

# Feedback

THE PANOLIN MAGAZINE – ISSUE 02/2017

## ECOMOT Engine oil family

Efficiency, environmental protection and economy



# Practical tests and hurricanes



**Silvan Lämmle**, CEO PANOLIN AG

**Daniel Zimmermann**, CEO PANOLIN International Inc.

**D**ear reader, this fall in Madetswil is proving to be a little more unsettled than usual. And it has a reason: we are continuing to expand our facility. Two years ago, it was our production that needed more capacity, and now we have a similar need in administration and development. The new building will provide our chemists and laboratory with a lot more space for their work. A PANOLIN product from our laboratory demonstrates what is possible when put to the test in tough, everyday conditions. Practical tests carried out by customers demonstrate what our new ECOMOT engine oil family can achieve in terms of fuel consumption savings and reducing CO<sub>2</sub> emissions. Not to forget the savings on the balance sheet. You can find the stories told by our customers JMS and Swissport on pages 4 and 9. Large parts of the USA, India and Bangladesh have experienced turbulent times this year. Flash floods and hurricanes caused immense suffering. A study shows that we will have to deal with such events on an increasingly larger scale in the future. High time to get ready. The use of biodegradable products is gaining ever greater importance. Page 3. We can once again be proud of the customers we are able to present in this edition. This

time, we even have two world market leaders in their respective segments. Read the impressive story of Kaiser AG from the Principality of Liechtenstein and that told by Bauer, the world market leader for special civil engineering from Schrobenuhausen in Bavaria. Pages 10/11 and 14/15. The largest construction site in Europe is equally as impressive. Work is currently in progress on a billion-euro project in Slussen in central Stockholm, Sweden. The chaotic traffic node where the paths of more than 100,000 Stockholm citizens cross every day is being developed into one of the world's most modern urban quarters. The majority of the 25 construction companies involved in the project trust in products from PANOLIN. Pages 12/13. You can get to know a giant from Holland on pages 18/19. The Boskalis «Magnor», aka The Fighter, is the world's largest backhoe dredger and boasts an immense capacity. This edition is really not short of superlatives. Growth in the USA is progressing well. Brandon Richards, our new CEO of PANOLIN America, speaks in an interview about the suffering of his fellow citizens and the huge opportunities with biodegradable products in the USA. Pages 16/17. You can read about something truly unique on pages 20/21 of this edition. The chances of having to stop on a highway because of a tilt bridge in operation are microscopically small. If you ever happen to be on the A11 highway in Belgium, you might just get to enjoy the experience. The tilt bridges in Dudzele are probably the only ones in the world. Finally, at the end of this edition, you can learn where the largest tidal barrage in the world is at work, what the moon has to do with it and why 150,000 liters of PANOLIN products are involved. Pages 22/23. Our masterpiece on the last page is also one of a kind. The mechanical objects of performance group «La Machine» are phenomenal. The perfect ending to this edition of Feedback. We look forward to receiving yours.

Best regards,  
Silvan Lämmle, Daniel Zimmermann



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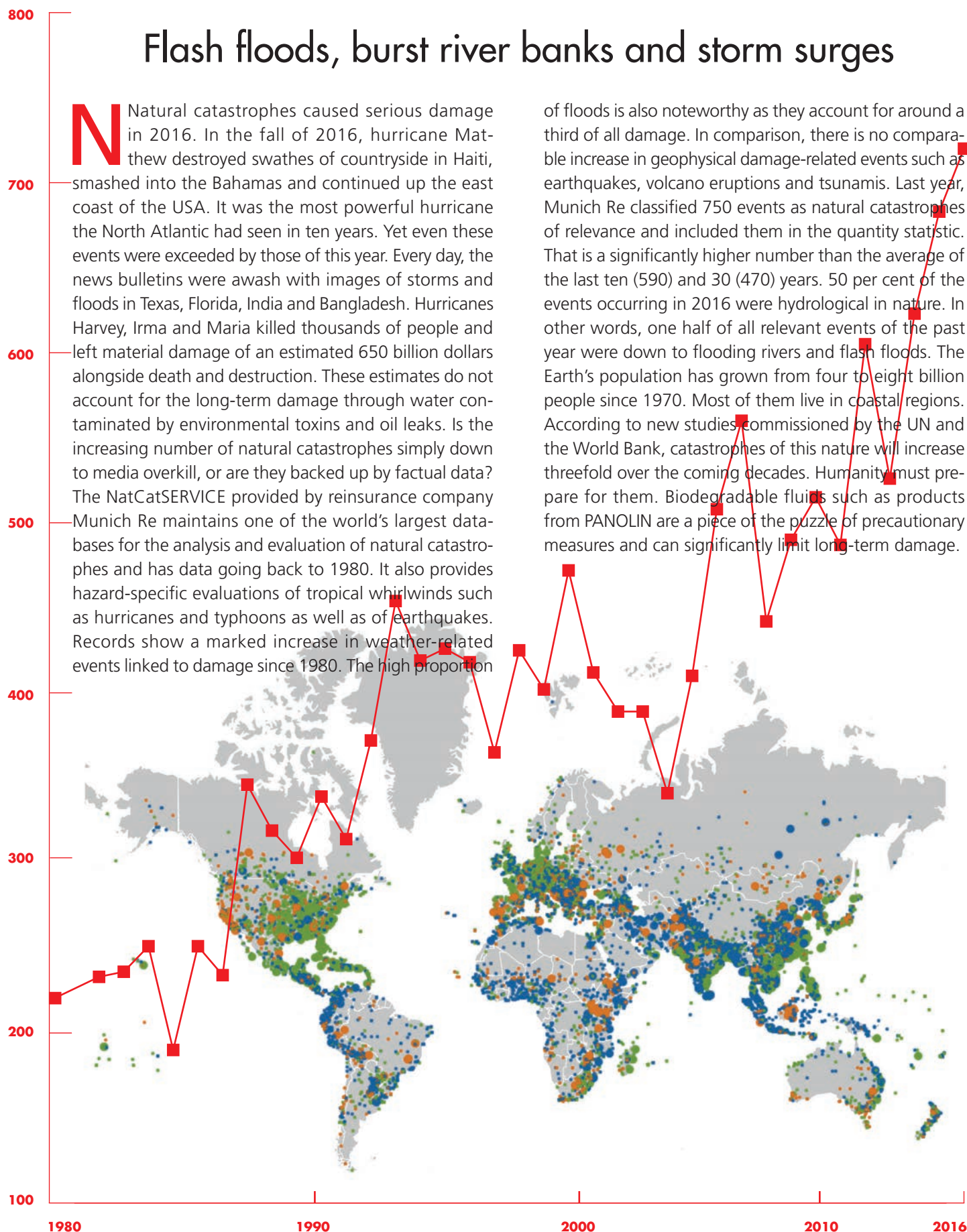
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# Flash floods, burst river banks and storm surges

