

Putzmeister

Special issue for the anniversary

74

Post

50 years of Putzmeister

Making things masterly always better and more beautiful



...from „hands on“ to mechhydronic®

50
Years

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(Ill.: wikipedia)

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Burj Dubai – our Babel?

What do I think, now 75-year-old, high up there at 600 m about “50 years of Putzmeister”?

Is it hubris – as it is supposedly for those in the Bible building of the tower of Babel? Or was it as in the legend the striving to come closer to heaven, or to perfection?

Yes, there is something in that, even for Putzmeister.

This Burj Dubai is also our tower. Not only because we have helped finance it when filling up at the petrol station. It is also our work, because it was only able to be built using our concrete pumps. Only a PUTZMEISTER pump was able to pump concrete at this modern-day construction of the Tower of Babel to a height of over 600 metres with up to 300 bar concrete pressure – the first time this has been achieved.

Since we achieved our first world record in 1976 on the 310 m high Frankfurt telecommunications tower, we were recognised as experts. And since then, I knew that we could also go twice as high – it only depended on having the opportunity for this world record.

For me, it is not only about high pressure pumping for especially difficult media at PUTZMEISTER – but about the striving for an ever higher professional and personal level for our people.

Have we now come closer to our “heaven” after 50 years of PUTZMEISTER and with this tower? Do we do things from inner desire really well and always better, as it says in our PUTZMEISTER catalogue of values?

Our customer in Dubai says YES. There were many problems – but never with PUTZMEISTER. Today I nevertheless know: the best pump has not yet been developed. This also applies to our people, for only they achieve the best in response to our customers' expectations.

How much further is our upwards path, in order for us to remain the best – indeed in cooperation and in what we create?

Looking at my long and hard experience of life on the big tasks we have also always grown as people. The true success factors we recognised to be traditional values and virtues that exist for their own sake. Truthfulness in perception and in-depth problem solving are then the main principle. So PUTZMEISTER became “Top in Mind and Top in Choice” for most customers – and competitors

I think back here with great gratitude at this 600 m benchmark to our first 50 years of PUTZMEISTER and the trust won from customers, company management and many business partners. Without this trust which has been placed in us also as a foundation-owned company, which at the same time brings obligation, PUTZMEISTER would not have been able to evolve into such a successful company.

So this “Burj Dubai” can stand as a symbol for what we have achieved together in 50 years. It gives people at PUTZMEISTER everywhere in the world the confidence and strength making things masterly even better and more beautiful in the future.

It fills us with belief, hope and love again for everything we have been given – and what is still imposed on us so that we – in true partnership with our customers –

enjoy to Serve, to Improve and to Create Values.

Karl Schlecht

Putzmeister today

Over 3,900 employees ensure that equipment to the value of around € 1 billion (\$ 1.5 billion) is produced annually in the Putzmeister group works and delivered to customers in 154 countries on all five continents. This includes 3,400 concrete pumps, a variety of booms in more than 40 covering size and specification, over 4,300 mortar pumps, almost 2,500 screed conveyors and well over 700 high-pressure cleaners.

Spectacular records in high-rise concrete pumping (606 m at the Burj Dubai in February 2008) and development of the largest boom for truck-mounted concrete pumps (70 m vertical reach, presented in May 2008) make people stop and listen time and again. These technical milestones are possible due to the company's impressive innovation, high product quality, solid expertise, dedicated company management and continuous expansion of global manufacturing capacity at locations close to the market worldwide. Between 2006 and 2007, approximately € 113 million has been invested in extending the Putzmeister product facilities and distribution companies.

No-one could have imagined 50 years ago that an engineering student assembling his degree thesis would set such standards and create these values. So let's look back a few decades....

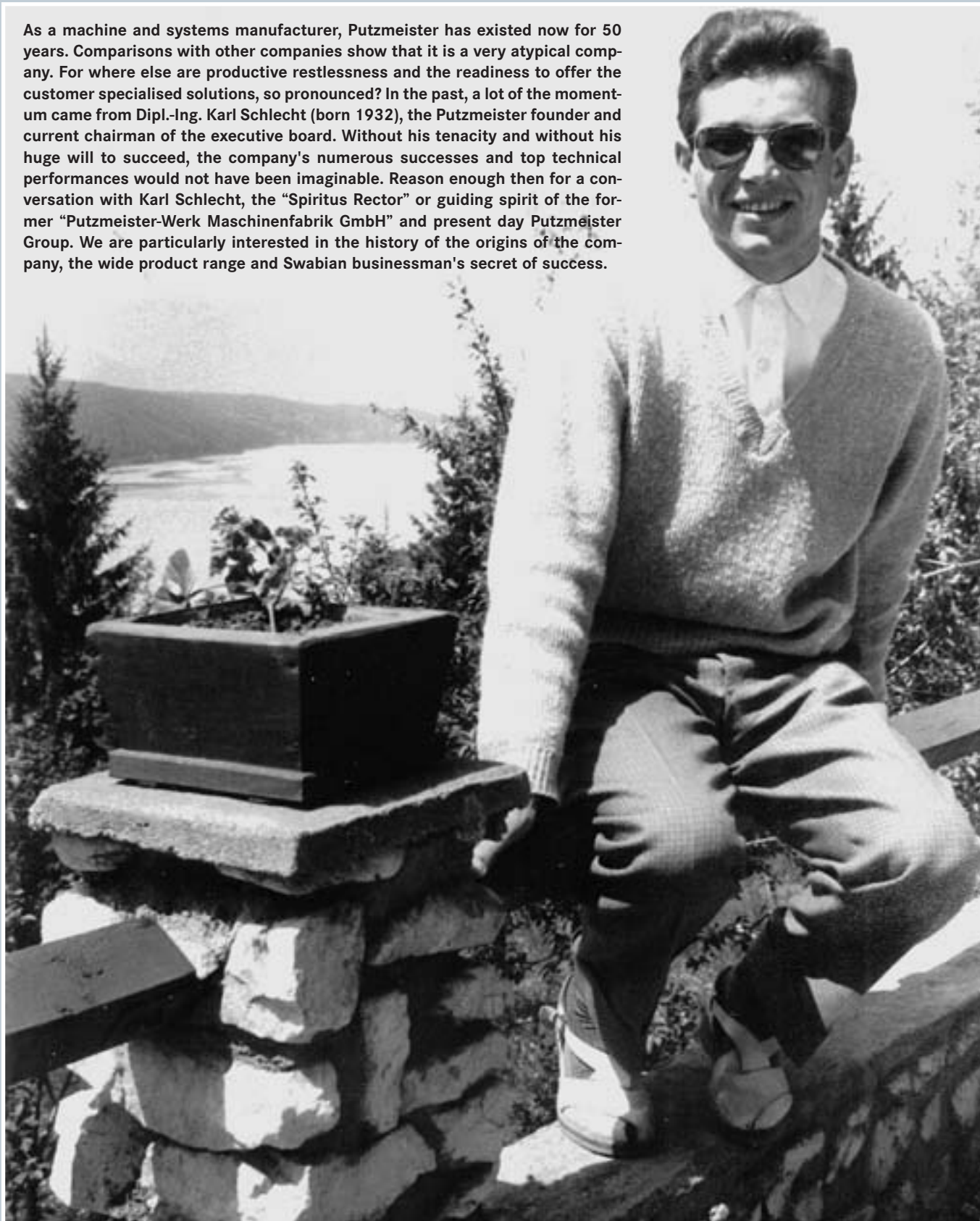


**Putzmeister company headquarters,
Aichtal**



1956 1957 1958 1959

As a machine and systems manufacturer, Putzmeister has existed now for 50 years. Comparisons with other companies show that it is a very atypical company. For where else are productive restlessness and the readiness to offer the customer specialised solutions, so pronounced? In the past, a lot of the momentum came from Dipl.-Ing. Karl Schlecht (born 1932), the Putzmeister founder and current chairman of the executive board. Without his tenacity and without his huge will to succeed, the company's numerous successes and top technical performances would not have been imaginable. Reason enough then for a conversation with Karl Schlecht, the "Spiritus Rector" or guiding spirit of the former "Putzmeister-Werk Maschinenfabrik GmbH" and present day Putzmeister Group. We are particularly interested in the history of the origins of the company, the wide product range and Swabian businessman's secret of success.



1959 1960 1961 1962

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Motivation and decisiveness

Karl Schlecht – also known as KS to business partners and company management – has mottos whose validity is cemented by his experience of life. Anyone who is called Schlecht (meaning 'bad' in German), must be good: but he does not only want to do everything well, he wants to do it better. If you wish to be a successful entrepreneur, a different sort of experience, you need persistence and the courage to take decisions based on your expertise, even when if you do not yet have an overview of the final consequences. And, very importantly, if you head a company, you must win over your employees as a leader. Because after their conviction, it is only a high level of self-motivation on the part of good employees that helps cross the threshold separating a low profit company from a high-yield company. That, says Karl Schlecht, is absolutely “the deciding factor”.

Diploma thesis with consequences

By placing these demands on himself, the determined Swabian did not go wrong. But a lucky hand too, which cannot be forced even with the best will in the world, helped him to establish his engineering company in 1957. As a mechanical engineering student, he had learnt about the hard work involved in using mortar, which had to be towed with the vat, during the vacations at his father's business. “But then shortly before completing my studies, my father asked: “How can we get the mortar up there more easily?” The young man became inquisitive and began to approach the problem of mortar delivery practically and academically. Practical experience gained at his father's business and his vision that “...something could really come of this in the future...,” was to be decisive for the subsequent development of the student Karl Schlecht.

As prospective engineer, he had now also discovered the topic for his diploma thesis: the design and construction of a compressed-air-driven diaphragm pump for mortar delivery. And it worked not only theoretically on paper, it all worked practically on the construction site, at least as long as poorly mixed mortar did not damage the diaphragms.



The first end hose spraying device still had a lot of rebound



The result of his diploma thesis also worked in practice



Mortar pump P1 in front of his father's garage

1960 1961 1962 1963 1964

Proximity to customers brings product improvement

Karl Schlecht now had a lot of work to do in the field; he drove from construction site to construction site, built and repaired himself, and was constantly in contact with customers. He therefore quickly found out that his diaphragm pumps were not reliable enough. Proximity to customers and to his product – even after the conclusion of a sale – proved to be important, rectifying faults, continually improving design and even challenging it when it became “expensive”. He consistently drew his lessons from practical experience: the diaphragm pumps were replaced by piston pumps with hard-chromium plated cylinders. Hard-chromium plating was little-known at the time: “A single operation in Stuttgart, the company Schoch, applied a hard-chrome plating of 2.5 – 3 tenths of a mm as an exception, on my request. At the time, it was not possible to achieve a smooth surface, which is why the cylinders were made up with a lot of effort. But then, in contrast to the diaphragm pumps, they didn't break anymore!”



Mortar pump P1 with sprinkling pipes for mortar delivery (“mortar conductor”)

“Just don't try and do everything yourself!”

From 1958 onwards, Karl Schlecht in his newly-founded company KS-Maschinenbau took on the mortar pump assembly himself, first with one, then with two fitters. The diesel engines, compressors and other compo-

nents continued to be bought in and assembled in his father's garage and in his frame shed in Bernhausen. So it was not a manufacturing operation as such, the main focus was much more on development, assembly and distribution: “At first I still welded the frames together myself, later the village blacksmith did it – he purchased



The Putzmeister works in Echterdingerstraße in Bernhausen during the first stage of expansion, occupied in January 1961)

1964 1965 1966 1967

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Years

electrical welding equipment and an electric hacksaw especially for this. I even farmed out work such as painting and cable installation to painters and electricians – just don't try and do everything yourself!"

The KS mortar pumps sold well and the number of units rose quickly. Already in 1960, in the second year of production, over 100 plastering machines were distributed. It was no reason for celebration however. "Earning money was for me – and still is today – the means to an end, namely to make more from it!" In addition to this, Karl Schlecht understood how to use promotional tools. The KS mortar pumps were renamed "Putzmeister", and the slogan "Professional plastering with Putzmeister" quickly got around in the construction sector.

Success came early

The assembly operation on his parents land was bursting at the seams in the meantime. At the start of 1961, Karl Schlecht moved into his own small factory with office building on Echterdinger Straße in Bernhausen, having earned the financial means to do this in the meantime. Amused, he tells an anecdote from that time: "I thought: 'I will register the operation as Putzmeister-Werk' ('Putzmeister Works'). But the German Chamber of Industry and Commerce put their foot down. No, you can't call it Putzmeister Works, because you don't have any works, only a small business. But you can call it Putzmeister-Werk Maschinenfabrik (Putzmeister Works Engineering Works).' And that is then what I did. In the meantime, I have had no more problems with the 'works' designation..."

Putzmeister mortar pumps were soon offered with different outputs, more technically advanced and increasingly easier to operate. The competition was also already there: "But I have made the running, so to speak, because my machines were equipped with diesel motors and were much more manageable and sprayed better. The competitor's models were real monsters, and still electrically driven. The only thing was – at the time, there were hardly any construction sites with three phase current! Usually a prophet has no honour in his own country – but I then sold an incredible number of mor-

tar pumps in the surrounding area and made a huge effort. We also advertised aggressively, with a new advertisement every four weeks. Soon we had 70 to 80 % market share. It was fascinating!"

Man and machine

The new mortar pumps did promise to make work easier for workmen, however they were not accepted with open arms everywhere. As is so often the case with technical innovations, there were reservations among those who were supposed to operate them. Piece-work crews feared for their earnings: "My father even lost some people for this reason," recalls Karl Schlecht. "Later it was the other way round, then people were asking: 'Boss, have you got a machine?', before they agreed to be hired."



Plastering job with sharp, clean sprayed steel

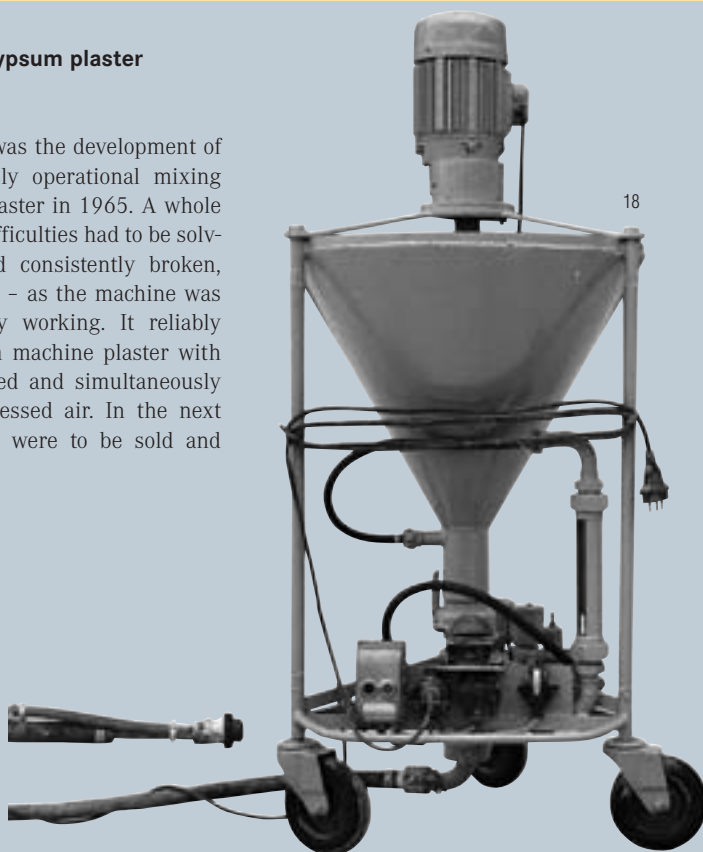


The successful Putzmeister model PKM with integrated pugmill mixer and diesel engine

1964 1965 1965 1965 1966

The revolution in gypsum plaster had begun

The next milestone was the development of the first continuously operational mixing pump for gypsum plaster in 1965. A whole series of technical difficulties had to be solved and new ground consistently broken, until the "Gipsomat" – as the machine was called – was finally working. It reliably metered the gypsum machine plaster with water, mixed, pumped and simultaneously spray-applied compressed air. In the next few decades 10,000 were to be sold and often copied.



Compressed-air assistance for screed conveying

The Putzmeister mortar pumps were predominantly used in new buildings. However, the buildings did not only have walls and ceilings, which were now increasingly plastered by machine, but also had flooring with floor screed. This stiff, almost dry material could not be pumped using piston and screw conveyor pumps.

The young entrepreneur KS and his competent employees experimented again with different delivery systems. Hand in hand with the work on the machine were other attempts trials with different dispensing formulations. The outcome was so-called plug phase conveying, by which the screed mixture was transported with regular air cushions through the connected delivery line. In 1966, the compressed-air-charged "Mixokret" screed conveyors were incorporated into the Putzmeister range.



Putzmeister exhibition stand at BAUMA 1965

1967 1968 1969

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Years


Trials are performed by the boss himself: in 1966, KS tests his first oil-hydraulically driven concrete pump HB 1 with flat gate valve, for pumping fine concrete and screed



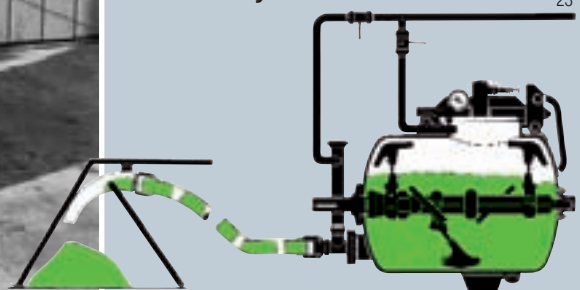
From 1966 onwards, Putzmeister introduces the Mixokret screed conveyor to the range



Coping with crises by anticipating them

The first trough of the post-war period, experienced by the construction industry in the second half of the 1960s, prompted Karl Schlecht to review his product range. "It was in about 1967, we had a slump in construction. I thought, in the end the trend will be like it is in America, where gypsum and plaster are hardly still used. There, almost everything was made with gypsum plaster-board, i.e. with dry material. If that was going to arrive over here, I could be closed down. So I had to look around for something new!" He saw good opportunities in the construction of pumps for ready-mixed concrete which was increasingly used on the market. To be financially attractive for the building contractor or constructor, however, the concrete had to be placed on the construction site more quickly than, for example, with the traditional crane buckets and old-fashioned concrete pumps

Systematic illustration of compressed air delivery



From the handcart to the concrete pump – development of readymix concrete conveying

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Dr.-Ing. Richard Sonnenberg:

History of concrete pumping

Since the beginning of the last century, the increasing prevalence of concrete construction has meant ever larger quantities of concrete having to be placed on construction sites. The selection of pumping equipment used for this over the course of time went according to delivery range and delivery height, concrete amount, concrete consistency and component dimension. Belt and trough conveyors, container conveyors with carts, crane buckets, skips, monorails and cable cranes as well as pipelines on pneumatic pipe conveyors and concrete pumps were used.

