POCLAIN MAG

#23

bauma | Munich April 7-13

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POCLAIN,
HYDRAULICS AND BEYOND

Content

Editorial

Denis GREDER
Marketing Director

> **...Our new generation of hydraulic and electric motors is unveiled at this year's BAUMA**

While the 2025 Bauma edition comes at a challenging time for our industry, it can also be seen as the beginning of a new cycle. For Poclain, this event marks the introduction of a new wave of technologies that we are sharing with our visitors at our innovation corner. It is the first time our new generation of hydraulic and electric motors is unveiled.

Poclain is taking a deliberate techno-agnostic stance, promoting simultaneously the latest in cam-lobe radial piston motor engineering with our HEVO suite of motors and our new electric e-Wheel motors that integrate an inverter, a brake, a motor and a reduction gear for compact machinery.
This time, more than ever, we are excited to engage with the BAUMA community in our shared mission to design future-ready construction machinery.

This issue of Poclain Mag gives you a good glimpse into what Poclain is showcasing in Munich.

HYDRAULICS AND BEYOND:
POCLAIN'S BOLD MISSION AS A GAME CHANGER IN TRANSMISSION SOLUTIONS

As Poclain Hydraulics celebrates four decades of independence in 2025, the company stands at a pivotal moment of transformation. With the completion of its ENGAGE 2020-2025 strategic plan and the launch of NEW GEN 2025-2030, Poclain is reaffirming its role as a key partner in transmission solutions. This renewed vision will take center stage at BAUMA Munich 2025, where Poclain showcases groundbreaking innovations that push the boundaries of hydraulic and electric technologies. More than just technical advancements, these innovations reflect Poclain's commitment to helping customers navigate an increasingly competitive and resource-constrained world.

From hydraulics to a technology-agnostic future

The ENGAGE strategic plan has been instrumental in shaping Poclain's evolution, emphasizing sustainability, innovation, and technological openness. By expanding beyond its core hydraulic expertise, Poclain has embraced a technology-agnostic approach, integrating hydraulic, electro-hydraulic, and full-electric solutions. This adaptability positions Poclain as a preferred partner for OEMs, offering tailored technologies that address today's evolving market demands.

This ambition is encapsulated in our new tagline: "Poclain, Hydraulics and Beyond." Our deep-rooted expertise in hydraulics, combined with advancements in electric and hybrid technologies, enables us to deliver cutting-edge solutions that meet the evolving needs of modern machinery manufacturers.

Electric and hydraulic technologies provide powerful synergy

Our experience in power transmission dynamics plays a crucial role in advancing the shift to electric mobile machinery. Pushing innovation towards enhanced efficiency, intelligence, modularity, and sustainability helps us connect the dots between hydraulics and electric drives.

Electrification projects demand compact, highly integrated components, inspiring lighter and more compact hydraulic motors that seamlessly fit within machine architectures. At the same time, insights from electrical power curves help refine hydrostatic system management, making hydraulic solutions more precise and better suited to specific applications.

By optimizing torque, energy flow, and system design, Poclain accelerates the electrification transition while enhancing hydraulic performance. This fine-tuned energy management —critical for maximizing battery autonomy—also helps reduce energy losses in hydraulics, boosting overall efficiency.

Hybridization further highlights the strengths of both technologies, combining the responsiveness of electric motors with the durability and energy density of hydraulic systems. This hybrid approach enhances control, modularity, and integration, opening new possibilities for off-road applications.

HEVO: A breakthrough in hydraulic performance

A prime example of Poclain's innovation is HEVO, a next-generation hydraulic solution that pushes the boundaries of performance. By redesigning core components around torque and power, HEVO can operate at up to 11,600 PSI (800 bars), pushing back traditional physical limits.

HEVO boosts power output while improving efficiency, reducing energy consumption by up to 30%. HEVO also integrates advanced steering and transmission control systems, enhancing machine productivity and functional safety. Designed to meet growing market demands for sustainable and high-performance solutions, HEVO exemplifies how Poclain redefines hydraulic excellence.

eMobility: Driving the future of compact machinery

The eMobility program is another step in Poclain's journey beyond hydraulics. By leveraging decades of expertise in electro-hydraulic drives, we are expanding into full-electric systems designed for compact machines, such as skid steer loaders, mini excavators, and compaction equipment.

These solutions align with customer priorities for automation, energy efficiency, and performance monitoring. The integration of advanced software and sensor technologies enhances control, making operations more intuitive and efficient. By providing OEMs with plug-and-play sub-systems that fit seamlessly into their architectures, Poclain helps manufacturers simplify machine development and accelerate time-to-market.

Frédéric Michelland
CEO POCLAIN

A trusted partner in a changing landscape

In a fast-changing industry, OEMs encounter growing challenges, including emerging competitors, localized supply chains, and increasing sustainability requirements. Poclain's approach helps manufacturers overcome these complexities by providing solutions that improve efficiency, reliability, and repairability while reducing environmental impact.

By integrating functional safety, automation, and intelligent software into our transmission solutions, we ensure that customers maintain control over their machine performance while meeting stringent regulatory and operational demands.
The off-road and construction machinery sectors are at a crossroads, balancing electrification, sustainability, and evolving customer expectations. Poclain is committed to leading this transformation by delivering solutions that drive both productivity and sustainability.

Our ambition to be a global leader in transmission solutions is fueled by our deep industry knowledge, relentless innovation, and commitment to customer success. The NEW GEN 2025-2030 strategic plan lays the foundation for this bold vision, fostering strong OEM partnerships and ensuring that our technologies address the critical needs of tomorrow's machinery.

At BAUMA Munich 2025, Poclain's presence will be more than just a display of technological milestones—it will be a statement of our role as a trusted partner, shaping the future of transmission solutions and empowering our customers to succeed.

POCLAIN EXTENDS ITS ELECTRIC TRANSMISSION OFFERING FOR COMPACT MACHINERY

Poclain's five-year strategic plan has been instrumental in shaping the company's evolution, with a strong focus on sustainability and innovation.

