POCLAIN MAG

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March 2023

We'll be there!

CONEXPO CON/AGG

booth #S80841

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> Anticipating what lies ahead, the next technology leap is electrified zero-emission vehicles

MATT CHRISTENSEN
Vice President Sales - North America

EDITORIAL

CONEXPO, the construction industry's largest North American exhibition, has a special feel to it this year. It comes at a time when a sense of normal seems to return, putting an end to remote work and gaps in the supply chain. It will be the opportunity for us to reconnect with our mobile equipment community and get a feel for what is new in terms of trends, technology and products.

During the past three years, our main challenge has been to grow new business with new opportunities while working to deliver on time. Our factory has a new feel as our plant expansion has allowed us to incorporate an automated paint line, a pump assembly cell and two pump test cells. To optimize our throughput, we have streamlined the plant layout and increased our output and workforce by more than 40%. These changes have enabled us to absorb our steady growth, which averages 16% per annum since 2019.

Our recent commercial success comes in part from our new offerings for track loaders and skid steers. Our dedicated ML06 and MT07 motors are an excellent fit for these types of vehicles, and our line of tandem closed loop pumps are a compact and robust solution for the compact track loaders. Our system integrating tandem pumps and wheel motors provide the compact, durable and efficient solutions these applications need. As for our large displacement motors, they have continued to serve the horizontal and directional drill market well, especially as these drills increase in overall size, thrust and pull back force and bore size. Our large motors have also been a good fit for other high horsepower applications in wood processing, for example.

Much of our growth comes from the dedication and cooperation of our distributor partners. They excel in developing close relationships with smaller accounts and winning projects on applications such as specialty harvesters and compact all-terrain vehicles. Their ability to incorporate Poclain's products into larger systems shows that the range of product, features and durability Poclain provides for large scale machines can also serve smaller machines such as orchard harvesters.

Anticipating what lies ahead, the next technology leap is electrified zero-emission vehicles. Our mobile equipment customers are evaluating the benefits and risks of converting their drive system either partially or fully to electric; some already have a demo vehicle. In January, we started an electrified prototype for another one of our customers. With Poclain's electro-hydraulic solution, they can move from a traditional hydraulic and engine-based platform to a hybrid platform combining electric power and a hydrostatic transmission, all with minimal changes to the vehicle. One of these solutions, a compact articulated mini-loader, will be the centerpiece of our CONEXPO booth exhibit.
Remember to stop by our booth #S80841 at CONEXPO, we are looking forward to connecting with you.

SHIFT-UP!

HOW POCLAIN YORKVILLE DOUBLED PRODUCTION WHILE MEETING UNPRECEDENTED 24 MONTH MARKET DEMAND

The team at Poclain serves clients from all over the world and has done so in North America since our first subsidiary opened in 1978. To this end, we have invested $25 million CAPEX in our plant in Yorkville, Wisconsin over the last two years. The investment came with an emphasis on logistics and deliveries in response to current market demands while utilizing best practice manufacturing to process our highly designed products.

THE PLANT

Our primary facility in North America employs 280 workers in a facility that is 167,000 square feet after a recent expansion. The facility is designed for best-in-class manufacturing and innovation. Poclain is involved in all aspects of our products and services including the design, engineering, and project management for motors, pumps, valves, electronics, electromobility, and more. The experience and capability of our team includes off-road machinery such as skid steers, compact track loaders, directional drills, and combines. Our people and our facilities allow us to manage even the most complex projects for our customers - both domestic and global.

THE INVESTMENT

Poclain's investment focused on increasing our overall capacity. It became immensely important during the pandemic when logistics and supply chains were severely disrupted across entire industries. Poclain's investments included a building extension and overall upgrade to turn Poclain Yorkville into a state-of-the-art facility. Key use of our funds included:

- Increasing inventory of parts for our facility and our sister plants worldwide.
- Improving working conditions for our valuable team, which included making the facility cleaner, environmentally friendly, with better lighting, and an overall great place to work.
- Additional positive air pressure to prevent dust, dirt, and other contaminants from affecting our work quality further securing our ISO 9001 certification.
- A paint line to meet our customers' demands for higher quality with a paint blend and quality that is consistent with our most demanding customer painting requirements.
- A new and improved assembly line for motors and pumps with advanced process control to deliver products that are below 200 ppm.

Pierre-Antoine BATAILLE
Chief Executive Officer,
Poclain North America

THE RESULTS

The overall goal remains to provide shorter lead times to better serve our customers by safely and effectively increasing capacity. Our most recent results were an increase in production of more than 50% in the last two years. From 2020 to 2022, we outperformed our competitors in terms of deliveries and maintaining competitive prices.

As a result, we are continuing to invest into our newly expanded building, as well hiring quality personnel, retaining our current talent, and promoting high performing individuals from within. Additionally, team members have received new training programs to ensure they can deliver the best products with the best lead times.

MOVING FORWARD

Future plans include adding a new complete pump line with associated test benches in addition to extra motor production capability. The plant has room for several new assembly lines as market demands increase, and we plan to invest another $2 million CAPEX for 2023 to ensure a robust supply of components given any uncertainties in the logistics market with an emphasis on continuing to exceed our customer's expectations.

THE MT07 COMPLETES POCLAIN HYDRAULICS' COMPACT LOADER MOTOR OFFERING

With a fleet of around 150,000 skid steer loaders equipped with their motors, Poclain Hydraulics knows the compact loader application well. In addition to the ML06 which has become a reference on skid steer loaders, we are introducing the MT07 dedicated to track drives on compact track loaders.