**N**atural catastrophes caused serious damage in 2016. In the fall of 2016, hurricane Matthew destroyed swathes of countryside in Haiti, smashed into the Bahamas and continued up the east coast of the USA. It was the most powerful hurricane the North Atlantic had seen in ten years. Yet even these events were exceeded by those of this year. Every day, the news bulletins were awash with images of storms and floods in Texas, Florida, India and Bangladesh. Hurricanes Harvey, Irma and Maria killed thousands of people and left material damage of an estimated 650 billion dollars alongside death and destruction. These estimates do not account for the long-term damage through water contaminated by environmental toxins and oil leaks. Is the increasing number of natural catastrophes simply down to media overkill, or are they backed up by factual data? The NatCatSERVICE provided by reinsurance company Munich Re maintains one of the world's largest databases for the analysis and evaluation of natural catastrophes and has data going back to 1980. It also provides hazard-specific evaluations of tropical whirlwinds such as hurricanes and typhoons as well as of earthquakes. Records show a marked increase in weather-related events linked to damage since 1980. The high proportion

of floods is also noteworthy as they account for around a third of all damage. In comparison, there is no comparable increase in geophysical damage-related events such as earthquakes, volcano eruptions and tsunamis. Last year, Munich Re classified 750 events as natural catastrophes of relevance and included them in the quantity statistic. That is a significantly higher number than the average of the last ten (590) and 30 (470) years. 50 per cent of the events occurring in 2016 were hydrological in nature. In other words, one half of all relevant events of the past year were down to flooding rivers and flash floods. The Earth's population has grown from four to eight billion people since 1970. Most of them live in coastal regions. According to new studies commissioned by the UN and the World Bank, catastrophes of this nature will increase threefold over the coming decades. Humanity must prepare for them. Biodegradable fluids such as products from PANOLIN are a piece of the puzzle of precautionary measures and can significantly limit long-term damage.



**PANOLIN:** the new ECOMOT engine oil family reduces fuel consumption and CO<sub>2</sub> emissions and affords the engine better protection.

# Efficiency, economy and environmental protection

**T**he ECOMOT engine oil family was developed over the past two years by a committed team at corporate headquarters in Madetswil. The three products named ECOMOT 10W-40, ECOMOT 10W-30 and ECOMOT 5W-30 are now in use. The goal was to develop a new generation of engine lubricants capable of delivering a higher performance whilst saving fuel, reducing CO<sub>2</sub> emissions and affording the engine better protection as well as being naturally biodegradable. Johann Müller AG of Schmerikon (JMS) as a project partner put the lubricants to the test.

The specifications for the new PANOLIN engine oils for heavy-duty diesel engines were as follows: Efficiency factor – the product must be universal in use, enable simple handling and reduce the risk of confusion with other products. Environmental protection factor – it must reduce CO<sub>2</sub> emissions and fuel consumption and contribute towards exhaust gas conditioning. Economy factor – it must substantially reduce costs further still and extend oil change intervals. In summary: outstanding engine oils from PANOLIN – simple, efficient and effective. PANOLIN has again put the new products to the test in practical conditions. The ECOMOT engine oil family is a further development. Every PANOLIN product is subject to continuous review. PANOLIN's experts continuously increased product efficiency and service life. The result is improved energy, process and cost efficiency for the customer and a consistent pursuit of sustainable goals with regard to environmental protection.