By expanding beyond its traditional hydraulic expertise, Poclain has adopted a technology-agnostic approach, fostering synergies between hydraulic, electro-hydraulic, and full-electric solutions.

This vision is underpinned by decades of hydraulic expertise combined with advancements in electric and hybrid technologies, resulting in innovative solutions tailored to meet the evolving challenges of modern machinery manufacturers.

Whether full electric or electrohydraulic, our innovative technologies bring value to your off-highway machines whatever your application - from wheel loaders to multi-tool carriers, site dumpers, truck-mounted forklifts, tandem rollers, mini compact track loaders, autonomous agricultural machines and more.

We are thrilled to showcase our high-performance electric solutions at the BAUMA 2025 tradeshow, enabling compact machines to transition to a greener, more efficient future.

eWheel

Optimize your machine propulsion with the all-in-one eWheel electric drive solution

At Poclain, we believe that a complete transmission solution is a significant advantage for the future of zero-emission off-road machinery. This has driven us to launch an **all-in-one electric** drive solution that not only enhances the performance of your machine's off-road operations but also streamlines its development, empowering your transition to e-vehicles and fostering your ability to innovate.

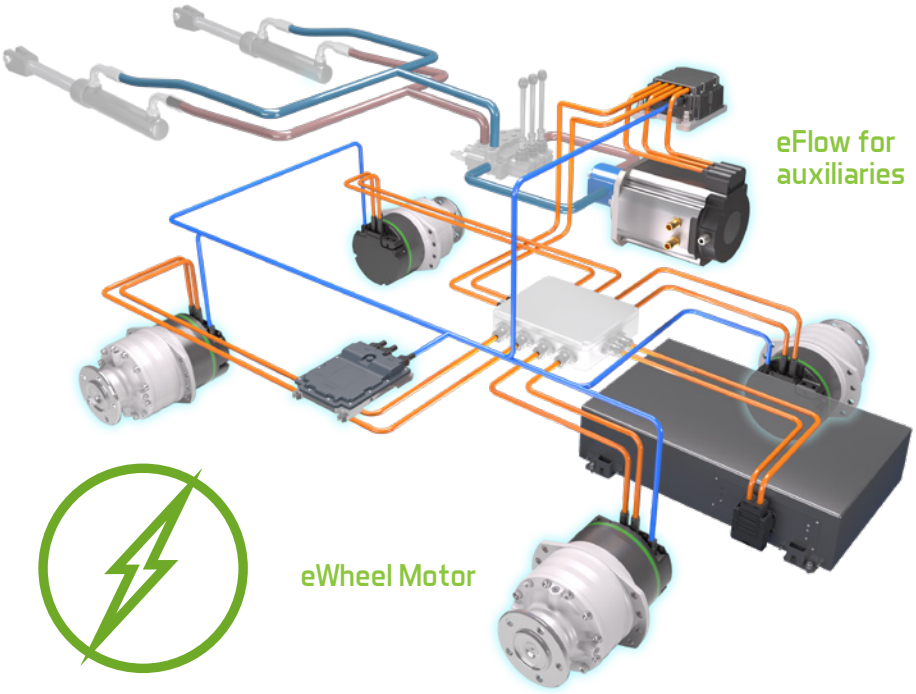
This solution simplifies electrification through fully integrated components, offering the flexibility of low and high-voltage configurations to suit diverse needs. It offer the same mechanical interface to ensure seamless machine integration. By maximizing drivability and control, our electric drive solution optimizes each wheel's performance and delivers superior off-road capabilities.

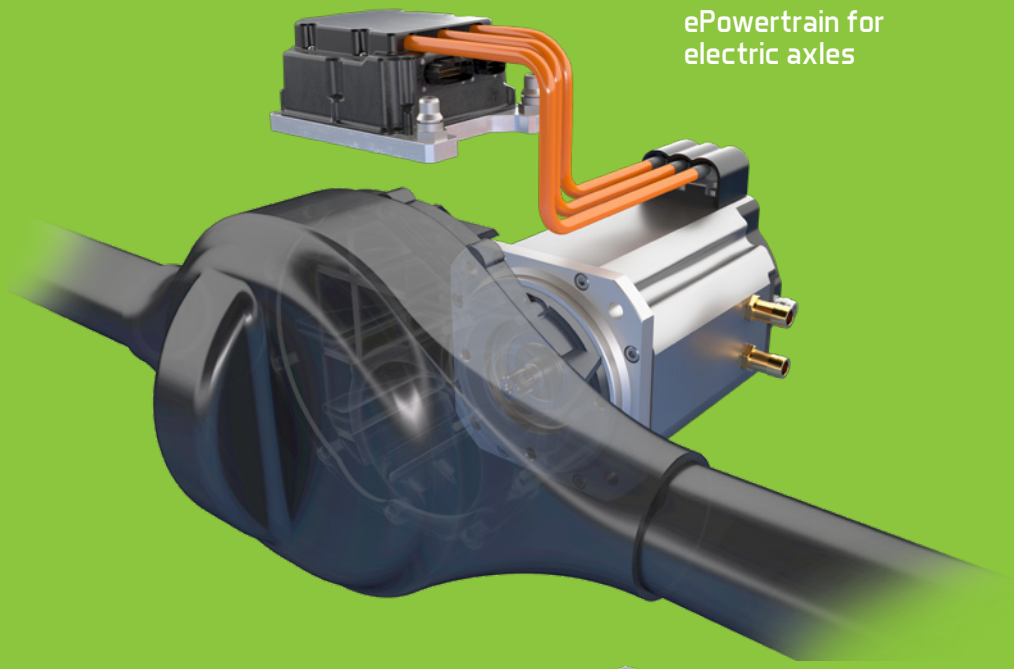
With its ability to enhance in-field performance, reduce the number of components, and improve efficiency, the solution not only supports sustainability but also boosts productivity. Furthermore, it offers exceptional total cost of ownership, providing long-term value to your customers and end-users. At Poclain, we are committed to delivering solutions that shape the future of off-road machinery with unmatched performance and sustainability.