THE MT07, A PERFECT FIT FOR THE COMPACT TRACK LOADERS

Operators love CTLs for their all-terrain capabilities. The MT07 integrates robust sealing system to tackle mud, gravel, debris, and protect the moving parts during the entire lifetime of the machine.

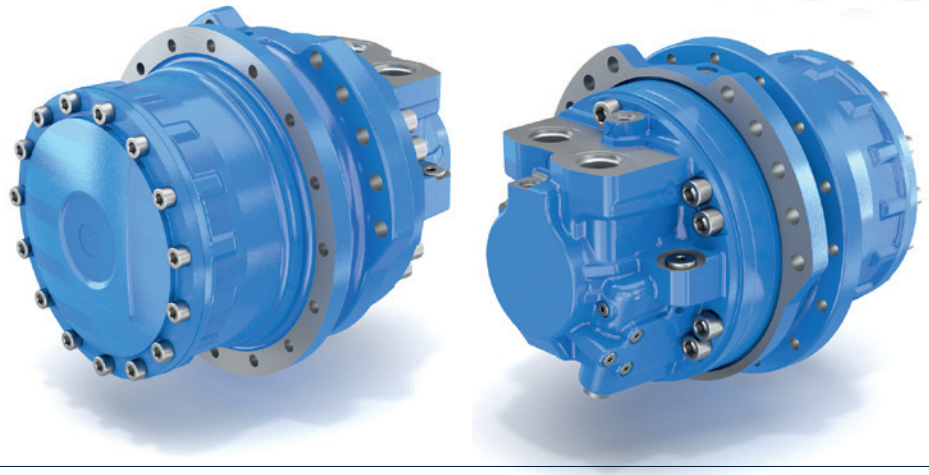
The high efficiency of the MT07 enables the operator to move swiftly on the jobsite, shifting continuously from forward to reverse, as well as drive at 12 mph (20 kph). Its high efficiency also allows the OEM to downsize the cooling system.

The MT07 is available with two speeds. Thanks to its symmetrical valving, is offers the same level of performance in forward and reverse for agile maneuvering.

The design of the MT07 fits snug inside the track and its weight is well balanced, reducing the stress on the track and chassis.

As for braking, the MT07 comes with a high-performance multidisc brake capable of withstanding emergency braking. Both fixed and suspended undercarriages can integrate the MT07, as it is available with either axial or radial connections. With a displacement ranging from 30 and 56 cu.in per rev (495 to 920 cm^3), the MT07 is suited for CTLs up to 10,000 lbs.

Compact track loader MT07 + Tandem PM 50



MT07 motor

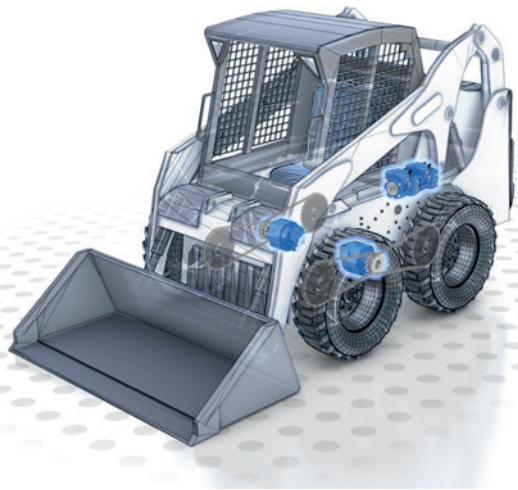
Vincent KNAB

Product Marketing Specialist
Poclain Hydraulics

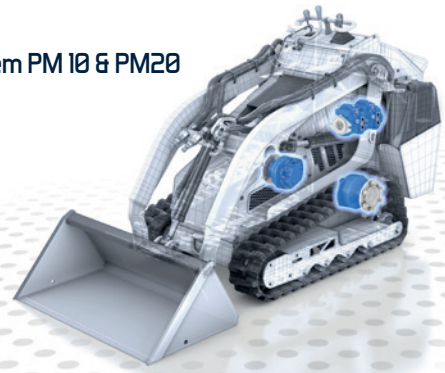
A COMPLETE RANGE OF DEDICATED COMPONENTS FOR THE COMPACT LOADER MARKET

With over 20 years' experience in serving the skid steer and compact loader OEMs, Poclain Hydraulics can partner with you to design your next-gen compact loader. As you break ground in zero-emission machines, our electro-hydraulic transmission can help you transition to a diesel-free alternative without compromising your chassis design.

