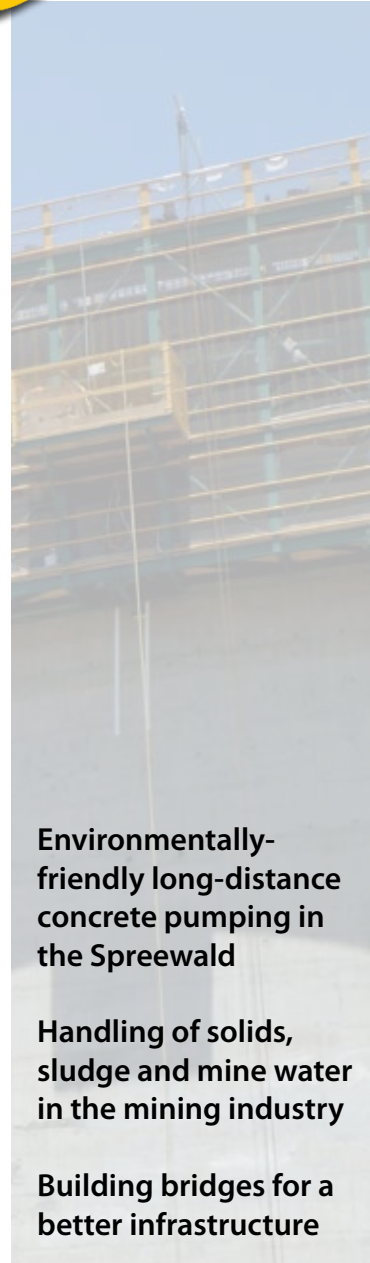




Putzmeister

Post



Environmentally-friendly long-distance concrete pumping in the Spreewald

Handling of solids, sludge and mine water in the mining industry

Building bridges for a better infrastructure

Australia builds the world's first LNG facility to turn coal seam gas into liquefied natural gas

Title story

Australia: The world's first LNG facility to turn coal seam gas into liquefied natural gas **4**

On site

Germany: Putzmeister pump used for environmentally friendly, long-distance conveying of concrete in the Spreewald **8**

USA: Building bridges for a better infrastructure **14**

Sultanate of Oman: Fine concrete pump P 715 TD used for stabilising slopes during road construction **17**

Putzmeister Industrial Technology

Putzmeister plants in mining industry: Handling of solids, sludge and mine water in the mining industry **22**

Technology

Norway: Power PUMI **20**

News

Deutschland: 50 years of Putzmeister's Munich branch **24**

Putzmeister Mortar Machines

Denmark: Trans Mix is part of extensive hotel renovation **12**

Germany: Putzmeister mortar machine of 1964 **27**

Imprint / Photo credits **2**



4 **Australia:** Huge LNG facility under construction



12 **Denmark:** Trans Mix in use at hotel renovation

Imprint:

Published by:
Putzmeister Holding GmbH
Max-Eyth-Str. 10, 72631 Aichtal/D

Editing/layout/typesetting:
Petra Montag,
Putzmeister Holding GmbH

Printed by:
Offizin Scheufele GmbH & Co. KG
Tränkestr. 17, 70597 Stuttgart/D

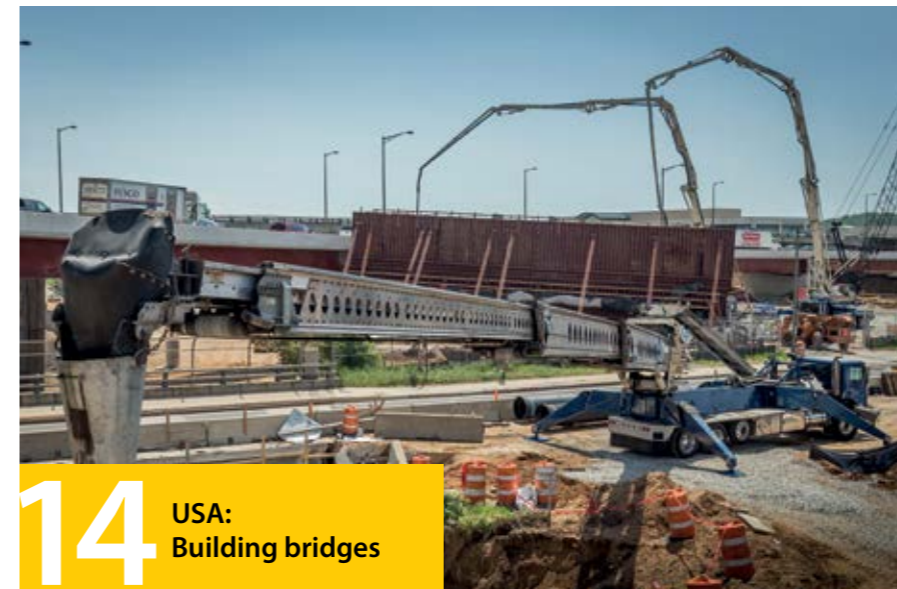
All rights and technical modifications reserved.

Despite careful content control we are not liable for the content of the specified external websites. The operators of external websites are solely liable for their content.

Some of the illustrations show special machine variants and snapshots which do not always comply with the regulations of the Industrial Employers' Liability Insurance Association.

© by Putzmeister Holding GmbH 2013
Printed in Germany (41312)

Photo credits:
All illustrations are subject to copyright of Putzmeister Holding GmbH unless otherwise stated.



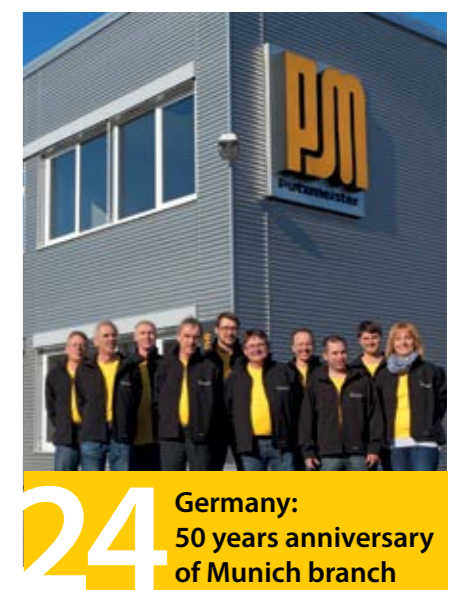
14 **USA:** Building bridges



17 **Sultanate of Oman:** Stabilising slopes using shotcrete



20 **Norway:** The „coolest“ workplace



24 **Germany:** 50 years anniversary of Munich branch

Clean solution: The world's first LNG facility to turn coal seam gas into liquefied natural gas



Upon completion in 2014, Queensland Curtis LNG Plant (QCLNG) will convert coal seam gas into liquefied natural gas (LNG), providing cleaner hydrocarbon energy for export markets, along with creating thousands of jobs and boosting the local economy. The project is being developed by QGC Pty Ltd, a division of the BG Group, a leading player in the global energy market with operations in more than 25 countries across five continents. Equipment from Putzmeister has been working to place concrete at the site since last fall.