A Poclain all-in-one electric drive solution that is set to revolutionize machine propulsion.

With a **power output of up to 7kW and a torque of 2200 Nm at a 48V DC link**, the eWheel is specifically designed for off-highway heavy-duty applications.

Its simple mechanical and electrical interfaces ensure easy integration, while its robust design guarantees unmatched efficiency and durability in all operating conditions. eWheel will be available in serial production beginning of 2026.





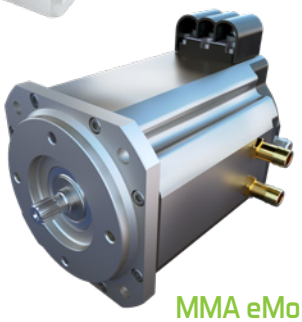
ePowertrain

The best-in-class solution for power and torque density

With a continuous power of up to 65kW and a torque of 125 Nm, operating at a 48V to 850V DC link, ePowertrain is designed to unlock the full potential of your axles. Our perfectly paired inverters and eMotors ensure optimal performance and dependable operation, making ePowertrain the ideal choice for manufacturers seeking highvalue-add solutions.

The transmission inverters

are produced by Emsiso, our new sister company based in Maribor, Slovenia, which specializes in high power density inverters for both low and high voltage systems covering a range from 5kW to 100kW. Our Maribor site has developed extensive expertise in system security over its 15 years of existence, and the e-Wheel transmissions comply with the ISO 25119 standards for vehicle safety.



The transmission e-Motors

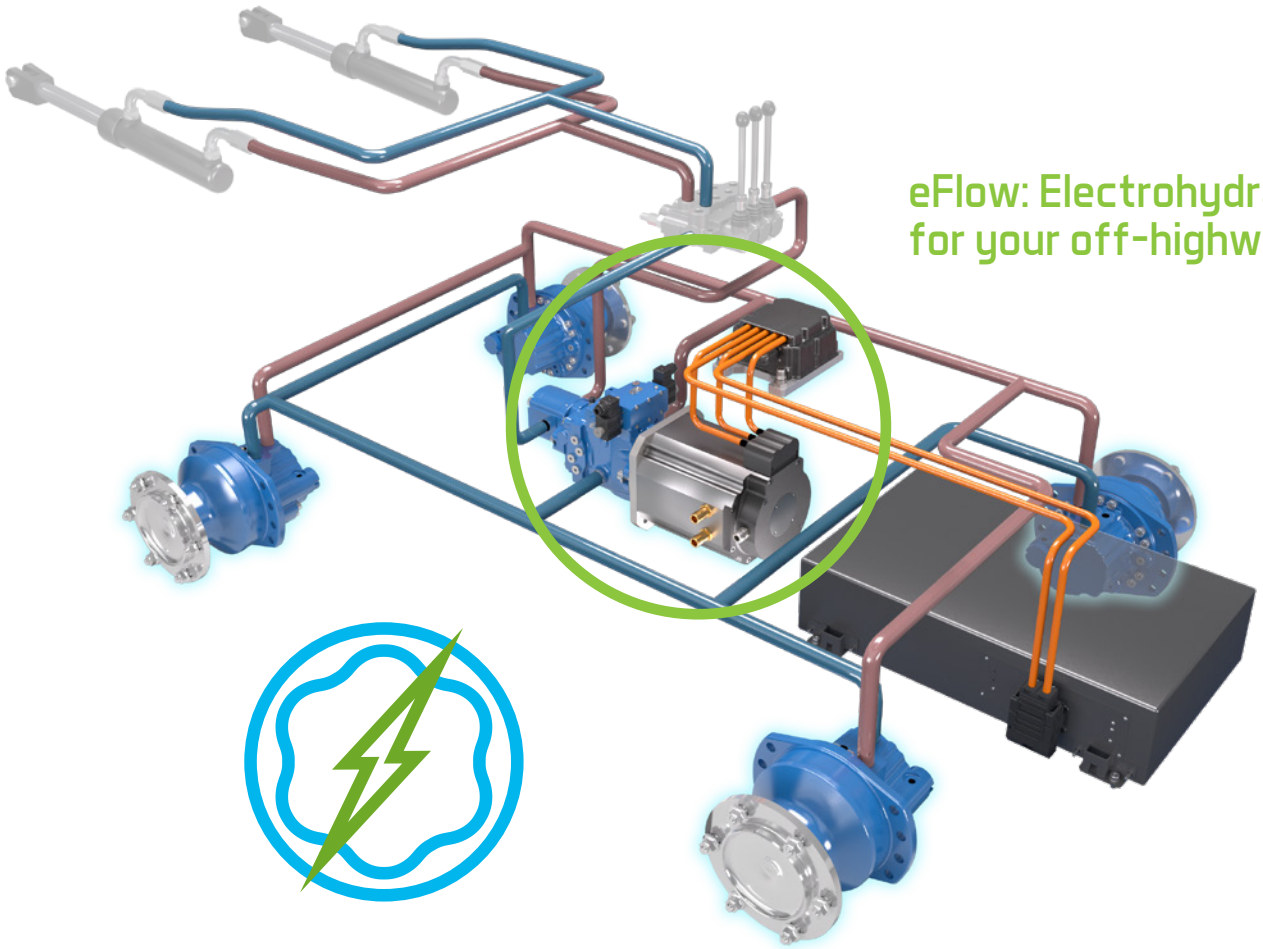
are designed and produced by Moteg, our new majority-owned competence centre located in Flensburg, Germany. Moteg specialises in compact PMSM (permanent magnet synchronous motors) which are primarily used today in electrified trucks and buses to drive oil pumps or air compressors.

eFlow

Powering traditional hydraulic pumps with advanced electric technology

First in our lineup is eFlow, the smart choice for your electro-hydraulic solutions. With capabilities up to 150 l / min (40 GPM) and 400 bar (5,800 PSI), operating within a voltage range of 48 V to 850 V, eFlow is engineered to enhance your implements and propel drives. Our perfectly paired inverters, eMotors, and pumps ensure superior performance.