The intensive collaboration with customers, usually over decades, leads to experiences that subsequently flow into development. One of our partners in practice is Fischer Logistik AG of Chur. The results achieved with the new products are extremely positive. The use of PANOLIN

ECOMOT 5W-30 demonstrably reduced fuel consumption by up to 4.65 per cent. Fischer Logistik achieved annual savings of around 200,000 Swiss francs in one year as a result. This in conjunction with a modern vehicle fleet of the EURO 6 class. A CO<sub>2</sub> reduction of 350,636 kilograms was achieved in addition to the fuel savings. Additional plus: less sulfate ash (-48%), phosphorous (-50%) and sulfur (-69%). Oil change intervals were increased once again. The overall result is significant cost savings in comparison to competitor products. The GREENMACHINE product is suitable for diesel engines with and without exhaust conditioning systems.

Let's speculate. Given a fuel saving of 4.65 per cent through the use of the new PANOLIN ECOMOT product, Switzerland's 52,000 trucks <sup>1</sup> could achieve total savings of 77.4 million liters of diesel. The same calculation for Germany <sup>2</sup> with its 530,000 trucks would reduce consumption by 1.18 billion liters of diesel. The USA <sup>3</sup> has 3.46 million Class 8 trucks and could save an incredible 11.6 billion liters of diesel per year with the new ECOMOT. These figures are, of course, (still) theoretical in nature, but show nonetheless how fast a business could reduce its costs by a considerable amount – with no technological cut-backs. On the contrary. The environmental balance sheet would be relieved of an incredible CO<sub>2</sub> tonnage. Other aspects such as performance and oil change intervals would also see improvements. PANOLIN ECOMOT is therefore beneficial not only to the

**Fundamentals:** <sup>1</sup> Mileage 80,000 km/average mileage per year/consumption of 40 l/100 km), <sup>2</sup> Mileage 120,000 km/average mileage per year/consumption of 40 l/100 km), <sup>3</sup> Mileage 180,000 km/average mileage per year/consumption of 40 l/100 km).



An aerial photograph of a two-lane asphalt road winding through a dense, lush green forest. A red semi-truck with a white trailer is driving on the road, positioned towards the left side of the frame. The road has white dashed lines for lane markings. The forest is composed of many tall, green trees, creating a thick canopy. The overall scene is bright and clear.

**4.65%**  
**Fuel Saving**



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PANOLIN ECOMOT 5W-30



**Martin Jud**, Managing Director for Gravel, Sand, Concrete at JMS Group



**JMS:** construction company continuously optimizes processes to reduce its fleet's overall travel distances and empty mileage.

corporate wallet, but also to the environment. Johann Müller AG of Schmerikon (JMS) is an important reference partner with regard to putting the lubricants to the test. The family-owned business was founded in 1929. Today, it is run by members of the third and fourth generation. The company was founded by Johann Müller, who established it as a small operation for rock quarrying and ship operations. The JMS Group currently employs more than 300 highly qualified staff, has a modern vehicle fleet and an acute awareness of environmentally friendly working methods. Guarantor for outstanding services all around Lake Zurich. We met up with Martin Jud, Managing Director for Gravel, Sand, Concrete at JMS Group.

Visitors to the JMS Group's website ([www.jms.ch](http://www.jms.ch)) will soon discover statements concerning sustainability. «It is indeed one of the most important drivers of our business», explains Martin Jud. «A gentle and sustainable approach to handling precious raw material resources is hugely important.» The company's sustainability blog ([nachhaltig-natuerlich.ch](http://nachhaltig-natuerlich.ch)) regularly publishes articles on the topic, demonstrating that it is more than just a buzzword. During a discussion of the challenges facing his company, Jud explains that ever more orders are placed at short notice. «Customers usually place an order the evening before or even early on the day of delivery.» The company has adapted accordingly. «After 90 years of operating in the construction sector, we know what counts: a smooth transition at every interface.» And that is how the company works. Material logistics, transport, machine deployment and on-site project realization are coordinated directly between the parties involved. This makes it possible to complete every work step expediently, cost-efficiently and competently in accordance with the customer's requirements. «This is why we set such great store by further education», explains Jud. The company also invests regularly in the vehicle fleet. «No matter what demands our customers have, our machine pool of 65 vehicles is always up to date with the latest technology and has the right equipment for every need», explains Jud. «We live by sustainability every day», he says. Hence the use of PANOLIN products. «Our expe-