The future LNG production plant QCLNG, located on Curtis Island in Gladstone Harbour, Australia, consists of the construction of a world-class LNG plant. Upon completion, the plant will comprise two LNG production units, known as trains, each able to produce more than 4 million tons of LNG per year; two storage tanks each able to hold nearly 140,000 m³ of LNG; a marine facility for passenger and equipment transportation between the mainland and Curtis Island; and marine loading facilities for LNG cargoes. Most of the 120,000 m³ of concrete needed for the plant and accompanying structures for the project is being placed by Putzmeister equipment, including two M 47-5 and two M 36-4 truck-mounted concrete pumps along with six MX 43-5 placing booms.

Project details

Occupying less than two percent of the island, the plant facility is surrounded by an environmental protection zone. The site can accommodate an expansion to more than 12 million tonnes per year of LNG, a colourless, odourless, non-toxic and non-corrosive liquid. For the project, Bechtel Australia Pty Ltd. was chosen as the general contractor and purchased the Putzmeister placing systems. Meales Concrete Pumping from Brisbane is supplying the Putzmeister truck-mounted concrete pumps and high pressure stationary pumps.

Secluded location

One of the more challenging aspects of the QCLNG project is that it is located on an island, which means all equipment, supplies and workers need to be transported across the harbour from Gladstone, Queensland. As a result of the approximately 3,000 workers needed for the job, a temporary construction camp, which houses up to 1,700 workers, has been established on the island. This has helped to reduce road traffic and relieves pressure on the Gladstone housing market. Additional local workers ferry across from the mainland to the island each day. All aggregate materials for the site's concrete are shipped across to the island on bulker barges, then transferred into six-wheel dump trucks and transported to the two 120 m³/h batch plants set up by the project's concrete supplier, Boral Concrete. All other construction materials and equipment, including the Putzmeister boom pumps and placing booms, also arrived via water transport.

Creating marine access

Being based on an island, adequate marine facilities are an essential part of the QCLNG project. Thus, the first phase of the construction process involved building a material offloading facility that ships can pull up against during construction to unload their cargo. The construction team has been using a M 36-4 concrete pump to place the 8,000 - 10,000 m³ of concrete required for all marine facilities. Because of a congested work site and since most of these areas are not accessible by land, building the marine facilities has been a challenge. As a result, much of the work has been performed from barges located in the water.

Additional marine facilities consist of ferry terminals for passenger ferries, along with docks and ramps for the barges that transport all the construction vehicles. Eventually, a "jetty" will be built, which will be where ships will pull into to get loaded with LNG once the plant is completed.

◀ Both placing booms and truck-mounted boom pumps are being used to place approximately 15,000 m³ of concrete for each tank.

Placing the “Trains”

The two LNG production units, or “trains,” are where the coal seam gas travels through the various processing stations to eventually be converted to LNG. To build the massive trains, two Putzmeister M 47-5 truck-mounted concrete pumps are working to place the majority of the 90,000 m³ of concrete for the footings, mat pours, pedestals and columns.

On occasion, to supplement the M 47-5’s, a M 36-4 assists in the placement of concrete. The M 36-4 is used in addition to the M 47-5’s on mat pours greater than 1,200 m³, and for smaller miscellaneous pours, such as many of the pedestals that will support the plant upon completion.

Circling the Tanks

After the gas is liquefied in the processing plant, it will be transferred to one of two massive storage tanks before exportation. To build the 90 m by 40 m high tanks, both placing booms and truck-mounted boom pumps are being used. Approximately 19,600 m³ of concrete will be placed for each tank. Six MX 43-5 placing booms, three surrounding each tank, are mounted on 40 m high freestanding lattice tower sections. Each lattice tower has two ties back to the tank to help support the free stand height. The systems utilize three BSA 2109 HD stationary concrete pumps.

Since the MX 43-5 is the industry’s largest placing boom that does not require a counterweight, it has helped to significantly reduce congestion on the work site. The crew also is using the M 47’s to support the placing boom systems on larger tank wall pours.

Each tank will require 10 wall pours at about 4 m high, each of which are poured in a complete ring. The base of each tank will be poured in four sections that include two outer ring pours and two inner floor pours with each pour consisting of about 1,000 m³ of concrete. “The tanks are about 90 m in diameter, which gives you a circumference of more than 280 m,” explained Lethbridge. “The placing booms were chosen because they gave the crew complete coverage of the walls, and offer enough reach to access the top of the tanks to pour the roof.”

The placing booms are primarily responsible for placing concrete for the walls, and roof of the tank structures. On the lower sections of the tank walls, which are thicker than the top portions, and therefore require more concrete placement, the M 47-5’s are being used to help supplement the pours.

“The truck-mounted pumps allow the pours to be finished in a shorter period of time than if just the three placing booms were being used,” explained Lethbridge. “This helps the crew to better meet its deadlines, which is vital to any construction project.” ■

Peter Lethbridge, General Manager of Meales, about the equipment of Putzmeister:

“The work site near the marine facilities is congested with barges, piling rigs, drill rigs and cranes. The M 36-4 was especially useful for this part of the project due to its small footprint. The Putzmeister truck-mounted concrete boom pumps were selected because they not only allow us to reach the designed heights and complete the large pours efficiently, but they also allow us to move the machines around the site easily with fast setup and teardown times. On any given day the machines could be set up in three or four different locations for the placing of concrete.”

▼ Most work for the marine facilities has been performed from barges in the water due to a congested work site and most of the marine areas not accessible by land.