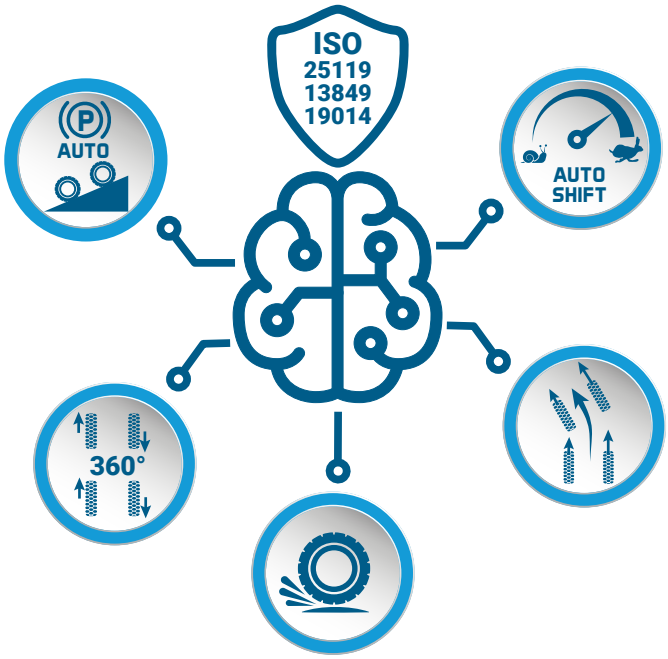
Powering traditional hydraulic pumps with advanced electric technology, eFlow reduces emissions, lowers fuel consumption, and minimizes noise, making it ideal for urban environments. Fully integrated and easy to install, the eFlow simplifies your operations and offers a flexible, adaptable solution for various applications.



eFlow: Electrohydraulic power for your off-highway vehicles

eDrive Transmission Control maximizes efficiency and productivity

Whether you are looking for electro-hydraulic or fully electric solutions, Poclain also offers advanced transmission control software compliant with ISO 25119, 13948 and 19014.



These software solutions simplify the integration of our products into your machines, ensuring seamless operation and enhanced performance.

Tailored to your specific needs, it operates on Poclain's Transmission Control ECU or your own ECU with Poclain's electrification engineering support. Enjoy rapid engineering and validation times and get valuable features such as:

- **Electronic differential**
- **Speed and torque regulation**
- **Anti-skid/anti-slip control**
- **Parking brake management (hill start...)**
- **Vehicle data (speed, steering)**
- **Power arbitration between propel and auxiliaries**

Electrification Services

Engineering Services

At Poclain, we understand the unique challenges faced by engineers in the construction, agriculture, and logistics machinery sectors.

With our extensive experience in your applications and electric transmissions, as well as our expertise in system engineering, we help you integrate the best solutions seamlessly and accelerate your time-to-market. Trust our dedicated team of engineers to turn your challenges into opportunities.
Poclain's experts and connected services support you in fine-tuning your new machine.

On-site Commissioning

Ensure your machine meets end-user expectations :
- Qualify your machine in actual operating conditions
- Fine-tune and validate parameters
- Track alerts, troubleshoot rapidly
- Reduce time-to-market

Rely on Poclain expertise to ease the transition from prototype to serial production.

HEVO PROGRAM: OPTIMIZING PERFORMANCE THROUGH ENERGY EFFICIENCY EXCELLENCE

POCLAIN, with four generations of hydraulic radial motors, proudly stands as the unparalleled leader in this technology.

HEVO is a mix of innovative technologies for hydrostatic transmissions:

- **HEVO Booster, a local pressure amplifier,**
- **HEVO Dual Feed, a new oil distribution system,**
- **HEVO SmartSense, a new generation of hydraulic and mechanical sensors.**

>THE HEVO BOOSTER TECHNOLOGY

On-demand power for high torque applications

- The HEVO Booster is engineered for peak torque applications facing high torque peaks and requiring controlled speeds.
- Up to 11,600 PSI (800 bar) to improve efficiency.
- Internal pressure amplifier to achieve more torque out of a small displacement.

> HEVO DUAL FEED TECHNOLOGY

More horsepower on the job

New oil distribution design to improve the efficiency of your transmission during the high speed/high power phases.

> HEVO SMARTSENSE TECHNOLOGY

Positioned at the core of the motor, HEVO SmartSense enriches data collection and optimizes the transmission system's efficiency

- Master your job with new data.
- New generation of hydraulic and mechanical sensors.

HEVO Booster Ultra High Torque Peak Motor
On-demand torque for high-torque applications

The HEVO Booster range is purpose-built for applications that encounter high torque peaks. Designed with efficiency and reliability at its core, the HEVO Booster represents a significant leap in hydraulic motor technology.

Preview

The HEVO Booster range is designed for peak torque applications that experience high torque peaks and require limited speed. The concept is straightforward: the motor operates on a small nominal displacement sufficient for more than 90% of its usage time. When torque peaks occur, an internal pressure booster is activated, enabling the pressure inside the main cylinder block to double up to 800 bars (11,600 PSI) for a short time.
HEVO's internal components have been upgraded to withstand these high pressures, while the other components of the hydraulic system, including pumps and hoses, only encounter the standard system pressure of around 400 bars (5800 PSI).

OEMs can design their circuits around a small displacement motor that runs at high pressure and low flow most of the time, ensuring high system efficiency. When needed the booster engages to help the transmission handle external loads smoothly without shocks.

What are the benefits of the HEVO Booster technology?

HEVO Booster is available either integrated into the HEVO motor or as a stand-alone unit that can be plugged into other hydraulic motor ranges.

- Optimized circuit design using smaller displacement motors that operate at high pressure and low flow most of the time, ensuring high system efficiency
- Smooth handling of external loads without shocks, like a CVT gearbox, for enhanced reliability and performance

HEVO Booster enables to halve the displacement of the propel motors while delivering the same performance. This reduces hydraulic flow requirements, minimizing associated losses, simplifying the machine architecture, and lowering fuel consumption by 22%.