Skid steer loader
ML06 + Tandem PM 50



Mini-CTL
MS02 + Tandem PM 10 & PM20



NEW ADDIDRIVE SOLUTION DEDICATED TO THE US TRUCK MARKET

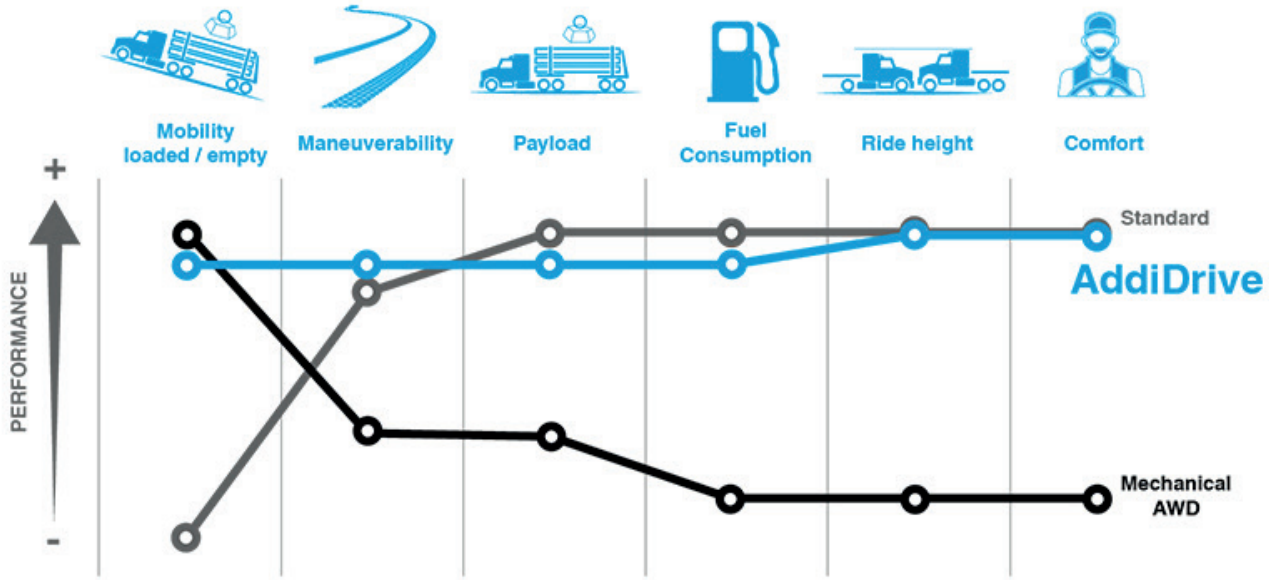
Poclain Hydraulics introduces a major evolution of its AddiDrive solution for the U.S. market. Compatible with U.S. rims, it couples with the gearbox P.T.O. and facilitates system integration without reducing its performance. Prototypes will be available starting 2024.

Maximizing productivity and safety while minimizing CO2 emissions is a top priority in many industries. For companies that use trucks, the challenges they face include maximizing payload, uptime, and material lifetime while minimizing fuel consumption. Add to these challenges recent supply chain constraints all over the U.S. and diminishing spare-part inventories. With all-wheel-drive trucks, finding the right compromise for the job and route is paramount to ensuring a truck gets the job done effectively.

The most popular trucks on the market today are those for on-road applications such as long-haul trucking. These trucks are optimized for driving on the road but not for rough terrains, as they do not normally operate off-road. On the other hand, mechanical AWD versions are perfect off-road but offer limited on-road performance. Having only these two alternatives presents a problem for vocational application truck users who spend nearly all their time on-road and only a small amount of it off-road. They are based either on a standard long-haul truck that can get stuck in off-road conditions, or, if based on a mechanical AWD transmission, they limit their on-road performance.

Mechanical AWD is a solution for high mobility needs and short-distance driving. It is optimal for trucks working almost exclusively off-road. To avoid risk to mobility in this type of application, a common solution is to acquire a mechanical AWD truck that copes with difficult situations with or without load, maximizing uptime. However, mechanical AWD has constraints, such as a reduced turning radius, which dramatically limits maneuverability. Furthermore, AWD necessitates increased ride height, creating constraints when driving on-road. This is especially limiting when it comes to height restrictions on bridges and tunnels, and even more so for utility trucks with over-cab lifts or cranes already at the limit of height regulations. Moreover, mechanical AWD reduces the payload and increases fuel consumption, which makes it not suitable for driving on-road most of time. This makes AWD inappropriate for trucks in applications such as fire and rescue, construction, towing and recovery, or other specialized hauling applications.

Bruno LACHETEAU
AddiDrive Program Manager,
Poclain Hydraulics



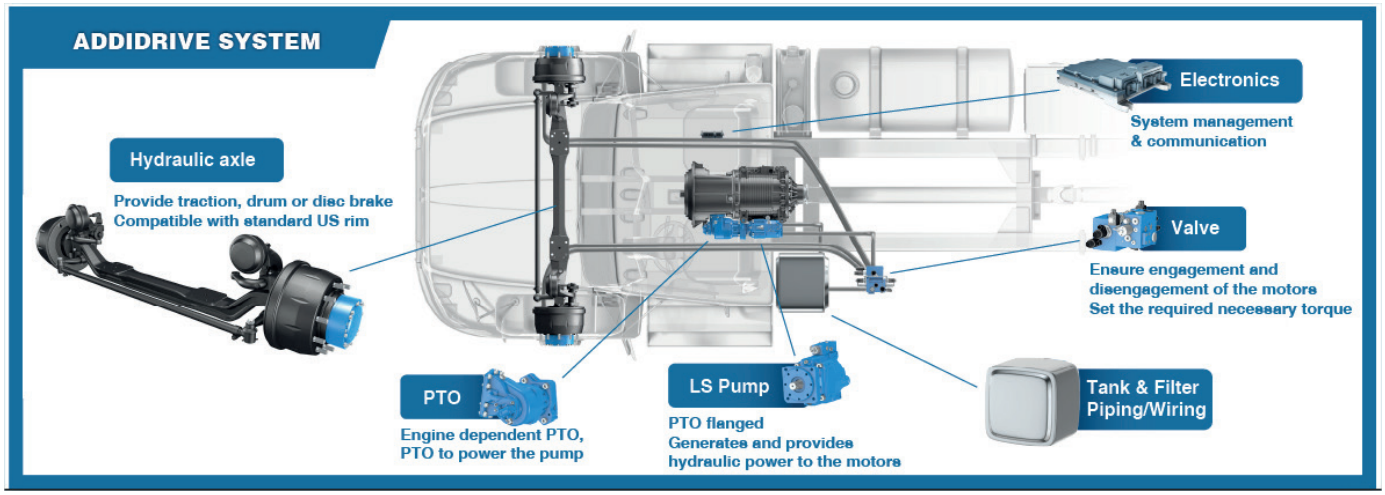
A compromise for these types of applications, the best of both worlds, so to speak, is an on-demand AWD hydraulic system that has the capability of a standard truck in off-road situations but maintains its on-road performance. This type of solution delivers optimal mobility in difficult driving conditions, such as mud, snow, slope, or sand, improving maneuverability by keeping a standard turning radius and improving the grip on unstable terrains or in low-adherence situations.