riences show that we have not only reduced our fuel consumption through the new products, but also significantly improved our CO<sub>2</sub> balance sheet. We make savings», explains Jud. When asked about digitization in his industry segment, he explains how his company works. One basic JMS principle is always to travel with a load. «We use our fully integrated fleet control system to achieve this goal by continuously optimizing our processes and consequently reducing travel distances and empty mileage», says Jud. Most orders are placed by phone. «These orders are immediately entered electronically into our system», explains Jud. All transport vehicles – 14 tippers for earthworks and 16 concrete mixing trucks – are equipped with a tablet PC. This makes it possible to continuously optimize every journey, keep travel distances short and empty mileage low. «We were able to reduce empty mileage by up to 50 per cent in this manner», says Jud. Fewer traveled kilometers also mean less heavy vehicle tax. JMS mostly uses 5-axle trucks to further improve sustainability and economic efficiency. This makes it possible to make the best use of the maximum 24-tons capacity. JMS is a PANOLIN customer of long standing and uses the new generation ECOMOT 5W-30 in all of its 70 construction vehicles such as excavators and wheel-loaders. «The new generation of engine oils from PANOLIN has achieved positive results for us», explains Jud. «With PANOLIN ECOMOT, we now have less fuel consumption, longer oil change intervals, shorter down times and, naturally, less CO<sub>2</sub> emissions.» The use of PANOLIN products is another puzzle piece in the sustainable JMS strategy and helps to lower costs. «After all, what counts at the end of the day as the most important decision-making criterion for our customers is the price.»

If you want to calculate your savings potential with regard to fuel consumption and CO<sub>2</sub> emissions, you can do so with the CO<sub>2</sub> calculator from PANOLIN. Simply send an email to PANOLIN with the details of your machines, their filling capacity, etc., and we will calculate how much you could save by using PANOLIN products. You'll be amazed!

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PANOLIN ECOMOT 10W-40



**Kurt Bernasconi**, Swissport Manager Zurich GSE Services



**Swissport:** sustainability is an important topic. It is also of decisive importance to securing Swissport's future in the long term.

# «You have to push before you can fly»

**A**nyone boarding a plane at Zurich airport will experience the aircraft being maneuvered by a tow truck. This push-back is necessary because aircraft do not have a reverse gear and therefore rely on assistance to leave their parking position. The latest generation of ECOMOT engine oils from PANOLIN are hard at work when Swissport tow trucks maneuver the large aircraft. Kurt Bernasconi, Manager GSE Services of Swissport, picks us up from the large flight display board at Zurich airport's Check-In 1. We quickly collect our visitor's ID and board a vehicle that will take us to the one of the lesser-known giants on the airport's apron «You have to push before you can fly», explains the agile Swiss, who changed to Swissport following the grounding of Swissair and has since held various management positions.

During a so-called push-back, a tow truck pushes the aircraft out of its parking position so it can roll to the runway under its own steam. These vehicles are broad, square and very flat. «These powerhouses push back the planes at Zurich airport from the gate to the taxiway», explains Bernasconi. Swissport recently purchased a new number of these special vehicles. «The planes are becoming larger and heavier, and we need to adapt accordingly», explains Bernasconi. A while ago, a push-back tractor would have had two 15.9 liter V8 diesel engines with an output of up to 1360 horsepower. These days, that is no longer enough to maneuver an Airbus A380 weighing 560 metric tonnes. «We need these vehicles not only for push-back work at peak times, but also for

other jobs that involve moving an aircraft, for instance on its way to the maintenance hangar», says Bernasconi. He and his team from Swissport GSE (Ground Support Equipment) are responsible for 650 motorized vehicles at Zurich airport. Swissport and PANOLIN have worked together as partners for many years. «We strive to establish long-term partnerships with our suppliers and want to be a fair partner», says Bernasconi after the excursion to the apron and goes on to explain why. «A fair and long-term relationship keeps the quality of cooperation at a consistently high level and enables us as a customer to rely on first-class service in the event of a problem». This has been the case for many years with PANOLIN. «Products from PANOLIN are naturally of the high quality we specify and they are also biodegradable», explains Bernasconi. «Sustainability is a very important topic at Swissport.» The area is of great importance with regard to securing Swissport's long-term future and the company accordingly publishes regular sustainability reports. Furthermore, it has committed to an environmental policy aimed at significantly reducing the environmental burden and other negative effects. The program also serves to raise the environmental awareness of every employee and in every division. «The use of PANOLIN products is an important part of this strategy», explains Bernasconi.

Swissport International AG is the world's largest ground and cargo handling service provider for airlines and airports. A giant with 62,000 employees. The company has 280 locations in 48 countries on five continents and a revenue of 2.7 billion Swiss francs.



**Kaiser AG:** power of innovation and inventive spirit.

# Power of innovation and inventive talent from Liechtenstein

**K**aaiser AG of Schaanwald in the Principality of Liechtenstein can look back on a history of more than 100 years. A patent for weaving machines from the year 1913 is the starting point. It was followed by inventions such as the legendary Kaiser tractors or, in 1959, the Kaiser barrel that was presented at the Olma exhibition. Originally designed as a liquid manure tanker for agriculture, the Kaiser barrel was further developed and evolved into the sewer cleaning machines available today in various combinations, including municipal vehicles with integrated water recovery systems. The second major segment of Kaiser AG was launched in 1965. Walking excavators take over where tracked vehicles cannot make progress. The prototype of the Kaiser MUK 2000 was built in 1965, and excavators made by Kaiser are today walking, driving and climbing all over the world. These powerful machines are able to perform difficult tasks in challenging locations.