▲ The project is using six MX 43-5 placing booms mounted on 40 m high freestanding lattice tower sections, and two M 47-5 pumps to assist larger pours.

▼ Because the project is located on an island, all equipment and supplies are shipped to the site on bulker barges.



➔ **Curtis Island National Park**

While the southern part of the island is dominated by the construction site, flora and fauna can be found in the north in the Curtis National Park. The park is located 474 kilometres north-west of Brisbane, 40 kilometres south-east of Rockhampton and 30 kilometres north of Gladstone on the east coast of the island of the same name. The park stretches over coastal areas from Black Head in the south as far as Cape Capricorn in the north.

In the park there is coastal heathland, coastal rainforests, sand dunes, barrier beaches and salt flats. The park is also home to the rare black-necked stork, also called a Jabiru stork.

© Djambalawa/en.wikipedia (CC-BY-SA 3.0)



Putzmeister pump used for environmentally friendly, long-distance conveying of concrete in the Spreewald

A unique task for Putzmeister: A pump was delivering concrete along a pipeline across the Spreewald biosphere reserve to a construction site 450 m away. The installation of a sluice was designed to overcome the difference in level of the watercourse. The successful progress of this project has shown that nature conservation and concrete pumps can go hand in hand.

The Spreewald in Brandenburg is an area of significant touristic interest located approximately 70 km away from Berlin. In addition to many other free-time activities, travelling along the endless stretches of water in all types of vessel is a popular activity. Plans were in place to install a new sluice at a location with limited access before the 2013 summer season to overcome the difference in height and allow river enthusiasts to continue enjoying their journey undisturbed. It is not only the extremely tight schedule restricting construction to a total of nine months and the predominant wintry conditions during this period

that posed a major challenge. Right from the start, the project team had to concentrate their efforts on the logistics across an almost impenetrable landscape. Know-how, teamwork and outstanding technical equipment were required to overcome this hurdle.

First hurdle – Construction site with limited access in a conservation area

The relevant sluice (number 112) is located in a biosphere reserve at the heart of the Spreewald far away from any paved roads and surrounded by a marshy, almost impenetrable landscape. Heavy construction vehicles can only reach as far as the car park of a nearby restaurant and must travel another 450 m to reach the construction site.

As early as January 2012, the project team began to discuss and test different methods of transporting concrete and other building materials to the construction site using environmentally friendly means. For a brief moment, transportation by donkey was a serious

→ Biosphere reserve Spreewald

A landscape unique to Central Europe is located 100 kilometres south-east of Berlin: the Spreewald. Following the last ice age approximately 20,000 years ago the River Spree divided itself into an expansive and finely structured network of flowing waters. A large inland delta with wet meadows arose here. This area not only offers living space for storks, otters or dragonflies, for many centuries the entire area and its waterways have also been used by people. Small farmsteads were set up and dotted across the lands-

cape like a mosaic. Traditions, lifestyles and working methods, which are closely linked to the natural pasture landscape, developed.

An important goal of the biosphere reserve is the preservation of the patterns of use typical of the region. The agricultural holding on the small farmsteads is unprofitable under the conditions of today's agricultural policies. For this reason, almost all farmsteads had to be surrendered without any support. The biosphere reserve is working locally with all partners on establishing finance structures for farmers which are sustainable



▲ The Moli 21.12 pumps material along the 450m pipeline. The pipeline is secured in position with a heavy concrete block.

for society with the aim of preserving the cultural landscape, for example through a foundation model.

The focal points of the biosphere reserve also include the large nature protection project Spreewald for water retention and renaturation of canals and land improvement, as well as innovative environmental education projects using modern media and new nature-based offers.

Source: www.unesco.de





consideration. The engineering company PTW (Planungsgemeinschaft Tief- und Wasserbau GmbH) based in Dresden contacted and included the project engineers from Putzmeister in the project at an early stage. Consequently, a stable concrete conveying concept with minimum environmental impact was developed within a very short time. The concrete had to be transported to the exact location along a pipeline laid across the protected landscape without any kind of manual intervention. In terms of nature conservation, the concept stipulates that the concrete pump and pipeline must be cleaned in such a way that no concrete residues or washing water is deposited into the Spreewald. The practical solution: cleaning forwards using compressed air to convey the concrete residues into the formwork.

Second hurdle – Testing the pumpability of the concrete recipe

It was initially unclear whether the pump would be suitable for conveying the specified concrete recipe over a distance of 450 m. Qualified personnel conducted tests on the floor concrete C30/37 at the company headquarters of Kann Beton in Koschendorf, Germany using a Sliper

rheometer. This measuring device provides values that indicate the expected conveying resistance (friction value) of concrete in the delivery line. It is then possible to draw conclusions about the concrete pump and pipeline required for the job. If the results of the measurement are positive, the selected concrete pump can be approved for operation.

Work to set up the construction site began in November 2012. The companies involved transported sheet piling and other materials to the construction site on flat barges. Floating pontoons were used to transport the excavators. Putzmeister project engineers were responsible for installing, setting up and securing the pipeline in close collaboration with all the companies involved in the concreting process. They made all the necessary preparations, in particular for cleaning work and possible emergencies during concreting (blockages). Workers secured the pipeline at several points in anticipation of the high delivery pressures of almost 100 bar.

Third hurdle – Adverse weather conditions

Work on concreting the floor of the sluice began at the end of March 2013.

In spite of snow storms and subzero temperatures, the pump seamlessly conveyed the concrete into the first 150 m³ of formwork. The concrete pump service provider TBG Pumpendienst Berlin appointed to the task used a MOLI truck-mounted concrete pump from Putzmeister. The truck is equipped with a powerful concrete pump designed for delivery pressures up to 115 bar.

Preparations, on-site specialists and excellent equipment paved the way for the timely completion of the construction work. ■

◀▲ The concrete for the sluice floor is distributed using flexible delivery hoses and excavators.

Putzmeister equipment used:

Concrete pump: BSF 21.12 H MOLI
Max. delivery pressure: 115 bar
Pipeline: ZX 125 130 bar

Builder:

Wasser- und Bodenverband Oberland Calau, Velschau

Planner:

PTW - Planungsgemeinschaft Tief- und Wasserbau GmbH, Dresden

Concrete provider:

Kann-Beton Lausitz GmbH & Co KG, Werk Boblitz

Concrete pumping service:

Heidelberger TBG Pumpendienst, Berlin-Hoppegarten



Fit for a king: The Trans Mix is part of Denmark's most extensive hotel renovation



▲ Small space requirements are what the Trans Mix handles best

The Hotel D'Angleterre in the centre of Copenhagen reopened its doors in the middle of 2013, after being closed for almost two years following a complete renovation.