The development of the different concrete delivery methods was often a reaction to the introduction of new types of concrete. Each influenced the other. So the change was made from tamped concrete – which to start with was only conveyed using carts – to cast concrete as the basis for the construction of casting towers with troughs for free concrete flow from the casting tower to the placement site.

Internal vibrators enable placement of stiffer concrete

After the introduction of internal vibrators for concrete compaction in 1926, it was possible to place stiffer concrete without problem in narrow and reinforced formwork. For delivery of jolted concrete, conveyor belts, container conveyors and pipelines were and are used.

For all types of delivery, one of the most important requirements was and is that demixing of the concrete during pumping is reliably prevented. Moreover, any change in the temperature of the concrete should be prevented, e.g. through cooling of the delivery pipe. In addition, the water content must be kept constant, e.g. with tarpaulins to protect against rainwater on large open containers or with leak-proof containers to prevent water loss.



Truck-mounted concrete transporter as forerunners of the concrete mixer, USA 1924 (Ill. Ford Motor Co.)

Earlier truck-mounted concrete mixers from the American manufacturer Rex (Ill. Rex)

Casting towers

With the quantities of concrete becoming larger, compaction of the tamped concrete, which was used almost exclusively in its day, the use of hand rammers became uneconomic. To facilitate concrete construction with tamping and to prevent the creation of air pockets in the concrete and tamping gaps, in the USA before the First World War, the water content of concrete was already increased so much that at an angle of 20° to 30°, it was able to flow on its own as cast concrete. The consequence of this transition from tamped concrete to cast concrete was that on larger construction sites, the concrete no longer needed to be transported using carts, but was filled into a casting tower

using a crane. The concrete flowed from the casting tower under its own steam into the lower lying formwork. Concrete was then conveyed in buckets in the casting tower for high-rise concreting operations. Troughs with a gradient of 20° to 30° were used to spread the concrete from the casting tower to the placement sites.

The adjustable bucket, self-emptying at the stop, the concrete silo with the trough mounting and the trough system with fixed and slewable troughs formed part of the casting tower. For stiffer concrete, conveyor belts were also used.



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Considerable assembly effort

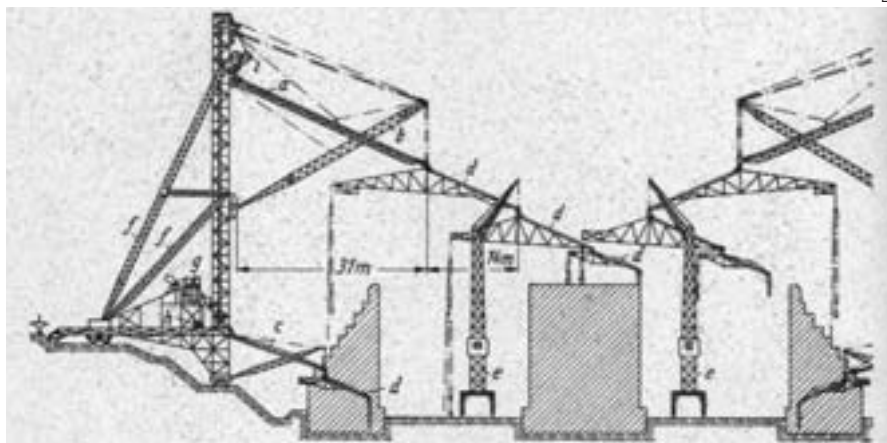
For elongated structures, cable trough mountings (in the USA) or movable booms, particularly for sluice construction (in Europe), were used. The height of the casting towers was usually 60 m (in the USA up to 145 m). The assembly effort for the casting tower was 800 hours or 300 hours for the boom. The economic field of application for the tower started at 4000 m³ Placement amount, for the boom at 150 m³.

From 1920 onwards, cast concrete also caught on in Germany and became very widespread in a short time. However, the disadvantage of the switch from tamped to cast concrete was a significant deterioration in the quality of hardened concrete as a consequence.

Water/cement value is reduced

Further development was characterised by efforts to lower the water/cement value and the high cement paste content, which was supposed to prevent demixing of the cast concrete. This reduction both meant cement could be saved and concrete shrinkage limited. Perhaps we would have come back to the traditional tamped concrete, if in 1926 Mr Deniau's idea of increasing the fluidity of concrete during compaction by exciting vibration had not lead to the construction of internal vibrators. Using vibration compaction, large and reinforced components made of stiffer concrete could be compacted more economically and better than by tamping.

The switch from cast concrete to jolted concrete with stiffer consistence and lower fluidity meant the end for casting troughs and casting towers. In their place came con-



Moveable casting tower (on the left in the picture) with 75 m³/h placement output and up to 70 m horizontal projection (weight 250 t). In the middle, two moveable cranes hold the casting troughs. (Ill. Garbotz)

veyor belts, conveying containers and pipe conveying.

Pneumatic conveying systems

From about 1915 onwards, compressed air conveyors were deployed industrially in America in tunnel and gallery construction. The systems were designed as dynamic concrete canons. The concrete was conveyed with screw conveyors from the concrete container to the delivery pipe and there – as with shotcrete – was carried along at a speed of approximately 30 m/s by supplied compressed air. In Germany, such a system was used for the first time for the construction of the Schluchsee hydroelectric power station.

Static compressed air conveyors with drive boiler (Placy System) came onto the market in France in 1920. During the construction of the Paris metro at the end of the 1920s,

this system achieved outputs of up to 20 m³/h at a delivery distance of 100 m. From 1950 onwards, these advanced static conveyors became more widespread in Europe.

Gate valve required for concrete compressed air conveying

The static compressed air conveying systems consisted of a compressor for filling a compressed-air tank, which acted on the concrete filled in a drive tank and forced it into the delivery line. The delivery line behind the drive tank ended in a capture tank, out of which the concrete dropped down at the placement site into the formwork. The compressed air escaping at the end of a charge from the delivery pipe that had been blown empty was also depressurised in the capture tank. In the case of vertical concrete delivery, a gate valve in the lower delivery line running horizontally prevented a backflow of concrete from the riser into the drive tank during concreting breaks. The gate valve was also required for continuous delivery.

With short delivery lines without capture tank, it was possible for the concrete to be shot out of the delivery pipe directly at high speed. This delivery method was mainly used for backfilling formworks that were difficult to access, such as in gallery and tunnel construction, for instance. The air consumption in the middle was 15 to 20 times as high as the output. The energy consumption of the compressor was approximately 2 kWh to 2.5 kWh per cubic metre of pumped concrete. The concrete delivery pipes had diameters of 125, 150 mm and 180 mm. The operating pressure in the delivery pipe was between 4.5 bar (3.5 at. (gauge)) and 6 bar (5 at. (gauge)).



Transporting concrete by conveyor belt, 1934 (Ill. Verlag Bau+Technik)

Advantages and disadvantages of concrete compressed air delivery

Concrete delivery using compressed air brought advantages when delivery operation was frequently interrupted, if there was strong fluctuation in the decreased output and for concrete placement in cramped conditions. The systems operated in structural and civil engineering projects, transport construction and tunnel construction. Further advantages of pneumatic pumping were as follows

- Simple machine design with mechanically moved parts, therefore less wear
- Low manpower requirements
- Easy handling
- Easy maintenance and cleaning
- Quick installation
- Moveable delivery line with swivel and pivoted couplings

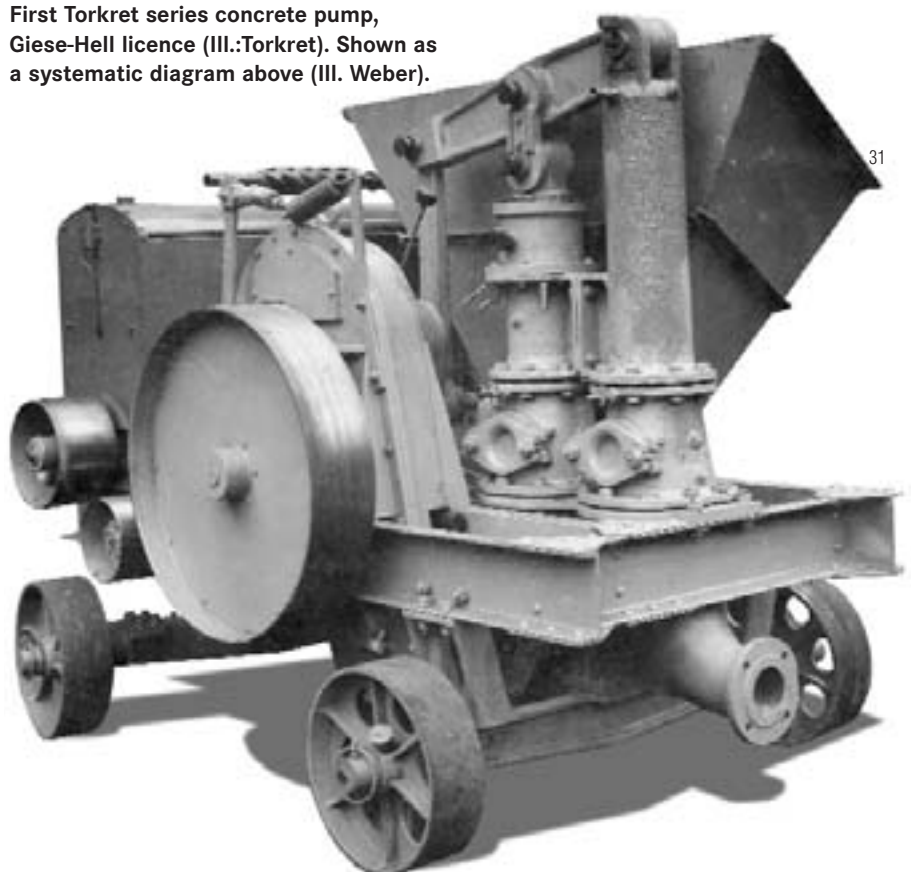
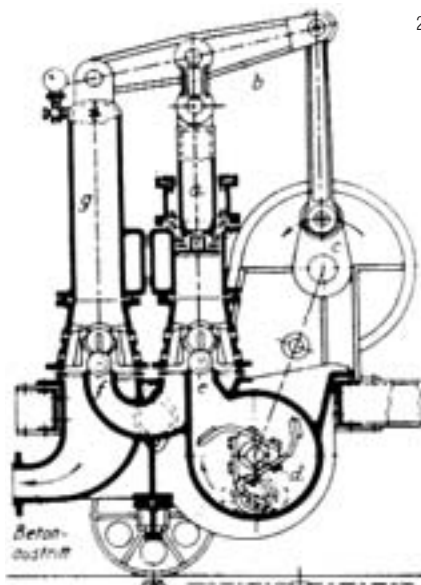
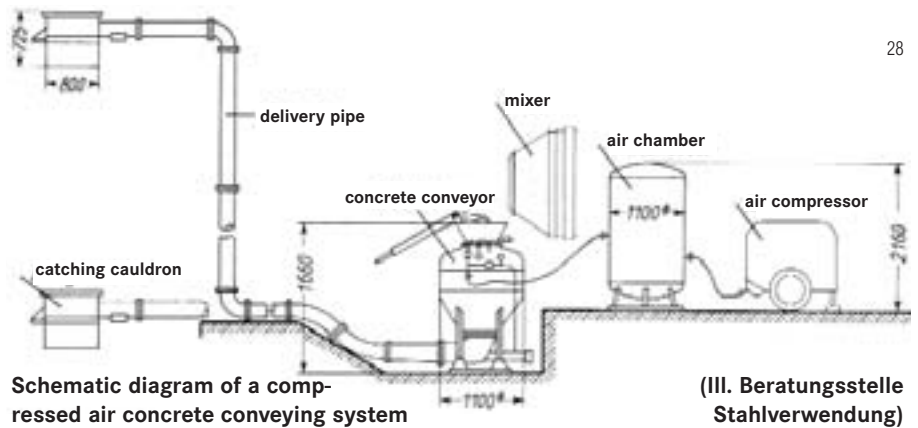
Pneumatic delivery could be very dangerous - when the compressed air cut out too late, the concrete residue shot out of the delivery pipe and caused serious injuries to personnel and damage to the structure. The end for pneumatic conveyors came in about 1960 with the introduction of hydraulically driven concrete pumps on the market.

Crane bucket concrete delivery

After 1945, newly-developed tower cranes made a significant contribution to the reconstruction of the countries destroyed in the war. Until about 1965, the crane bucket was the main transport equipment for fresh concrete in structural engineering. Concreting performance using crane buckets decreases significantly as the structure height increases, however, due to the longer duration. Moreover, during concreting, the cranes are not available for other tasks. With the replacement of crane buckets by concrete pumps, this enabled continuous delivery at constant output rates.

Concrete pumps

Early documents from first uses of a concrete pump during the construction of the New York subway date from about 1903. In Germany, the first concrete pump was built by the constructor Giese-Hell in Kiel. With this pump it was possible in the spring of 1929 to obtain the first experience of pumping concrete on the construction site of the Deutsches Haus in Flensburg and the Marine cenotaph. This showed that larger-size particles did not pass through the ball valves and caused gear breakage. Yet despite this failure, the pump achieved a delivery height of 27 m and a delivery rate of 10 m³/h.



The company Torkret, co-founded by a German-American, took over this design in 1932 and developed it further. While the first machine with a mechanical drive was still an upright one-cylinder plunger cylinder pump with 180 mm cylinder diameter, 180 mm piston stroke and ball valves incorporating a downstream damping vessel, the more developed pumps ("Torkret, Giese-Hell system") already had horizontal cylinders. The ball valves no longer opened upwards, they opened downwards. This meant the concrete no longer needed to be drawn in as it did on the prototype.

Concrete pumps are developed further

In 1934, the modified and improved pump was equipped with one or alternatively two horizontal cylinders. Instead of the ball valves, it had two positively-controlled rotary slides per cylinder. So that the slide rods were not damaged or destroyed when aggregate (stones) jammed, in the middle of the 1930s Torkret acquired the licence from the Dutchman Kooymann for the patented concrete pump with spring-telescoping slide rods. Torkret also awarded the licence for this mechanical pump built in series in the USA, to Rex (Milwaukee) among others. Up until 1945, approximately 1,000 concrete pumps in this version were sold by Torkret. Once the patent protection expired, the slide rods were copied by various manufacturers. In Germany, the company Kaiser build a simplified mechanical piston pump with only one 3-way gate valve, which was later also adopted by Rex and others.

Common to all these early pumps was the fact that the diameter of the delivery cylinders and pipeline was the same. Because when the concrete "bled" at the gate valve during the pressure stroke and caused blockages, it could only be pumped through pipes of the same diameter – even with restrictions. This principle of the "same cross section" also had to be retained on the flat gate valves coming onto the market from 1952 onwards.

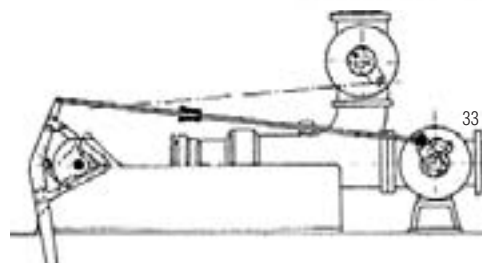
After 1950, the hydraulic drive then caught on – as in other areas of machine construction too – on concrete pumps with delivery rates of 46 m³/h to 110 m³/h. In 1957/59 Torkret brought out the first PK 20 concrete pumps with water hydraulic and from 1959 with oil hydraulic drive. Torkret supplied approximately 1,000 units of the PK 20, which achieved delivery rates of up to 50 m³/h. It is said that within two months, two model PK 20 L machines pumped 45,000 m³ of concrete from a distance of 590 m at a gradient of 5 m through 200 pipes.

After 1960, rapid development began in the concrete pump market after the introduction of ready-mixed concrete. In addition to the already established concrete pump manufacturers (Torkret, BSM, Schwing and Wibau), essentially newcomers, such as the companies Hünnebeck, Putzmeister, Stetter and Scheele as Torkret's successor, were also significantly involved in this.