Preview

HEVO Dual: High-speed productivity meets exeptional power

HEVO Dual is targeted mainly at tools that need to operate at high speed to achieve high productivity levels, while keeping enough torque to address high resisting loads.

HEVO Dual is a twin-displacement motor designed to run most of the time in its smaller displacement to maximise energy efficiency through high pressure and low flow conditions. What sets HEVO Dual apart is its innovative oil distribution design, capable of handling high power at high speeds for long periods of time without overheating or wear.

Preview

Key applications include drilling machines and forestry harvesting heads where working time is crucial.

HEVO DUAL enables tools such as harvesting heads to achieve productivity gains of over 20% and improve responsiveness.

HEVO Dual is a twin-displacement motor designed to operate mainly in small displacement. Its design maximizes energy efficiency by leveraging high-pressure, low-flow conditions, reducing energy consumption.

Uniquely capable of handling high power at high speeds for extended periods, the HEVO Dual motor integrates an innovative oil distribution design that ensures consistent performance without overheating or wear.

Unlike traditional motors, the HEVO Dual design ensures that all cam lobes and pistons actively produce torque during each revolution, even in small displacement. This balanced stress distribution across all motor components significantly enhances durability and longevity.

Ideal for tools requiring both speed and torque, HEVO Dual is a perfect fit for industries where efficiency and reliability directly impact productivity and profitability.

A HEVO DUAL 978 cc (60 cu.in/rev) delivers in its small displacement 120 kW (160 hp) and can sustain a pressure of 400 bar for over 1000 hrs at 200 rpm, a much higher performance than most radial piston motors on the market.

HEVO SmartSense: Make your motors smarter and more connected

SmartSense continuously monitors bearing loads in real time and records the motor's stress history. Combined with key application parameters (pressure, temperature, and speed), it assesses damage and predicts potential failure.

The sensor ring mounted on the machine chassis flange interface provides the following benefits:

- **Increased reliability:** Optimized sizing and lower failure risks
- **Lower costs:** Maintenance based on actual wear and operation conditions
- **Optimized motor lifetime:** Retrofit triggered by precise data.

Enhance machine intelligence and safety

HEVO SmartSense assists operators by optimizing stability, traction and energy efficiency. It enables real-time communication between the motors and the machine via a CAN network.

HEVO SmartSense signals are processed through a dedicated application layer, allowing OEMs to integrate EDGE's computed data into their machine controller for the following uses:

Transmissions	Forklifts	Forestry harvesting head
Instant load detection at the wheel to anticipate slippage and adjust traction in real time. Ideal for construction and agricultural applications with high load variations.	Real-time center of gravity prediction to prevent tipping and ensure compliance with safety standards.	Dynamic adjustment of feeder roller pressure on the log to enable fast delimbing without damaging the motors.

- **Maximized productivity, extended machine lifespan & reduced energy consumption**
- **Improved safety & regulation compliance**
- **More autonomous machines**

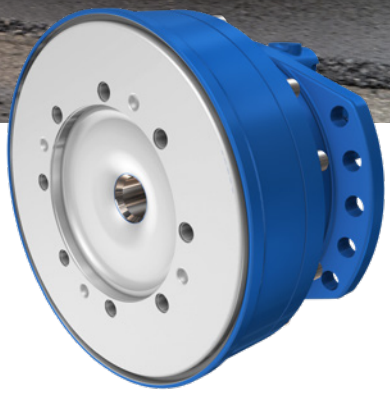
Seamless integration designed for your application

Designed for direct motor integration, SmartSense will be available on the HEVO range. This compact, rugged, turnkey solution will be offered in multiple motor sizes.

- **Fast deployment:** Reduced time-to-market;
- **Industrial reliability:** Built-in protection and resistance to harsh environments;
- **Simplified logistics:** A ready-to-use, adaptable solution;
- **Standalone option:** The SmartSense sensor is also available for MS motors with a separate ECU.

POCLAIN BEST-IN-CLASS MK12 DRIVE DYNAPAC'S GROUNDBREAKING CX9 ROLLER

MATTHEW BIELLER
Global Product Manager for Asphalt Rollers at Dynapac



MK12 hydraulic motor with hollow shaft

For over 90 years, Dynapac has been at the forefront of innovation in compaction. The Swedish company introduced the world's first self-propelled compactor in 1953 and are now onto their sixth generation. Today, the Karlskrona-based manufacturer boasts the most comprehensive range of compactors, assembling each model to order. In 2024 they launched the CX9, a pivot-steered asphalt roller integrating four MK12 motors for optimal power density and stability.

More efficient vibration

Dynapac's CX9 is highly versatile. With a total length of 4.2 meters and an overall height under 3 meters, it weighs only 9 tons, making it easy to transfer on a trailer and ideal for city job sites. Its pivot-steer structure provides the highest offset on the market, up to 1.35 meters, enabling smooth compaction around tight bends.

The CX9 also features the latest version of Dynapac's Seismic Asphalt technology, which mimics the natural behavior of the ground as it is compacted and continuously adjusts the vibration frequency. Combined with Dynapac's revolutionary eccentric design, the Seismic Asphalt technology enables the machine to compact more efficiently and reduce the size of the engine and hydraulic components, as well as save on fuel, reduce noise and increase operator comfort.

Best-in-class MK12 motors to drive the drums

To power the CX9's drums, Dynapac selected best-in-class drive motors that match the machine's performance: MK12 motors by Poclain. Under 26 cm (10 in.) long, they feature a hollow shaft to pair up with the eccentric motor, making them the ideal solution for split drums.

"Poclain is one of our long-standing suppliers, and we chose their motor technology for its smooth driving behavior, which is critical for tandem rollers" explains Matthew Bieller, Global Product Manager for Asphalt Rollers at Dynapac. The four motors are mounted in a parallel circuit with a four-way flow divider to ensure precise drum synchronization.

With its cutting-edge combination of intelligent software and high-performance components, the CX9 exemplifies Dynapac's commitment to sustainability and operator well-being. Dynapac's CX9 proves that even a time-honoured process like asphalt compaction can evolve to meet today's sustainability demands.