Markus Kaiser was appointed CEO of the Kaiser Group in 2005 and represents the third generation of the founding family. He has driven the company's internationalization ever since. This year, his company took another major step by acquiring Premier Oilfield Equipment of Denver, USA. The acquisition has made Kaiser AG the only internationally active, large-scale producer of vehicles for sewer cleaning and industrial waste disposal. «It is another significant strategic step in the expansion of our worldwide market position», he explains to Feedback. Premier Oilfield Equipment focuses on the production of hydrovac vehicles and suction excavators. The new company bears the name «Kaiser Premier» and will

retain all employees. Markus Kaiser intends to become the market leader in the US for recycling vehicles and further expand the current product range. He also intends to increase the degree of familiarity of mobile walking excavators in the USA. Kaiser sees the acquisition as a logical step: «In 2008, we opened a company in Eastern Europe, which was followed by an acquisition in Finland in 2011, one in Italy in 2014 and now, three years further on, another in the USA.»

Kaiser goes on to explain: «Unfortunately, sewer cleaning is basically off-topic. Hardly anyone is aware of how much high-tech is available for maintaining this important infrastructure.» However, powerful and efficient sewer cleaning vehicles are gaining ever greater importance due to a focus on modern environmental technology. Kaiser's patented recovery system, for instance, saves 24 million liters of fresh water per year and vehicles. «We are therefore very well positioned for the future», says Kaiser. «Our focal points are sewer and municipal cleaning vehicles and mobile walking excavators. We are banking on technically discerning devices as opposed to mass production.» Essential core elements of Kaiser vehicles such as high-pressure pumps, vacuum pumps and the recycling system are proprietary developments. Wherever possible, Kaiser AG uses HLP SYNTH 46 from PANOLIN for its products. «We have worked closely with PANOLIN for many years. Our products naturally need high-quality and environmentally friendly hydraulic fluids, and we get them from PANOLIN. Service is also of great importance to us. And PANOLIN offers outstanding quality in this regard as well.»





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PANOLIN HLP SYNTH 46



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**Sweden:** Europe's largest construction project will transform Slussen into a new world of encounter and will also tame the unruly traffic.

# Operating on Stockholm's major traffic artery

**O**ne of the most ambitious traffic node conversion projects in Europe is currently under way in Stockholm. Slussen is a sluice between the islands of Södermalm and Gamlastan in central Stockholm and also one of the Swedish capital's most important transfer points. The largest construction project in the Swedish capital will transform Slussen into a beautiful new world of encounter.

The Slussen subway station is the most frequented of Stockholm's subway network. More than 85,000 commuters board or change subway trains here on a normal working day. The suburban railway line Saltsjöbanan also terminates at Slussen. Numerous bus routes connecting the municipalities in the east of the city start their journey from the bus terminal. A roundabout in the shape of a clover leaf free from intersections and built in 1935 is located to the south of the sluice. 30,000 motorcyclists, 130,000 bus passengers, 26,000 cyclists, 23,000 pedestrians and 300,000 subway passengers cross paths at this location. This giant traffic node was never developed any further after it was opened and is in a poor structural condition. As a renovation was deemed unfeasible, plans to completely redesign the area have been under development since the 1990s. The city decided to completely redesign the entire area as construction projects that eat up space are no longer executable in European cities without encountering resistance and also because the links between the various modes of transport were in dire need of improvement. The new design adapts the distribution of space to reflect modern requirements. The needs of cyclists and pedestrians have been granted due consideration and public transport accelerated. Prior to

the start of construction, the two islands of Södermalm and Gamlastan were connected by two bridges with a total of twelve traffic lanes. The two bridges will be replaced by a single crossing with eight lanes. Wide cycle lanes and walkways will run alongside. The remaining area will be upgraded. The roundabout will be replaced by a T-junction, and a new pedestrian bridge enabling direct access to the old city will be built parallel to the subway. The main traffic artery Stadsgårdsleden will be redirected through a tunnel topped by buildings and a park. The sluices will also be modernized. They are not only responsible for the passage of marine traffic from Lake Mälaren to the Baltic sea, but also protect Stockholm from floods and secure the supply of drinking water for two million citizens. The entire project is scheduled for completion in 2020. Sweden's largest city conversion project was awarded in 25 individual contracts. It will cost around one billion euro.

PANOLIN products are used by the construction companies involved in the Slussen conversion project. «This giant project is no exception to the strict Scandinavian environmental standard, which is mandatory in particular with regard to construction work in cities and on behalf of the government», explains Hamed Alimanesh of PANOLIN Scandinavia AB. «PANOLIN HLP SYNTH 46 as a biodegradable product has been approved by the Swedish Standard SS 155434 of the Swedish National Testing and Research Institute. Additionally, the products are long-lasting and fulfill every high performance requirement,» says Alimanesh.