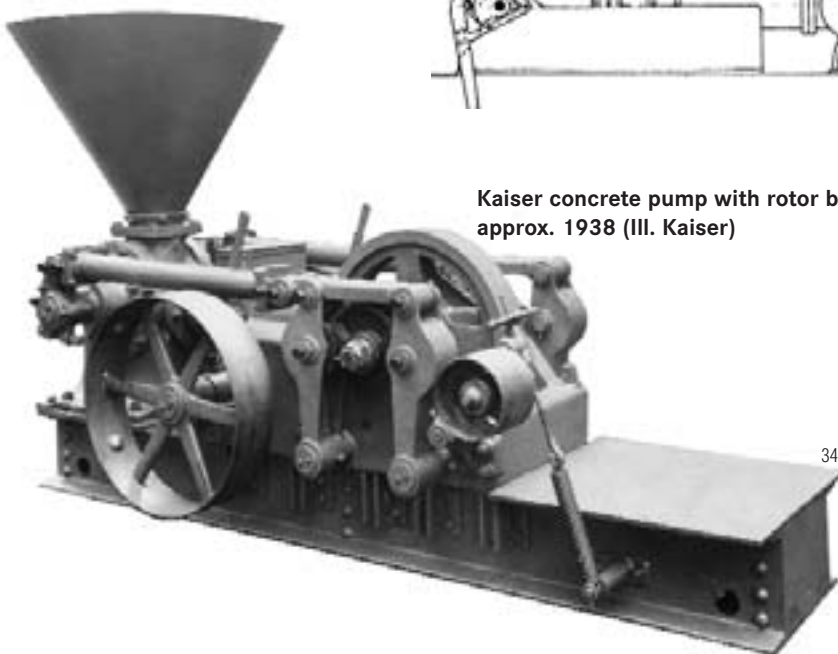
Torkret concrete pump with horizontal cylinder and spring telescoping slide rod, below in a systematic diagram, Kooymann System (Ill. Torkret)



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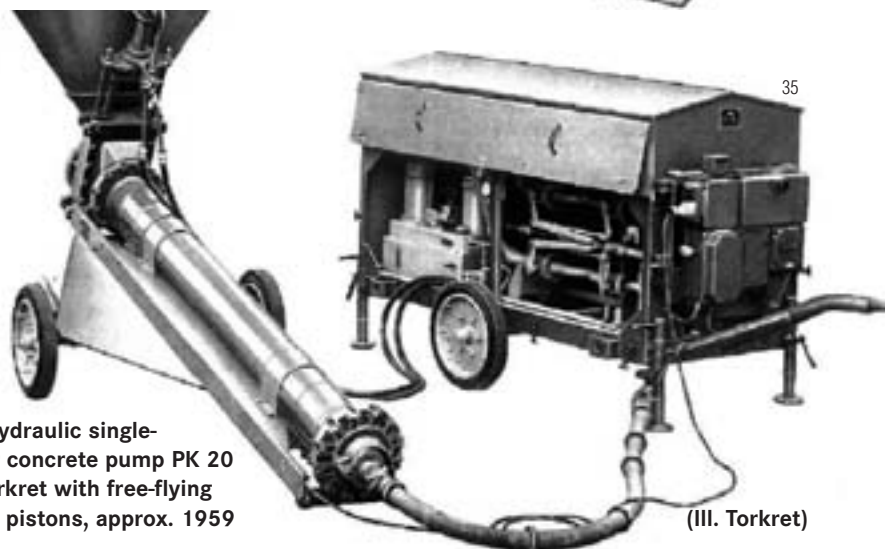


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Kaiser concrete pump with rotor blade, approx. 1938 (Ill. Kaiser)



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Water hydraulic single-cylinder concrete pump PK 20 from Torkret with free-flying delivery pistons, approx. 1959

(Ill. Torkret)

1968 1969 1970 1971

The newcomer stirs up the market

KS had still been able to bring mortar pumps and plastering machines onto the market as innovations. With concrete pumps, however, he had to compete with competitors from the start. "I finally decided on a dual piston pump with long-stroke delivery cylinders (dia. 230 mm) and water hydraulic drive. And this concept with mechanical piston retraction was, due to its large cylinder volume and its quiet pumping characteristics, so successful from the start that we became the leading supplier in Germany within two years. The long-established and renowned concrete pump manufacturers were simply overwhelmed by our machines. Once, we assembled 40 concrete pumps in one month. I still remember how quickly turnover rose, from 6 to 9 million DM, then later to 12 million DM, and tripled the year after that to 35 million DM!"

Since Karl Schlecht still did not have his own distribution channel for exporting concrete pumps, he collaborated with Elba from 1969 onwards for approximately four years. As a supplier of concrete mixing systems, Elba had good contacts with fresh concrete producers, most of which at the time also operated concrete pumps. Nowadays the concrete pumping market is not at all so standardised: there are still many countries in which ready-mixed concrete works also offer a pumping service. In Europe and North America, however, most pump operators have since specialised exclusively in concrete pumping. Ready-mixed concrete works, on the other hand, often only still supply the concrete building material.

Already in 1971 Putzmeister introduced four water hydraulically-driven types of concrete pump for mounting on truck chassis into the range. With their overall size and output they already cover a broad range, which can still be seen today. Here is a summary of some parameters:

These concrete pumps were offered both on trailer chassis and in combination with a "concrete crane", the name for a concrete placing boom at the time. While Karl Schlecht optimised the water hydraulic pumps further and had them assembled in his own factory from delivered components, Putzmeister initially purchased the booms including support according to its own specifications from Meiller (Munich) and Atlas Weyhausen (Vechta). At the start of the 1970s, the Putzmeister range included these four types of boom (the designations are taken from the documents from the time):

And Putzmeister truck-mounted concrete pumps sell well! A Putzmeister press briefing quotes a written communication from

the federal office for motor vehicles dated 26.1.1973, according to which in 1972, out of a total of 420 newly approved truck-mounted concrete pumps in Germany, 168 units originated from Putzmeister production. As there were seven well-known suppliers, this corresponded to a market share of 40 %.

Putzmeister was only to establish its own department for the development of booms and base structures in 1975. In order to be able to offer "large booms" too, the bought-in triple boom combined with an additional main boom ("A" arm) and tensile-loaded cylinder and by the end of the 1970s already achieved up to 39 m vertical reach.

Boom model	W 11/14	W 17/20	M 19/22	M 25/28
Arm length (m)	11	16.8	18.5	25
Maximum height (m)	14	20	22	28
Number of arms	2	3	3	3
Length of end hose (m)	6.6	5	6.6	6.6

Pump type	B 232	B 232 S	B 233	B 333
Maximum output (m³/h)	60	65	100	125
Maximum concrete pressure (bar)	35	42	45	50
Required drive motor output from approx. (HP)	80	100	130	160
Piston stroke / (mm)	2,000	2,000	2,000	3,000
Delivery cylinder dia. (mm)	230	230	230	230

1972 1973 1974 1975

50
Years

36



First Putzmeister truck-mounted concrete pump with M 16 boom and 100 mm delivery line on Mercedes-Benz L 808

37



To make full use of the chassis superstructure length, Putzmeister incorporated delivery cylinders inclined towards the rear with 2 m piston stroke

Hans Hostadt, pump operator since 1967, remembers

One of the first customers to order concrete pumps from Putzmeister was Hans Hostadt (born in 1937). The entrepreneur from Essen was (and still is today) joint owner of the company Breitbach & Hostadt, which had specialised in the transport of construction machines and building materials between the Rhine and the Ruhr since 1967. Against this backdrop, came first contacts with the company Torkret, the well-known German concrete pump manufacturer in its time. First discussions with Putzmeister took place in 1968 at the Hanover trade fair.

Here Karl Schlecht presented his concrete pumps with water hydraulic drive for the first time. "I was sceptical about the machines exhibited at first", said Hans Hostadt in a conversation forty years later. "Since we knew the drive with water hydraulics from Torkret from before, they had that sort of delivery system with only one cylinder in their range. The outputs were not bad in fact, but at 20 bar pressure it was finished! But then along came Putzmeister, who placed two cylinders next to each other, combined the whole thing together with a flapper system, and the water hydraulics, which had been thought to be completely over the hill, were completely redesigned here and really performed." In April 1970, Breitbach & Hostadt took delivery of their first Putzmeister concrete pump, the second a few weeks later. On both machines there was already a model W 17/20 boom integrated, the third was delivered by Putzmeister by the end of the same year. In total, recalls Hans Hostadt, his company purchased six new Putzmeister pumps with water hydraulic drive within a very short space of time, later – in order to cover peaks of demand – several used machines were also acquired.

Listening and rectifying defects

The sale of new machines was run via the regional Putzmeister distributors, first through Montanbüro, then through the Putzmeister branch in Mühlheim/Ruhr, which later moved to Kettwig. Not least because of his technical expertise, Hans



Hans Hostadt on the way to the construction site, approx. 1969 (Ill. Hostadt)

Hostadt (who was also not afraid to build his own, efficient concrete pumps using components from different manufacturers) became valued by Karl Schlecht as a business and discussion partner. And Hans Hostadt noticed that in the Putzmeister founder was someone who could not only sell well, but also listened; someone with whom problems could be discussed and who not only promised to sort out defects, but also really did remedy them. "Karl Schlecht did a lot differently to others, and this finally convinced even us 'old hands'. He really did listen, made notes, was flexible and reliable. And while problems were really then solved immediately, the technical changes were incorporated into series production – sometimes no doubt to the sorrow of the Putzmeister design engineers, from whom something new was always required."

"Experts" are disproved

Several years later, the legendary Putzmeister C transfer tube was to be developed from these contacts ("listening to the customer"). The impatient Putzmeister boss Karl Schlecht saw these experiences – or rather problems – from practical applications as challenges: sealing problems were solved, longer piston stroke and large cylin-



Within a few months, the pumping service Breitbach & Hostadt ordered six of the water hydraulic Putzmeister truck-mounted concrete pumps with W 17/20 boom

der volume favoured and short reduction introduced, which every so called "expert" had previously advised against.

Over the years, mutual appreciation was to develop into friendship. Of course we saw each other not only on business matters, but also socially. Hans Hostadt was once there when Karl Schlecht dropped off this car at the workshop. The courtesy car was declined by the Putzmeister owner. Instead he asked for the keys to a Honda 750, which was parked to one side. Schlecht and Hostadt climbed in, switched on the ignition and rode over the fields – at the time surroundings of the Putzmeister works were very agricultural. Neither of the parties concerned wishes to recall their actual top speed...

Now, in 2008, one can still meet Hans Hostadt every day at his pumping service. The senior partner is now assisted by his son Martin (born in 1971), who as a member of the management board with power of procurement will head the company in future.



Hostadt conversion: Take a Torkret truck-mounted concrete pump with gate valve and replace the power unit with a water hydraulic Putzmeister pump with flapper system... (Ill. Hostadt)



**Hans Hostadt in January 2008:
With good concrete pumps, the operator can be pretty relaxed...**

Concrete pumps become the mainstay of sales

Even in the boom years, Putzmeister adhered strictly to the principle of an “extended workbench”. It was planned in the company design office, drawn and assembled in the works. The individual components were bought in from suppliers however: “We had good suppliers, we paid promptly, and they all earned a lot of money.”

External steel construction operation becomes one of the most important Putzmeister production locations

Schlecht actually held the viewpoint, not to take a share in suppliers financially. From one of the supplier operations, the company Wurster from Althengstett near Calw, he purchased various sheet metal parts, hoppers, components for plastering machines and compressed-air vessels for the Mixokret screed conveyor. When the Wurster metal working operation got into financial difficulties in 1973 and was up for sale, the Putzmeister founder took over 100 % of H.W. Wurster GmbH & Co. KG.

Karl Schlecht saw in this the opportunity, to safeguard capacities at Putzmeister. And to expand: since manufacture of the first concrete placing boom developed by the company had already begun a few years later in the Althengstett works. Schlecht: “Until then we had always bought in booms, first from Meiler, who then became too expensive for us however. Then from Atlas Weyhausen, which manufactured steel structures such as truck-mounted cranes, excavators and also hydraulic cylinders. In 1979, we then designed and built ourselves the prototypes of the M 31-3 boom for our subsidiary in Brazil which had been founded five years previously. We quickly realised that the unit costs could be reduced by standard production, so that we were soon able to manufacture the booms in the Althengstett works more cheaply than Atlas Weyhausen was able to supply them.” Just how important the Putzmeister production site in the Black Forest and its future “field office” in Gründau near Frankfurt was still to become for the Putzmeister Group, becomes clear by the beginning of the 90s (see page 45).



Putzmeister placing boom manufacture at the company Wurster around 1979. How today the ultra-modern Putzmeister works in Althengstett looks meanwhile can be seen in photos on page 45.

Concrete pumps increasingly take up capacities

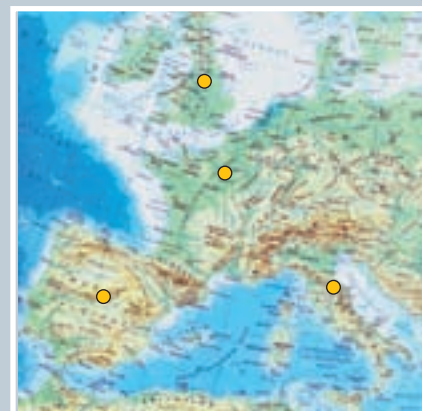
Viewed with today's hindsight, there were bound to be serious consequences. Due to the unbelievable sales success of the concrete pumps, the significance of the traditional mortar pumps for Putzmeister's turnover declined continually. A large part of the personnel and development capacities were taken over by concrete pumps, but the mortar pumps on the other hand were treated rather like a “younger brother”. “The concrete pumps took up so much energy. I should basically already have established a separate operation for the mortar machines then, since we wanted to develop them further too. It was simply that I wasn't able to 'look after it' any longer,” was Karl Schlecht's self-critical assessment later of the decisive phase at the end of the 70s and beginning of the 80s. The necessary adjustments to the company structure would be made years later – but more of that later.

The road to other countries

Since 1960, there had already been interest in KS plastering machines from abroad, and the German market soon became too narrow. The first mortar pumps were sold to England, Spain, France, Italy and Switzerland. In these countries, the types of mortar were very different, depending on the local raw materials. The same applied to the ways the trades were structured. Only where plastering companies existed was there the

requirement for investment in customised manufacture. So not in Italy, for example, where plasterers were hired by the building contractor as the case arose, but definitely in South America.

The machines were not always dispatched abroad complete from Bernhausen. Customs barriers and cheap labour costs at the start of the 1970s lead to parts for mortar pumps and screed conveyors being manufactured in the particular market, e.g. in England, Spain and Italy. So mere dealerships abroad became subsidiaries which bought, tested, assembled and delivered parts to local agents. “We wanted to avoid local competitors copying us in the market once it was built up and underselling us due to the labour cost advantage in the country.”



Attractive subsidiary in Spain

Putzmeister Ibérica is perhaps the most successful European Putzmeister subsidiary. The company celebrated its 50-year anniversary in the autumn of 1999 as “Induresa Putzmeister S.A.”. So the subsidiary would be eight years older than the Putzmeister parent company. Is that even possible?

The present-day Putzmeister subsidiary in Spain has a family tree with several branches: the old roots reached back to 1949, when Induresa (Ingeniera Industrial y Representaciones, S.A.) as a trading company represented the interests of the German company and plant construction firm in Spain. An important business area was the coal and steel industry. Because Spanish furnaces had to be lined – that is, filled – with fire-resistant material at regular intervals too, as the agent for Torkret dry-mix spraying machines, Induresa quickly managed to gain a foothold in the sector.

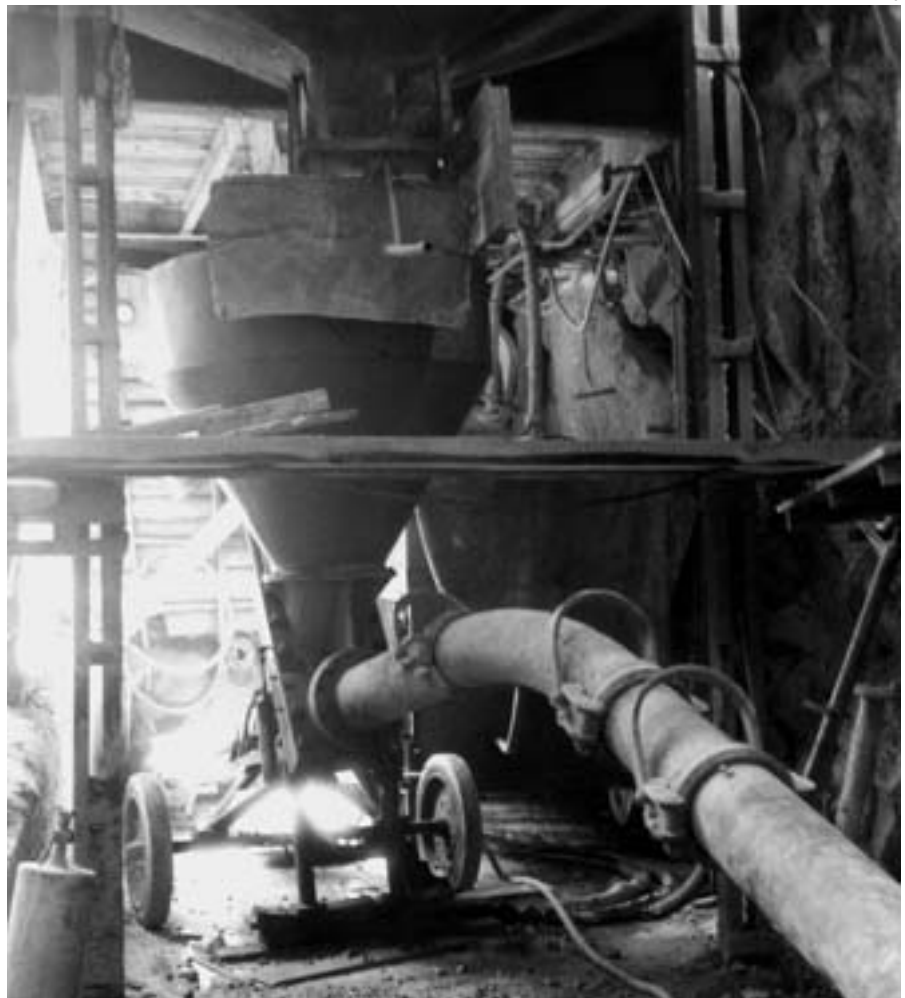
The water-hydraulically and later oil-hydraulically driven stationary concrete pump represented another Torkret product area, which was also marketed via Induresa in Spain. They were used in the construction of large barrages, for instance, which were built in the 60s in numerous valleys to control meltwater and supply drinking water. Induresa also supplied numerous Torkret single-cylinder pumps for concreting the underground car parks, which were built in Madrid at the end of the 60s. Decisive for the later success of Induresa was the fact that its employees not only sold the machines, but also knew the materials to a large extent which were conveyed, sprayed and pumped by the machines.



Delivery pipes with 200 mm diameter were standard at the time (Ill. Lettner)



Management, after-sales service and assembly at Putzmeister Ibérica have since been housed in new or renovated buildings (2004)



With water hydraulic Torkret pumps (see page 15) – here a PK 20 photographed in 1963 – the employees of the future Putzmeister subsidiary learnt about pumping concrete (Ill. Lettner)

First contacts

At the start of the 1960s, Gerwald Lettner, the young head of the Induresa construction machine department, and Karl Schlecht, company founder and owner of Putzmeister GmbH, which was just a few years old, got in contact with each other. One was interested in becoming an agent and obtaining distribution rights for another German construction machine manufacturer. The other was looking for new export markets and for a well-established company representative office in Spain for distribution of Putzmeister mortar pumps and screed conveyors.

Despite the relatively modest starting capital of 1,000,000 Pesetas (then worth approximately 34,000 €), which the Swiss owner made available at the time, the collaboration advanced quickly: from June 1963 onwards, Induresa sold the first Putzmeister mortar pumps. Since Induresa was bound by contract to Putzmeister's competitor Torkret for stationary concrete pumps, from 1971 it only took on the distribution of truck-mounted concrete pumps for Putzmeister, which were initially imported from Elba into Spain. In 1972, following an amicable separation from Torkret, Induresa then became the agent for all Putzmeister products.

