

# POCLAIN HYDRAULICS' MAG

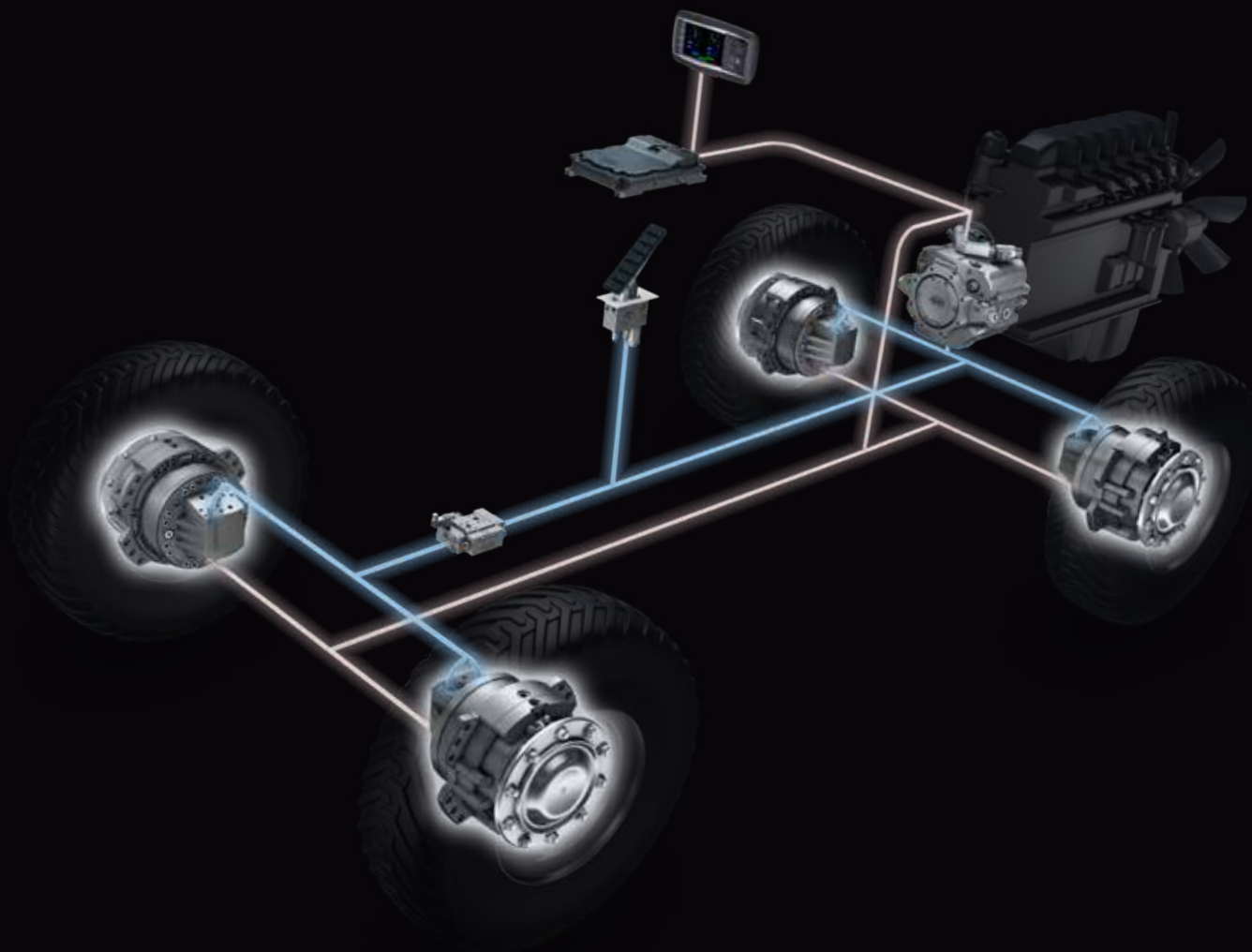
#5 November 2015 | AGRITECHNICA

HIGH PERFORMANCE AT THE WHEELS:  
**MHP 20/27**

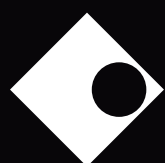


**POCLAIN**  
Hydraulics

HIGH QUALITY HIGH VALUE ADDED  
HIGH PERFORMANCE  
HIGH TECHNOLOGY HIGH POWER



Hydraulics Systems  
for Mobile Applications



**POCLAIN**  
Hydraulics

# EDITORIAL

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For many years Poclain Hydraulics has been your strong partner in the world of hydrostatic transmission systems. Thanks to a close network of branches and distributors, Poclain Hydraulics can be found easily – at your location.

Poclain Hydraulics is well represented in the German-speaking area in Europe: more than 30 years ago its German subsidiary was founded near Darmstadt (Rhein-Main-area) and we have a close partnership with our distributors Hainzl in Austria and Hawe Hydratec AG in Switzerland.

Our customers can rely on sales and application engineers who have long-lasting experiences in mobile and industrial applications. We accompany big and mid-sized companies which are often market leaders. They can trust in Poclain Hydraulics' consulting and expertise. Our combined expertise in hydraulics (motors-pumps-valves), electronics and mechanics, along with our understanding of your applications, enables us to design, manufacture and offer you high added value solutions.

For a very long time we have been providing off road solutions for construction, agriculture and specialized machinery.

It is our pleasure to be the partner of leading manufacturers of agriculture machinery who trust in our offer. Our strength is the drive transmission for sprayers, mowers, combines and their reel drives.

Recently we looked for new challenges and opened new markets: Poclain Hydraulics developed a hydraulic transmission providing all-wheel drive on demand for heavy trucks that operate in difficult conditions such as mud, snow or steep grades. We are very proud to have started another successful story of its long-lasting history.

Agritechnica is the world's leading international exhibition for Agricultural machinery and equipment. During this fair we are pleased to present to you technological innovations, such as our new HIGH PERFORMANCE motors – MHP. These motors will allow us to consolidate our position in the Agricultural market and to open up new paths for Poclain Hydraulics.

We are looking forward to welcoming you at our booth B 12 in hall 16.

**Klaus Meyer**  
**Subsidiary Manager**  
**Poclain Hydraulics GmbH, Germany**



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# GRIMME: A GLIMPSE IN THE HISTORY

The Grimme – Poclain Hydraulics relationship goes back more than 40 years! All Visitors of Agritechnica 2011 or of Grimme Technica in Damme may have noticed among the company's displays the first self propelled two row potato harvester, first launched in 1974. It featured a two wheel drive hydrostatic transmission with two rear wheel motors of 2 liters from Poclain Hydraulics. Many years have passed and Poclain Hydraulics remains a good business partner for Grimme. Our motors can be found on the front axle of the self propelled VARITRON 220 potato harvesters. The assist drive motors, MS08 & MSE08 of respectively 1 l & 1,2 l displacements can

be freewheeled at high speed, with the use of our famous free wheeling valve VDF H15. Poclain Hydraulics also equips two series of trailed potato harvesters, the GT 170 elevator harvester, with motors of the MS11 range with displacements of 1 l & 1,4 l fitted with drum brakes, and the SV 260 series (bunker harvesters) fitted with MS18 motors of 1,8 l displacement with drum brakes.