Over 90 rooms, including 60 suites, have been brought right up-to-date. At over € 150 million, the hotel renovation costs are the highest in Denmark's history.

The ambitious aim to complete the works within two years was also challenging for the tradesmen and planners involved.

One of the most complex tasks was laying the new floor. The site management chose the company Lodbyg to do this. With its advantages suited to this particular construction site, Trans Mix technology was able to impress all decision-makers.

The construction site was located in a compact area of the city, which meant there was little room to set up or manoeuvre the machines. In some cases, it was necessary to work from newly designed sites. Thanks to its small platform,

► And they're off: Thanks to the Trans Mix technology, the works progressed very quickly

the Trans Mix was the perfect choice. Driver and machine operator Torben Hansen even brought the required materials to the construction site in the Trans Mix – no additional delivery vehicles were required. And once the works were complete, the construction site was cleaned and tidied up.

The floor insulation and levelling were also completed using the RiBa-plan polystyrene system. 4.000 m² of floor were being renovated. The Trans Mix is supplied with blowing-in equipment for polystyrene. It was reloaded at the construction site and it was possible to work almost continuously.

It was as though the RiBa-plan material had been made for the Hotel D'Angleterre construction site. Good insulating and levelling properties, as well as quick processing, were important criteria.

Trans Mix owner Leif Hansen demonstrated that he has a good nose for buying when he chose the Trans Mix. This machine helped him in his task of renovating the Hotel D'Angleterre and made it possible to handle the construction project quickly.

Large delivery ranges and quantities, small space requirements and a clean procedure all help to prove the capabilities of the Trans Mix. ■



→ The Hotel D'Angleterre in the heart of Copenhagen

The five-star Hotel D'Angleterre, located in the historic "Kongens Nytorf" square in the heart of Copenhagen, has been synonymous with luxury hospitality for 250 years. It combines tradition and an atmosphere reminiscent of times gone by with comfort of the highest order.

The hotel's guest list boasts prominent guests, members of royal families, heads of state, actors and musicians past and present.

Built in 1755, the Hotel D'Angleterre is one of the oldest hotels in the world.

Even then, the hotel was meeting the highest demands. It had large guest rooms and spacious stables to accommodate a coach and two coach horses.

In 1795, during Copenhagen's devastating three-day fire, the hotel was almost burnt to the ground.

When the new owner extensively refurbished the hotel from 1872 onwards, it posed a challenge for other European luxury hotels. The main building was extended by ten metres and a new wing was built to house the "White Hall" (also known as "Palmehaven").

In the 1980s and 1990s, the Hotel D'Angleterre was still able to maintain prominence, despite a crisis in the Danish hotel and restaurant industry. Last but not least, thanks to the new owner's visionary and optimistic outlook, the "White Lady" became known as one of the most exclusive and famous hotels in the world. The owner invested hundreds of millions of Danish Kroner in the hotel and commissioned the famous Danish artist Børn Wiinblad to decorate the hotel's restaurant. Since 1995, the hotel has had the largest indoor swimming pool in Scandinavia.



Building bridges to a better Infrastructure

Located in southeastern Washington D.C., the US \$ 390 million 11th Street Bridge Project is the largest project underway in the District Department of Transportation's (DDOT) Anacostia Waterfront Initiative, which consists of two phases and involves the re-creation of the transportation infrastructure network to promote safe, efficient, multi-modal travel throughout the Anacostia Waterfront area. Two Putzmeister M 47-5 truck-mounted concrete pumps, one Putzmeister M 36-4, one M 20-4, and one Tebelb TB 110 telescopic belt conveyor have been placing concrete and stone on the project.

Phase I: 20 bridges

Phase I of the 11th Street Bridge Project began in late 2009, was completed in spring 2013, and included the construction of 20 bridges to provide direct connections between the Southeast-Southwest Freeway and both directions of Interstate/DC-295, fixing a long-standing deficiency that forced motorists to use local streets to connect to and from both freeways. The project's joint general contractors, Skanska USA Civil SE and Facchina Construction Company (Skanska Facchina JV), hired Maryland-based Aaron's Concrete Pumping, Inc. (Aaron's), the only woman owned concrete pumping company in the Mid-Atlantic region that is certified with various state and county minority divisions, for material placement.



They placed approximately 20,000 tons of stone at bridge abutments in wall fill for the mechanically stabilized earth (MSE), a precast concrete panel stacked vertically and held in place with both galvanized reinforced strips and backfill material with specific engineered properties.

The team at Aaron's used its Tebelb TB 110 to place the stone and dirt for the bridge abutments. The abutments were earth and stone filled and contained by MSE wall panels on all four sides, which didn't allow for access. The Tebelb allowed Skanska Facchina JV to convey the material up over the walls to speed the process in constructing this abutment. "For the approach ramps, with no access for dump trucks, using a Tebelb to move the material was much faster than the traditional crane and bucket or excavator methods," explained Joshua Sheets, vice president and co-owner of Aaron's. "It saved the crew a lot of time and headache."

Phase II: Three additional bridges

The second phase, which began in early 2013, includes the construction of three additional bridges to further improve freeway connections. The project is replacing two bridges built in the 1960s with new bridges that separate local and freeway traffic.

Aaron's was also hired to work on the second phase of the project. Two Putzmeister M 47-5, one M 36-4, and one M 20-4 pumped the approximately 6,116 m³ of concrete for the bridges. The TB 110 was utilized for the bridge abutments on Phase II, as well.

Pumping for good

Tracey Sheets Rhoten, president and CEO of Aaron's, recently had Putzmeister outfit one of her company's two M 47-5 trucks on the 11th Street Bridge Project with a special decal supporting Autism Speaks, a leading autism science and advocacy organization. Aaron's has committed to donating one percent of sales from the truck every year to Autism Speaks to help raise awareness for the disorder.

◀ Aaron's recently had Putzmeister outfit one of its two M 47-5 trucks on the 11th Street Bridge Project with a special decal supporting Autism Speaks, and has committed to donating one percent of sales from the truck every year to the organization to help raise awareness for the disorder.