**Web page:** <http://vaxer.stockholm.se/projekt/slussen/>

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**BAUER AG** – a champion in Europe's corporate landscape since 1790, the company achieves great success around the world through innovation, high quality and customer proximity.

# Global market leader for special civil engineering

**B**auer AG from Schrobenhausen in Upper Bavaria is one of the quiet champions in Europe's corporate landscape who achieves great success through high quality and customer proximity. Founded in 1790, the company is today the world market leader in the provision of services, machines and products for soil and groundwater. Boasting more than 110 subsidiaries and a global network across 70 countries, the company's 10,800 employees collectively achieved a turnover of 1.6 billion euro in 2016. The corporation's business activities are split into three segments: construction, machines and resources. The construction segment offers techniques for special civil engineering and carries out foundation work, sealing walls and sub-soil improvements. Bauer is world market leader in the machines segment and provides machines for special civil engineering as well as for the exploration, development and production of natural resources. Bauer's focus in the resources segment is on innovative products and services in the fields of water, the environment and natural resources, where it offers solutions for urbanization and infrastructure requirements.

Can a corporation such as Bauer, that looks back on more than 220 years of history, benefit from this experience? «Which properties define the company and what deeply-rooted traditions does Bauer have?» Dieter Stetter, Managing Director of Bauer Maschinen GmbH, responds. «We are a family-oriented, listed company and understand our activities as an aspect of social responsibility in which people work together towards achieving success.» This is the best way of increasing the company's value. «Outstanding engineers, technicians and craftsmen have passed down their passion for technol-

ogy and progress through the generations and created the foundations of Bauer's leading position», adds Stetter. «We have defined a dynamic, self-controlled organization that is capable of learning and are proud of the result.»

«The cooperation between PANOLIN and the Bauer Group has existed for many years», explains Dr.-Ing. Andreas Ziegler of Bauer Maschinen GmbH. «PANOLIN has always been a reliable partner. We are very satisfied and look forward to continuing our relationship». The company has very clear ideas about environmental protection: «As a globally active company, we need to face the challenges of environmental and climate protection around the world». Bauer continuously strives to reduce fuel consumption, avoid noise, save water and use energy more efficiently. The company also focuses intensively on uncovering energy-related potential for improvement and expanding the proportion of renewable energy sources, explains Ziegler. Why does Bauer use environmentally friendly lubricants? «These products are becoming of ever more significance», explains Ziegler. «The use of these products in the construction segment is important. By using environmentally friendly lubricants, we can minimize the environmental impact in the event of a leak». Furthermore, the lubricants need to handle increasingly longer periods of use and deliver an enhanced performance under ever more difficult conditions. «Against this background, PANOLIN products have mastered every practical task with flying colors», explains Ziegler. «Alongside significantly longer aging stability and the associated longer change intervals, PANOLIN products also score through very good corrosion protection». A partnership that works.







**PANOLIN America:** the USA is undoubtedly of great interest to any supplier. Environmental awareness is also growing among US citizens.

# «Help the environment and your wallet»

**P**eople all over the world witnessed the terrible images from both Florida and Texas in the aftermath of hurricanes Irma and Harvey. The loss of life is devastating and the damage to the environment a disaster. Other countries also witnessed dramatic events as storms and rainfall caused flooding and destruction. Are we really that helpless? No, although studies (see page 3) indicate that civilization does little in the wake of such events to prepare for future storms and catastrophes. Interview with Brandon Richards, CEO of PANOLIN America. What messages can PANOLIN communicate in the USA when you look at the catastrophe in Texas and Florida and its consequences? «Naturally, my thoughts are with the families and friends who have been affected. The contamination through heavy industry and oil leaks as a result of hurricane Harvey is visible in many neighborhoods of Houston.» This is why products like those manufactured by PANOLIN are gaining ever greater importance. «Our products are easily biodegradable and will place a much lesser, short-term burden on the environment in the event of such a catastrophe.» The use of these products also reduces CO<sub>2</sub> emissions and therefore helps the environment. «The high performance of PANOLIN lubricants and their long service life also benefits nature and the user's wallet», explains Richards. Richards graduated in biology. What does your degree contribute towards your new job as CEO of PANOLIN USA? «A great deal. That's because a large part of my course of work was focused on chemistry. In addition, my work in research and development was an extremely powerful foundation for my working career and now

helps me with my new challenge, PANOLIN. It is a good starting position to convince potential customers.» How important is the US market to PANOLIN? «The USA is undoubtedly of great interest to any supplier. Environmental awareness in the USA is increasing, especially in the aftermath of such events. Today, enterprises and consumers alike expect a sustainable approach to preserving natural resources.» PANOLIN America is currently focusing on segments with significant potential for the use of biodegradable products. They include the sectors for construction, excavation work, dredging, shipping,



**Brandon Richards:** CEO PANOLIN America Inc.

hydroelectric power, forestry, food processing, oil and gas and lift systems. «We won't run out of work any time soon», says Richards. It is now important for PANOLIN America to spread its wings and reach out to customers and interested parties from coast to coast. «Our focus is on the exchange of information and on education, as they will point out the benefits of our products and enable everyone to see why an investment in PANOLIN products has an extremely beneficial impact on the balance sheet and the environment.» What do you like about

PANOLIN? «PANOLIN stands for high-quality products, outstanding performance, an impressive service life and biodegradability. In fact, PANOLIN is the perfect US product: it is the best product on the market in every segment», explains Richards. «The fact that companies such as Bosch Rexroth recommend PANOLIN as a reference product for demanding applications is naturally of great benefit. In addition, PANOLIN is a very customer-oriented company with a reputation of perfect customer care.»