*The first self propelled two row potato harvester*



*SV 260 series trailed potato harvester*

# LASERJET

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LASERJET is a fast growing group located in the North of Italy specialized in the area of self propelled machines to clear canal-sides and roadsides. Their division ENERGREEN has developed a unique line of un-manned, remote-controlled mowing robots that can climb hills as high as 55°. In this specialized niche, their market share is higher than 65%, and their machines are sold throughout Europe and in the USA. Robogreen, their best selling machine, uses two MSE03 Poclain wheel motors to drive the two crawlers. The very recent Robozero, which uses rubber wheels rather than tracks, includes a complete Poclain Hydraulics system with 2x MSE02 motors

as well as a tandem medium duty pump (PM10) and a swash plate axial piston 17cc M1 motor from our Gaggio factory to drive the cutting tool. LASERJET is very satisfied with the performance and the reliability of the Poclain Hydraulics wheel motors.

LASERJET is close to our “French heart”. It has started to manufacture models of the Eiffel tower of various heights, starting with a 2 m model, then making four towers of 14m and one of 38 m that can be seen next to their main plant. They even have a project for a 80 m Eiffel tower!



# FEMALE SPLINED SHAFT ON THE MI250 MOTOR

With the arrival of the MI250 motor on the market, Poclain Hydraulics now has the final missing link in its range of motors specially designed for the most demanding of applications (industrial, mining, marine, etc.). With a displacement of up to 30 liters, it is able to reach a torque of 140 kNm for a 500 kW power under a pressure of 350 bar.

Available from 5l to 30l, the robust and proven design of the large displacement hydraulic motors of Poclain Hydraulics is an undisputed benchmark on the hydrostatic machines market worldwide. It has been developed and optimized to meet the performance needs of the most demanding sectors by combining high-power density and efficiency.

To complete its broad panel of options, our entire range of large motors is now available with female spline shaft.

By creating the female part of this splined coupling, Poclain Hydraulics is facilitating the adaptation of its motors to your machines and relieving you from the tricky manufacturing of splines. This simplified integration is an opportunity to reduce your manufacturing costs.

This new interface facilitates the stages of assembly and disassembly throughout the entire lifespan of the motor, enabling significant savings in time and maintenance costs.





# A *HIGH PERFORMANCE*



MHP Motor



PW Pump



SD-CT Controller +  
EcoDrive™ Software

## Reduce fuel consumption:

Reduced diesel engine speed to match actual power requirement thanks to EcoDrive™ software.

Reduce fuel consumption thanks to the hydrostatic transmission with high efficiency components.

Reducing Losses opens new downsizing opportunities (for same power to ground, power required by hydrostatic transmission can be reduced)





# TRANSMISSION DEDICATED TO SPRAYER

## Pushing forward the borders of productivity:



Increase the speed up to 60 kph on the road. Up to 40 kph on the fields.



Wet discs friction brake with boosted hydrostatic braking leads to low wear components.



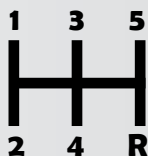
Extreme gradability thanks to 500 bar max pressure and TwinDrive™ to overcome any traction problem.

### What is TwinDrive™ solution?

By using two pumps assembled in tandem, TwinDrive™ solution provides an instantaneous and automatic traction control solution, without compromising the overall transmission efficiency.



## Improvement of the driving comfort:



Smoothness is guaranteed by the Automatic or Sequential Seamless speed Shifting.



Less Noise :  
Direct drive gearless wheel motors.  
Lower Engine RPM thanks to EcoDrive™ software

## Easy to integrate:



Direct drive solution with few rotating parts and robust mechanical sub components.



Easy & Efficient diagnostic using Phases configuration software.



Positive and fail safe «SAHR» brake combined in one package to perform consistent service, parking & secondary brake.

# HIGH PERFORMANCE AT T

The heart of the HIGH PERFORMANCE Transmission is the MHP motor. It has been designed with the Agriculture Machinery market in mind. It fully addresses the main requirements of this market which are higher productivity (higher speed at high power), low fuel consumption and reduced down time.



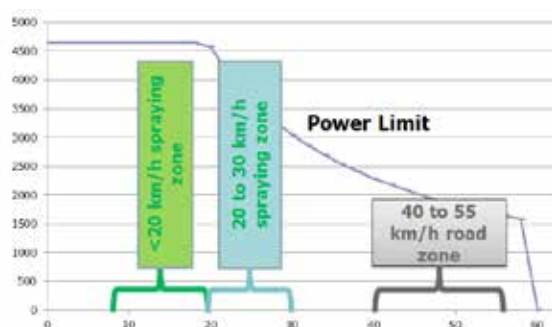
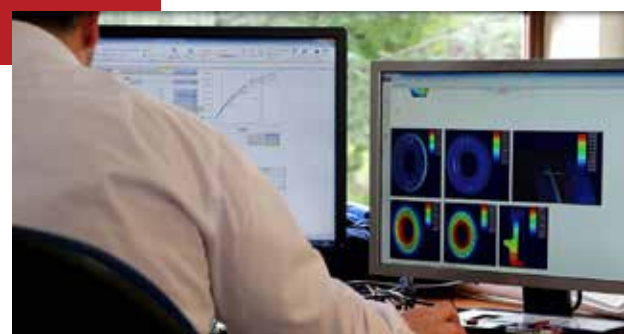
## POWER AND SPEED



This motor creates a real breakthrough in the cam-lobe / radial piston technology: the maximum rotation speed can reach up to 370 rpm and the maximum power level 280 kW.

## EFFICIENCY

The MHP motor new distribution designs allows to greatly reduce the internal pressure drops, even at high speeds. This feature combined with the fact that it works without planetary gear box results in very high efficiency levels all over the operating map. Our lab bench tests have shown that compared to a conventional bent axis axial piston motor with a planetary gear box, the average gain in efficiency of the motor can reach 36% over a compounded duty cycle presented below:



3 modes considered:

- Field 1 (40%)
- Field 2 (30%)
- Road (30%)

Based on real test results



Bent axis motor + gearbox



MHP27

Efficiency in Field 1*	0.79	0.93
Efficiency in Field 2*	0.66	0.93
Efficiency in Road*	0.53	0.86

\* @150 bars      0.67      0.91

**+36% efficiency at motor level**

# THE WHEELS: MHP 20/27

## TRANSMISSION RATIO

The new design built around 8 cam-lobes permits the use of full displacement as well as of multiple combinations of partial displacements. The axially located main displacement shifting spool can be activated by two external pilot signals, allowing the use of the MHP motor with three different displacements. This results in a transmission ratio of 4.