As a parent of a child with Asperger's syndrome, an autism spectrum disorder, the organization is close to Rhoten's heart.

"One in 88 children are affected by autism," she explained. "Many schools are cutting funding for kids with special needs, so any support we can give to organization like Autism Speaks can really make a difference in their lives."

Rhoten said the response to the truck and her company's commitment to Autism Speaks has been overwhelmingly positive.

"It's amazing how many people on our jobs have children, nieces and nephews, and friends whose children struggle with autism," she said. "We've had so many generous customers, vendors and employees willing to donate money under my son's name. It's been really touching."

Large pours in close quarters

The 'Autism Speaks' truck, along with the second M 47-5, the M 36-4 and the Tebelb, are restricted to limited space on the 11th Street Bridge Project, due to several factors. The freeway location has proved challenging, limiting the amount of working room for equipment. There are also cranes and other heavy construction equipment and materials on site, which allow for less space for the pumping equipment. Thus, the compact footprint – with outrigger spread of 7.95 m in the front and 8.99 m in the rear – of the M 47-5 and the M 36-4 – with outrigger spread of 6.27 m in the front at 6.60 m in the rear – has been beneficial. Another setup challenge is the fact that there is a railroad track and tunnel that runs underneath the site. The equipment has to be strategically placed below the bridge cap, but above the train tracks, leaving little room for error.

"With so many limitations in the working area, we needed equipment to be flexible and easy to move," said Sheets. "The compact footprint of the Putzmeister equipment worked out perfectly on this job site."

The M 47-5's maneuverable five-section boom, with a reach of 46.10 m vertical and 42.09 m horizontal, also helped the efficiency and ease of the concrete place-



▲ A Putzmeister Telebelt TB 110 is being used to place the stone and dirt for the bridge abutments.

ment. The five-sections provided the necessary maneuverability to get over and down into the form work.

“Without having a lot of room to work with on the job site, having trucks with a long reach and lots of flexibility was essential,” Sheets added.

While the working area is small, the pours are fairly large for this type of project. The substructure components, piers, columns and caps being poured for the bridges are massive and tall, making consistent concrete placement critical.

“The Putzmeister equipment handled the pours with accuracy and ease,” said Sheets.

In addition to the work the M 47-5 and the M 36-4 have been doing on site, Aaron’s also used its M 20-4 to work on the substructure for two of the bridges. The M 20-4 was set up on top of the bridge deck and the pump placed concrete for a 36 m deep by 6 m in diameter substructure shaft, replacing the typical footing column and caps.

“The M 20-4 worked perfectly in the location on the bridge deck, as its reduced

footprint allowed us to only shut down one lane of traffic,” Sheets explained.

Beating the traffic

Since the purpose of the 11th Street Bridge Project is to help improve traffic flow on the city’s overcrowded freeways, it was inevitable that controlling traffic during construction would be a challenge.

“The daily volume of traffic in the DC metro area is huge,” explained Rhoten. “Every possible scenario was discussed to develop the best schedule for placing concrete.”

Ultimately, the crew decided to begin concrete placement for each of the nine pours needed for each of the three bridges around 3:00 a.m. to take advantage of the lighter traffic at that time. Given the efficiency of the crew and equipment, the first of the 336 m³-pours were completed in just eight hours without any problems.

“The quick setup and removal of the M 47-5s has been especially beneficial on this job site, as we are doing everything

we can to minimize the disruption of traffic,” added Rhoten.

A smoother ride

The majority of the work on the 11th Street Bridge Project will be completed by the end of 2013, with the finishing details to be wrapped up in 2015.

Overall, the 11th Street Bridge Project will improve vehicle travel throughout the metro D.C. area, providing faster free-moving traffic patterns, eliminating traffic congestion, along with adding new storm drainage and other environmental investments to treat all storm water within the project area, and a 4-m-wide pedestrian and bicycle path on the local bridge that connects with the Anacostia Riverwalk Trail. ■

Fine concrete pump P 715 TD used for stabilising slopes during the construction of roads in Oman

The compact P 715 TD is currently demonstrating its outstanding versatility during the construction of a section of road between Bidbid and Sur. The piston pump is currently being used to pump shotcrete for stabilising the slopes on either side of a road that passes through the rough mountain landscape in the east of the Sultanate of Oman.



The expansion of the infrastructure in the Sultanate of Oman has been a top priority for more than four decades. However, road construction is extremely difficult due to the rough terrain. The inland desert Dschiddat al-Harasis covers most of the central part of the country. Towards the coast in the northeast, the desert is hemmed in by a barren mountain range with peaks reaching up to 3,000 metres in height and this is precisely where the construction of the 35 km long road between Bidbid and Sur will take place. It forms part of the important road between Muscat, the capital of the sovereign state, and the southeast section of the coast. Where economically feasible, tunnels will be constructed to overcome the mountain range. In other places, the slopes will be blasted away and then stabilised to prevent landslides.

The Omani Ministry for Transport commissioned the Turkish construction company Özkar Construction L.L.C. based in Muscat to construct the road. Following many positive experiences with the P 715 TD from Putzmeister, the company

decided to purchase another fine concrete pump of the same model to stabilise the slopes using shotcrete.

Careful preparations for a challenging task

Slopes as high as 20 metres and a rugged landscape provide a stern challenge for the robust piston pump from Putzmeister. The combination of outdoor temperatures of approx. 40 °C and 90 metres of hose between the pump and the shotcrete nozzle are equally as demanding. The concrete consistency had



to be adapted precisely to the pump and ambient conditions to ensure that the material remains pumpable and does not harden. An engineer from Putzmeister was present on site to provide a supporting role. He conducted a series of delivery tests with and without fibre admixtures under real conditions to determine the right concrete formulas and make sure the concrete could be pumped over the long distances involved. It was also possible to adapt sections of the hose based on the results of the tests. Reductions at the end of the line usually caused the most problems. The transition from an inner diameter 65 mm to 50 mm, for example, poses a risk of blockages. The Putzmeister specialist also gave exact instructions on how to start pumping again following an interruption

in operation using cement sludge with a homogeneous, viscous consistence and a sponge ball.