With Poclain Hydraulics' on-demand hydraulic AWD system AddiDrive, there is no need to increase the cab height; the axle fits perfectly with standard chassis integration, which means the same ride height as a standard truck. Having traction in the front wheels does not affect the installation of auxiliaries or truck-height compliance for road regulations. The system has minimal impact on payload and fuel consumption. A truck with the AddiDrive system can carry up to 1,400 pounds more than a standard truck with AWD. Fuel consumption with the AddiDrive system increases by only 0,5-1% while a mechanical AWD increases fuel consumption by 10-15%. The system increases tire lifetime by avoiding excess slippage. It also lowers total cost of ownership because of reductions in downtime, maintenance, fuel consumption, and tire wear. It boosts productivity by maximizing the daily payload and offering better comfort and safety for the driver.

From a driver's perspective, keeping the same cabin height as a standard truck improves comfort and optimizes the driver's visibility and ergonomic accessibility. The system also reduces stress and driver fatigue and provides peace of mind that they will meet their mileage goals. Additionally, on-demand hydraulic AWD, through increased mobility without added height, reduces the planning required of fleet managers and drivers by optimizing routes and driving hours. Even when drivers encounter harsh weather conditions or irregular terrain such as fields, forests, or construction sites, they will not get stuck or lose valuable time.

Besides advantages to end users, an on-demand hydraulic AWD system has a positive impact on the environment. Reduced slippage increases tire lifetime, which reduces waste and fuel consumption, thus limiting emissions. It also means there may be no need to pave access to the work site. Additionally, the system reduces the risk of cash spent for towing a stuck truck, which is beneficial to fleet managers, drivers, and the environment. By keeping the same fifth-wheel height as a standard truck, the manager can standardize his fleet of trailers.

On-demand hydraulic AWD system architecture is relatively simple. The new AddiDrive open loop system optimized for U.S. trucks consists of a load-sensing-type pump, a valve, an electronic control unit, and two motors assembled onto an axle that is fitted inside the truck's wheels. Besides these components, the system requires a hydraulic tank, a filtration system, pipes and wiring to complete the system.



For system integration, the system must be compatible with North American standards for North American trucks. In the new AddiDrive open loop system, the motors are tailored to fit U.S. standard rims, while the axle covers a full range of load capacity. The pump is compact and the tank is easy to integrate without taking up space needed for other components. Thus the system fits trucks from class 6 up to class 8. Moreover, the system is compatible with U.S. truck power take-offs. Allowing mounting of the pump directly onto a transmission PTO makes for a compact and optimized integration that does not interfere with work done by the bodybuilders and upfitters, making it fully compatible with their tools. At speeds up to12 mph, where increased traction is often needed, the system is able to provide 5,000 lbf tractive effort at 5,100 psi (351 bar).

AddiDrive is a simple set-up. When the system is activated, the pump, powered by the transmission PTO, generates and provides flow to the valve block, which ensures safety and manages the motors' activation. The valve block splits the flow between the two motors, providing traction. The electronic control manages communication and pilots the system.

Contrary to a mechanical axle, on-demand hydraulic AWD delivers torque only at the required level and only when needed. The driver maneuvers a switch on the dashboard, activating the system and allowing it to engage and disengage. In AddiDrive systems, engagement and disengagement can be done on-the-fly, while the vehicle is moving.

On-demand hydraulic AWD has two modes: traction mode, in which the hydraulic-powered axle delivers torque, and freewheeling mode, in which the two hydraulic motors are disengaged.

In traction mode, the AddiDrive system can drive the truck up to 12 mph, after which it automatically disengages. Depending on the resistance created by the machine to move, maximum pressure may be applied in the hydraulic motors to provide around 5,000 lbf additional tractive effort. Maximum torque can be applied from 0 mph; afterward it will be adapted at higher speed, never exceeding maximum power limitation. Maximum tractive effort is optimized depending on the front-axle load and low-traction conditions typically encountered in difficult situations. While the traction mode is active, the pump displacement is controlled to ensure speed synchronization between the front and rear wheels. Additionally, the driver can adjust the pump displacement to the required level of system pressure.