GIKEN LTD. GYRO PILER™ POWERED BY POCLAIN REDUCES SEISMIC RISKS

Munehiro HAMAGUCHI
Product Development Department

Since its establishment in the Kochi prefecture, Japan, GIKEN LTD. has designed construction machinery to protect people from pollution and natural disasters. One of their leading products is the GYRO PILER™, which reinforces infrastructures against earthquakes, tsunamis and floods.

The GYRO PILER™ requires high torque to drill through diverse ground conditions, a perfect application for Poclain's MS50 motors. Three of them powered GYRO PILER™ F401-G1200 as it consolidated the Noto-Satoyama Kaido expressway after the Noto earthquake in 2024.

GIKEN secures the expressway during the Noto earthquake

The GYRO PILER™ uses the press-in principle to drill the piles into the ground. It clamps onto the piles that are already in place and uses their resistance and the static load of the hydraulic system to push the next pile into the ground.

No pounding or vibrating, and no need to erect a temporary construction site, as the machine stands on the piles. It can work on steep landslide-prone terrain and drill through all types of ground. After the Noto earthquake, the GYRO PILER™ F401-G1200 took only three weeks to build a retaining wall that prevented further landslides and enabled the safe reopening of the roadway.

Poclain MS50 motors at the core of the GIKEN GYRO PILER™

Three MS50 hydrobases power the slew drive of the GYRO PILER™, which provides a press-in load of 1500 kN and maximum torque of 1050 kN-m at the chuck, enough to drill effortlessly through any terrain. The motors rotate continuously, drilling the length of the pile into the ground. Rotation speed is stable and efficient even at low speed and is adjusted according to the ground type. The MS50 motors generate low noise, a crucial advantage for urban construction projects.

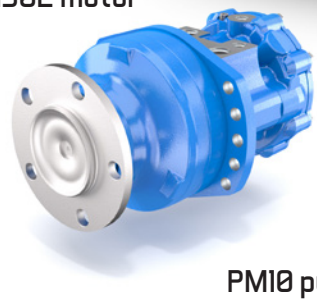
As sea levels rise, the GYRO PILER™ is being deployed beyond Japan. A notable example is its role in replacing ageing wooden piles along 200 km of canal banks in the Netherlands. With its unique disaster mitigation expertise and offering, GIKEN stands out from conventional vertical drilling solutions, providing faster and more efficient response.

Amsterdam

KANTO TEKKO HITS THE MARK WITH POCLAIN-DRIVEN 1.8-TON ROLLER

Convenient and nimble, small compaction equipment is gaining popularity in Japan.
Kanto Tekko's new 1.8-ton KV15CS combi roller, which was released in 2024, has surpassed the sales of larger models in the company's lineup. It is driven by a Poclain transmission with a pump and motors in both front and rear and we spoke to the company's president, Mr. Shunya Hashimoto, to get an insight into their growth and their collaboration with Poclain.

MS02 motor



MK04 motor

PM10 pump

Kanto Tekko's story began in 1984, when the company provided parts to Bomag Japan before moving into white-label manufacturing for top Japanese OEMs. In 2009 they launched their own brand, Kanto Tekko. Family owned, they have succeeded in expanding their territory and product range, competing alongside industry giants like Sakai and Hitachi. With a team of 50 collaborators, they now export to South Korea and the ASEAN region, offering a product lineup that spans from hand-guided compactors to self-propelled and pneumatic rollers up to four tons.

Agility as a competitive edge

"Kanto Tekko's small size is our greatest asset" says Mr. Hashimoto. *"We keep a close watch on the market and our customers, whether they are contractors or rental companies. Our small teams can move fast when a request is made. The success of our new KV15CS combi roller is a prime example — there was a demand for a 1.8-ton combi roller after major brands discontinued their models. Sales took off the minute we launched our model"*.

Poclain Components: A key to success

Like all of Kanto Tekko's ride-on compactors, the new KV15CS combi roller integrates Poclain components. It features a PM10 medium duty pump, an MK04 motor on the front drum and two MS02 motors on the rear, connected via a serial circuit to ensure synchronization. *"Poclain is the global leader in compactor transmissions. We know that their technology delivers in terms of stability at low speed and reliability"*. With a lean engineering team, Kanto Tekko also values Poclain's expertise in designing efficient transmissions that meet market demands.

Embracing the trend for compact and nimble combi rollers, Kanto Tekko's KV15CS continues to convert more customers as the machine is showcased at tradeshows around Japan. Its Poclain transmission demonstrates exceptional field performance, further strengthening the OEM's standing in the Asian compactor market.

Shunya HASHIMOTO
President of Kanto Tekko

SDLG ROLLER & GRADER PERFORMANCE ENHANCED BY POCLAIN'S SOLUTIONS

With a broad portfolio of earthmoving and construction machinery, Shandong Lingong Construction Machinery Company Co., Ltd. (SDLG) is a leader in the Chinese construction equipment market. By prioritizing innovation and efficiency, and with the backing of Volvo, SDLG has become a significant global player. For over ten years SDLG has been integrating Poclain motors on its rollers and graders. We spoke with Mr. Ma Chengzhao, Hydraulic supervisor for Road Machinery, to learn more about the collaboration.

Over the past decade, SDLG's earthmoving machines, particularly their loaders and excavators, have achieved significant success, largely driven by China's Belt and Road Initiative. Sales in China and Southeast Asia surged as the machines' rugged design and high efficiency perfectly aligned with contractors' demands.

SDLG chooses Poclain MS motors for their road construction machinery

Besides loaders, SDLG's product line overlaps with Poclain's technology on rollers and graders. Since 2013 SDLG has incorporated our products on the 3-ton tandem RD703H roller and the 12-ton single-drum RD7120H roller.

Poclain solutions have been extensively utilized across a diverse array of applications, with their technological efficiency being well-established over several decades. The Poclain MS motors, specifically employed in roller applications, exhibit stability, reliability, and compactness. These motors facilitate the direct propulsion of the rollers' drums, thereby obviating the necessity for a gearbox.