Best prospects of success with the right equipment

The P 715 TD trailer-mounted fine concrete pump is extremely compact and lightweight, which makes it easy to transport and manoeuvre. These characteristics prove very advantageous on a construction site 35 km in length. The powerful 2-cylinder piston pump also offers a host of advantages. It is driven hydraulically and generates a maximum pumping pressure of 68 bar, while maximum delivery rate of 17.4 m³/h guarantees rapid construction progress. Versatility is the main strength of this pump. Not is it only ideal for shotcreting, but also for pumping anhydrite, cement and cementrite self levelling floor

◀ Slopes as high as 20 metres and outdoor temperatures of 40 °C provide a stern challenge.



screed, fine grained concrete with a grain size of 16 mm and pressure pointing mortar.

On rugged sites like the one in Oman, the lightweight, hard-wearing plastic hood repels dust and stone impacts with ease. A stable shutter protects instruments and switches from damage. The chassis and support feet are ideal for these conditions because they are robust and guarantee maximum stability at all times. The large hopper is also well equipped for this task. The low-wearing agitator can tackle heavy-duty mixes with ease, providing they are homogeneous. In addition to the Putzmeister fine concrete pump with matching hoses and a 50 mm shotcrete nozzle for a grain size of 8 mm, a compressor with air hose, a chemical tank with silicate metering pump for the binder and a truck mixer for delivering the fine grained concrete will be used to stabilise the slopes. ■

▼ On rugged sites like the one in Oman, the lightweight, hard-wearing plastic hood repels dust and stone impacts with ease. A stable shutter protects instruments and switches from damage.



→ The Sultanate of Oman

Oman is a coastal state that borders the United Arab Emirates in the north west, Saudi Arabia in the west and Yemen in the south west.

The Sultanate has ministers and two national parliaments but these only play an advisory role to the absolute ruling monarchy.

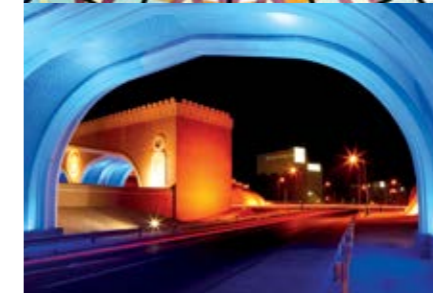
Sultan Qabus has ruled over the roughly three million inhabitants in the country since 1970. The infrastructure of Oman has gradually improved during his reign. There are asphalt roads leading to almost every city, town and village. Occasional missing interconnections are the only thing preventing these roads from forming a coherent transport network.

In 1970 Oman also started setting up social services. Today there are old-age and disability pensions, and support services for widows and orphans. The health system was expanded considerably, medical care is free.

Oman is one of the most sparsely populated countries on the earth. Approximately 5 % of the population still live as nomads. The population grew by 17.5 % between 1994 and 2004. The influx of foreign workers is the main reason for the increasing growth in the population in recent years. The most important raw material that the country yields is crude oil, which is why Oman is so wealthy.

→ www.deutschoman.de

According to its Articles of Association, the Deutsch-Omanische Gesellschaft e.V. with its head office in Berlin aims to strengthen the understanding and friendship of people of the Federal Republic of Germany and the Sultanate of Oman and to promote cooperation in the area of culture, science and sports.



Norway's "coolest" workplace: Power PUMI

Recently Putzmeister Concrete Pumps GmbH supplied an unusual PUMI. The truck mixer concrete pump was constructed for Kjell Magne Gronli in Norway on a 1+3 Volvo chassis. For the Putzmeister engineers and fitters this was not an unusual order on first glance. After all, Putzmeister builds on chassis of other manufacturers such as Renault, DAF, Astra and others, in addition to the usual chassis of Mercedes Benz and MAN.

On a closer look at the specification they were impressed: The engine of this PUMI delivers 750 HP (551 kW). Kjell Magne Gronli ordered the FH 16 750, the strongest possible engine, with a cubic capacity of 16 litres and massive torque: The PUMI with a 28 m placing boom and a 9 m³ mixer drum moves an impressive 3,350 Nm.

But why buy such a power pack? The answer is simple. The customer was won over by its new Intermix truck mixer on a Volvo chassis. The vehicle together with its equipment and its local Volvo dealer impressed him.

The local conditions around Haugesund also of course played a role. At such power the PUMI easily tackles every task.

Kjell Magne Gronli, proud owner of the powerful PUMI, heaps great praise on its "work horse":

"The reason I decided to purchase this Volvo chassis was my Intermix truck mixer. It has a triple axis, 3.3 m wheelbase, 660 HP, the automatic Volvo I-shift transmission, rear air suspension, a drum with a volume of 9 m³ and telescopic chute. The vehicle is awesome!", he raves with a smile. "An incredible acceleration. A dream for any automotive fan! Super work!"

"For me it was obvious to purchase another Volvo vehicle when I received a new contract from NorBetong AS in Haugesund. Fantastic service, excellent customer care and not forgetting the dealer Cristen Oftedal from Volvo Trucknor in Haugesund. A perfect package!"

"With the air suspension I can lift and lower the vehicle, and it also drives very comfortably."

"When it came to the decision of the actual work machine, the concrete pump, there was no doubt: It had to be Putzmeister. One of the best-selling machines and the best pump in general, in my opinion."

"Reliable, good to drive, superb solutions for daily work. High range, 5.5"

feed pipe, large hopper with powerful agitator and excellent pump power. But it was mainly quality that was key: Then the choice became obvious."

"I think Putzmeister has delivered excellent work in accommodating my special requests. Now I look forward to my work at the coolest workstation in all of Norway." ■



Putzmeister plants in the mining industry: Handling of high-density solids, sludge and mine water

With Putzmeister technology demanding tasks in transport, storage and delivery of high-density solids and sludge are completed worldwide. In 3,500 m deep in Africa or at 4,000 m high in the Andes, Putzmeister is the partner in the mining industry.

Hydraulic double-piston pumps with a capacity of over 400 m³ per hour and up to 160 bar deliver diverse materials. They are generally tailings from the ore dressing, e.g. from gold, copper, bauxite or iron ore, as well as coal slurry and saline suspensions and salt concrete, both in landfill areas above ground and for backfilling below ground. Removals of well over 5,000 m are easily conquered without the interconnection of booster pumps.