## NOISE

The MHP motor is intended at working as a direct drive, with no gear box. Its rotating group operates at the same speed as the driven wheels. When wheel angular speeds reach levels of 120 rpm or more, the low sound level of the Poclain motor becomes really obvious and is a big benefit when compared with competing technologies that use two stages of gears: both for the operator's comfort and for the farming community quietness.



## POWERFUL BRAKE

The MHP motor includes a wet disk self-contained service brake: the brake relies on a stack of multiple disks that when compressed by the dynamic brake piston create a maximum braking torque of 33 000 Nm. The brake also works as a SAHR (spring applied hydraulically released) parking brake: when no debrake pressure is applied, a second piston compresses the same set of multiple disks to reach a parking brake torque of 18 000 Nm. The brake is very strong, its discs are permanently flushed and they can dissipate up to 1 million Joules of energy. Its disk splines mesh directly on the main drive shaft, which is the best design in terms of safety: the brake directly stops the wheel shaft; there are no sets of planetary gears between the wheel rotating drive and the actual brake.

On top of this combined brake design, the wheel motors can also produce a very high hydrostatic braking torque. Even when motors are used in small displacement (as is often the case at high speeds), the integral boosted brake design allows to "switch on" the non-active cam-lobes to reach a torque equivalent to the full motor displacement.

## RELIABILITY

Major effort has been dedicated to ensure that the MHP motor undergoes all necessary endurance tests. The MHP is capable of working in very demanding environments, with high radial loads (it has been designed to work with 4WD 26 T sprayer), high axial loads: large 54" wheels used by crop sprayers with tire diameter up to 2100 mm) and lots of dirt & debris threatening to damage the seals. Its reinforced oil sealing as well as protection against environmental dirt and its close cover design have been designed to make this motor very robust against leakage risks. In anticipation of future trends in the Agriculture market, the MHP motor has been qualified for max pressure of 500 bars.



## RANGE

The new MHP range is the cornerstone of the new range of HIGH PERFORMANCE Motors that will enhance the current line of Poclain Hydraulics cam lobe motors. The motor frame (MHP20/27) introduced at Agritechnica covers a wide array of displacement from 1430 cc to 3500 cc.

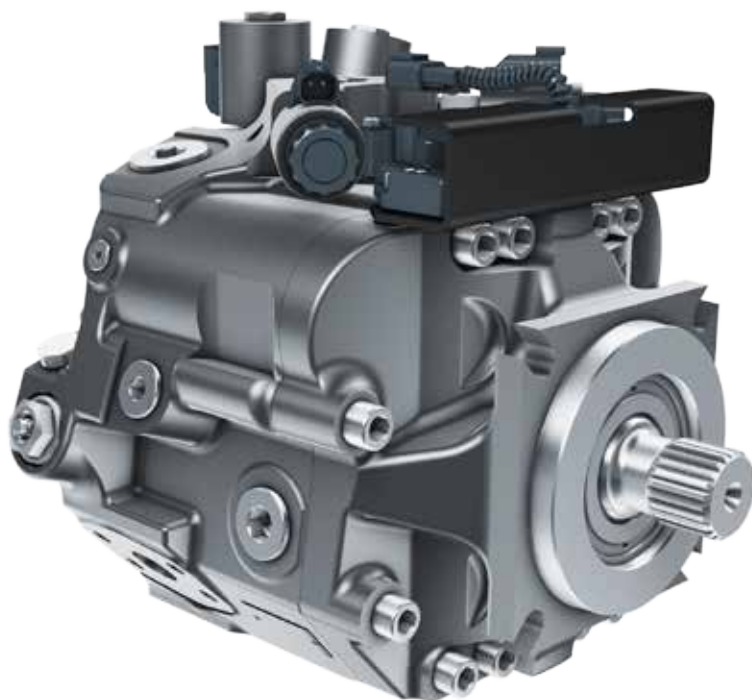
# THE HIGH PERFORMANCE

The main pieces of this transmission, beside the MHP motors, are the new PW pump, the new CT ECU controller and a new software called EcoDrive™.



The **PW Pump** is the new heavy duty closed loop pump from Poclain Hydraulics. Displacements available today are 85cc & 96cc. Displacements of 115cc & 130cc are planned for production release in 2016. The pumps are capable of reaching 500 bars and speed of 3850 rpm. They stand out through their compact length (the shortest on the market) and their exclusive electronic displacement control that provides precise and dynamic stroke control, a key feature to allow smooth motor displacement shifts. Their design with short piston strokes and robust sliding plate guarantees outstanding efficiency and good resistance against cavitation.

The PW Pump can be piloted with its own “integrated” control unit: this is the **PWe pump**. Several standard software can be loaded into this “on-board” controller. The most simple is the CAN Bus control which allows the PWe pump to be controlled via CAN by most external ECU controllers on the market. Other software can provide more functions so that the PWe with its inboard software become “self-sufficient” and can be used without any external additional controller.





# HIGH PERFORMANCE TRANSMISSION



To match the PW pump, Poclain Hydraulics has developed a new range of ECU controllers, called **Smart Drive CT range**. The CT200 & CT300 controllers feature enhanced calculation capability, an increased number of inputs and outputs. They can be uploaded with software that support all functions assigned to hydrostatic transmissions such as pump management, engine control, driving ramp management, automotive drive mode, antistall, combined friction and hydrostatic braking, smooth motor displacement shifts, protection against excessive power, pressure and temperature, diagnosis and errors management. They are certified IP67 and compliant with safety standards as required by Machinery Directive 2006/42/EC and compatible with performance level d (Pl-d according to ISO 13849-1).

With the **CT-Design** software, Poclain Hydraulics is making access to electronically controlled hydrostatic transmissions easier by allowing OEMs to create their own management software. Thanks to a library of fully tested software functions, each customer using CT-DESIGN can, without any further help, combine the necessary functions to generate their software in just a few clicks, and reduce development time and costs.

In order to use the CT-DESIGN software, customers will first need to acquire a user license from Poclain Hydraulics.



A specific software layer is required for the above components' excellent performance to be fully revealed. Having gained a better knowledge of each component's best efficiency points, the R&D office of Poclain Hydraulics has developed software capable of exploiting them in the most effective manner possible, and only when necessary. This is the logic behind **EcoDrive™ system management, a key part of the HIGH PERFORMANCE transmission by Poclain Hydraulics**.

The principle is as follows: the EcoDrive software automatically adjusts (with no particular action required from the operator) the diesel engine speed, while guaranteeing the machine's travel speed by adapting the displacement of the pump and of the wheel motors. The MHP motors' high displacement ratio of 4 enables high road speeds while maintaining diesel engine speed at a low level, its optimum fuel consumption point. At the slightest increase in demand for power, the diesel automatically revs up again.