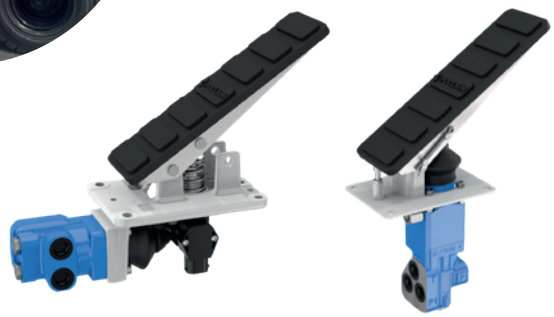
When the system is disengaged, the pump returns to the neutral position and the two motors switch to freewheeling mode, reducing system drag losses to a minimum.

Generally, integration for this type of system occurs at the OEM level. It offers OEMs an opportunity to differentiate their product. OEMs can deliver more versatile truck models with efficient performance both on- and off-road without the constraints of a mechanical AWD. The front axle is fully equipped with a plug-and-play solution compatible with the chassis installed on the normal axle; only the hoses need to be attached. This type of plug-and-play system offers fast integration at the OEM level, requiring less resources.

When specifying a truck AWD solution, the work and application need to be carefully examined. Whether a work truck is destined for full or partial off-road driving needs to be analyzed carefully to optimize the total cost of ownership and deliver a right-sized solution for each application. Having a choice between full-time and on-demand hydraulic solutions allows OEMs and fleets to differentiate themselves further in the market.

HOW INNOVATIONS IN BRAKE VALVES GREW SALES 30% IN ONE YEAR

VB3-002 and VB3-020 brake valves



GS Global Resources is an industry leader for controls, hydraulics, and custom machine components who is relied on by OEMs for technology and continuous innovation. Their location is just 25 miles away from Poclain's North American facility, so we were a natural fit. In fact, they have been a trusted Poclain Hydraulics distributor for over 25 years.

GSGR Expands Into Cabs

In 2018, GSGR acquired ADC Custom Products, now ADC Equipment Innovations, who manufacture protective structures and configurable cabs. As a result, they were in need of advanced hydraulic brake valves for these machines and other equipment, such as heavy duty forklifts. As in all industries, they were looking to go bigger and better, yet with more functionality and efficiency.

Poclain Hydraulics VB3 Valves as a Solution

Given our history with GSGR, we were able to meet the demand using our VB3 brake valves, which have adjustable pressure settings to allow for quick changes for different requirements, as well as offer a number of pressure ranges. The result was that GSGR was able to produce twelve cabs a month using our hydraulic brake valves.

In fact, GSGR decided to replace a competitor's parts with ours, in part because of our product's superior performance, combined with our personalized customer support. But what truly put us over the top was our ability to beat the minimum lead time of 48 weeks others were offering. In the end, GSGR was pleased enough to increase their Poclain Hydraulics purchases over 30% between 2021 and 2022 alone, and they have truly earned their "Top Distributor" status.

The Future for Poclain Hydraulics and GSGR

All of these issues began during the global pandemic when supply chain issues were a major factor. However, we were able to take the necessary steps in order to keep our customers happy.

Additionally, most GSGR sales personnel have an engineering background and know Poclain Hydraulics products well enough to make the optimal product selection for their application. Our sales and engineering groups worked closely to complete this project, and will continue to do so for others in the future.

We are looking forward to building on our work with GSGR to grow Poclain Hydraulics' latest VB3 adjustable brake valve program that is set up for quick response prototypes in hydraulic brake valve applications.

Primoz PANGERSIC
Valves Portfolio Manager
Poclain Hydraulics

PARTNER WITH POCLAIN FOR YOUR NEXT-GEN ZERO-EMISSION VEHICLE

From mining to garden landscaping, zero-emission is today's new frontier for off-road machinery. As duty cycles vary dramatically, it is hard to know whether the electric technology will do the job. How long can the machine work between charges? What will be the performance and the premium? With Poclain's Connected Services, OEMs can assess the feasibility of going electric, make the best technical choices and validate the performance of their zero-emission machine before market launch.

RISK-FREE, DATA-BASED DECISION MAKING

Knowing a machine's actual duty cycle is the first step towards deciding whether to go electric or not. Poclain carries out a diagnostic before electrification, which consists of equipping a diesel machine in the field with a Poclain Databox and sensors to collect high-frequency data. We look for duration at temperatures and pressures, pump displacement and command, engine RPM, auxiliaries, energy consumption, operator command, and mission profiles.

Data is collected in the cloud for one to three months to account for a variety of jobs and operators. Poclain data scientists then analyze the data and hand it over to the e-mobility team, who discusses with the OEM the feasibility of going electric as well as sizes the electric components, including the motors and the battery.

PERFORMANCE VALIDATION WITH CONNECTED COMMISSIONING

Before the zero-emission machine is launched, prototype and pre-production models are connected using the same protocol to validate performance and reliability in various operating conditions. Special attention is given to the battery capacity and charging needs. The OEM can also finetune the machine settings and resolve issues before the machine hits the market.

CONNECTED SERVICES SHAPE YOUR FUTURE ELECTRO-HYDRAULIC TRANSMISSION

Poclain's Connected Services enabled Norcar, a manufacturer of small articulated wheel loaders based in Finland to design their electro-hydraulic a60E1 mini loader. A long-time user of Poclain Hydraulics' motors, they called to collect the data on their diesel-powered model and size the components of the next-gen electric machine.

Magnus Holm, Norcar Research and Development Manager, is delighted with the outcome of the project. "Poclain's Connected Services helped us a lot. The electro-hydraulic model is very smooth and provides high power at a low noise level. The project has exceeded our expectations".