**Boskalis:** a leading global dredging and offshore contractor and maritime services provider. Founded in 1910, this Dutch company offers a unique combination of experts, vessels and activities. One of its new vessels is the world's largest backhoe dredger Magnor.

# Magnor means «The Fighter»

**P**ANOLIN can report on superlatives in every issue of Feedback. This edition is no exception and even contains a number of them. PANOLIN is used not only by the world's largest tidal power plant in Korea, but also by the world's largest backhoe dredger, a giant named Magnor that works with PANOLIN HLP SYNTH. And it needs no fewer than 60,000 liters of it. With a length of 72 meters, a breadth of 20.5 meters and 40-meter-long spuds, the new dredger is a gigantic workhorse. A standard 20-foot shipping container has a volume of around 33 m<sup>3</sup>. The same volume fits effortlessly into Magnor's bucket. Powered by a total output of 5,576 horsepower, Magnor's dredging bucket can lift no less than 67 tonnes of dredged material. Magnor is used for dredging hard riverbeds as well as surfaces and trenches, explains Bas Veenstra of Boskalis. The use of so-called backhoe dredgers for environmental reasons is on the rise as they minimize turbidity. Royal Boskalis Westminster, or Boskalis for short, is a leading global services provider operating in the dredging, maritime infrastructure and maritime services sectors. In addition to its traditional dredging activities, the company offers a broad range of maritime services for the offshore sector as well as towage and marine salvage-related services. The company's versatile fleet consists of more than 900 vessels and floating equipment. Many of them are proprietary developments.

The design of the Magnor is based on the Boskalis Baldur backhoe dredger. This backhoe dredger can be towed to any location in the world faster than a conventional backhoe dredger thanks to its tapered bow. The special design and the innovations developed by Boskalis for

this dredger, including the winch section, make the Magnor fast, powerful, efficient, clean and quiet. The Magnor's pontoon has a «BK 12700 DD Greenline» dredger based on a Caterpillar 6090, currently the largest mining machine in the world. The name Greenline underscores the fact that the dredger is characterized by a relatively low fuel consumption and reduced pollutant emissions and noise levels. A team of Boskalis employees headed by engineer Bas Veenstra modified and installed the dredger on the Magnor.

«We put our entire knowledge and experience in the fields of hydraulic, mechanical and electrical systems to the task,» says Veenstra. «The water cooling system for the engine and hydraulics is a highly effective innovation.» It results not only in a significant improvement to fuel consumption and emissions, but also to a reduction in noise levels. «That is a huge advantage, as ever more customers face strict requirements with regard to noise levels and environmental protection when executing their projects. That is why PANOLIN is involved as its products are not only biodegradable, but they also meet our own strict performance requirements for our projects,» explains Veenstra. In contrast to other backhoe dredgers, the Magnor has accommodation for eight people. «This makes it possible to operate the Magnor even in the most remote places,» says Veenstra. «Many Boskalis backhoe dredgers like the Baldur and the Wodan have names from Nordic mythology,» he continues. Magnor means «The Fighter». «We achieve good results with regard to speed, fuel consumption and emission reduction.» Its impressive level of performance has justified the name Magnor on many occasions, explains Veenstra.



PANOLIN HLP SYNTH 1.5





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PANOLIN HLP SYNTH 1.5



**Engie Fabricom and Bosch Rexroth Belgium:** traffic on the A11 highway stopped by red traffic lights and barriers.

## 12,000 liters HLP SYNTH 15 for highway tilt bridge

**T**he new A11 highway in Belgium was opened in the fall of 2017. It will speed up traffic traveling to the port of Zeebrugge and the interior. It is the most modern and also the most expensive highway in Flanders, and there's a reason why. The ground-breaking ceremony was held in 2014. Around 674 million euros were spent between then and the grand opening. The A11 highway connects the port of Zeebrugge with the hinterland to make the port more able to compete with the ports of Calais and Dunkirk in northern France. But what makes the 12 km of highway so expensive? The answer is complex engineering structures. Like the moving bridges crossing the Boudewijn Canal between Bruges and Zeebrugge. They ensure that traffic comes to a stop when a ship needs to navigate the canal as the bridges rise to let it pass. A large proportion of maritime traffic makes use of the canal. Smaller inland waterway ships can pass beneath the bridge without requiring approval. However, the bridge is too low for large ships, hence the construction of the two tilt bridges – on the A11 highway. These bridges are probably one of a kind in the world. Where else would one find a bridge in the middle of a highway that can be opened and closed within 90 seconds? These bridges will in future open numerous times each day to allow large vessels to reach the port of Zeebrugge. Traffic on the A11 highway will then be controlled by red traffic lights and barriers. The spectacular project was realized by enterprises Engie Fabricom and Bosch Rexroth Bel-