In order to get around the relatively high Spanish import tariffs, Karl Schlecht founded Putzmeister Española in 1973 as a manufacturing plant purely for mortar machines. The consequence was that at first the number of units of Putzmeister plastering machines and Mixokret screed conveyors manufactured in Spain from the middle of the 1970s skyrocketed. In parallel to this,



Putzmeister truck-mounted concrete pump B 232 S with "concrete crane" W 17/20 (Madrid 1971). Above, a plate with the names of the companies, which Induresa represented at the time. (Ill. Lettner)

however, the sale of concrete pumps proceeded uninterrupted with up to 50 units per year. In 1985, the tradition-steeped Putzmeister Española merged into the legal form "Induresa Putzmeister S.A.". The complete take-over of the shares in the business by the Putzmeister parent company took place three years later.

Accepted as a professional contact partner

The Spanish Putzmeister agent had long made a name for itself in the large construction industry of the country. The competent specialist knowledge of the employees – from Director Lettner, to the field service,

right down to the after-sales service fitters – made a decisive contribution to the constantly growing reputation. A particular challenge was posed in 1985 by the world record for concrete high-rise pumping (432 m) in the Spanish Pyrenees. For the first time in the history of concrete delivery, pump pressures of 170 bar were controlled safely in the process. During the design/construction of the concrete pumps used and during the installation of the delivery line system including the cleaning station, the construction site managers were able to rely unquestioningly on the competence of Lettner and his team. During this spectacular site application, Putzmeister was to take the decision to equip all stationary Putzmeister concrete pumps only with S transfer tubes in future. In 1991, it was again Gerald Lettner's team which established a new in all-time high for concrete pumping range (1661 m) in Barcelona.



In February 1985, this stationary concrete pump with S transfer tube (see also page 26) improved on the world record for high-rise concrete pumping to 432 m in the Spanish Pyrenees



Gerwald Lettner (centre) and Karl Schlecht at the record celebrations (Ill.: Lettner)

Speciality: shotcrete machines for tunnel construction

In the early 90s, Induresa engineers and applications specialists began to press ahead intensively with the development of a modern shotcrete machine. After a few bitter setbacks and the use of high numbers of personnel and a large amount of financial means, Induresa Putzmeister S.A. then presented in 1994 the first shotcrete manipulator it had developed itself – Wetkret. The extremely robust design, easy usability and its numerous sensible details meant the Wetkret found over 60 customers at home and abroad in less than five years production time. It was, moreover, not difficult to convince the Putzmeister parent company about the high standard of quality of the Spanish manufacturing. Since then, the complete development and production of the Putzmeister shotcrete machines for the world market is carried out at the Putzmeister subsidiary in Spain. In addition, to relieve production in Aichtal, the experienced manufacturing plant in Madrid takes over the assembly of certain truck-mounted concrete pumps and trailer concrete pumps for the Spanish market too, the components for which are supplied from Germany.

Change-over carefully prepared

In 1999, in the 50th year of its existence, the Spanish Putzmeister subsidiary is re-named Putzmeister Ibérica (PMIB). Before his retirement, the longtime managing director Gerwald Lettner begins to replace, extend and to modernise the administrative building, production halls and warehouse at PMIB. At the same time, he carefully prepares the company for a generation change

As his successor, Felix Selinger took over responsibility at PMIB in the same year. The multi-lingual qualified building engineer has many years of professional practice with machines for tunnelling and mining. During his nine year period of office, he has succeeded in increasing the turnover of PMIB 8-fold, combining the worldwide Putzmeister tunnel and mining activities and establishing a global sales alliance with Sika (Switzerland) for concrete wet spraying machines. From 2006, the Spanish Putzmeister subsidiary is no longer only responsible for the domestic market, but has since, after the founding of a subsidiary in Portugal, taken over sales responsibility for the whole Iberian Peninsula. In August 2007, Felix Selinger then takes over the managing directorship of Putzmeister AG. The management of Putzmeister Ibérica has since been in the hands of José Antonio



In the 90s, PMIB had specialised in wetcrete spray concrete machines. They were seen as successors to the large German-produced Putzmeister spray buffalos.

Nieto. Spain, rightly so, is regarded as the “country of large truck-mounted concrete pumps”. Of the Putzmeister large booms in the 60-metre class alone, there are over 20 machines working in Spain in the

Putzmeister anniversary year. Incidentally, the first of these long-reach boom pumps were sold “as on paper” – so great was the trust of the Spanish customers.

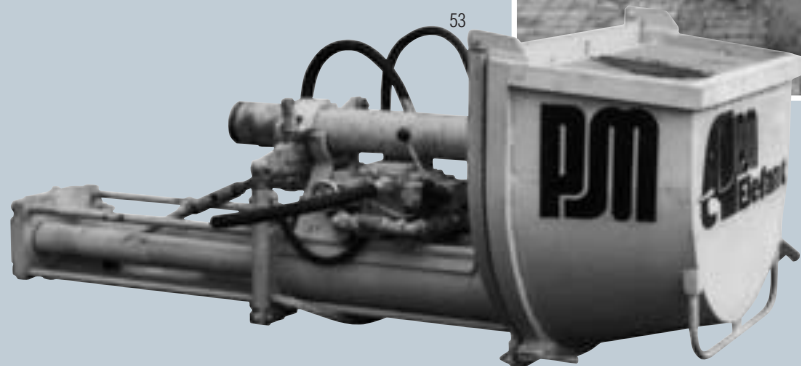


60-metre long-reach boom pumps during concreting of gigantic liquid gas tanks in Northern Spain

PUMI® conquers small construction sites

The costs for using a concrete pump could only be justified even in the past if – compared to the traditional charging bucket – a significantly larger amount of concrete could be placed per hour. For larger concreting jobs, this evidence could be supplied easily. However, how did the cost gap look for small construction sites, if only 5 or 10 m³ of concrete needed to be placed for a garage roof, a patio or retaining wall, for example? Even for these small construction sites, a truck mixer and concrete pump had to be ordered, which was hardly worth it due to the small amounts of concrete. For this reason there was the risk that the concrete pump contractor is ignored when the contract is awarded due to his price calculation.

Against this backdrop, Putzmeister took on manufacture of truck mixer concrete pumps with boom in 1976. Because these machines can mix and pump the concrete, they soon earned the nickname PUMI®, which is internationally known today as the “generic term”. With the PUMI®, pumping and spreading of small amounts of concrete of 6 to 10 m³/h became significantly quicker and less expensive. Because now only ONE machine and only ONE machine operator was required to transport the concrete to the construction site, mix it, pump it and deliver it into the formwork. At the same time, everything went much more quickly, since the very popular PUMI® – particularly in the early years – with 16-metre boom required no support at all and was ready for use in no time at all. Even the cleaning effort and the residual concrete amounts were significantly less than compared to the large, “proper” concrete pumps.



The PUMI® model range today

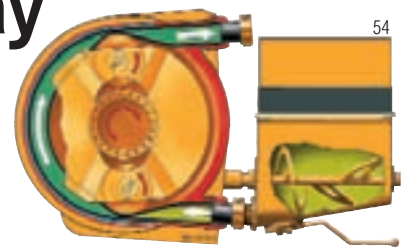
The PUMI® was especially popular with transport concrete manufacturers. For they earned now not only on the concrete building material, but also as haulier and pumping service provider. Soon the PUMI® had the nickname “money maker”. From the first PUMI®, assembled on a 3-axle chassis and with 40 m³/h output, 16-metre boom and 6 m³- drum, Putzmeister had in the meantime developed a comprehensive model range with 21, 24, 26, 28, and 31-metre boom options. For the delivery systems too, PUMI® operators also have a free choice, with three pumping systems and outputs between 56 and 80 m³/h . The modern PUMI®s are mostly assembled on a 4-axle chassis for 32 t permissible gross weight and have a mixer volume of 6, 7 or 9 m³.

In the meantime, the PUMI® truck mixer concrete pumps with rotor system are especially popular. Putzmeister has incorporated this delivery system into the range since the take over of Wibau in 1989. The rotor pump is outstanding in daily use, when there are several different construction sites, above all due to the fact that hardly any concrete residue is left over, the machine runs quietly, is easily assembled and can be cleaned quickly.

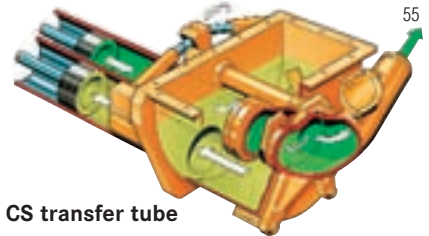
When deciding on the “optimum” truck mixer concrete pump, the consideration of different interests can sometimes be difficult. Anyone wishing to transport relatively large amounts of concrete in addition to

occasional pumping operations using their PUMI®, is more likely to decide on the small (i.e. also light) 21-metre boom. For those for whom it depends on maximum horizontal reach, will order a PUMI® with a larger boom and accept that they can only carry a relatively small amount of concrete.

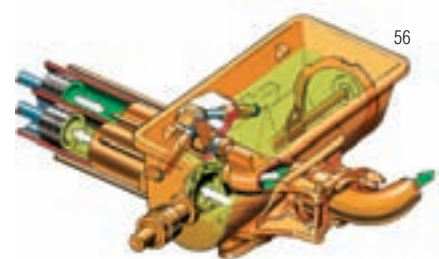
Since the PUMI® truck mixer concrete pump is classified by the legal authority as a “transport machine”, it is subject to other designations such as “truck-mounted industrial machine”, e.g. truck-mounted concrete pumps. Added to this are the very different, country-specific licensing rules, which affect “transport machines” to a much greater extent than the “truck-mounted industrial machines”.



Rotor pump



CS transfer tube



S transfer tube



A large PUMI® with 31-metre boom in Jeddah (Saudi Arabia)

"C transfer tube" pump chases off old concrete gate valve

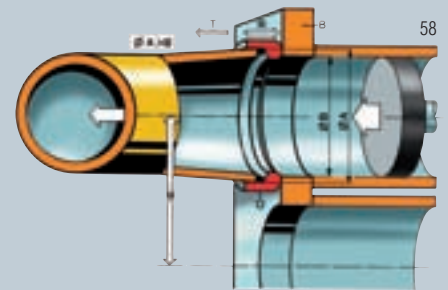
In order to be able to pump difficult concrete even at high pressures, Putzmeister hit technical limits with the water hydraulically controlled flapper. For one thing, the concrete pressure of the water hydraulic system was limited. In addition, the flapper had problems with faster stroke change due to concrete bleeding and formation of a concrete blockage in the gate valve housing (Figure "A").

The trend towards delivery pressures over 40 bar combined with ever more cost effective oil-hydraulic drives at the same time lead at first to an intermediate solution at Putzmeister at the start of the 1970s. It consisted of an oil-hydraulically driven 2-cylinder piston pump with 1.4 m piston stroke and closed hydraulic circuit (Figure "B"). Newly developed and patent-applied-for hydraulic control components provided an even flow of concrete, during which the pressure peaks occurring after each piston switchover were damped (SN controller).

This made it possible to achieve higher concrete pressures and a similarly continuous output flow rate as was the case with the successful water-hydraulic concrete pumps. During a transition period, KS still retained the flapper at first, however, before he successfully made a technical quantum leap with the "C transfer tube" system.

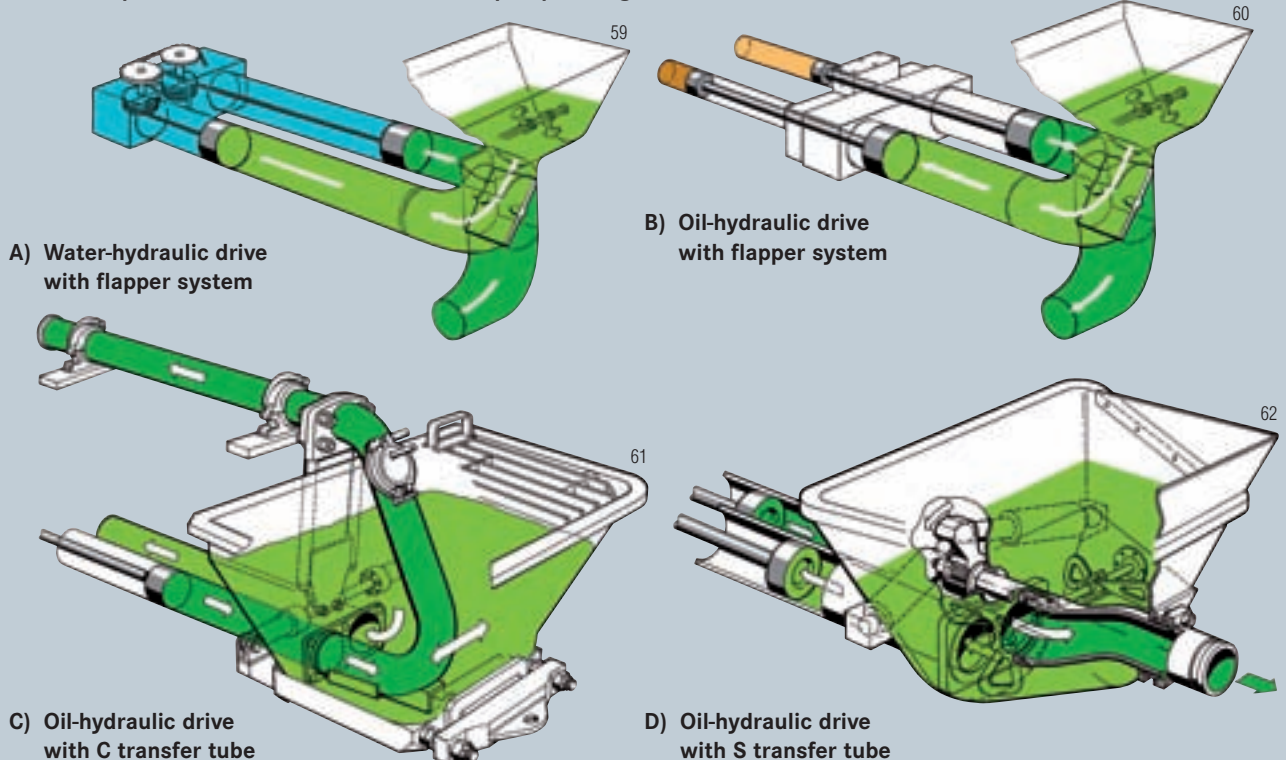
Because in 1971, the decisive breakthrough was to be made with the development of the first transfer tube controlled piston pump. With this design, a C-shaped transfer tube slews in front of the respective pressure cylinder of the dual piston pump and produces a deflection-free connection to the subsequent delivery line (Figure "C"). Because the C transfer tube looked similar to an elephant trunk when viewed from the side, Karl Schlecht had quickly found in "trunk" a memorable name, which is incidentally very symbolic in the industry worldwide even today. Now at 2.1 m piston stroke and 230 mm delivery cylinder diameter, Putzmeister achieved even smoother pump delivery. With the discovery made at the Frankfurt telecommunications tower

(see page 27ff) of the self-adjusting ring, this transfer tube pump then also became almost watertight. Thus it became possible to achieve high delivery pressures of over 100 bar. Moreover, these C (also referred to as "Elephant-") transfer tube pumps conveyed concrete the shortest route to the boom, very similarly to the water-hydraulically driven Putzmeister truck-mounted concrete pumps. Figure "D" shows the method of operation for the S transfer tube, which Putzmeister was to incorporate on stationary concrete pumps from 1985 onwards.



With the self-adjusting ring, the transfer tube became "watertight"

The development of the Putzmeister concrete pumps at a glance:



High-rise concrete pumping at the Frankfurt telecommunications tower at 310 m

The high-rise concrete pumping at the Frankfurt telecommunications tower (FMT) at the world record height of 310 m (1977) using a “trunk” pump made the construction industry sit up and take notice, causing considerable unrest among Putzmeister's competitors.

In actual fact, the three construction companies involved had not believed that concrete could be pumped all the way to the top at this construction site. Because the Putzmeister competitors were of the opinion at the time that concrete cannot be pumped over 160 or 170 m or at more than 60 bar, since concrete cannot “tolerate” a higher pressure. Thus the tower was equipped with a high-performance crane which was supposed to take over high-rise pumping when the pump failed – even if at lower capacity.

KS still remembers well: “Putzmeister received the contract to deploy a BRA 2100 series long-piston concrete pump on the Frankfurt telecommunications tower construction site, because this machine with its large stroke volume promised a smoother pumping method. The reason for this was that there were residential buildings in the surrounding area, and there were fears about complaints due to noise at night. For Putzmeister this was an enormous challenge. Prior to this, construction sites were operated predominantly by competitors Torkret and Schwing using stationary concrete pumps, while Putzmeister had good market success with truck-mounted concrete pumps. The tower was erected in sliding formwork construction method – every eight days, the 2.5 m high climbing formworks were raised to a new position and were ready for concreting. Cast-in-place concrete was used, as was usual at this type of construction site at the time.”

The process offered the advantage of continually adjusting the concrete mix, which Putzmeister as a pump manufacturer was not able to offer at first. In fact the 2.5 m high concrete layer was supposed to set at the same speed throughout. Thus, for the last cubic metres of concrete, the set-retarding admixture was omitted.

KS: “Up to a height of 150 m, delivery using our pump progressed without problems. Blockages then started to occur, however, in the C transfer tube and there were difficulties with switching through. The old methods seemed, therefore, to be right after all. The problem was bleeding at high pressure at the gate valve gap.” Karl Schlecht saw in this



On the Frankfurt telecommunications tower, the concrete was actually supposed to be hoisted in the crane bucket. But something else happened ...

a personal challenge. With great persistence, he worked on the solution to the problem and, in the process, hit upon a differential principle known from oil hydraulics. The result was a differently designed wear ring on the C transfer tube diversion valve.

KS: "The thought was that the system diameter of the ring and the spectacle plate needed to be smaller compared to the centring diameter on the C transfer tube. Then at higher pressure, the ring was supposed to press against the spectacle plate to form a seal and thereby prevent bleeding. This meant, on the one hand, that the C transfer tube – following the effect of the pressure – could rebound elastically towards the rear and, on the other hand, that it was sealed with an inserted O-ring seal." (see page 26).