# THE TEST ON A CO

## Two Sprayers – Two Transmission Systems



Poclain Hydraulics has operated for years extensive test benches allowing components validations and benchmarks of most technologies available on the market.

In the heart of the Picardie farm-land, Poclain Hydraulics also invested in outdoor test tracks for mobile machinery. Poclain Hydraulics' facilities include a 660 m long track, 20% and 30% slopes and have access to agricultural fields located immediately next to its R&D department.

*The test tracks in Verberie (France)*



Late 2013, our radial piston engineering team benchmarked several drive units, based on bent axis hydraulics motor and planetary gearboxes versus the preliminary concept of the HIGH PERFORMANCE transmission. We selected a modern crops sprayer, equipped with 275 hp engine, transmission and control which could be converted with our HIGH PERFORMANCE system.

The test to be performed were not only carried out on the test track in house, but also on open road roundtrip and on field.

Within an interval of 3 months, successive tests were performed. First with the original

transmission (bent axis motor and planetary gear-box) and then repeated with Poclain Hydraulics transmission.

All physical parameters were recorded during those tests in order to measure the performances: flow, speed, pressure, temperature, noise, vibration, fuel consumption, GPS positioning...

Series of tests were performed with the sprayer having either empty tank or full tank (approximate total weight of 20 tons), recording several sequences to get accurate results.

*The circuit on field: 1 km loop in 2 directions*



*The circuit on road: 14 km loop*

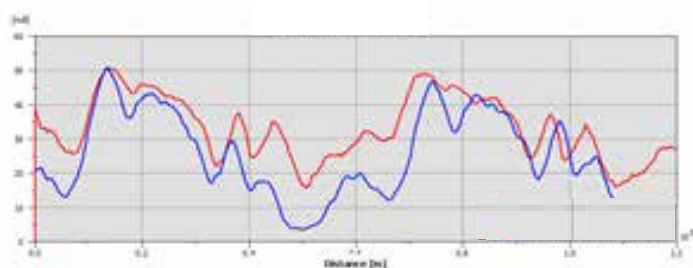


# COMPLETE MACHINE

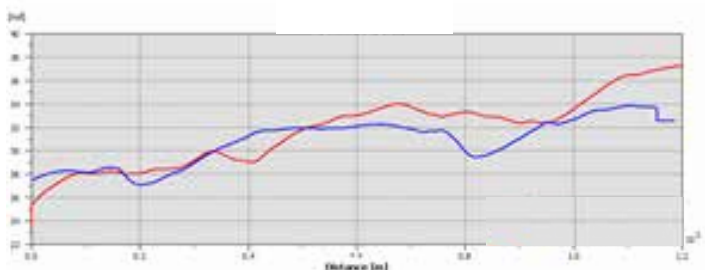
The sprayer equipped with the Poclain Hydraulics transmission over performed by far the original transmission. Overall behavior and driving feelings were excellent (more reactive, easier to control and quieter during high speed driving sequences). Even if those performances are not easy to convert in numbers, for sure, the low level of noise added to better steering capabilities are positively influencing the overall driving comfort level. When it comes to fuel economy, results were impressive: on the global cycle (on road + on field), Poclain Hydraulics measured 14%\* overall improvement directly related to the hydraulic transmission efficiency, and 30% improvement when EcoDrive™ mode was activated. During the loop of 14 km on road, the EcoDrive™ saved 3 liters of fuel in 20 minutes at 42 kph average. Temperature stabilization was the other evidence of the efficiency improvement, with fluid being stabilized at 12°C below the level of the original high speed motor and gearbox combination.

Those results confirm that Poclain Hydraulics technology can greatly improve vehicle performances!

## TEST ON FIELD

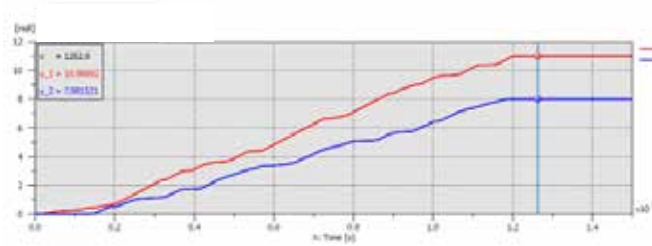


Comparison on **instantaneous fuel consumption** between HIGH PERFORMANCE (blue curve) and competitor system (red curve).

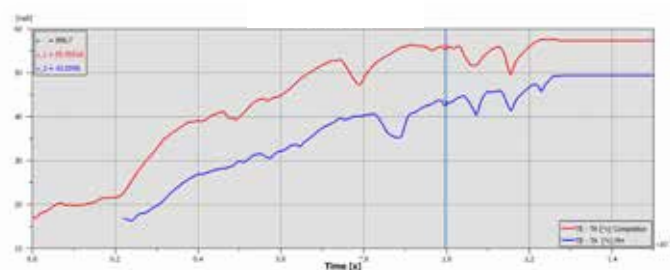


Comparison between the **temperature** of both circuits : HIGH PERFORMANCE system from Poclain Hydraulics Performance (blue curve) versus the competitor solution (red curve) during the test «on field».

## THE CIRCUIT ON ROAD



Comparison on **cumulated fuel consumption** between HIGH PERFORMANCE (blue curve) and competitor system (red curve).



Comparison between the **temperature** of both circuits : HIGH PERFORMANCE system from Poclain Hydraulics Performance (blue curve) versus the competitor solution (red curve) during the test «on road».

(\* ) The fuel efficiency improvement of 14% (without EcoDrive) is lower at the “machine” level than the efficiency measurement at the “motor” level (+ 38% as reviewed before) because fuel consumption takes into account all the losses (engine, pump, pipes) incurred in the transmission line upstreams from the wheel motor.