Backfilling of tailings

Through the introduction of paste-like backfilling materials mixed with cement or flue ash in hollows mined below ground, mined areas are filled and the utilisation level of storage sites is improved. In particular, the stability below ground is increased so that the mining of areas rich in raw materials can be improved and the ventilation can be adapted. The advantages of the Putzmeister twin-shaft mixers and the hydraulic Putzmeister piston pumps pay off for this application. Also the experience with our silage and silage cutters comes into play: The use of our technology allows paste-like high-density solids to be conveyed horizontally and vertically over long distances up to 80 % of the speed rate and avoids the timely change-over to other means of transportation.

Transport to landfills above ground

As water is a scarce raw material, there is an increasing need to use water-saving technologies. Compared with centrifugal pumps, Putzmeister piston pumps have the major advantage in that they are more environment-friendly and efficient to operate. For transportation only a quarter of the amount of water is needed and therefore the materials can be transported in a highly viscous state. This also has other advantages because the energy requirement is reduced significantly. There is also no need to pump water back, thus saving time. In addition, the landfill areas required can be reduced considerably as the area of paste-like materials is much smaller. Another plus is that less water penetrates the subsurface meaning the subsurface will not soften and thereby destabilise the ground. This reduces the risk of dams breaking for landfills located above ground.



Raising the mine water

For every underground mine the safe control of the mine water is of crucial importance. Also here the hydraulic Putzmeister piston pumps provide a reliable and cost-effective solution. Piston pumps are an interesting alternative to centrifugal pumps when raising mine water. Centrifugal pumps have high wear and energy costs as several centrifugal pumps have to be connected in series, for example, to achieve a delivery height of 800 m and more. In contrast, a powerful piston pump replaces a variety of centrifugal pumps. In addition, it is characterised by its high availability and low maintenance costs. The Putzmeister seat valve pumps have proved themselves as a particularly cost-effective and powerful pump for the delivery of mine water.

Increasing the delivery rate

High costs and time-consuming licensing procedures for the setup of new mines or for the sinking of new mine shafts may delay a desired increase in the delivery capacity or even make it impossible. Putzmeister is able to offer an alternative if existing mine shaft capacities are insufficient. A concept is being developed

on how and with which plant technology the delivery can be pumped above the ground. This also includes machines for conditioning the material such as our mixing plants and piston pumps. These are positioned below the ground close to the mine shafts. The delivery capacity can be increased significantly thanks to pipelines installed in the shaft or bore holes above the ground. Putzmeister Solid Pumps GmbH provides the appropriate equipment for this purpose.

Other areas of application: Landfill recycling, sludge removal and land reclamation

In addition to the above-mentioned applications, Putzmeister piston pumps together with excavator technology have been tried and tested in diverse applications for the renewal of old landfills, as well as for the sludge removal of natural or artificial waters. A pump and an excavator are installed on a pontoon. Putzmeister piston pumps are also used successfully in the land reclamation in the Rainbow procedure. For example, several high-performance Putzmeister piston pumps were involved in the construction of the artificial island for Nagoya Airport in Japan.



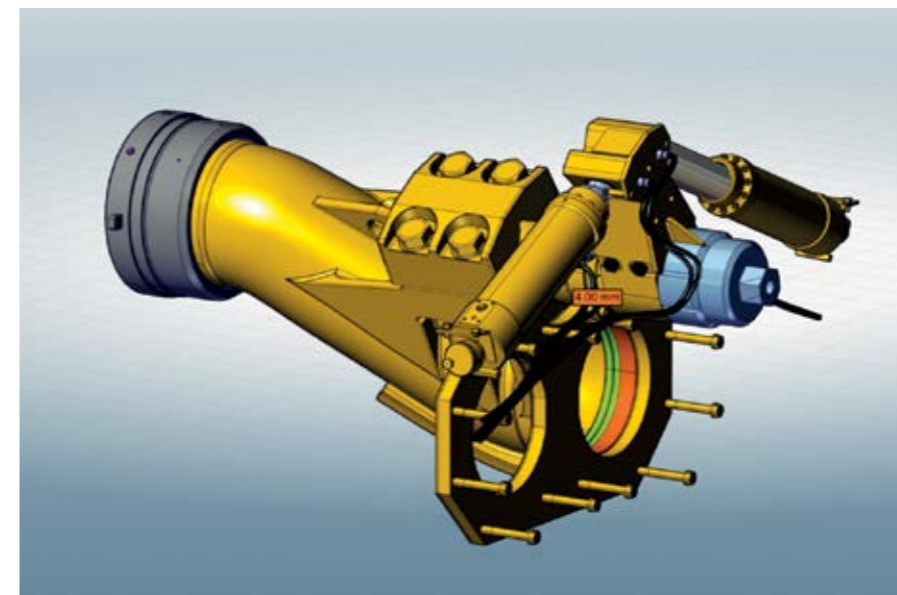
▲ Backfilling pump system under a paste thickener constructed on the San Bartolome silver mine in Bolivia

Complete solutions and after-sales service

Putzmeister Solid Pumps GmbH provides integrated system solutions. These include engineering, mixing plants (batch and continuous mixers) together with the necessary metering technology and, of course, the pumps including the process control technology, and also the pipeline upon request.

An international team of experienced engineers and technicians supports companies during the commissioning of the systems and training the employees. The local maintenance and service personnel learn to guarantee the reliable, safe and efficient routine operation of the plants. More and more remote maintenance and monitoring systems are being used in this regard.

The fast and reliable provision of spare parts is also part of the reliable, safe and efficient operation of the plants. The Putzmeister service team ensures that the appropriate high-quality original spare and wear parts are available in a timely manner. ■



◀ Saline concrete pump system below the ground in a Kali & Salz mine, installed at a depth of 850 metres

▲ Technician training using virtual component assembly – snapshot. See the full film online at: www.pmsolid.com/deu/downloads.htm

Congratulations: Celebrating 50 years of Putzmeister's Munich branch

Acting with foresight, half a century ago in 1963, Putzmeister founded their first branch in Germany: The Munich branch. Close proximity to customers was an important factor even then, initially for selling and servicing mortar machines, and then later also concrete pumps.

The branch, based in Eching near Munich, has successfully managed many projects, including achieving the record concrete pumping range of 1,520 m in the Chiemsee (Lake Chiem) tunnel in 1989.

▼ The team from the Munich branch in 2013 – the anniversary year: We have been your expert on-site partner offering rapid assistance for fifty years.