To everyone's surprise, this solution worked. The C transfer tube pump thus established a new record in the following weeks with every additional formwork elevation. Finally, the last metres above the viewing platform were pumped up to the top at a height of 310 m. So Putzmeister became an acceptable contractor even for large German construction companies. KS: "We had achieved a feat which was previously considered impossible."

A year later, the so-called S transfer tube was also equipped with self-adjusting ring. This transfer tube system was introduced by

Putzmeister on stationary pumps in place of the C transfer tubes from 1985 onwards. Other high-rise pumping operations on construction sites were therefore performed using S transfer tube pumps type BSA 2100 (see page 22).

KS: "By the use of this self-adjusting ring, the concrete pumps controlled by transfer tube became so successful, that finally even our main competitor switched to using transfer tubes. The same happened with all the other manufacturers, so that nowadays no other concrete gate valve designs are

used for concrete pumps any more. In the meantime, numerous large concrete pumping service providers in the USA who previously used machines from Putzmeister competitors in their fleet have for the most part switched to S transfer tube pumps from Putzmeister. Above all, the BSA 14000, which is also used on the Burj Dubai, is increasingly favoured internationally as a high pressure concrete pump. The start of the story was thus written at the Frankfurt telecommunications tower, whereby a new paradigm, a new way of thinking in the concrete industry was initiated!"

64



The world record at the Frankfurt telecommunications tower prompted the concrete industry to rethink high-rise concrete pumping

65



KS (4th from the right) visited the tower construction site regularly. On the left next to him Hans Hostadt (see page 18 f), who was also naturally interested in any technical innovations for high pressure concrete pumps. (Ill.Hostadt)

1971 1978 1979 1981

50
Years

Putzmeister diversifies: with tried and tested pumping technology into new markets

The Putzmeister core business was and is conveying particularly difficult media by tube. Following the success of the transfer tube designs for pumping concrete, Karl Schlecht also attempted to use this technology for other delivery jobs in industry, mining and tunnelling. These steps helped the diversification of the company, which was to become somewhat less dependent on the construction industry. Moreover, the immense variety of applications found in industrial technology opened up significant market potential for Putzmeister's already highly-developed pumping technology. It was based primarily all on oil-hydraulic drive, long piston stroke and few transfer tube switchovers. At first it was still "normal" concrete pumps, which now pumped other media. Then the pumps were increasingly adapted to the modified conditions. Putzmeister now talked about "high density solids pumps for the worst", which pumped particularly difficult media and material masses.

However, the areas peripheral to actual pump delivery increasingly gained in importance, i.e. the devices for pre-mixing and metering the high-density solids and their aftertreatment, as well as the electronic control of the complete conveying systems in night-and-day operation from a remote central control station. This enabled Putzmeister pumping technology to find new application fields in industry, in particular plant construction, from about 1977/78 onwards.

At first it was still concrete pumps that were used for the new tasks

So, for example at the Aswan Dam, a stationary Putzmeister concrete pump from a large-scale French construction company was used for purposes other than those intended, in order to remove the sludge deposition from the bottom of the dam. For this purpose, the pump had been set up on a pontoon anchored near the dam. A dredger on board transferred the Nile sludge into the concrete pump hopper. The sediment was then conveyed through floating pipelines to the river bank.

In Japan, during the construction of the underground, Putzmeister pumps soon not only pumped concrete in the tunnel, but also the excavated material from tunnelling out of the tunnel to the surface. The removal of the ground material from the site – this was fine, compact sludge from sedimentation, so-called "sea silt" – was seen in Japan as particularly dirty work. Through the use of the Putzmeister (concrete) pumps, the exca-

vated material was handled completely differently, however: the material was conveyed directly from the tunnelling machine to the pump and transported through a pipeline to the surface. The huge breakthrough in the conveying of excavated material using pumps was then achieved in 1988 during the tunnelling of the Eurotunnel under the English Channel (see page 36f).

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This Putzmeister concrete pump pumped waste excavated from the tunnel during the construction of the Tokyo underground

67



Use of a stationary concrete pump during sludge removal at the Aswan Dam

Pump for environmental protection

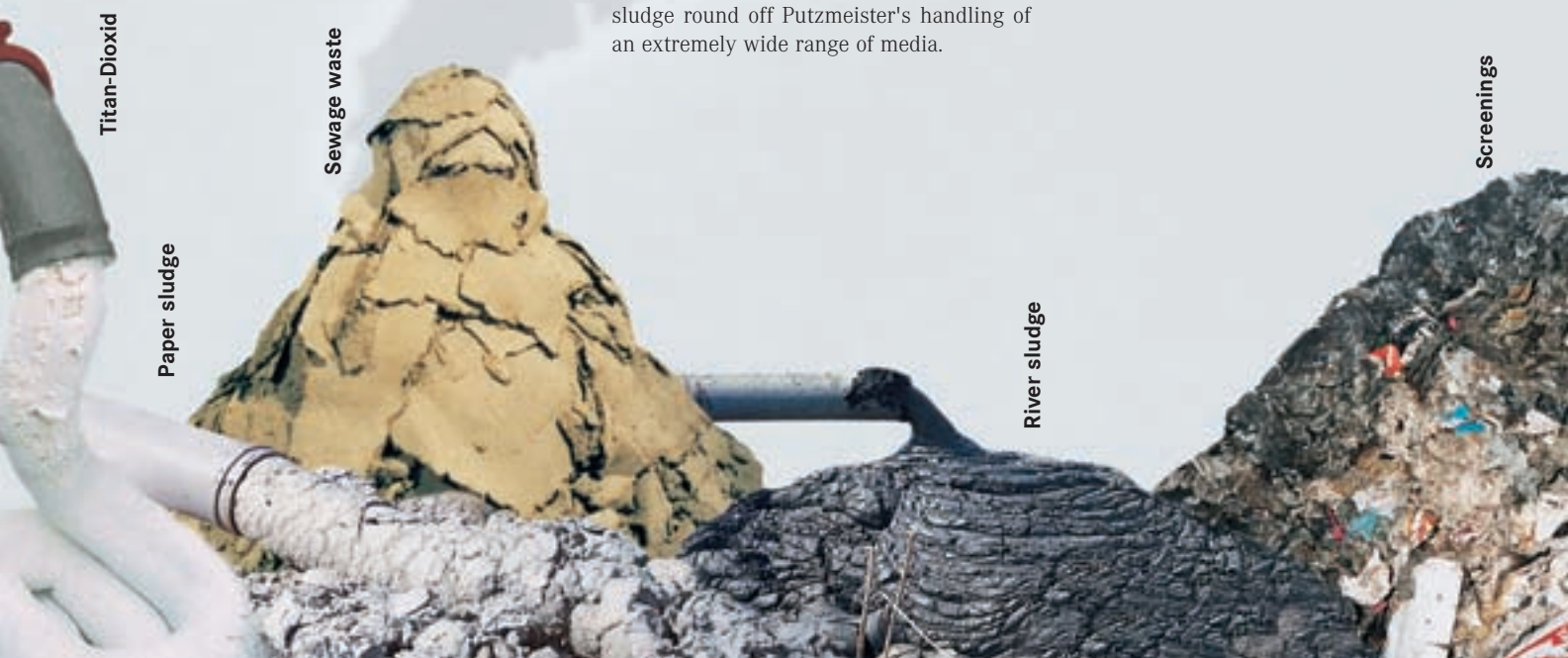
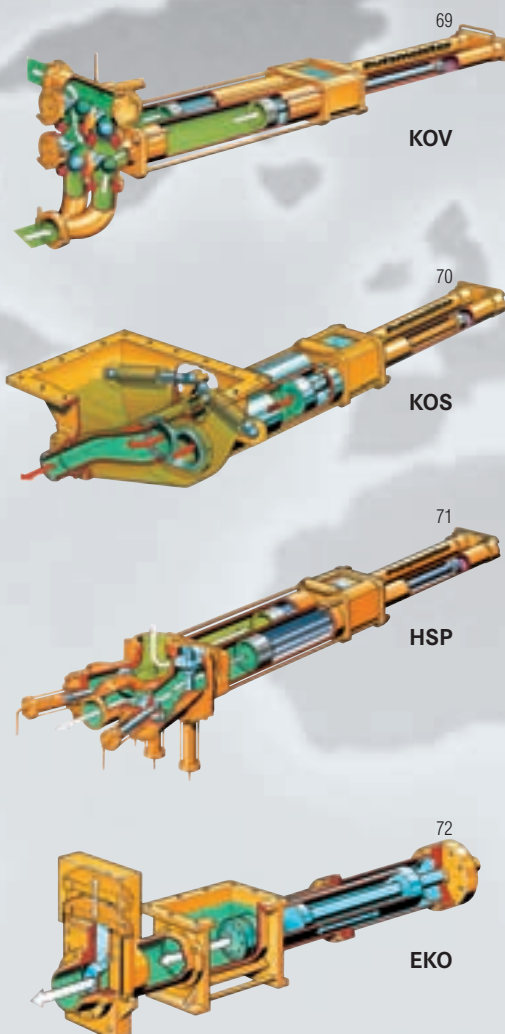
From the beginning, pumping hazardous waste and sewage sludge is a widespread application for the Putzmeister industrial pumping division. In order to reduce the volume and achieve better burning, the sludge is intensely dewatered, so that it exhibits as high a solids content as possible.

This compact material is pumped by the Putzmeister high density solids pump first to landfill and from the 1990s mainly to incinerators. In this way, Putzmeister technology always adapts to individual system design: sometimes sewage sludge is mixed with domestic waste before incineration, other times the sludge is injected together with coal into circulating fluidized bed furnaces, or a coal-lime mixture is carried into pressurised circulating fluidized bed furnace, as it has been for the past twenty years in the day-and-night operations in the Värtan power plant near Stockholm (the process is currently undergoing a renaissance). In the process, the metering and injection pumps from Putzmeister operate like injection pumps on a supercharged diesel motor. In the same plant, the operator also uses large Putzmeister transport pumps to transport the coal mixture from the silo at Stockholm port to the power plant. Or the Putzmeister high density solids pumps pump the drained sewage sludge into the fermentation drum of a composting plant, – also one of the solutions to problems which are still requested today.

High density solids pumps for the worst

The pumping of hazardous waste, filter cake, paste-like residues from the chemical industry or fly ash suspensions from power plants are typical examples of the range of media which can be pumped using piston pumps up to the present day. The decisive advantage of pumping these media and material masses is that they are delivered through a connected, hermetically-sealed pipeline. In contrast to traditional band-conveyors or chain trough conveyors, unpleasant odours or contamination due to falling material are prevented thanks to transportation by pumping.

In order to achieve the best results, the Putzmeister Systems Engineering division developed different delivery systems. For instance, high density solids pumps with ball valves (KOV) or seat valves (HSP) are suitable mainly for pumping fine-grained media. Putzmeister pumps with S transfer tubes (KOS) on the other hand have advantages for pumping particularly dry, fibrous or rough high-density solids, which can also be transported at high pressures and over long distances: for extremely dry material with large embedded foreign bodies such as shredded steel fibres with hazardous waste, Putzmeister designed the single-piston pump (EKO), which can also be fitted with trimming pistons. Silos with a discharge system for temporary storage of discontinuously delivered, but continuously drawn off sludge round off Putzmeister's handling of an extremely wide range of media.





Putzmeister high density solids pump under a silo in a hazardous waste incineration plant (on the top left in systematic diagram)



Putzmeister pumps for mining

If the Putzmeister high density solids pumps' delivery jobs are often already unusual in themselves, the Putzmeister applications in mining set benchmarks yet again. For example, high density solids pumps pump the mining residues stored aboveground – mixed with water and cement – into the excavation void underground, whether at gold, iron ore, non-ferrous metal or salt production mines. In the process, distances of several kilometres must often be overcome, so the pumps and hydroelectric drives have correspondingly high-capacity designs.

Sludge removed from the Teersee ('Tar Lake')

In the 1990s, the remediation of the gigantic Teer repositories at the Schwarze Pumpe site (near Cottbus) with a buoyant Putzmeister high density solids pump aroused particular interest. Over 500,000 tons of creosote residues were accrued in GDR times as a by-product of town gas production, stored at repositories and threatened to contaminate the groundwater. In its eight-year use, a large Putzmeister high density solids pump from a floating pontoon with dredger, material feed device, foreign body trimming device, mixing trough and reciprocating screen, pumped the creosote-solid mixture via a floating pipeline into a fuel preparation plant and disposed of it in an environmentally-friendly manner. The sticky creosote residues required regular maintenance of the plant. Due to the toxic 'tar lake' emissions, breathing equipment was stipulated as mandatory for Putzmeister after-sales service employees.

High density solids pumps for land reclamation

The use of gigantic Putzmeister high density solids pumps for land reclamation is spectacular every time, most of all off the Japanese coast. The pumping stations also work while afloat, from pontoons or ships. The machines are designed for outputs of up to 500 m³/h. According to the method for man-made land reclamation, the new Nagoya airport was built in the sea, for example, and started operating in February 2005. Currently, in the bay of Tokyo, the major airport of Haneda is being extended using similar Putzmeister pumps.



This large high density solids pump is controlled via seat valve and pumps gritty mine water out of a mine in Lorraine



The 500,000 tons of toxic, sticky creosote solid mixture containing phenol from a former repository were pumped using Putzmeister pumping technology into a treatment plant



For land reclamation – as here off the Japanese coast – particularly high-capacity Putzmeister high density solids pumps with an hourly output of 500 m³ are used



1983 1984 1985 1986

Cutting-edge technology on large construction sites

In the past five decades, Putzmeister has written numerous technical histories. At almost regular intervals, their own top performances in terms of long-distance concrete pumping were surpassed and new world records in high-rise concrete pumping set. If we had been in a position at the end of the 60s to pump concrete at a pressure of approximately 30 bar, Putzmeister can certainly cope with concrete pressures of over 300 bar today! Here is a summary of the development of high-rise concrete pumping in steps of 100 m.

Putzmeister world record in high-rise concrete pumping

- 310 m at the Frankfurt telecommunications tower (1977)
- 340 m at the Gotthard tunnel (1978)
- 432 m at the Estangento-Salente pumped storage power station (1985)
- 526 m at the Riva del Garda pumped storage power station (1994)
- 606 m during construction of the Burj Dubai (2008)

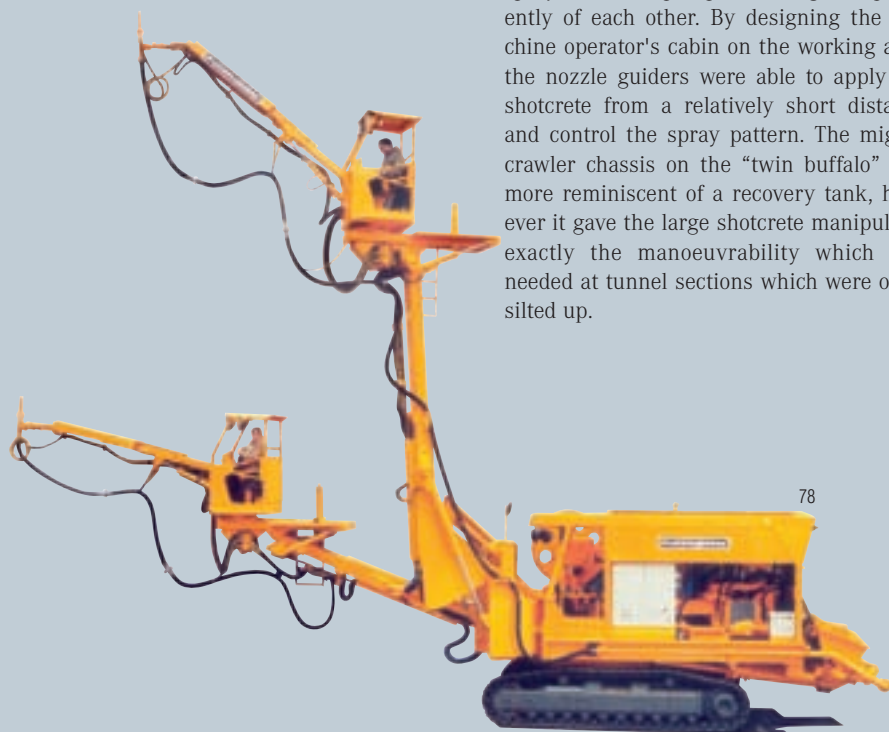
Putzmeister also already began to write history early with top performance for long-distance pumping range.

Putzmeister milestones in long-distance concrete pumping

- 1,520 m during the construction of a wastewater tunnel for the Lake Chiem ring sewer system (1989)
- 1,661 m pumping distance while concreting a drinking water tunnel near Barcelona (1992)
- 2,015 m concrete pumping distance during remediation of a compressed water tunnel near Le Refrain (1997)
- 3,600 m during backfilling of the circular gap at the Schäftlarn drinking water tunnel (1980)
- 11,000 m at the Walsum pit during backfilling of floatation mountains (mixed with filter ash and suspensions from coal washing: 90-100 m³/h delivery rate at 120 bar pump pressure (1990-2007)

In connection with the extension of the Deutsche Bahn (German railways) high-speed route network, in addition to completion of a lot of bridges, the construction of numerous railway tunnels was required. To safeguard the tunnelling of the partly two-track tunnel sections with correspondingly

large cross section, Putzmeister developed the so-called “twin shotcrete buffalo” for Hochtief and other large construction companies, which was used from 1984 onwards. This concrete spraying machine, the largest ever built, had a diesel-electric drive, two highly-moveable working arms and two spray concrete pumps working independently of each other. By designing the machine operator's cabin on the working arm, the nozzle guiders were able to apply the shotcrete from a relatively short distance and control the spray pattern. The mighty crawler chassis on the “twin buffalo” was more reminiscent of a recovery tank, however it gave the large shotcrete manipulator exactly the manoeuvrability which was needed at tunnel sections which were often silted up.



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Twin shotcrete buffalo on a tunnel construction site for a new high speed line of German railway

1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

50
Years

Large boom development milestones

For its truck-mounted concrete pumps, Putzmeister already presented booms with 46 m and 50 m vertical reach at the start of the 80s. The enormous working area of this boom made the industry sector sit of the time up and take notice. Due to the restricted licensing options, the machines were built on semi-trailers. During pumping operations, a patented pullock device connected the motor vehicle with the semi-trailer, and the tractor unit served as ballast. A few years previously, these large boom truck-mounted concrete pumps would still have seemed utopian.