# THE GAIN WITH ECODRIVE™

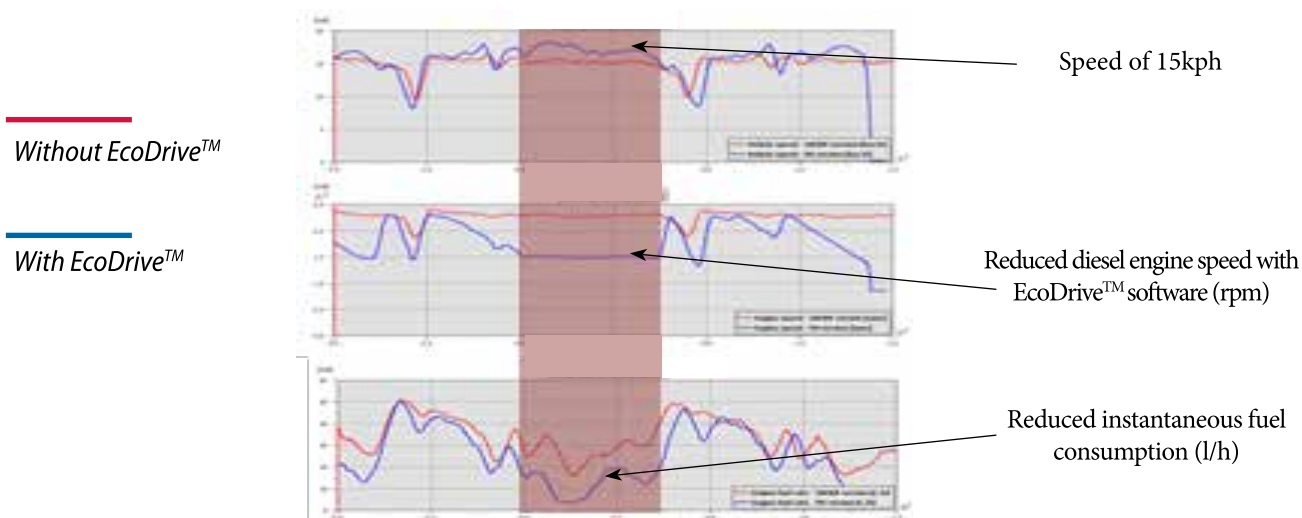
The most demonstrative figures of this test show how important fuel consumption reductions can be. Let's take a closer look on the EcoDrive™ software influence.

Thanks to the EcoDrive™ software, the diesel engine speed is continuously adjusted to the actual power requirement.

At 15 kph and 65 kph, the test machine equipped with EcoDrive™ software and the HIGH PERFORMANCE components demonstrate gains in term of instantaneous fuel consumption compared to the same machine with a standard software:



The recordings confirm the reading from displays:





# THE GAIN WITH BOOSTED BRAKE™

## Why a Boosted Brake function?

Boosted Brake™ provides increased hydrostatic braking capabilities. It enables regulation requirements to be met in terms of braking distances, whilst reducing the use of the friction brakes. Boosted Brake™ complements the diesel engine's retardation capacity. It also avoids engine over-speed when braking.

Using the principles of hydrostatic braking through the hydraulic motor's entire displacement capacity and not just the partial displacement that is active when braking occurs, it converts the machine's kinetic energy into heat in the oil in the hydrostatic transmission system. This heat is then evacuated in the cooler.

Boosted Brake™ is especially interesting for all machines subject to high and/or repeated deceleration, both on the road and in the field. It is recommended for machines with diesel engines with a low retardation capacity.



### Transmission's technology based on 4 axial piston motors and gear box

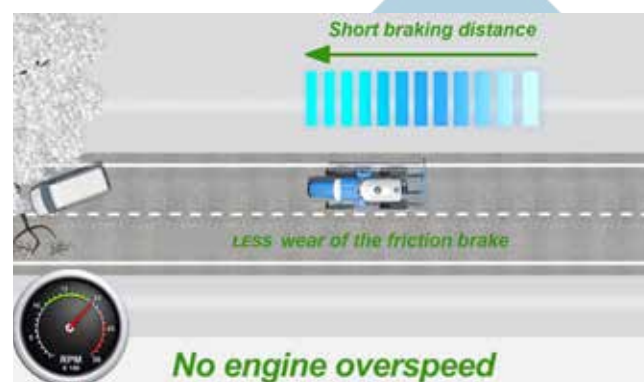
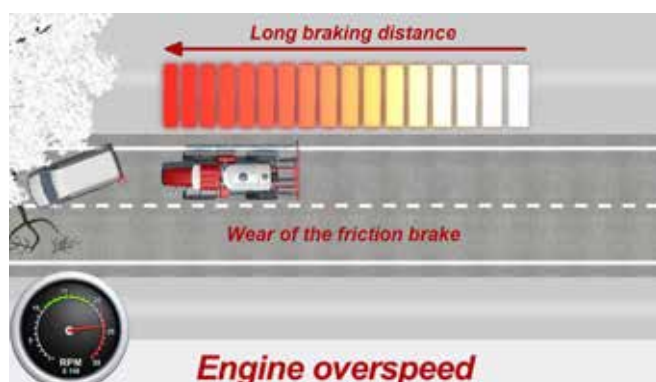
- Braking length at 50 kph: 67.5 m
- Duration of engine overspeed (> 2500 rpm): 5s

### Poclain Hydraulics HIGH

#### PERFORMANCE hydrostatic transmission

- Braking length at 50 kph: 42.4 m
- Duration of engine overspeed (> 2500 rpm): <1s

The Braking is more efficient and engine is preserved: that is an essential point to ensure the lifetime of the machine.



## DAMMANN



*The new DAMMANN-trac DT 2800H EcoDrive™ will be exhibited at the Agritechnica 2015 hall 9 stand B31 trade show to be held in Hanover from 8 to 14 November 2015.*

The German manufacturer DAMMANN is one of the market leaders in the crop spraying sector in its country. The history of Mr Herbert DAMMANN reminds us of that of Mr Georges Bataille, without whom our high torque cam motor would not have seen the light of day.

As self-taught man and farmer's son, he designed and built his first machines alone in his workshop, to simplify work on the farm. Faced with the growing success of his machines, in 1979 he created the company HERBERT DAMMANN GmbH.

DAMMANN and Poclain Hydraulics have been working closely together for more than 15 years, Poclain being the system provider for the complete ground drive transmission. Our drive systems are fitted on both 2 and 3 axles hydrostatic sprayers. They include 2 propel pumps of 100cc (with an option for 130cc), 4 or 6 two speed motors, one control ECU as well as a combined brake valve (accumulator loading and double circuit brake valve). Sprayers with 3 axles also include two traction control valves between the two rear axles, since all 4 wheel motors are supplied from the same pump. While rear axle motors are fitted with parking brakes, front axle motors feature combined brakes (including dynamic service

brakes) as well as the new "boosted brake" internal valve, which allows to make use of the full displacement of the front motors to generate high hydrostatic torque, even when the motors are used with half displacement in road mode.

At Agritechnica 2015, DAMMANN will display its new DAMMANN-trac DT 2800H EcoDrive™ Sprayer, equipped with the new HIGH PERFORMANCE Poclain Hydraulics transmission: this two axles machine will use 4 MHP motors with multiple displacement (three stages) and the new CT300 controller. The wheel motors are fitted with the new wet disks combined brakes C24/33 that provide very high static parking and dynamic brake torque. The front motors are equipped with a "boosted brake" internal valve. The CT 300 ECU is loaded with the new Eco Drive software. Main benefit of it is to constantly adjust engine rpm, pump swash plate angle and wheel motor's displacement to achieve speed required by the driver, power required by the external environment (slopes, speed, load, spraying needs) and to minimize the engine revs with a goal to save fuel. It is worth mentioning that the Eco Drive Mode is active both in road mode (with max speed of 50 kph) and field modes (30 kph).