gium. Bosch Rexroth supplied and installed the hydraulic drives for the two tilt bridges. Jeroen Dieusaert of Bosch Rexroth explains that the bridges are moved by hydraulic cylinders. Contrary to other tilt bridges whose cylinders are installed in a basement, these cylinders are mounted on a concrete support on the A11. When closed, the bridge stands 16 meters above the water's surface. «The two bridges can open fully in a very short time thanks to the technology provided by Bosch Rexroth,» explains Dieusaert. In addition, Bosch Rexroth has signed a maintenance contract for the bridges for the next thirty years. Maintenance work includes monitoring and replacing wear parts and checking the hydraulic oil. Bosch Rexroth installed five motor pump aggregates per bridge, each one equipped with a 200 kW electric motor. Close to 2 kilometers of pipeline were installed in the system to transfer the hydraulic energy to the hydraulic cylinders. Like with many other Bosch Rexroth projects, PANOLIN is also an important partner in Belgium. Why? Jeroen Dieusaert explains: «As the bridge is mounted on a concrete base in the canal, there is always a risk that hydraulic oil could enter the water.» As Bosch Rexroth is responsible for operating and maintaining the two bridges, the decision was made to choose a safe option. «After all, we would face high cleaning costs and massive fines in the event of oil leaking from the pipelines or hoses.» Hence the decision to use the biodegradable hydraulic oil HLP SYNTH 15. «PANOLIN has guaranteed us a product lifetime of 20 years for this application.»



**Korea:** the world's largest tidal power plant on Lake Sihwa generates more than 254 megawatts.

# Special requirements

**S**ihwa-ho, the world's largest tidal power plant, is situated on the Yellow Sea in South Korea and generates 254 megawatts of electrical output with its ten bulb turbines. Generated emission-free, this amount of electricity equates to the needs of a city with half a million citizens. It was built by general contractor Daewoo Engineering and Construction Co., whereby subcontractor Andritz Hydro supplied ten bulb turbines and Bosch Rexroth the turbine control aggregates. PANOLIN is also a project partner and supplied two of its products: HLP SYNTH 68 and TURWADA SYNTH 68. In 2003, the Korean Water Resources Corporation (K-water) decided to construct the world's largest tidal power station on Lake Sihwa in the mid-west of the Korean peninsula to change the country's energy supply. Lake Sihwa is an artificial lake of 56 km<sup>2</sup> created in 1994 through the construction of a dam aimed at making land arable and safeguarding irrigation for the region. Tidal power plants exploit the different levels at low tide and high tide. The water drives the turbines when it flows towards the lower level. Korea's west coast is predestined for a tidal barrage as it has a tidal range of up to eight meters. The power plant went into commercial operation on August 3rd, 2011.

Bosch Rexroth designed and manufactured ten made-to-measure hydraulic turbine regulation aggregates to control the flow of water through the turbines. They are used to adjust the guide vanes and rotor blades so that the turbines produce the optimum amount of energy across the entire tidal range of up to eight meters. The

Rexroth aggregates have worked flawlessly since 2011 with 117,000 liters of biodegradable HLP SYNTH 68 hydraulic fluid from PANOLIN and place high demands on the service life of fluid. The low-pressure turbines from Andritz Hydro are installed 22 meters below sea level and exploit the regularly occurring force of the seawater flowing in at high tide. PANOLIN filled 32,000 liters of TURWADA SYNTH 68 into the system to keep things running smoothly. And they have done since 2011.

Tidal power plants ultimately generate energy from the rotation of the Earth with the assistance provided by the gravitational pull of the moon and the sun. They decelerate the flow of seawater to a very small extent. Deceleration is caused by damming the rising and falling tidal flow and then utilizing the potential energy contained in the dammed water through turbines that convert the rotational energy caused by the flow of water into useful electrical energy via electrical generators. This deceleration is of no consequence in proportion to the overall deceleration caused by natural tide friction; the Earth has a very high rotational energy due to its high mass. Since its commissioning in 2011, the hydroelectric power plant has not only reliably generated electricity, it has also restored the original water quality as a quarter of the water in the lagoon is exchanged with every tide. The Sihwa Lake tidal power plant contributes towards strengthening Korea's energy self-sufficiency by developing green energy, reducing oil imports by 862,000 barrels per year and reducing CO<sub>2</sub> emissions by 315,000 tonnes per year.



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PANOLIN TURVADA SYNTH 68



# Masterpieces.



## The dragon «Long Ma» runs with PANOLIN HLP SYNTH 46 and has thrilled audiences since 2014.

The 45-tonne mobile construction was built by artists of the French performance group La Machine. PANOLIN supplied the hydraulic oil, gear oil and engine oil. [www.lamachine.fr](http://www.lamachine.fr)

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