Flexible “five-arm boom”

When the first large boom truck-mounted concrete pump M 52 “five-arm boom” was delivered in 1986, Putzmeister had not only improved the net reach and vertical reach, but thanks to the 5-arm technology, made it possible for truck-mounted concrete pumps to work a significantly more flexible working area. Nevertheless, at the start we were only counting on small unit numbers. In the meantime, this compact large boom heads the fleet of numerous pumping service providers at home and abroad.

In the same year, Putzmeister presented further pioneering achievement with the M 62-5 (first generation). The machines were considered to be the cart horse of large concrete pump fleets and are still operating today in Saudi Arabia and Spain to the satisfaction of their operators. With this development, Putzmeister was approx. twenty years ahead of the competition. Since 2005, the second, lighter generation of the 60-metre large boom class has been used by discerning pumping services in Europe, North America and the Middle East. In 2007, on customer request, development of a 70-metre boom was started. Putzmeister will supply the first of these large boom truck-mounted concrete pumps just in time for the 50-year anniversary – of which more later.



Concrete placing booms with five sections offer a considerably more flexible working range. Above a Putzmeister M 52-5, below a M 62-5 (first generation, 1986).



1981 1988 1989 1990 1993

Pioneer on the Eurotunnel

Putzmeister technology made a significant contribution to the construction of the 50 km Eurotunnel, described by the American Society of Construction Engineers as one of the seven modern wonders of the world. Between 1988 and 1994, 15,000 workers ensured that the 15 billion € tunnel project was pushed forward and completed. Putzmeister know-how played a decisive role in boring and securing the three tunnel pipes laid on average 40 m under the seabed.

Tunnel pipes securely anchored

Putzmeister supplied three ultramodern mortar injection and backfilling systems, with which the excavation void between the lining segment ring and the surrounding rock mass was concreted using special two-component mortar. In order to be able to produce and inject the exact quantity of quick-setting mortar mixture on site each time, Putzmeister had installed the plant in the rear carriages of the tunnelling machines. Here the components pumped in from outside were metered and intensively mixed by fluidised mixers. Putzmeister injection pumps completely filled the gap around the concrete lining segment with this material. It was important during this work that Putzmeister controls automatically adjusted the injection pressure to the ambient pressure. Since work continued at the Eurotunnel construction sites seven days a week and around the clock, those responsible also expected a correspondingly high level of reliability from Putzmeister technology. They were not disappointed.

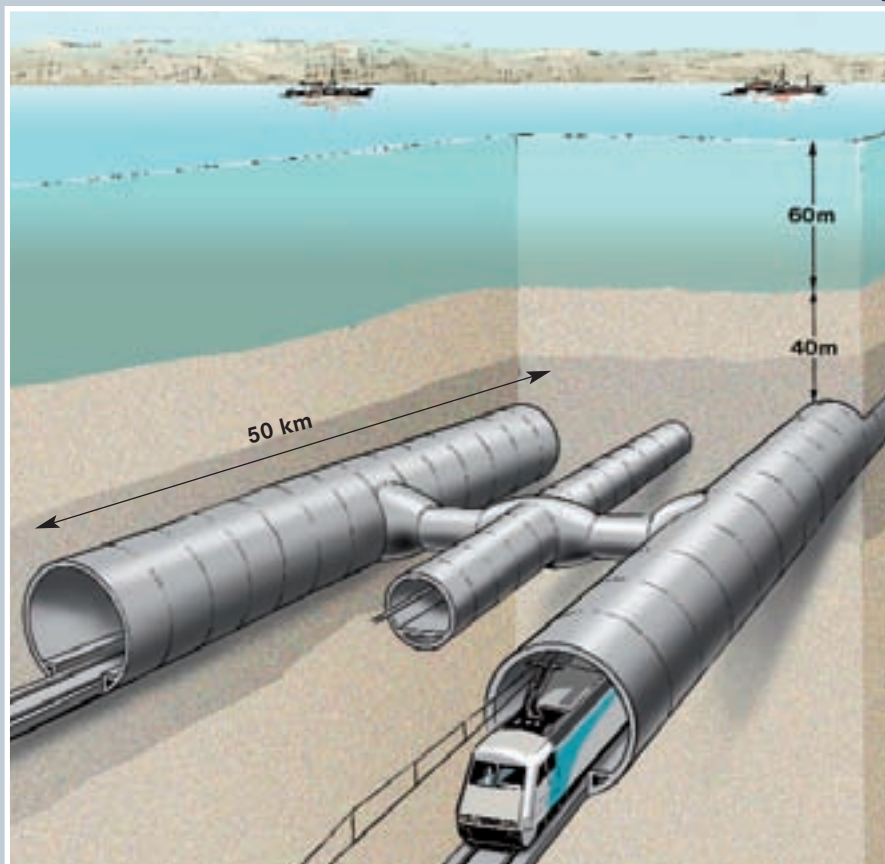
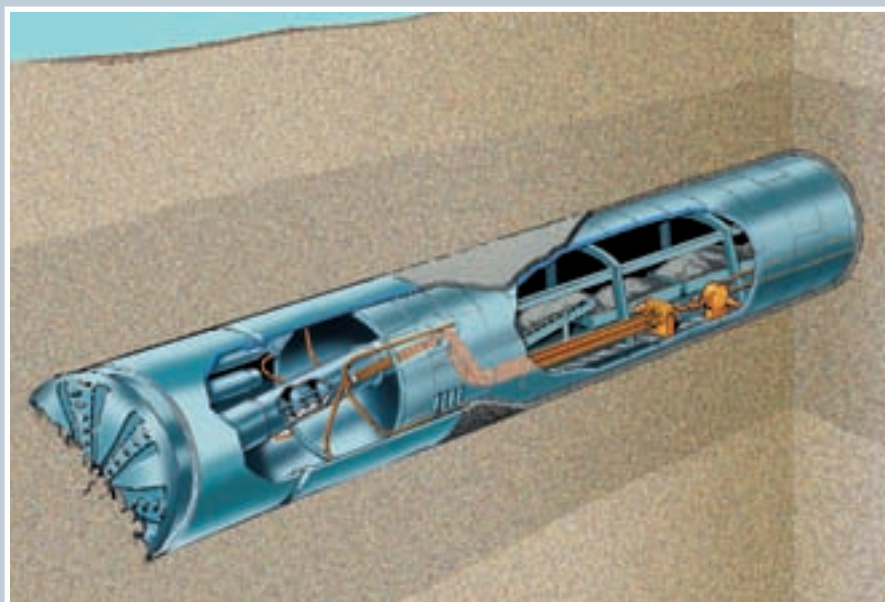


Illustration of the Eurotunnel with the two main tunnels, the service tunnel and one of the connecting tunnels



Method of operation of the mortar injection system for backfilling the excavation void behind liner segments

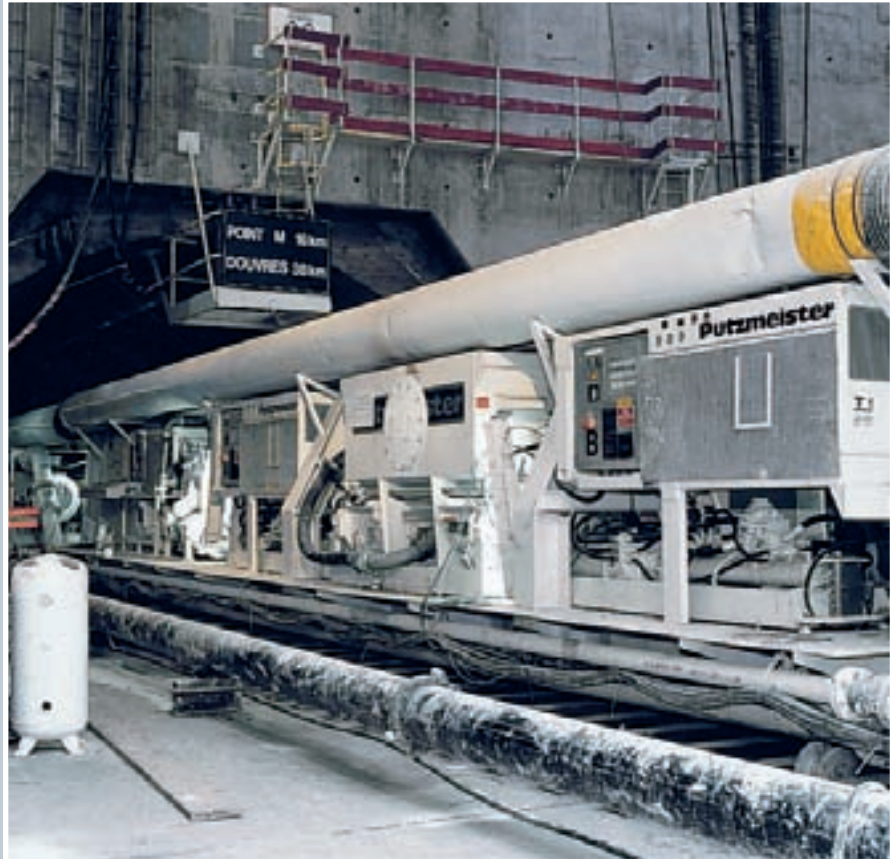
1994 1995 1996

50
Years

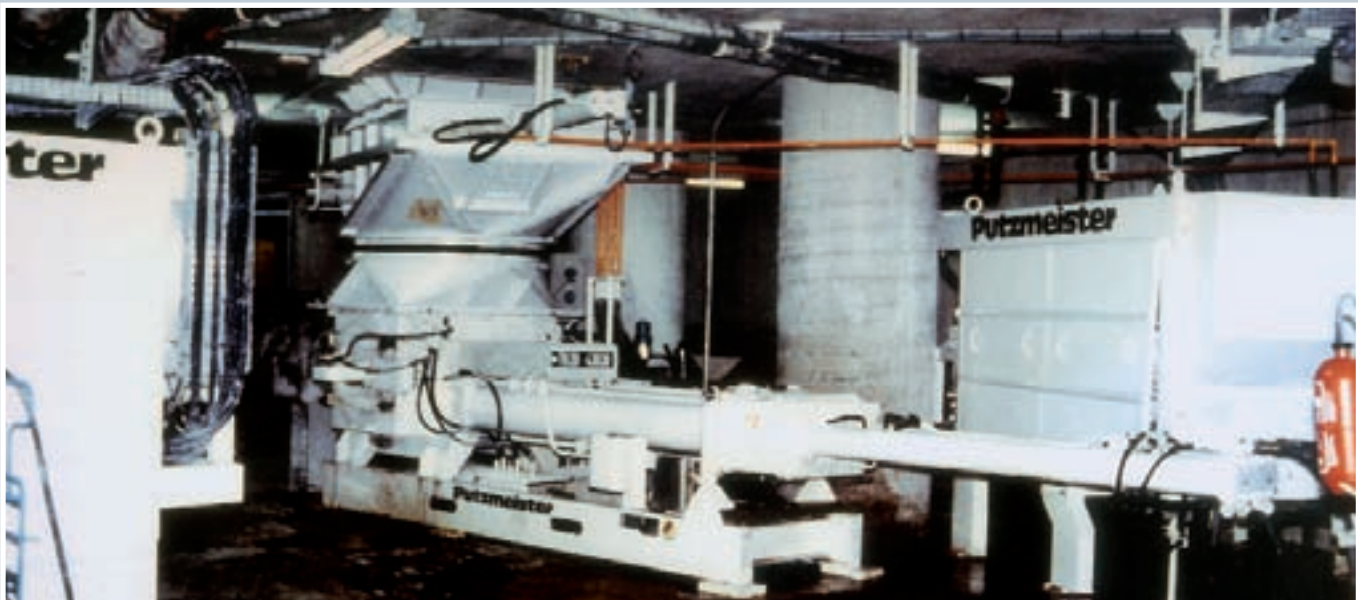
Putzmeister pumping station pumps excavated tunnel material over 1.8 km

During the construction of the Eurotunnel, banner headlines were provided by the mighty high-density solids pump facility which Putzmeister had installed on the French side below the station for breaking and mixing the excavated tunnel material. The facility consisted, among other things, of eight large-volume high density solids pumps, which together were designed for delivery rates of 1,200 m³/h. The facility pumped the coarse-grained chalk pulp with embedded flint over a distance of 1.8 km to a landfill site, where the material hardened in a relatively short time to form stable ground.

Similar models of Putzmeister high density solids pumps had been used shortly before on the underground in Lille, where comparable ground conditions prevailed. On previous attempts, it had already been shown that the flushing that had been originally planned using large amounts of water was not practical for excavated chalk.



The Putzmeister mortar injection systems were located approximately 50 m behind the tunnelling machine in the rear carriages



One of a total of eight large Putzmeister excavated material pumps with hydraulic drive unit (on the right in the picture)

1981 1988 1988 1989 1990

Putzmeister technology for an emergency

Putzmeister concrete pumps and booms are not only used for the construction of buildings, bridges, tunnels, power plants, etc. They are required to stand in time and again, in order to prevent wider environmental damage or even to respond in the face of catastrophes.

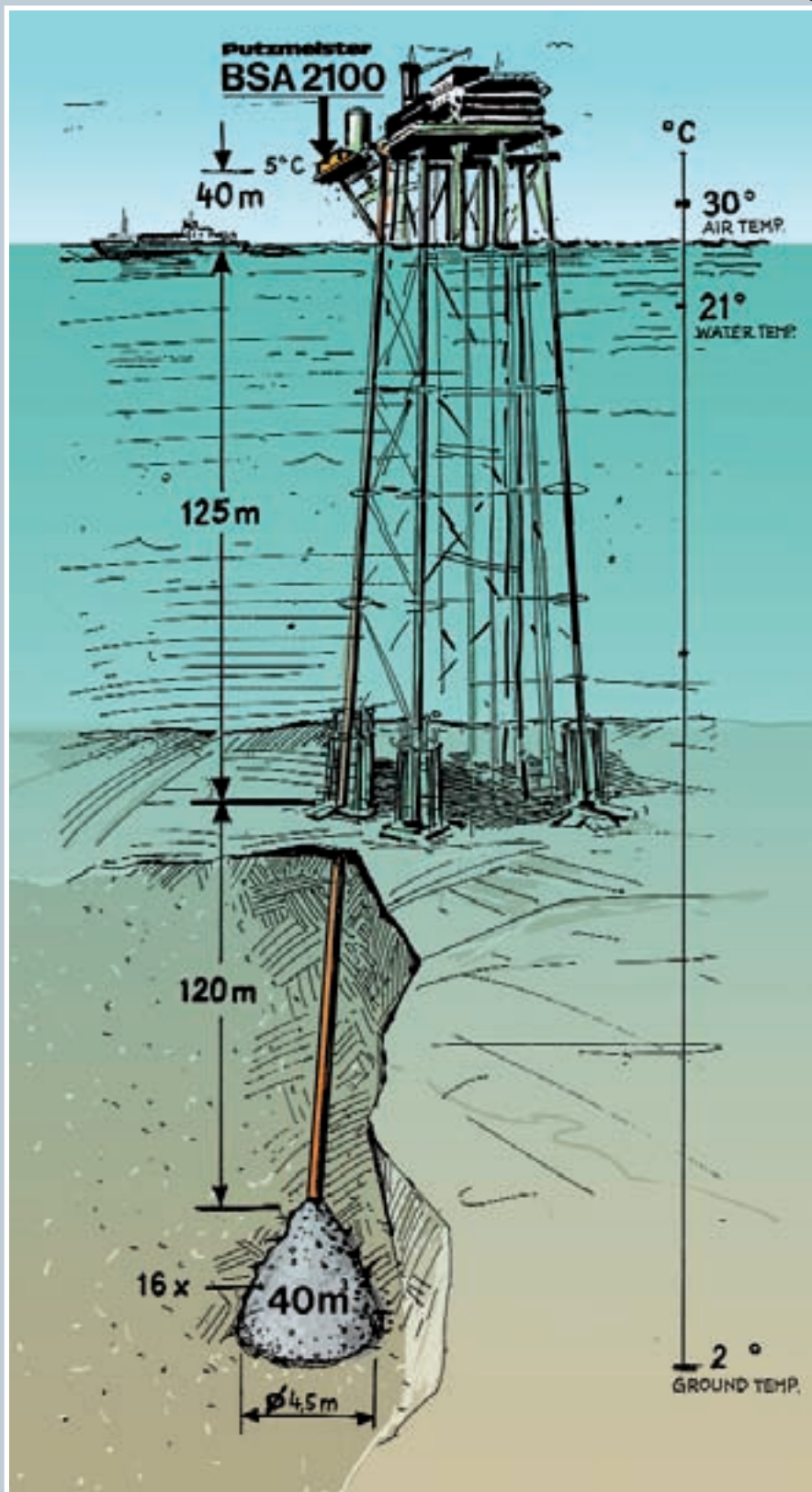
It is only mentioned in passing that Putzmeister has been carrying special extinguishing arms in the range since 1988, which are designed for installation on fire engines. Independently of this, Putzmeister customers report time and again on the use of their truck-mounted concrete pumps to extinguish major fires, even if this does not correspond to the proper use of the machine. But temptation is great, since the hourly water throughput of a 160 m³ concrete pump facility often exceeds the output of a fire brigade water pump.



Putzmeister truck-mounted concrete pumps as water cannons (III. Latz)

Natural gas delivery platform saved off Australia

In 1988, for example, 135 km off the Australian coast, a stationary Putzmeister concrete pump helped save the "North Ranking A" from sinking into the seabed, which at the time was the largest natural gas delivery platform in the country. In several complicated steps, a special cooled fine concrete had to be injected into 16 artificially created voids under the support legs of the delivery platform at high pressure. Putzmeister had adapted the concrete pumps appropriately to the strict fire protection regulations and supplied various components made of V4A steel. This had been preceded by years of preliminary work by the emergency rescue team.



Complicated rescue operations at a jeopardised natural gas delivery platform using Putzmeister technology off the Australian coast

1991 1992 1993

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Years

Booms with spray nozzles combat oil pollution in Alaska

When the supertanker Exxon Valdez ran aground off Alaska in March 1989 and 40,000 tons of crude oil leaked out, immediate assistance was requested. In a cloak and dagger operation, Chemtrack, a company specialised in environmental protection measures, therefore hired 14 Putzmeister truck-mounted concrete pumps, disconnected the booms from the truck chassis and assembled the booms on floating rafts. The Chemtrack employees then connected the boom tip using hydraulically slewable carriers, to which eight nozzles each were attached. The equipment on the "oil pollution fire brigade" included boilers combined with oil burners. There was never a lack of combustible material for heating up the steam jet water, since in the meantime the oil slicks all around the rafts had expanded... These floating booms were used mainly in coastal sections that were difficult to access.