# ADOPTS THE MHP

**Interview with Dipl.-Ing. Hans Osterholz, developer at DAMMANN, conducted during the launch of the HIGH PERFORMANCE system for the DT 2800H EcoDrive™ sprayer.**

«In 2001, when Poclain Hydraulics contacted us to present a transmission offering good traction, a natural anti-skid function and highly flexible architecture, we were immediately interested.

The traction of our sprayers could be increased without damaging the ground. Hydraulic technology enables us to eliminate the axles of a traditional mechanical transmission. We adopted it very quickly.

Since then, Poclain Hydraulics has become the supplier of all our self-propelled sprayers and we have revolutionized the architecture of our machinery. We are developing machines that enable the driver to adjust the track width and ground clearance at any time. They adapt perfectly to the various crops to be sprayed.

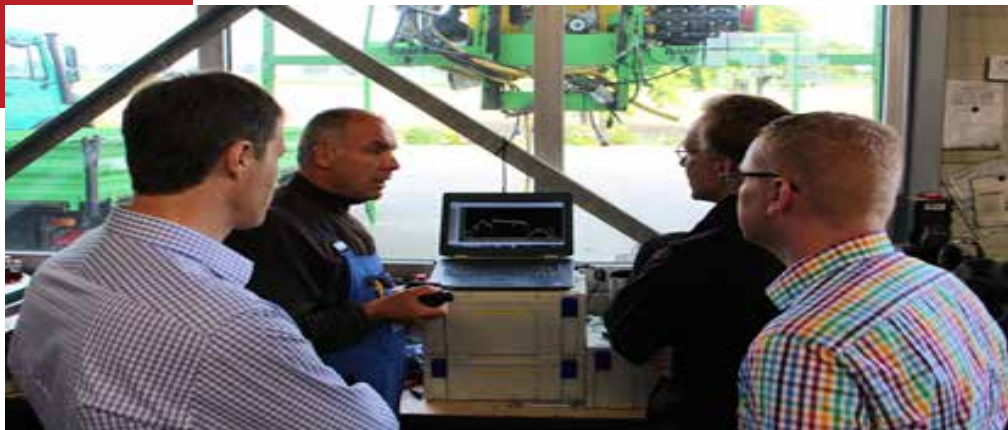
Over the last 15 years, our level of confidence in Poclain Hydraulics has been constantly growing.

Capable of supplying complete systems including motors, valves, pumps and electronics, this supplier has become a true partner. In addition to product-specific

know-how, Poclain Hydraulics has a thorough understanding of system management and has the skills required to take maximum advantage from it. This is an essential point.

When our company started out, the challenge was to develop machines with maximum working autonomy and therefore install ever larger tanks for crop spraying products. We therefore developed increasingly powerful machines able of propelling very heavy loads. We are, for example, the only manufacturer in the world to offer a six-wheel-drive machine equipped with a 12 000 l tank (the DT 3200H).

Due to increasingly strict highway legislation, we have reached the limit in terms of total machine weight. Our objective soon became to offer to our customers the most efficient machines capable of reaching the highest road speeds with the lowest possible consumption. As soon as we heard about the new Poclain Hydraulics MHP, we contacted the German subsidiary. We are very pleased to offer our customers a combination of high-performance technology and the EcoDrive™ electronic control system on our new sprayer, the DT 2800H. The results of today's test drive are conclusive. We reached 50 km/h, on-road, without excessive consumption.»



*The Poclain Hydraulics and Dammann teams working together to set the first DAMMANN-trac DT 2800H EcoDrive™*



# HYDRO CONCEPTS AND DRIVE TECHNOLOGIES

## **Local Poclain Hydraulics distributor and aftermarket support center in South Africa.**

Poclain Hydraulics has steadily increased its market share of hydraulic component sales in South Africa over the past few years.

This strong growth in local sales (especially to the mining industry) has required a strong local sales and aftermarket support partner who can technically support the Poclain Hydraulics components and also supply complete units and spare parts from stock.

Hydro Concepts and Drive Technologies (Pty) Ltd based in Olifantsfontein, Gauteng has emerged as the local partner

who can fulfil this role.

Their facility in Olifantsfontein has a well organised and effective workshop which can repair and maintain the full range of components. Poclain Hydraulics has trained their staff and after an audit in 2014, their workshop has been approved as a certified repair center of Poclain Hydraulics. This means that they are able to ensure warranty repairs on behalf of Poclain Hydraulics according to international standards.

Hydro Concepts and Drive Technologies (Pty) Ltd has also recently been approved for the ISO9001 Quality system, as well as becoming a member of SAFPA (South African Fluid Power Association).



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# HYFLO SOUTH AFRICA

Power and efficiency combined in a single motor!

HYFLO Southern Africa, established in 1954, is a leader in the Fluid Power Industry in Southern Africa and is, in addition, increasingly supplying services to the international market. They are a proud local distributor of the entire range of Poclain Hydraulic components of high torque – low speed motors, pumps, valves and electronic control systems. Their business is focused on distribution, engineering, manufacture, installation and commissioning, as well as after sales service and this makes them well suited to offer and support the Poclain Hydraulics components to the market.

HYFLO is well known for its large stockholding and engineering capabilities, which support its extensive product range. With a nationwide network (9 branches), including Namibia, they are able to service the Fluid Power Industry in Southern Africa. Their industry specialisation includes :

- the manufacturing and industrial industries,
- oil and gas,
- agricultural, mining, fishing, defence
- and marine industries.

HYFLO, continuously strives to invest in the latest technology, equipment and software to meet all their customers needs.

Quality has always been a paramount importance for the HYFLO Group (ISO 9001 - 2008 certified) and this is evident in the blue chip product ranges that they represent (i.e Poclain) and quality of systems that they design and manufacture.

The HYFLO team is valued as experts in their respective fields, providing clients locally and internationally with service excellence and turnkey engineering solutions. Hydraulic power packs are designed and built in-house, in accordance to Classification requirement rules such as Lloyds Register & Bureau Veritas. They carry out finite element

analysis, acoustic, vibration, electromagnetic compatibility as well as shock testing on required components. Factory acceptance tests are carried out to ensure systems comply with specifications prior to dispatch power units, from 0.5kW to 1MW.

## **43 Tonnes Active Heave Compensated (AHC) Winch equipped with Poclain Hydraulics components.**

The winch will be used to launch and recover a sub-sea dredger from a sea going vessel to the ocean floor. In order to safely position and recover the dredger the winch would need to compensate for wave motion. Ten MS50 hydraulic motors were used for driving the winch drum, five motors on each side of the drum. All of the motors are equipped with internal parking brakes.

The Poclain Hydraulics motors were chosen by the final customer for their superior performance and reliability, as well as their excellent international reputation in the marine winch market.