In comparison to standardized high-speed solutions, the Poclain solution effectively eliminates *"the requirement for routine gearbox oil changes, resulting in cost savings for end users. Furthermore, the implementation of localized production processes significantly reduces delivery lead times."*

Additionally, SDLG selected Poclain's MS motors with VDF freewheeling valves to power the assist drive on their G9220 motor graders, replacing the other motors, which used to be the preferred brand on the application until now. As users want to increase their productivity, the higher speed capacity of the MS motor is a better fit. Mr. Ma Chengzhao praised the compact and modular design of the motors, as well as the team's hydraulic expertise. *"During the design phase, Poclain advised us on how to control the transmission's pressure and speed, and we are very satisfied with the grader's performance in heavy snow."*

As competition intensifies in SDLG's markets, Poclain's decision to grow the share of locally sourced parts and manufacturing will reduce lead times and help SDLG become more competitive.

AUTONOMOUS AGRICULTURE MACHINES ONE STEP FORWARD IN NEXT-GEN FARMING

In the ever-evolving landscape of agriculture, the introduction of autonomous AG machines is seen as a solution to tackle a major concern, feed the world in a more sustainable way with less labor. Autonomous operation requires that the machine be precise and dependable. It must also preserve the farmer's assets and the environment. Ensuring productivity means optimizing operating times and reducing maintenance.

Autonomous agriculture robots in the wine industry

Autonomous agriculture robots are designed to perform various tasks traditionally handled by skilled human labor on conventional machinery. These tasks include planting, weeding, treatment, harvesting, and even monitoring crop health.

Avoiding obstacles is critical for safety. Robotic start-ups and companies have been working for many years on visualization, real-time kinematic positioning systems and probing solutions to detect real or fake obstacles.

They were the early adopters of innovative technologies like Artificial Intelligence and machine learning. Autonomous robot OEMs can rely on Poclain's proven propel solutions. The integration of hydrostatic drive systems in autonomous agriculture robots is showing promising results. In vineyards, they enable to navigate tight rows and steep slopes and perform the tasks that enable vineyards to thrive.

Poclain's solution, the wheel drive motor

In row crop farming, the high torque density and compact envelope of the Poclain wheel drive motors are a strong asset. The robust hydrostatic wheels can operate in a harsh environment, offering high resilience to shock and vibrations. Poclain wheel motors can easily adapt to different terrain types, whether it is soft soil, mud, or uneven ground. Their parking brakes require minimal energy to maintain the brake released. In the event of a lack of energy, the brakes will automatically engage to stop the machine.

Direct hydrostatic drive motor is smooth and precise, ensuring accurate navigation and travel speed. Rugged speed and direction sensors located inside the motor provide speed and navigation feedback.

The direct drive solution is also gearless, so maintenance is limited to changing the transmission fluid and replacing the filter. No additional lubricant is needed.

Poclain pairs up with pioneers

Exxact Robotics, subsidiary of Exel Industries, and their TRAXX machine are a notable example of the use of Poclain MS02 wheel motors and PM10 pumps on autonomous robots in precision farming.
The robot helps winegrowers by minimizing the use of fungicides, herbicides, and insecticides, while also implementing agronomic strategies to combat biological pests. For its robot, Exxact chose the wheel drive solution, a proven technology on conventional straddle tractors. The new diesel machine can run up to 35 hours with a mileage consumption as low as 3 liters per hour.

Yanmar decided to take advantage of the high-power density from the Poclain MK04 motors and PM10 pumps for their track driven straddle robot.
The YV01 machine was designed with the operator's health and soil preservation in mind. The 25 HP ICE engine machine is used for spraying. The result is an autonomous machine that can drive up to 4 kph and climb a 45% slope and a lateral slope of up to 20%. The machine can be transported on a 3.5-ton trailer.

Exxact-Robotics
TRAXX-2023 LG AGTRACKS 2116 scale

MS02 motor

MK04 motor

PM10 pump

Yanmar YV01 autonomous machine

Future Outlook

Real autonomy will provide a ground breaking change in farming.
One of the limits curbing the adoption of autonomous Ag machines is that they cannot currently operate without the direct supervision of an operator. Looking forward, the future (EU) 2023/1230 Machine Regulation should allow this, under the condition that a supervisory function be available with the possibility to trigger an override in real time. The second important limit is the need for higher productivity. Autonomous machines need to operate at higher speeds with fewer stops. Visualization tools, mostly based on AI systems are the culprit, they are still not trustworthy enough for safety functions. So machines need to detect obstacles by probing them at a reduced speed which cannot be over 2.16 kph (0.6 m/s).

eWheel electric motor

Nevertheless, the adoption of the autonomous solution is likely to increase as farmers and authorities recognize the benefits of reduced labor costs, increased efficiency, and sustainable practices. Poclain is committed to supporting the shift to autonomous technology by providing a range of advanced wheel drive solutions for propel systems. At the 2025 Bauma Munich exhibition, Poclain is presenting the next level of our technology with e-Wheels that can provide full electric propel drive, starting with a range of around 2000 Nm.

MS02 with reinforced dual cone seals

POCLAIN'S POWER-DENSE TRANSMISSION ON CNH MINI-TRACKED LOADERS

The mini track loader market has experienced significant growth over the past decade, with annual sales reportedly exceeding 25,000 units, primarily concentrated in North America. Most machines have a rated operating capacity of 1,000 lbs (450 kg) and 25 hp (19 kW) horsepower, though there is a growing trend towards larger, more powerful machines (40 hp/30 kW or more).

CNHI, a global construction equipment machine manufacturer, introduced new models of mini track loaders under the Case and New Holland brands at the ConExpo show in Las Vegas early 2023. These models, primarily sold in North America, are designed and manufactured in Italy.

A reinforced motor to protect against dirt contamination

Poclain has been involved in the R&D project from the start, taking a solution-oriented approach by providing technical assistance and supplying a complete package, including a tandem pump and two drive motors. Poclain's MSE02 motors used in the tracks have been customized for the application.

Despite their compactness, these motors are not as light-duty as they seem.