Whether you are developing new electro-hydraulic or diesel-hydraulic machines, you can rely on Poclain's Connected Services to design the optimal vehicle. The partnership will shorten time-to-market, reduce risks, and ultimately develop a machine that exceeds performance and operator comfort expectations.

Norcar a60E1 mini loader equipped with an electro-hydraulic transmission

Poclain Hydraulics' DataBox
collecting high-frequency data

SERGE NICOLOFF
Services Program Marketing Specialist
Poclain hydraulics

POCLAIN HYDRAULICS REPAIR DEPARTMENT UTILIZES BEST PRACTICES

Steve BAUMSTARK
Aftermarket Service Manager
Poclain hydraulics North America

The Poclain Hydraulics repair department has been in operation in the United States for over 30 years serving customers throughout North America and across the globe. In addition to handling warranty work, our repair department has also expanded into new and unexpected heights.

THE POCLAIN HYDRAULICS REPAIR DEPARTMENT TEAM

To create the best work environment, we have given our team members only the best. Each technician has their own space, work bench, and the latest in diagnostic equipment and tools. Their combined experience allows them to quickly perform inspections on any submitted products, analyze for any damage, find the root cause of the damage, and expertly fix whenever possible. As a result of our winning strategies, we are proud to share that we have one technician with over 30 years of experience, two with over 25 years, and one with 15 years of experience with our full range of Poclain Hydraulics products.

THE REPAIR TEAM BEST PRACTICES

Each repair experience is unique, but many involve a proven set of steps to ensure the best outcome. For example, if a leaky motor comes in, we thoroughly evaluate it to determine the cause of the leak, such as a faulty bearing or seal. One of our most important jobs is to determine how the failure in the product occurred: did it occur during manufacturing, during normal operation, or was the product improperly installed or used? It is essential to address these issues because:

- If it is a manufacturing issue, it must be addressed as soon as possible.
- To identify if a certain component tends to fail during normal operation.
- If customer has installed one product improperly, it is essential they know and are able to address any other improperly installed products.

Each repair job can come with inspector analysis, pictures, detailed repair reports, and much more.

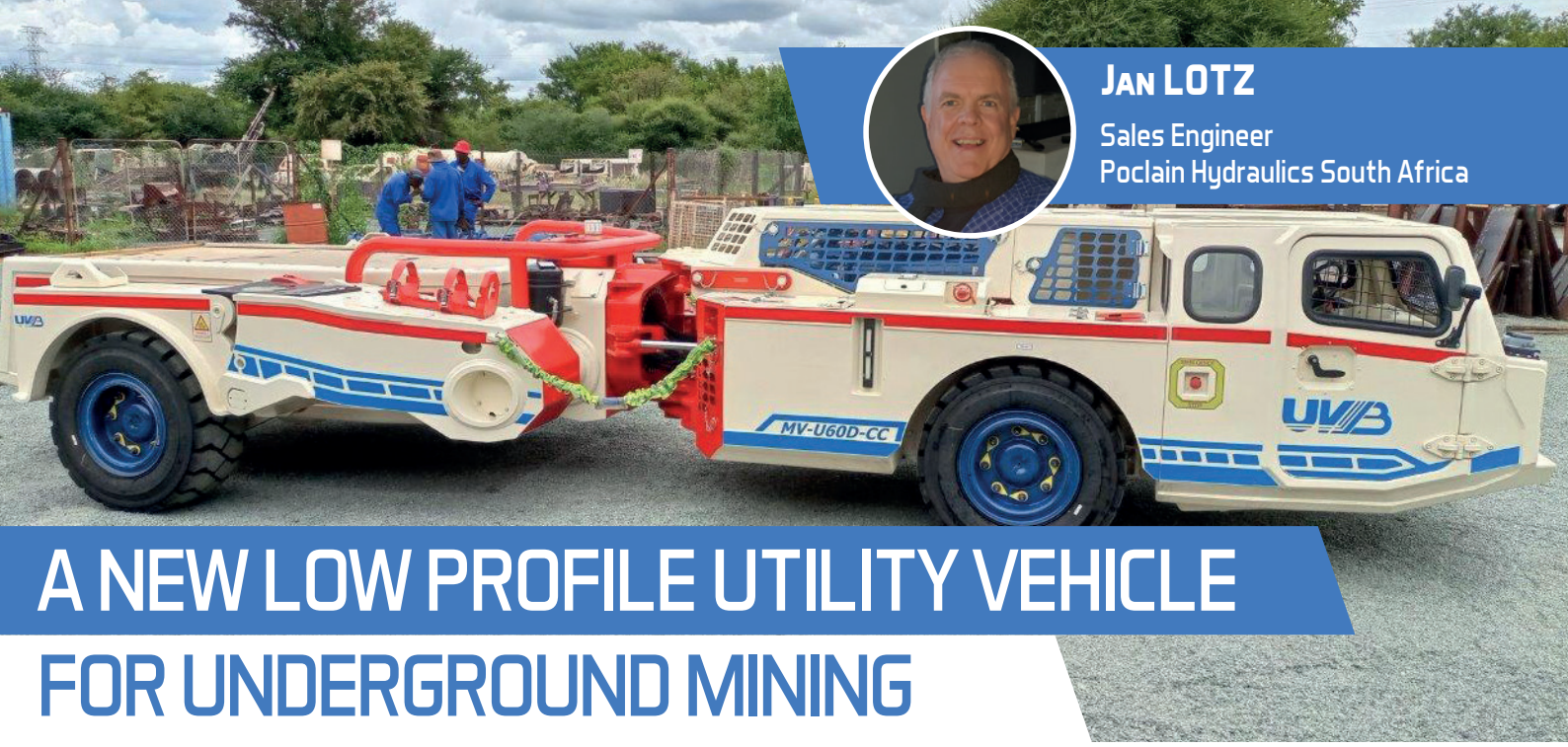
POCLAIN HYDRAULICS EXPANDS REPAIR DEPARTMENT

To build on our expertise, our department does not only stick to warranty work. In fact, we have expanded to include prototype work for the local sales group. We can also convert certain Poclain Hydraulics motors, valves, and more for specific customer needs.