The torque, speed and direction of the winch drives will be controlled by two servo proportional axis control valves for high accuracy position control. For Active Heave Compensation control mode feedback is received from a rotary encoder and load cell fitted on the sheave, pressure transmitters in the hydraulic system and a Motion Reference Unit (MRU). The Motion Reference Unit will follow and pre-empt the wave motion in order for the control valves via the PLC to compensate for vessel displacement.



# VALVES NEWS:

## VB-010 AND VB-002 NEW GENERATION

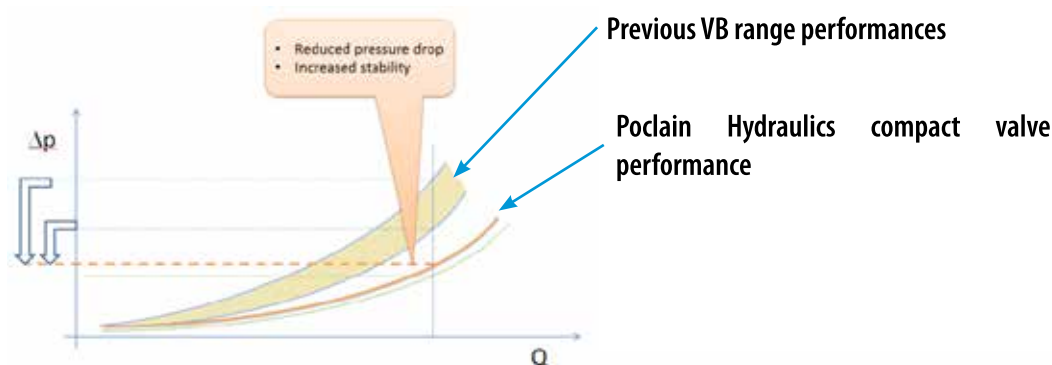
Among many valves that we provide in Poclain Hydraulics, a dedicated family, used for power braking (VB) is known for many years. Today we are introducing a new improved generation of brake valves (VB), starting with single circuit VB-010 and park brake VB-002.

Thanks to all improvements in design of casted body and internal components, we can experience a product with improved performance, when compared to existing VB products. With its small and compact overall size the product performance and stability can also be compared to competitive products with much bigger dimensions.

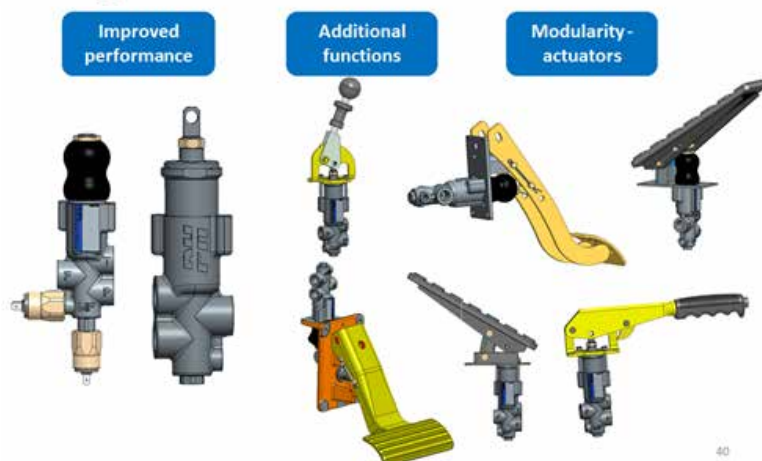
New VB-010 and VB-002 therefore is product with:

- Reduced weight,
- Improved performance,
- Increased inlet max pressure (250bar),
- Reduced pressure drop,
- Improved reactivity.

The new design is able to provide the same level of performance and the same stability as the best competitive products but into smaller dimensions.



Interchangeability capacities are assured, because product conserves same fixation points as previous standard VB-010 and VB-002. It can be adapted to same pedals and levers.



# VALVES NEWS:

## EXTENDED OFFER OF 6/2 SELECTOR VALVES APPLICATIONS

With its existing range of standard and customized valves Poclain hydraulic is an important player in the field of selector valves offering solutions for flow range up to 250 l/min and pressure range up to 450 bar.

Poclain Hydraulics launches a new type of selector valve Type KVH-6/2-8

This new valve has been optimized for applications with flow rate 60-90 l/min and working pressure up to 250 bar. A max pressure of 315 bar can be reached with the option of external drainage.

The design of the valve housing and spools has been optimized in terms of weight, pressure drop and internal leakage and the valve can be used as a single 6/2 valve or in bankable assembly of -2, -3 or more valve sections

This new product has many benefits : the efficiency is improved, the internal leakage is decreased and the ratio high performance /low weight is optimized.



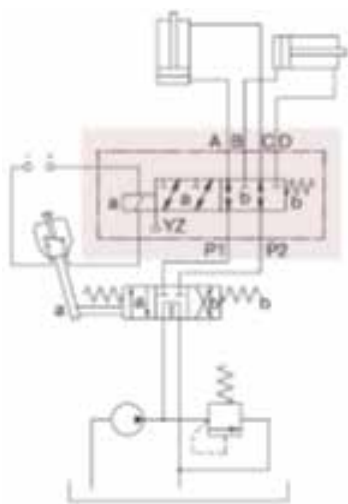
KVH-6/2-8

### FEATURES

Max working pressure: 250/315 bar

- Max flow 90 l/min
- Ports G1/2, SAE8, M22x1,5
- Weight 4 kg
- Solenoid power: 45 W
- Supply voltage 12 V DC, 24V DC, 48V DC
- Connector type EN 175301-803, AMP, Deutsch
- Surface protection: zinc coted, painted

6/2 selector valves are used for control of two (or more) hydraulic cylinders by only one directional control valve.



Mounting example

### APPLICATIONS

- Tractor attachments
- Front and backhoe loaders
- Tele handlers
- Snow ploughs
- Forklift trucks
- Forklift attachments
- Other attachments with non-simultaneous multi functions
- Motor free wheeling

# VALVES NEWS:

## NEW DIRECTIONAL CONTROL VALVE CETOP3

Poclain Hydraulic launches a new series of directional control valve for sub-plate mounting - size 6 to ISO 4401 (CETOP 03).

Design of the new housing has been optimized for reduced weight, reduced pressure losses and reduced internal leakage.

Thanks to 5-chamber housing the new valve assures reliable operation in heavy duty conditions with max pressure 350 bar on ports P, A, B and 250 bar on port T.



KV-4/3-5KL-6

### FEATURES:

- Reduced weight
- Reduced pressure losses
- Reduced internal leakage
- Max pressure 350 bar (port P, A, B)
- Max pressure 250 bar (T)
- Max flow : 80 l/min
- Solenoid power 31 W
- Connector type EN 175301, AMP, Deutsch
- Various emergency control options
- Surface protection phosphated, zinc coated or painted

# M AXIAL PISTON MOTOR:

## EASIER TO INTEGRATE AND MORE VERSATILE

Customers searching for solutions to ease hydraulic motors integration will find the perfect fit with the new cover of the M motor range (M1-M2-M3 swash plate axial piston design).

