the new Mixellent from RMH Lachish Industries in Israel. Neither have the farmers, who can be sure their animals get the nutrition they need for perfect health and optimum milk yield more efficiently and at reduced cost.

In fact, the world's first fully computer-controlled, self-propelled, self-loading mixer feeder is so intelligent, it can almost think for itself.

Sauer-Danfoss has supplied the entire electro-hydraulic system, including components that just about span the Sauer-Danfoss product range – a true demonstration of what an intelligent integrated system can achieve. In all, the system comprises a steering unit, three closed

hydrostatic circuits for the drive, chopper and mixer, and, for the detailed work functions and fan drive, an open circuit that makes use of no less than seven HIC blocks. The whole lot is tied smartly together by PLUS+1 controls – a fact RMH Lachish is happy to highlight with PLUS+1 decals on all Mixellent machines.

## Rapid innovation

Presented at Agritechnica 2007 in Hanover, the first of three Mixellent prototypes has recently completed a successful startup. The first series production began in May – a little over a year since RMH Lachish initiated the development project in cooperation with Sauer-Danfoss.

Interest in the innovative Mixellent is high. Accurate chopping followed by precision mixing of expensive feed ingredients ensures nothing goes to waste, keeping feed costs to a minimum. At the same time, farmers can enjoy the machine's high energy efficiency which combines top performance with lower fuel consumption and emission levels that live up to the most stringent international standards.

## Power to maneuver

The hydrostatic transmission, comprising a Sauer-Danfoss Series 90 axial piston variable displacement pump and Series 51 bent axis variable displacement motor, enables a maximum road







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speed of 40kph when unloaded – twice that of conventional tractor-pulled mixer feeders. Series 90 pumps also supply hydraulic flow to the chopper and mixer motors.

Two drive options are incorporated - a two-wheel drive for road use and four-wheel drive for farm use. Aided by a Sauer-Danfoss OSPC load-sensing steering unit with OLS priority valve, the four-wheel drive can be operated in crab or round mode, allowing supreme maneuverability in low or narrow barns.

### Smart communication

PLUS+1 technology makes the whole system talk. PLUS+1 microcontrollers respond to signals from the machine's sensors and communicate via CAN-bus, linking all the machine's functional devices. Programmed by Sauer-Danfoss to meet RMH Lachish's operational requirements, the control system ensures a smooth and precise overall operation.

For all its advanced technology, the Mixellent is both comfortable and simple to operate. PLUS+1 ensures light and responsive machine management from the cabin, while all operational data is monitored on the DP600 graphical display unit, providing a clear performance overview.

Intelligent electrohydraulics mean the feeder mixer can now leave the tractor behind and maneuver its own way effortlessly around the farm. That's good news for the operator, the farmer and the herd.

  
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*The products shown are not a precise representation of the Lachish solution*

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# Executive Office expands



A decision to expand the Sauer-Danfoss Executive Office has brought the appointment of three more members. With members based in Denmark, Germany and the US, the Executive Office now lives up to its goal to have global reach.

"The new structure and membership of the Executive Office gives us the ability to create, through the division leaders, a closer connection between the entire EO and our company-wide priorities," says Dave Anderson, Sauer-Danfoss President and Chief Executive Officer.

The six members of the Executive Office are (from left) Hans Cornet, Executive VP and Chief Marketing Officer; Henrik Krabsen, Executive VP and President Work Function Division; Dave Anderson, President and CEO; Thomas Kittel, Executive VP and President Propel Division; (sitting) Wolfgang Schramm, Executive VP and President Control Division; and Karl Schmidt, Executive VP and CFO.

## US expansion on track

A \$7 million investment is currently underway to expand one of the three Sauer-Danfoss Inc. facilities in Ames, Iowa, USA. The 36,000 square foot [10,972m<sup>2</sup>] extension of the 13<sup>th</sup> Street location, due for completion this summer, includes additional office space and new staff facilities. The move is the next step in an overall expansion plan announced by Sauer-Danfoss Inc. in 2006. Since then, the Ames facility has hired more than 240 new employees, primarily production operators and machining technicians in the production facility. An additional 208 employees are expected in 2008.



## Award recognizes charitable effort

The Sauer-Danfoss plant in Ames, USA, has won a special prize in recognition of its donations to local charities - the 2007 Story County Alliance Outstanding Corporate Philanthropist Award. Companies that receive the award must show exceptional commitment to fundraising and encouraging involvement in the local community. Over the past ten years, the Ames plant has donated more than USD1 million to charitable organisations.

## Improved valve service in Asia



Sauer-Danfoss can now provide an improved level of service to Asian customers following the opening of the new HIC Valve Design & Manufacturing Center at the Sauer-Danfoss plant in Shanghai, China.

The center enables faster deliveries of cartridge and HIC valves to customers in the region.

## Safety program expands globally

Sauer-Danfoss today has one of the top safety programs in the US. Now, after a decade of continuous improvements, the company aims to consolidate its safety record by benchmarking the environmental management and safety (EH&S) systems throughout the entire global organization.

To achieve this goal, two new EH&S leadership teams have been established in Sauer-Danfoss' EU and Asia Pacific regions to work with the team in the US.

The US safety program is based on the US Department of Labor's Occupational Safety and Health Administration Voluntary Protection Program. Involving state-of-the-art new employee orientation and all-employee annual refresher training, the program has brought a significant reduction in the recordable incident rate and lost work day rates.

Ken Foltz, leader of the US EH&S team, credits the improvement to culture change surrounding safety and work environment - visibly backed by management. "Employee involvement by the entire site or facility creates an awareness of unsafe practices, educating the safe work practice and practicing that behavior to create a permanent change," he says.

Together, the global EH&S teams continue to build on this foundation by enhancing existing programs and practices, benchmarking other companies and providing training.

## Coming events

Meet Sauer-Danfoss representatives at these exhibitions later in 2008:

<b>Jämsänkoski, Finland</b> FinnMetko 2008	Aug. 28-30
<b>Poland</b> 7th International Fair for Hydraulics, Pneumatics, Control and Drives HPS	Oct. 21-23
<b>Moscow, Russia</b> Interdravy 2008 2nd international specialized exhibition	Nov. 11-14
<b>Bologna, Italy</b> EIMA	Nov. 12-16
<b>Shanghai, China</b> Bauma China 2008	Nov. 25-28