Shorter lead times are also essential to us, as speed is of the essence. Using an adaptive strategy, we were able to stay ahead of supply chain issues caused by the pandemic and look to do the same with any future challenges. The repair department can even turn around work in a week or two on customer request if the circumstances are favorable. It all depends on if we have the parts in stock or can get them quickly. Even non-priority repairs can be done within the month. We especially like to cater to smaller manufacturers as they don't have hundreds of other machines to rely on if one of their's breaks.

THE FUTURE FOR THE POCLAIN HYDRAULICS REPAIR DEPARTMENT

The research and development team at Poclain hydraulics has recognized our ability to perform quality work on a quick basis and often asks us to assist on their projects. For example, we may test a new product at the same time they do with a focus on components in order to compare results. Our team can also perform inspections and tear downs. On occasion, we are able to find a serious issue and report it before the product goes into production. We look forward to working with you on your next Poclain hydraulics product.



Jan Lotz
Sales Engineer
Poclain Hydraulics South Africa

A NEW LOW PROFILE UTILITY VEHICLE FOR UNDERGROUND MINING

Poclain Hydraulics is on a growth path and we are finding that one way to gain new business, is to become more active in countries & regions outside of our traditional business areas. An example of this strategy is our growing business in a country like Botswana.

Poclain Hydraulics has been active in Southern Africa for over 30 years and has provided hydrostatic transmissions to several OEMs in the region. Since 2015, we decided to have a permanently based sales engineer stationed in South Africa and his focus is to travel throughout Southern Africa to support our business.

Against this back-drop, Jan Lotz has been key in securing new business in Botswana and helping UV Botswana design a new hydrostatic transmission for their 6T low profile underground mining utility vehicle platform.

UV Botswana (Pty) Ltd is a 100% locally-owned private company which was established in 2005. They specialize in the design and manufacture of low profile, trackless utility vehicles, offering a broad range of innovative and robust underground UVs to cater for a variety of mining, supervision and support activities. The company boasts new and state-of-the-art manufacturing facilities in Francistown, Botswana. At this modern plant, they provide a full service offering including research and design; engineering and manufacturing; commissioning, field service and full after-sales service backup.

The MV-U60D CC machine is a low-profile utility vehicle that can carry and move a range of multi-functional cassettes into and around the underground mining area. Individual cassettes are loaded onto the machine for a variety of tasks - including general purpose transport, transporting of bulk emulsion explosives, diesel fuel, oils and other fluids. Cassettes can carry loads of up to 6T, and the OEM can also design and build cassettes to meet the specific needs of their customers.

The first prototype of this machine was commissioned in mid 2022 and the vehicle is now in serial production. Orders for the machine are growing as more and more mines see the competitive advantages which this machine can bring to their operations.

This machine is a four-wheel drive vehicle that relies on a complete Poclain Hydraulics hydrostatic solution. The drive system includes a tandem PM50 pump with automotive control, four MS11 wheel motors, as well as brake valves. Anti-skidding features of the machine are provided by having two independent closed loop hydraulic circuits – each consisting of one pump and two hydraulic motors, driving two wheels each.

MS11 motor and PM50 tandem pump

The machine's service braking system consists of a foot brake pedal and brake valve which provides a first level of hydrostatic braking by inching (de-stroking) the pump and at the end of the pedal stroke, the front wheel motors multidisc service brakes get activated.

The MS11 front wheel motors include Poclain Hydraulics' "S" type wet multidisc service brakes which are integrated in the bearing supports as well as our "T" type spring-applied and hydraulically released (SAHR) Park/Emergency brakes at the rear end of the motors. The rear motors just include our "P" type SAHR park/emergency brakes, which are also located in the bearing supports of the motors.

HOWE & HOWE THERMITE® FIREFIGHTING ROBOT SPORTS POCLAIN HYDRAULICS TRANSMISSION

Paul Ford
Howe & Howe's
Program Manager

As part of Textron Systems, Howe & Howe Inc. are leaders in developing advanced robotic land vehicles. Primarily serving the military and first responders, they build machines that are robust, reliable, and built for extreme conditions. When they searched the market for a more compact pump to feed their diesel Thermite firefighting robot, the compactness and efficiency of the Poclain Hydraulics technology won them over.

THE THERMITE, ONE OF THE MOST RUGGED FIREFIGHTING ROBOTS ON THE MARKET

With Howe & Howe's expertise in military applications, they have built a unique model capable of driving up stairs, smashing a door, and outputting a maximum of 1,250 gallons of water per minute (a volume that would usually require four to six men to hold the hose). Its zero-turn capabilities enable it to maneuver around debris and manage tight turns in stairways.