Thanks to its new architecture, many options are now directly integrated in the cover:

- **Relief valves** (MM, MA, MB options) are now integrated as close as possible to the motor, which is the most efficient way to reduce risks of peak pressures.
- Integrated **anticavitation valves** (RR, RA, RB options) make machines more reliable. Customers will appreciate this option that ensures a longer lifetime for their machines, especially for applications in open loop when the motor undergoes working sessions with high inertia and can be driven by the load.

- Thanks to the **flushing valve** option (VS option), the motor is now able to regulate the temperature of a closed loop circuit without addition of another valve block.
- The **flange ports** (FS options) allow direct connection on the motor with an external valve block featuring other functions.
- Lastly, the integration of the **speed sensor** (SS option) allows to collect easily the motor speed information and increase the precision and accuracy of the machine.





# PUMP: New PM30

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In March 2014 at the Conexpo tradeshow in the United States, Poclain Hydraulics unveiled the first pump from its brand new PM range (the PM50).

Today, Poclain Hydraulics presents at the Agritechnica tradeshow its little sister: the PM30.

Designed according to the same rules as the PM50, the PM30 has been especially developed to meet all customers' expectations in terms of productivity, comfort, reliability and efficiency.

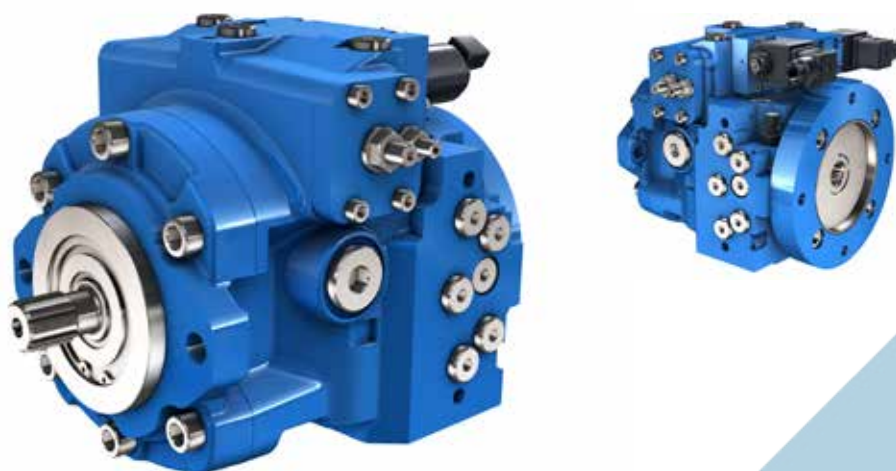
This pump is well suited to the most demanding markets like mower, wheel loader, compactors, platforms etc.

Customers are constantly looking for more efficient and economical machines. Thanks to important efforts made during the development phase, Poclain Hydraulics engineers reduced losses and made this pump able to work under a max pressure of 400 bar. Consequently, with the same diesel engine, this pump increases significantly the performance of the machines. Keeping the same performances while downsizing the diesel engine and cooler is a major advantage to meet standard emission levels.

In order to optimize comfort and safety, our engineering and design department has come up with a coherent and flexible range, offering the same choice of controls as on PM50. They are compatible with many applications; ranging from servo-mechanical, hydraulic, automotive to electronic with or without mechanical swashplate position feedback.

Poclain Hydraulics used the latest generation of simulation and testing tools to reduce noise and to improve the comfort of the driver.

This exclusive new product will be available for customers in the beginning of 2016 and will be shown in preview on Poclain Hydraulics booth of Agritechnica.



# HAINZL 50<sup>TH</sup> BIRTHDAY!

While Poclain Hydraulics is celebrating this year the 30th anniversary of its independence, its partner HAINZL has blown out its fifty candles. It is the opportunity to make a quick review of the collaboration between these two companies.

It is in 1992 that HAINZL asked the support of Poclain Hydraulics for the first time.

An Austrian manufacturer of single drum compactors needed to equip its machines with hydraulic systems. Since then, Hainzl became the Austrian distributor of Poclain Hydraulics. In 2009, HAINZL obtained the certified repair center label.

Here are some examples of interesting projects that HAINZL developed for different markets thanks to its partnership with Poclain Hydraulics :



*Mobile shredding machine*

*MSE03, MS05 and MS08 motors drives the conveyor belt drive, and PL pumps feed the open loop circuit*



*Forest harvester and cableyarder:*

*For these applications HAINZL supplied MS (from size 2 to 35) and MW motors*



*Cableway*

*HAINZL supplied MS25, MS35 und MS50 for the emergency drive function.*



*Sideloader forklifts*

*HAINZL sells Poclain Hydraulics MS motors (from size 5 to 11) to equip different machine sizes.*

In all projects, HAINZL underlines the good relationship and technical support from Poclain Hydraulics. They really appreciate the availability of the technical team when necessary.



*Headquarter of HAINZL in Linz*

In November 2015 HAINZL will organize for its birthday a big celebration at its headquarters in Linz. For sure, Poclain Hydraulics will be here!

## FACTS & FIGURES

HAINZL INDUSTRIESYSTEME, is a leading European systems provider in fluid technology, automation technology and building services engineering and its head office is in Linz.

- HAINZL was found 1965 by Mr. Erich Hainzl and is led now by his son Dr. Martin Hainzl
- HAINZL employs more than 750 best and highest qualified employees
- 25% of employees have an engineering education, additional 25% have a technical diploma.
- On 60.000 m<sup>2</sup> of property area HAINZL develops and produces technology for highest standards.



*Dr Martin Hainzl, CEO of HAINZL INDUSTRIESYSTEME*



# WHAT'S NEW



POCLAIN group acquired **GRANDRY TECHNOLOGIES** company, based in Sablé Sur Sarthe (France).

This upstream integration of a castings company is the result of a long term strategic approach from POCLAIN. This acquisition will foster **productive synergies**, increasing the added value beneficial to the customers of both companies.

With its **international expertise and financial capacity**, POCLAIN will enable GRANDRY TECHNOLOGIES to accelerate its international business development and support its longterm investment plan.

In return, GRANDRY TECHNOLOGIES brings to POCLAIN its expertise in highly cored GS (graphite spheroidal) castings, essential components in the design and performance of hydrostatic transmissions.

## POCLAIN HYDRAULICS' COMING EXHIBITIONS

EXCON Bangalore (India) // 2015 November 25-29

LAMMA Peterborough (UK) // 2016 January 20-21

BAUMA Munich (Germany) // 2016 April 11-17

## NEW WEBSITES

**Russia:** [www.poclain-hydraulics.ru](http://www.poclain-hydraulics.ru)

**USA:** [www.poclain-hydraulics.us](http://www.poclain-hydraulics.us)