▲ Betz was the first branch manager on Winfriedstraße in Munich-Laim.

02.01.1963: Putzmeister's Munich branch opens on Winfriedstraße with two fitters – Alfred Herzensfroh and his brother Johann – and the manager, Mr Betz. The branch manages sales and servicing of mortar machines across the region.

Later selling and servicing concrete pumps was added to the range of available services. Between 1977 and 2000, Mr Unkelbach managed the branch in new premises in Eching.

In 1984, its fields of activity were expanded to include servicing industrial pumps. Since then, the branch has been independently managing project tasks within the construction industry.

▲ Always on the ball: Putzmeister's Bavarian employees in 1973, following the building work and relocation to the new branch in Munich-Eching

▼ 50 years of Putzmeister's Munich branch – 40 years in Eching



50 years of Putzmeister's Munich branch

Large projects: Advise competently, implement successfully

Ernst Bachner, who has managed Putzmeister's Munich branch since 2000, remembers the wide-ranging project tasks that have been successfully completed with the help of his Munich-based team over the years:



In mid-1984, the first contract was awarded by Südbayerischer Betonpumpenverleih for long-distance concrete placement in a U-Bahn (underground network) construction site in Munich – covering a total distance of 500 m. Thanks to the success of this project, from that moment on we won almost all contracts to concrete the inner shells on existing U-Bahn construction sites in Munich. The competition was swept to the side. At the same time, up to seven tunnel pumas and eight stationary pumps with delivery lines and placing systems were in use.

In 1989, the former world record for a delivery range over 1,520 m was set at the construction site for the Chiemsee (Lake Chiem) tunnel.

We were called upon to work on Germany's highest construction site – renovating the Environmental Research Station on the Zugspitze mountain at a height of 2,664 m – and to fill the Maxhütte pit using a downpipe over 185-m long.

Other projects in which the Munich branch has been involved include:

- The ICE high-speed railway line between Nuremberg and Ingolstadt
- The ICE high-speed railway line between Frankfurt and Cologne
- The ICE high-speed railway line between Erfurt and Nuremberg
- The Nuremberg U-Bahn underground network
- The Hamburg Drahtenau sewage treatment plant
- The Goldisthal pump storage works
- The ÖBB (Austrian Federal Railways) tunnel construction sites in Inntal

We helped our Austrian dealer, the Hans Eibinger GmbH to introduce the shotcrete technique using the PM WKM 103 in Austrian tunnel projects and for high-rise concrete pumping at the Millennium Tower in Vienna, which is 176 m tall.

For the "UptownTower Munich" skyscraper project, Wayss&Freytag was able to achieve a delivery height of 146 m, and between 2010 and 2013, with Bögl we were able to achieve a height of 202 m at Vienna's Donau City Towers.



▲ Millennium Tower in Vienna, completed in 1999



▲ World record 1989: 1,520 m at the Chiemsee tunnel using the TTS 14000



▲ Tunnel puma in use at the Goldisthal pump storage works (2000)



▲ Construction site for the DC Tower in Vienna in spring 2011



Almost 50 years old and still working tirelessly – the Putzmeister PKM mortar machine built in 1964

Old love never dies: Putzmeister PKM mortar machine built in 1964

Business partners Frank Weerts and Reinhard Koch, a bricklayer and concrete worker, made a rare discovery in Ihausen (Westerstede) in northwest Lower Saxony: a legendary PKM built in 1964 – the oldest intact Putzmeister plastering machine in existence according to present knowledge! Since a major overhaul, the lucky finders have been using the machine for their daily work.

1964 – a historical year when Willi Brandt was elected as chairman of the SPD party and candidate for German Chancellor, and Cassius Clay aka Muhammad Ali contested the world heavyweight boxing title. It was also the manufacturing year of a machine that Putzmeister founder Karl Schlecht developed himself – a PKM piston mortar machine with diesel engine and integral trap mixer. The model

preceded the equally successful P13 piston pump.

Much later in 2011, Frank Weerts and Reinhard Koch stumbled across the vintage Putzmeister machine by chance in a shed in Westerstede. The two contractors, who have run their mason and concrete construction companies in close cooperation for 16 years, were lucky on two counts. Firstly, Reinhard Koch had previously already worked with the PKM and had secretly been in search of a similar machine ever since. Secondly, the probability of making such a find is extremely low because these rarities are usually discovered in Eastern Europe. Weerts and Koch purchased the machine from the owner on the spur of the moment and brought it to the nearest Putzmeister dealer and service partner

Klarmann Bau- und Landmaschinen GmbH for renovation. Even the most experienced mechanics had never seen such a rare machine, yet welcomed a change from the usual models. Since then, the PKM has been used every day and according to the owners and their employees, it runs like a „Swiss timepiece“ and could continue to do so for another 50 years as a result of the careful maintenance.

The PKM mortar machine combines durability with simple technology from today's perspective in the usual Putzmeister quality. The diesel version of the machine is most practical in rural areas because it operates independently of a power supply. Extremely reliable, it is ideal for any kind of masonry or plastering work. ■



Everything under control!

The new SH end hose: Fewer deflections, increased safety

- Significantly fewer deflections
- Minimized risk of injury
- Gentle work on the end hose
- Less wear
- Possible to use the end hose accessories

SH end hose	part no.
125/5.5" 3 m	480550
125/5.5" 4 m	480549
100/4.5" 3 m	480548
100/4.5" 4 m	476899

Increased safety, rapidity and accuracy:
The combination of a sub-divided end hose with a protective sleeve, EQV and SH end hose with the Excalibur concrete brake.

SH end hose variants	part no.
For the 3-m variant (1 m + 2 m)	
End hose SH125 5.5"	
x 2000 special	589666
For the 4-m variant (1,5 m + 2,5 m)	
End hose SH125 5.5"	
x 2500 special	589668
For the 4-m variant (1 m + 3 m)	
End hose SH125 5,5"	
x 3000 special	589669

By using the SH end hose, working safety is increased above legal regulations.



Putzmeister

Your Putzmeister service staff or Putzmeister dealer will be happy to help you draw up your perfect end-hose package.

Putzmeister Holding GmbH
Phone +49 (7127) 599-0 · Fax +49 (7127) 599-520
www.putzmeister.com · pmw@pmw.de