When Howe & Howe set out to find a more compact pump to optimize the diesel Thermite set-up, Hydro-Air, their hydraulic distributor, suggested Poclain Hydraulics' PM10 tandem pump. As for the braking function, Howe & Howe had designed a solution in-house that required regular maintenance. It is now replaced by two maintenance-free MS02 two-speed motors with an integral brake.

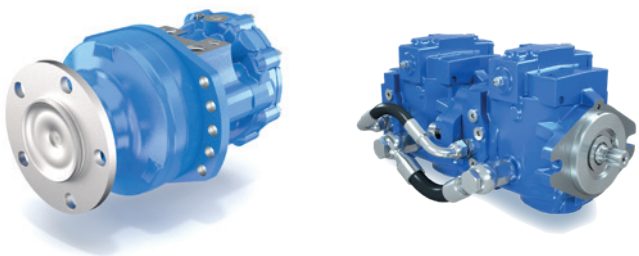
POCLAIN HYDRAULICS' TRANSMISSION ENHANCES THE THERMITE'S PERFORMANCE

Paul Ford, Howe & Howe's Program Manager for robotics, states, "Our first design had separate drive components, whereas the Poclain Hydraulics system has everything integrated - the hydraulic brakes and the two-speed capability. It is more robust and simplifies manufacturing and maintenance." Poclain Hydraulics' heavy-duty motors and pumps bring additional benefits to the application:

- Excellent resistance to the water from the vehicle cooling system and the hose,
- Lower circuit temperature. The high volumetric efficiency of the motors contributes to stabilizing the heat in the circuit,
- Two-speed capability, providing better maneuverability in the slow range.

The Thermite robot is a highly versatile robotic ground vehicle with a wide range of applications, from forests to oil and gas plants. This vehicle has already reached international markets with several dozen units sold in China. Exciting prospects are lying ahead, and Howe & Howe can rely on Poclain Hydraulics' technical support and responsiveness.

MS02 motor and PM10 tandem pump



POCLAIN HYDRAULICS MOTORS ADVANCE CONCRETE LEVELING INDUSTRY

Ligchine International is a leading manufacturer of laser-guided and 3D GPS/LPS-guided concrete screeds. They have expanded to include a full line of automated concrete screeding machines that are ideal for upper deck concrete and slab-on-grade screeding applications because they reduce the need for manual labor.

These amazing machines use hydraulic motors, and as a result, Poclain Hydraulics has been partnering with them for several years now. Our MSE02 hydraulic motor is a good fit because it is available with and without brakes and is designed for wheel motors or tool drives that need torque up to 2500 N.m (1840 lb.ft). However, Ligchine's continued success led to the demand for more machines that were larger, could perform more work, and used more advanced technology.

Our MGE05 motors were also a great fit for these machines because of their superior performance with high torque (max force 4769 N.m - 3510 lb.ft) and low speed at 420 rpm. In addition, the radial piston design was preferable to a traditional gearbox set-up because it does not require as much maintenance. For example, a traditional gearbox needs gearbox oil and hydraulic oil. Additionally, competitor tolerances are lower - resulting in max pressure 400 bar and 6527 PSI on the MGE05. The larger machines also use our KV size 6 selector valves.

MS02 motor and MG05 motor

THE POCLAIN HYDRAULICS ADVANTAGE

Along with the above, the advantages with this configuration include:

- Use of alloy steels for strength and reduced weight,
- Use of a direct drive motor without gearbox,
- Advanced precision,
- Increased efficiency of a low speed, high torque motor.
- MGE05 are steerable motors that include a swivel joint to prevent pipe bending while steering; it also comes with steering lugs and a C frame.

THE RESULT

The overall result was that the Poclain products are used in the Ligchine Screedsaver Elite models. They are their newest laser-guided concrete screed machine with a larger boom for greater accuracy and stability, all-wheel drive for rough surfaces, and an amazing side-shift screed head.

POCLAIN HYDRAULICS MOTORS FOR AMPHIBIOUS TRUCK

Amphibious vehicles are those that can be driven over land and water, which can have benefits in a wide range of applications. However, many obvious challenges exist to manufacturing these types of vehicles for optimal performance on both land and water.

GROUPE EP

The EP Group in Quebec Canada has many years of experience designing and developing vehicle propel drives. When Zeal Motor Inc, a renowned manufacturer of amphibious vehicles came to them for a vehicle propel solution, Groupe EP knew right away that Poclain Hydraulics' cam lobe radial piston motors would be able to help meet all of the machine's propel requirements.

SPACE, WEIGHT, PRICE, AND EFFICIENCY

The vehicle operated with a belt drive and dual paths, much like a skid steer loader, which Poclain Hydraulics has years of experience with. The unique application needed a hydrostatic system that was of simple design, could fit in a tight space, have a high power to weight ratio, and be cost-effective. They needed a motor that would perform on land and on water.

Poclain Hydraulics' MS05 motor was a total solution due to its small volume, reasonable weight, overall efficiency and value. The hydraulic solution also allowed the vehicle to have an infinite transmission ratio instead of having to shift gears, which allows the vehicle to better navigate over all kinds of rough terrain.

AMPHIBIOUS TRUCK APPLICATIONS

The market has an impressive demand for this type of vehicle in many industries and applications. It is ideal for the transport of workers to and from off-road sites that may have water hazards. It can also be used to transport materials to and from such sites. We at Poclain Hydraulics look forward to addressing your unique vehicle propel application requirements.

MS05 motor

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