Booms with spray nozzles

Concrete pumps eliminate oily sludges

As a consequence of the Gulf War of 1990/91, the devastating damage started to be confined relatively quickly, which arose due to the destruction of the Kuwaiti oil loading station. Above all, a seawater desalination plant on the island of Abu Ali was threatened. The Saudi Arabian airforce therefore flew five stationary Putzmeister

concrete pumps to the region, in order to pump the oily sludge on the coast, including sand, flotsam and stones, through pipelines into containers. The people in charge on the Portuguese Atlantic island of Porto Santo also proceeded in the same way, when oily sludge on the coast was pumped by a Putzmeister concrete pump into a pontoon holding 20,000 tons during a five-week operation.



Oil sludge, sand, stones and flotsam were pumped by these concrete pumps, before the mud reached a seawater desalination plant

Putzmeister high-pressure cleaners remove heavy oil from Spanish coast

When the tanker Prestige sank off the Spanish coast in November 2002 and 77,000 tons of heavy oil threatened to contaminate the beaches of Galicia, it was again possible to avoid the worst by using Putzmeister technology. This time, employees of the Spanish Putzmeister subsidiary also participated in the clearing up and cleaning operations. Dyanjet high-pressure cleaners, which had been added to the range a year before, were used for the task.



Using Dynajet high-pressure cleaners off the Spanish coast, the heavy oil from a sunken tanker was removed

The most dramatic catastrophe which sticks in the memory, during which Putzmeister machines and Putzmeister know-how prevented the worst, is the atomic reactor accident at Chernobyl (April 1986). "Chernobyl" is still today a synonym for the fact that technology is not always controllable and catastrophes know no borders between countries. Many of the helpers at the source of the incident paid for the containment of the atomic radiation at the reactor with their life. There would have been many more victims, had ten of the largest available truck-mounted concrete pumps at the time, equipped with special radiation protection and partly video-monitored and remote-controlled from a distance of a hundred metres, not pumped enormous amounts of concrete into the reactor building and later into the protective shell of the sarcophagus.

Nuclear disaster required rapid action

On 26 April 1986, early in the morning at about 1 o'clock, reactor block IV at the Soviet Chernobyl nuclear power plant goes out of control during a routine exercise by the operating crew. As a result of a chain reaction, there is a massive explosion, which blows the cover off the 1,000-ton reactor core and destroys it. The explosion and subsequent fire release large quantities of radioactive material. Those responsible did not have much time to work out the details of complex, subsequent safeguards. Instead, it was a matter of acting quickly to contain the consequences of the catastrophe – the contamination of enormous areas of land. Putzmeister concrete pumps also played a part in this.

Through the dumping of approximately 5,000 t of sand, clay and lead from helicopters in the first weeks after the disaster, the heat escaping from the reactor block is successfully contained and the dangerous radiation absorbed. The graphite fire is finally extinguished and the escape of radioactive materials slowed by feeding in nitrogen.

In the early summer of 1986, the department responsible in the Soviet foreign trade ministry and Putzmeister sign a contract for the delivery of ten M 52-5 truck-mounted concrete pumps with 5-arm large booms, the truck-mounted concrete pumps with the longest reach available at the time, with "special equipment". The extras include two adjustable video cameras per machine, mounted on the rear left-hand supporting leg and on the tip of the boom. These are intended for observing the filling of the hopper and the actual concreting work from a distance. Moreover, it has to be guaranteed that the truck-mounted concrete pumps can even be operated from a distance of up to 800 m via remote control and by cable radio control. Also, control and observation of the machines should also be possible from the cab – a monitor is fitted in place of the passenger's seat. Incidentally, the Soviet side would have liked to order the new M 62 long-reach boom pumps. However, these machines were still in development at the time and not due to be delivered until Autumn 1986.

Special equipment to protect against radiation

The special equipment on four of the machines also includes a lead hood (weight approximately 4 t) to protect the cab from radiation. When the lead casing is attached, the driver can only get into the cab via a hatch specially cut into the roof. Four small, slitted windows provide front and side visibility. Here too, radiation protection is provided by lead glazing; the sensitive video camera optics are similarly protected. The first two machines leave the Putzmeister works at the end of June. One factor in the prompt delivery is the readiness of several

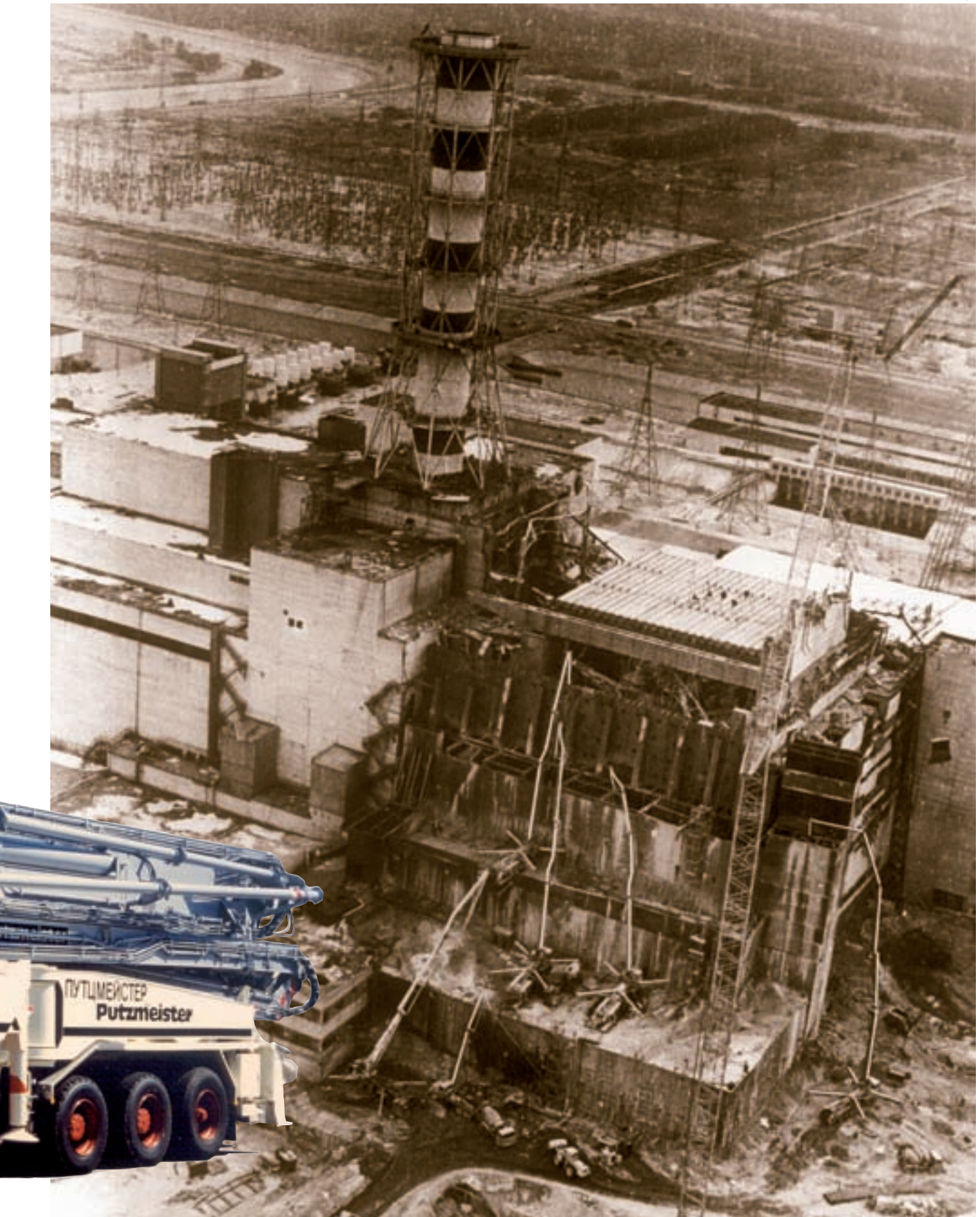
customers to make available machines which were really intended for themselves and the 5-axle chassis they had ordered. There are also many Putzmeister employees, however, who work late into the night, are available at weekends and postpone their planned annual holidays. The last of this order's large boom concrete pumps are finally handed over in September 1986. Three stationary high pressure concrete pumps are also delivered. These have the task – as was learned later – both of loading several of the truck-mounted concrete pumps via pipelines from a distance, and of delivering concrete through a 600 m long delivery line for a tunnel under the reactor building. This tunnel is reason for the manufacture of a 2.5 m thick protection plate under the reactor block.

Everything kept secret

An anecdote on the side: the Putzmeister sales representative responsible for Eastern Europe felt the effects of how sensitively the Soviet side reacted on the subject of "combating damage to the Chernobyl reactor". Despite meetings arranged a long time in advance, in the early summer of 1986 he was not received in Moscow by his Soviet contact. Appointments rearranged for the days that followed were repeatedly cancelled, so that the Putzmeister employee finally abandoned his visit to Moscow. During the Lufthansa flight to Frankfurt, he leafed through the current edition of the German magazine "Der Spiegel". And then it became clear to him why he had been put off several times by his Soviet counterpart: in a detailed article, the Hamburg news magazine reported on the radiation protection equipment on the Putzmeister concrete pumps, two of which had just crossed the border between



For their work in Chernobyl, truck-mounted concrete pumps were equipped with protective lead covers and remote-controlled video cameras for the first time



Large boom truck-mounted concrete pumps filling the steel moulds arranged in the pyramid shape of the protective wall

West and East Germany heading east. According to the article, the heavy lead covers had been transported on a separate flat bed truck. The destination of the freight was presumed to be Chernobyl...

The restrictive information policy of the Soviet authorities meant that during operations at the Chernobyl reactor, where the accident occurred, it was prohibited to make details of the operations public. Meanwhile, it came to be known that the first concreting operations were carried out initially using pumps which were available locally at short notice. With the Putzmeister concrete pumps came approximately twenty machine operators via Moscow to Chernobyl, many of whom already had experience of operating Putzmeister truck-mounted concrete pumps. They trained a further 80 drivers on how to operate the machines. Most of them have died.

According to information from a manager in the department responsible at the time at the Minergo Ministry, the first Putzmeister truck-mounted concrete pumps delivered to Chernobyl pumped 80,000 m³ of concrete in only three months – and without a single fault. A total of about 400,000 m³ was required to encase the remains of the reactor.



Machine operator Haertdinov Buchir in front of his M 52-5 (Ill. Buchir)

Machine operator Baschir is thankful

Twenty years later, Putzmeister received an e-mail from Haertdinov Baschir, one of the surviving machine operators from Chernobyl. Here is what he said:

“Greetings !!!

My name is Haertdinov Baschir, and I took part in cleaning up the damage at the Chernobyl nuclear power station. I decided to write this letter of thanks on the occasion of the 20th anniversary of the Chernobyl

disaster. I worked as a driver on one of your truck-mounted concrete pumps and delivered concrete into the reactor block 4 area of the nuclear power station where the disaster occurred. It is thanks to your “Putzmeister” technology, that we were able to clean up this dangerous accident. Your concrete pumps worked non-stop around the clock. They were only switched off to check the oil level in the engine. As confirmation of my words, I am sending you the photos. Once again a big thank you for your technology!!!”

In the meantime, the concrete shell has perished, steel girders are rusting, walls threaten to collapse and rainwater seeps through cracks into the interior. Today there are still 120 workers there on a daily basis (another source speaks of “hundreds”), trying to stabilise the building as far as possible. There are plans for the construction of a “safe shell”. These provide for a gigantic, 100 m tall arched construction, which stretches over 250 m wide. Due to the high level of radiation still present around the sarcophagus, plans are for the arch to be constructed some distance away and towed in sections on Teflon rails over the reactor where the accident occurred.



The Putzmeister large boom pumps were either fed from several hundred metres away by stationary concrete pumps or – as here – directly from truck mixers

1989 1990 1991 1992

Wibau becomes a modern Putzmeister machining centre

In February 1989, a message took the construction machine sector by surprise: Putzmeister takes over Wibau.

The tradition-steeped company from Gründau-Rothenbergen near Frankfurt had an excellent reputation since the 1950s as a manufacturer of asphalt mixing plants. From 1965 onwards, the founder of Wibau, Karl Matthias, started manufacturing truck mixers and concrete pumps under licence from the American manufacturer Challenge-Cook. These concrete pumps operated according to the so-called "squeeze pump" principle and were sold very successfully as rotor pumps in Germany too. Since the rotor pump system soon reached its technical limits, Wibau first worked together with piston pump manufacturer Scheele in order to supply, later along with the knee valve, its own piston pump system independent of partners. From 1980, Wibau belonged (in addition to companies such as Hanomag, Hamm, Lanz, Zettelmayer, etc.) to IBH Holding AG which, as parent company, filed for bankruptcy in 1983. In the course of the

collapse of IBH, Wibau was in the hands of the receiver until the start of 1989. Despite the tense situation, not only were remainders and new machines were sold by Wibau in the course of this, but the technology was also further developed – both for asphalt mixing plants and on the concrete pumps front. From 1986, the Wibau truck mixer concrete pumps with rotor system became a serious competitor for the Putzmeister PUMI®.

No luck in the asphalt business

Initially, Karl Schlecht tried to integrate and continue both business sectors. This was achieved relatively smoothly for concrete pumps. Thus, the Putzmeister rotor PUMI® grew out of the former Wibau Ro-Mix truck mixer concrete pump. It occupies a firm place in the ready-mixed concrete industry and achieves respectable sales figures down to the present day. The opportunities at the start seemed not to be too bad for the asphalt mixing technology because Putzmeister had already had dealings with the black material for road paving and built road milling machines, for example. Karl Schlecht remembers:



The Wibau truck mixer concrete pumps with rotor were in competition with the Putzmeister PUMI® with piston pump in the second half of the 1980s

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Karl Schlecht at the address of the official receiver in front of Wibau employees (centre of picture). The takeover by Putzmeister is announced (1989).

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1981 1989 1991 1992 1993

97



Karl Schlecht initially tried to integrate Wibau asphalt technology at Putzmeister too

“The diversification begun and then abandoned in the 1970s with road milling machines, which we had built for the road construction company Schöllkopf, did not go any further because we did not have any application experience of our own and we also had a lot on our minds with our concrete and mortar pumps.

The asphalt plant business at Wibau was completely different, but we had no idea at all about asphalt mixing plants or handling asphalt. The best people from Wibau asphalt technology had already left at the time of our takeover and vital drawings and technical know-how were taken away by groups of former employees, who competed against us in newly formed companies. In addition, there was the fact that Wibau's reputation following the IBH bankruptcy was ruined, of course, and we were only able, therefore, to sell plants at a reasonable price. Some mixing plants found customers, however, due to the good name of Putzmeister, the new owner. But ultimately we only lost money on these. This is why I sold the Wibau asphalt plant business - without the land - to the company Astec in the USA at a financial loss. In any case, the dream of diversification with road construction machines could not be realised. The sector was too alien to us and we were too involved with mortar and concrete pumps. However, I learned a lesson from this, and from the

takeover a few years previously of the American company Thomsen, NEVER again to take over an ailing company.”

Capacities enlarged

However, the 1989 takeover of Wibau also took place more or less for reasons to do with capacity. As a pleasant side effect, Karl Schlecht also had two fewer competitors now, Wibau and Scheele. The official receiver for Wibau had in fact also handled the bankruptcy of the concrete pump manufacturer Scheele and transferred the Scheele engi-

neering documents and stock to Wibau in 1987. In addition, there were a lot of components and all the drawings from the two competitors, who were thereby out of the market.

A group of technicians and fitters, who had built concrete pumps and placing booms at Wibau, now took over the manufacture of the PUMI® with rotor pump. The team soon also started on construction of Putzmeister placing booms for truck-mounted concrete pumps. Some of the partly empty Wibau factories in Gründau-Rothenbergen were rented.

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Above: at the Putzmeister works in Gründau (formerly Wibau) ultramodern welding robots produce the placing booms for the Putzmeister Group (Ill. Werner). Below, an aerial photograph of the extensive area where the Putzmeister branch in Gründau is located.

1995 1996 1997 1998

50
Years

A new beginning in Gründau

In 1992, in the former Wibau production facility, a new era began. Putzmeister Maschinenbau GmbH (the Putzmeister steel construction works in Althengstett, see page 20) opened up a branch on the Wibau site and took on the former employees from the Wibau concrete pump and steel construction department. Shortly afterwards and after the closure of the former works agency Schoop (Rüsselsheim), sales and service subsidiary 3 (now the Gründau subsidiary) was also set up at this site.

Following the merger (1992) of the two Putzmeister works Althengstett and Gründau into "PUMAK" (Putzmeister Maschinenbau KG), the strategic realignment of the works structure occurred in 1995: for Putzmeister truck-mounted concrete pumps, the Althengstett production site now supplied all the base structures and the Gründau works all the arm assemblies.

In 2000, the Putzmeister subsidiary PUMAK was integrated into Putzmeister AG. Over the following years, Putzmeister consistently modernised both works with targeted investments and expanded them into extremely efficient machining centres. The welding work is taken on by robots working with great precision, however, at points relevant to safety or which are difficult to access, the ability of qualified welding specialists is still required.



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Refugees from the GDR introducing themselves at Putzmeister

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Putzmeister's commitment to East Germany

In 1989 at Putzmeister, as in the previous years, the order books are full, production is booming and qualified personnel are urgently sought. When the first refugees come to the Stuttgart area from the GDR via Hungary, some welders, machinists, motor mechanics and electricians find a new employer in Putzmeister. The company also helps out with house-hunting and negotiates with the authorities regarding applications for planning permission for provisional accommodation suitable for families on nearby company sites. At the beginning of 1990, Putzmeister agrees a collaboration with VEB Baumechanisierung Halle, which – in addition to other machines – also manufactures concrete pumps and placing booms and sells predominantly to Eastern Europe.

Following German reunification, Karl Schlecht reacts immediately. He does not take over VEB Baumechanisierung Halle, because there is no prospect of making the company competitive. Moreover, due to the political changes in Eastern Europe, the traditional export market of this Halle-based concrete pump manufacturer is increasingly breaking away. Instead, in East Germany a tightly-knit sales and service network is built up. Commensurate with the Putzmeister principle of demonstrating expertise locally through a network of support points, the Berlin branch was initially supported by a further site near Halle, which moved to Gera in 1997.