They are positioned close to the ground and exposed to rough conditions, with a risk of contamination entering through the shaft seals. To address this, the motors have been fitted with reinforced dual cone seals that protect them in muddy or dusty environments. The oil chamber sealed by the dual cone is isolated from the transmission case oil to ensure optimal lubrication and thermal stability.

Poclain also provides tandem pumps with a reinforced PTO for auxiliary gear pumps and a hot oil shuttle valve for each of the two closed-loop circuits.
The successful market launch was made possible by the close collaboration between the local Italian teams, creating a three-way teamwork dynamic between Poclain's pump plant in Spilamberto, its sales and application team in Carpi, and CNHI teams at their Sampierana plants in San Piero, Bagno and Cesena.

POCLAIN'S VB03 SERVICE BRAKE VALVE: THE IDEAL CHOICE FOR SWIVEL SEAT CABS

VB3-010 brake valve features

- Weight 1.0 kg [2.2 lbs]
- Modulating mechanical control with pedal
- Max inlet pressure 250 bar [3,626 PSI]
- Brake operating pressure 20-150 bar [290-2,175 PSI]

VB03-010

Options

- High Flow
- High force pedal feedback
- Electrical inching
- Pedal position sensor

VB03-010 with electrical inching

As off-road vehicles become more versatile and ergonomic for operators, OEMs are incorporating rotating seats for 360° visibility. Working both at the front and rear, backhoe loaders and forestry tractors fall into that category. They call for two sets of control panels at the front and back of the cab. Poclain's compact and highly configurable VB03-010 single circuit service brake valve is ideal for this configuration, fitting into the tight space between the seat and the window frame.

Poclain's engineering team can adjust the VB03-010 valve's pedal stroke, the performance curve relative to pressure, and the deadband. Poclain's valve team works in agile mode, adjusting valve behavior and carrying out rapid sampling for validation with our customers' engineering teams. Thanks to Poclain's agile development process, the valve's performance can be rapidly customized to meet various specific vehicle requirements.

THE DIGITAL REVOLUTION OF POCLAIN FACTORIES

Poclain has developed its own operational excellence system: P-MOMS (Poclain Manufacturing Operations Management System). Its goal: optimize and rationalize operations within the group's factories as part of the digitalization of production management.
The application includes multiple features such as quality control plan management, level 1 maintenance, automatic data collection from machines, and real-time indicators.
P-MOMS transforms the daily lives of operators and revolutionizes data analysis within Poclain factories.

One year to deploy internationally

After standardizing the operational data collection platform and unifying the group's production data visualization, Poclain is moving on to the next level by developing a new tool tailored to its specific needs.
As the existing solutions on the market were limited and costly, Poclain decided to develop its own solution, leveraging an expert dedicated team. The objective was to create a versatile and efficient operational excellence system with features meeting the needs of field operators.

P-MOMS was developped using the agile approach, enabling quick adaptation to user needs and continuous improvement of the application. The project was launched in November 2023. At the beginning of 2024, the first tests were conducted in the Verberie plant. A few months later, the first deployment on the plant floor took place in India: a new step for Poclain in the era of Industry 4.0.

The development was quickly followed by a testing and deployment phase in all Poclain factories. The application is now operational in France, India, China, and Italy. The next steps include deployment in the United States, Slovenia, and the Czech Republic by the end of 2025.

Poclain operational excellence

P-MOMS is at the heart of the digitalization of operations at Poclain, serving as a fundamental tool for operational excellence in our factories. It has several advantages:

- Improving operational efficiency by simplifying the operators' daily tasks,
- Enhancing quality control with a faster and more efficient process,
- Ensuring traceability of operations,
- Improving data reliability by directly connecting measuring devices and equipment to P-MOMS,
- Increasing operational flexibility by accelerating decision-making through real-time indicator monitoring across all group factories.

Thanks to P-MOMS, the operator connects directly to the workstation and instantly visualizes the tasks and

supports, specific applications, and other Excel files. Once the equipment is selected, P-MOMS provides the operator with the manufacturing order, the related work instructions, and the tasks to be performed according to the operator's profile. They directly input relevant data and validate their checks with a single click. The application is also directly connected to other applications in Poclain's production ecosystem via a datahub.

An application designed for the field

After standardizing the operational data, one of the main challenges encountered during the development was the amount and diversity of data to be processed upstream. Each factory had its own systems, with different formats and languages. To face this challenge, the team set up its own recognition tools adapted to the Poclain environment to retrieve the data and establish a common knowledge base. Thanks to this preliminary work on standardizing collected data and developing in close collaboration with the field, user adoption was almost immediate. Industry 4.0 became a concrete reality for operators in Poclain factories thanks to P-MOMS. Throughout the development process, the team integrated user feedback. "*Every issue was converted into a ticket. We wanted to remain open to any evolution to be as close as possible to the operators' needs,*" recalls Houssam, Industry 4.0 Engineer. "*We were very lucky to be surrounded by highly engaged and motivated key users. They tested the tool right away and gave us detailed feedback immediately. We took all their remarks into account,*" says Rija Rakotoarisoa, Group IT Operations & Industry 4.0 Manager.

Quick user adoption

From the beginning of the deployment, users were trained to use the interface. A wide array of training materials, available in all the group's languages, is available: videos, quizzes, demonstration environments... Everything is designed to simplify tool adoption. In India, after only 30 minutes of training, the operators were confident enough to use the application on their own. "*The operators were already doing everything we integrated into the application. They already knew the procedures. P-MOMS only intervenes to simplify their daily lives, so they adopted it rapidly!*" says Rija.

After the success of the first deployment phase, the team is planning a massive deployment by the end of 2025 and is already working on the next release. Other projects are also underway to go even further in the IT/OT convergence of the group's information system. Among them are simplifying user connection, strengthening operational cybersecurity, and implementing the UNS (Unified NameSpace) architecture. As a data-driven company, Poclain aims to optimize and intensify its data usage.

RIJA NONO RAKOTOARISOA & HOUSSAM ABOULFARAJ

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