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The Putzmeister works in Althengstett is equipped with the most technically sophisticated machining centres available on the international market. Here, the large steel construction parts such as boom pedestals and base structures with support are manufactured with the highest levels of precision for the Putzmeister group.

1991 1992 1993 1994 1996

Active and capable abroad too

In parallel to the expansion of his own organisation, since the 60s, the Putzmeister founder had been investing in cooperations and licence agreements with capable partners in emerging countries. So good connections with China, Japan, Cuba, South Korea, India, the Czech Republic, Russia and Turkey were already in place at an early stage. Depending on the agreement, Putzmeister supplied either individual assemblies or subassembled machine models, in any case, though, the actual core pumps and the hydraulic system components.

KS: "In order to win the trust of customers in far-off countries, I already had the impression early on that we needed to be present with our own assembly plant and increasingly local part production on site. However, we were seldom fortunate with licence agreements. For example, as early as 1962 I had concluded the first licence agreement with the Japanese company ShinMaywa. Due to the completely different mortar composition and plastering techniques, our machines were not successful in Japan, however, compared to the very simple rotor pumps which were the standard there. At the end of the 90s, ShinMayma then discontinued production of our mortar pumps ..."

At the end of the 80s, Putzmeister in Shenyang, in Northern China, concluded a licence agreement with a construction machine company for the local assembly of stationary concrete pumps.

KS: "Due to considerable problems in our collaboration with this state-run company and with our dealers, who were still working from Hong Kong at the time, this project was also not successful. After the decision was made at the start of the 90s to build our own works in Shanghai, we no longer continued this collaboration."

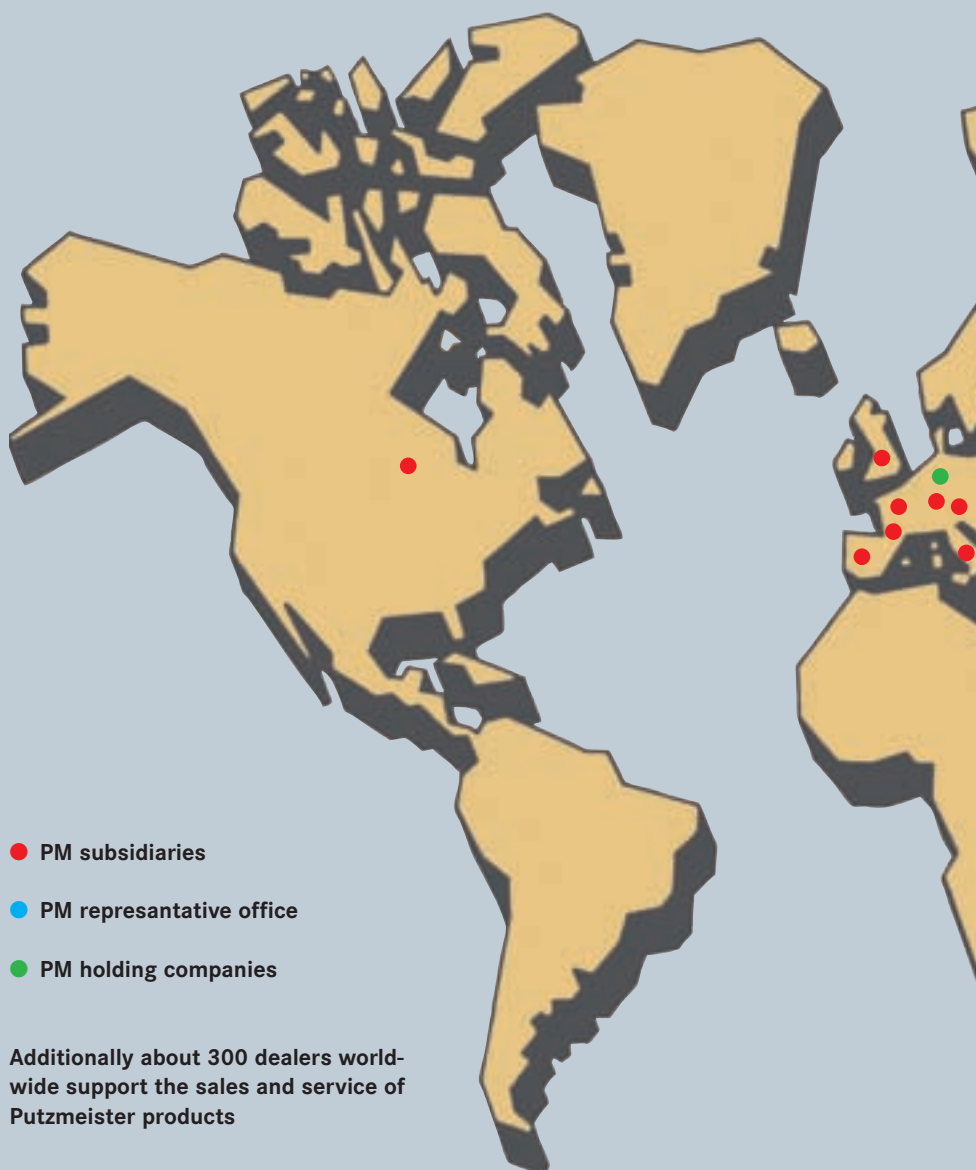
New subsidiaries since the beginning of the 90s:



Putzmeister Japan (1992)



Putzmeister Shanghai (1996)



1997 1998 1999 2000

50
Years


Putzmeister Korea (1997)

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A licence agreement was also signed in the 1980s in Korea, with Daewoo Motors.

KS "In Korea it was not possible at the time to set up our own company, and imports were very restricted. While Putzmeister was still able to win considerable market share there, our licensing partner – due to its size and variety of products – neglected to support the concrete pump customers and the supply of spare parts. The company JunJin, which was involved in the manufacture of some of our spare parts and in assembling our units, later became a competitor!"

At the end of the 1970s, Putzmeister concluded an agreement with its Turkish agent Tatmak (Istanbul) to manufacture compon-

ents and for assembly of certain types of concrete pump on a licence basis. Over the years, this became an important manufacturing plant with an annual production of over 200 concrete pumps. KS: "In order to strengthen the partnership and help Tatmak get through the economically difficult years, in 1999 we took a financial interest in the company and further extended our commitment later. Finally, in 2007, Putzmeister took over the remaining shares in the company from the shareholders and, at the same time, set up its own Putzmeister works in Cerkezköy. This Putzmeister works in Turkey (PTR) had since begun to supply Putzmeister customers in Turkey and in some export markets."

The Putzmeister works founded in Brazil in 1972, initially only in the form of a financial interest, was finally closed in 2001 after many loss-making years. Afterwards sales acquired a local agent.

In South Africa too, the founding of the Putzmeister subsidiary (PMSA) goes back to 1972. Despite many difficult years, Putzmeister held onto its site on the African continent. Since 1990 PMSA, incorporating Sales, assembly hall, After Sales department and replacement parts store, has been located in its own new buildings. Due to the improved economic situation in South Africa, PMSA has registered a significant upswing since 2000.

The subsidiaries founded in the 1970s (Italy, France, Spain, Great Britain, USA, Brazil and South Africa) were joined in the 1990s by several new foreign subsidiaries. These included Japan in 1992, China in 1996 and South Korea in 1997. In addition, several liaison offices in important markets supported the sales activities of the Putzmeister dealers, such as the Representative Offices in Moscow (established in 1993), Singapore (founded in 1996) and in the United Arab Emirates (opened in 2004). Thanks to these various measures, Karl Schlecht succeeded in serving important markets worldwide to an ever-increasing standard.



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(April 2008)

1931 1944 1995 1996

Putzmeister's commitment to the USA and the company's history

From 1994 onwards, Karl Schlecht relocated the activities of the American Putzmeister subsidiary from the Gardena site (California) to Sturtevant (Wisconsin). Due to the shrewd model policy and tumultuous growth, production and management at Putzmeister America had to be expanded several times from the middle of the 1990s onwards.

KS in retrospect: "In the USA and Canada, American Pecco initially took over distribution of Putzmeister concrete pumps in 1972. The company marketed Peine concrete cranes in North America and had a countrywide distribution and service organisation. Putzmeister plaster machines had little market opportunity over there at that time due to the widespread precast part construction method. Other materials, such as gypsum and fire protection mortar, were applied with machines from the local manufacturer, Thomsen." This company will be discussed later.

At the end of the 1970s, American Pecco began manufacturing Putzmeister concrete pumps with trunk system under licence, initially near New York City, later in Houston (Texas). Karl Schlecht's stated aim, however, was to have a presence with a Putzmeister works in North America, in order to supply the agent locally and to hold on to specialist knowledge. When the Thomsen company, manufacturer not only of mortar but also concrete pumps, filed for Chapter 11 bankruptcy in 1982 and was therefore involved in composition proceedings, Putzmeister assumed financial responsibilities and took over the production facilities of its former valued competitor in Gardena on the west coast of America. In place of the flapper system, the Putzmeister-Thomsen machines (the name and its long tradition are kept initially) were equipped with the Putzmeister S transfer tube. This allowed KS to avoid breaches of contract with the Putzmeister dealer and licensee American Pecco. The collaboration with Pecco ended in 1987, after the company had been sold to investors.

Orientation principles

All these successes and the readiness to be there for customers in all circumstances were no accident. Karl Schlecht formulated a values catalogue for himself, his company and Putzmeister employees, in which he acknowledges customer satisfaction as the highest priority and which puts cooperation with suppliers on a fair footing, but also demands responsible behaviour at a high level in his own company. The core statements are to be:

- qualitative
- innovative
- flexible
- competent
- hard working
- cost and value-conscious

With these business principles and the strong will to set an example with and implement these principles in his own company, Karl Schlecht was certainly many steps ahead of other companies in the 1990s.

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Putzmeister America in Sturtevant (Racine), US State of Wisconsin (2007)

The results did not come to nothing. Karl Schlecht: "We had – and have – very capable engineers. After it became apparent that the placing booms on our concrete pumps could be controlled precisely, we wanted to fit the boom tip with all sorts of equipment." In 1986, Putzmeister started on development work for the electronic boom control with partners from industry and research, in order to simplify handling of the, by now, 5-arm large boom. The prerequisites for these robotics were highly-developed control systems, sensors, angle and position measuring systems, computers and tailor-made software, which Putzmeister alone could not manage. As a result, in 1988, the highly flexible handling system requested by industrial customers with 5-element working arm was presented. At the suggestion of and with the encouragement of the German airline Lufthansa, this system was further developed into the "Skywash" by 1997. "These large mobile robots were then finally real 'master cleaners' ('Putz-Meister' in German), used for cleaning aircraft", according to Karl Schlecht. The know-how acquired during the computer development

for the Skywash was to supply important principles for the development of the electronic control system for multi-arm placing booms with only one joystick, which had long been requested. Although the Skywash did not become a commercial success, it made Putzmeister into the leading provider of electronic boom controls to this day. "So", says Karl Schlecht, "the big investments in this technology were worthwhile!"



Repair work on ships

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mechydronic®

At least by the time the Skywash system was developed, it became clear at Putzmeister how tightly interwoven mechanics, hydraulics and electronics are. For the interaction of these technologies which were each different in themselves, the Putzmeister founder

developed the higher level concept "Mechydronics". Today it constitutes the core of the company's technical expertise. In order to safeguard its technical lead, Putzmeister has offered training in mechydronics for years and works closely together with research institutes.

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Two of these large mobile robots clean a Jumbo in two hours

Putzmeister remote controls are writing history

The tumultuous development of the Putzmeister concrete placing booms was accompanied by that of the associated remote control. It became increasingly more comfortable and soon included additional functions.

The objective since 1970 had been to improve the reliability of the boom controls and to simplify operation. Many steps led finally – thanks also to the pioneering work on the Skywash – to the infinitely adjustable Ergonic Boom Control radio remote control with joystick operation. Putzmeister introduced the advanced “Follow-Me” function of the Ergonic Boom Control in 2004.

Where the machine operator at the end of the 1960s still had to lift, slew, fold out and bring the placing boom into position manually at the hydraulic valves, in the 1970s the first remote controls already existed. On these, the actual control device was still connected via cable with the boom hydraulic control block. As long as the working range of the concrete placing boom was still manageable, rolling out and rolling up the control cable was reasonable. However, once floors 20 m high were reached, a cable proved to be impractical as it could easily cause the machine operator to become caught on the scaffolding. The radio remote control, which Putzmeister introduced into the range from 1981, promised to simplify matters.

However, these devices too only worked in “black and white” mode at first, i.e. for each control lever movement, a pulse – “On” or “Off” – was sent to the boom hydraulics with

no intermediate position. Experienced machine operators were required in order to achieve as even a movement of the individual arms as possible using this “black and white” control system and to prevent the whole boom bouncing. Moving the boom by continuously pressing the control lever (“flipping”) was not to everybody's taste in any case.

When Putzmeister introduced its first radio proportional control in 1985, this signified a quantum leap, since the movement speed of the arms and the boom could now be adjusted proportionally according to the control lever movement.

A more advanced radio proportional control, which had a very attractive design as well, was then introduced by Putzmeister in 1998. Where the previous remote controls were housed in boxes similar to shoe boxes, Putzmeister had adapted the housing of the new Ergonic models ideally to the machine operator's daily work. The control system was not only more comfortable to carry, its innovative design enabled operation of 5-arm concrete placing booms using only one joystick. Since BAUMA 2007, Putzmeister truck-mounted concrete pumps have included an interactive graphics display as standard equipment.



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Unrivalled: the left-hand illustration shows a replica of a “black-and-white” cable remote control for a M-31-3 overhead roll-and-fold boom as it came back to Putzmeister from a demonstration tour of the Soviet Union in 1987. Since the original control had somehow got lost, clever machine operators locally had made this fully functional replica out of a metal casing, bakelite mounting plate and toggle switches. The right-hand illustration shows a B&W cable remote control for Wibau truck-mounted concrete pumps with three boom arms from the 1980s. The Wibau control system for 4-arm booms had an additional control lever.



111



112



113

The first Putzmeister radio remote control from 1981 already used digital technology and encoded frequencies.



116

This B&W cable remote control was supplied for placing booms with three arms until 1982.



120

B&W cable remote control for 3-arm placing booms, which Putzmeister offered between 1982 and 1992.



114

B&W radio remote control for concrete pumps with 4-arm placing boom (1985 – 1998).



117

Proportional Putzmeister radio remote control from the middle of the 1980s, protected by a circulating strip, on the left for 3-arm and on the right for 4-arm placing booms.



121



115

With “Follow Me”, the boom tip automatically follows the manually guided end hose



118

Proportional radio remote control for three (on the left) and four (on the right) placing boom arms, as carried in the Putzmeister range from approx. 1989 until 1998. The control systems had two or three joystick and (later) radio channel selector switches for four frequencies.



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Putzmeister equipped its truck-mounted concrete pumps with five-arm booms with this proportional radio remote control in the modern Ergonic housing between 1998 and 2001.



123

Putzmeister proportional radio remote control in the Ergonic Boom Control version with selector switch for five positions.



124

Any more? This radio proportional control with interactive graphics display, available since BAUMA 2007, is included in Putzmeister truck-mounted concrete pump standard equipment.

2000 2001 2002 2003 2004

Into the 21st century with enthusiasm

The period following the turn of the century was marked at Putzmeister by far-reaching technical developments and decisions in terms of distribution policy. These include

- Diversification of the product range
- Expansion of manufacturing on a global scale
- Cooperation with strategic partners
- Multibrand marketing for mortar pumps through investing majority shares in competitors
- Structuring into different technical market fields under the management holding of the KS foundations

Control technology revolutionised

From 2001 onwards, Putzmeister set a clear course with the mechydronics-based Ergonic Boom Control (EBC). This computer-aided system enables multi-arm concrete placing booms to be guided in all directions, comfortably and precisely, using only one joystick to offer continuous, analogue remote control. The simplified operation and reduction in vertical end hose swing enables the placing output to be increased. Moreover, on the EBC system there is the possibility of limiting the working area, e.g. in order not to knock into building walls or collide with walls in conditions where space is restricted.

In 2004, with the EPS (Ergonic Pump System), Putzmeister presented another mechydronic device. In contrast to conventional hydraulic control systems, EPS controls the concrete pump drive hydraulics fully electronically. The pumping process is optimised due to the simplified control hydraulics. This means smoother switch over of the transfer tube, reduced wear, lower fuel consumption and also improved efficiency due to the reduced number of hydraulic components.

Further optimisation of concrete placing booms

In parallel to the boom and pump control systems, Putzmeister also expands its placing boom range consistently. The focus of development are compact four-arm booms such as the M 20-4 (2005) and M 28-4 (2004), and the completely redesigned M 42-5 (2005) and M 46/47-5 (2003), as well as the particularly compact, 5-arm M 58-5 (2007). The large boom truck-mounted concrete pumps in the 60-metre classes with up to six boom arms attracted a great deal of international attention. These were offered by Putzmeister from 2004 in different variants as the M 61-4, M 62-6 and M 63-5, depending on market conditions.

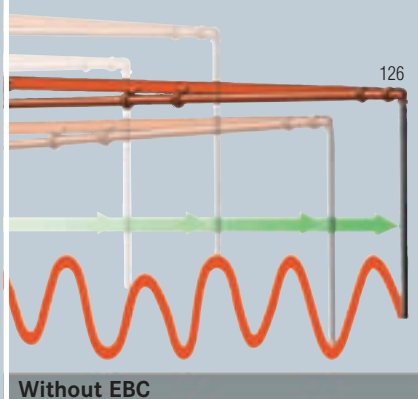


Complete redesign: the compact M 58-5 long-reach boom pump

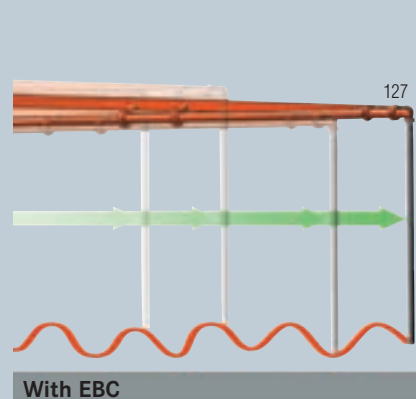


With 5 or 6-arm technology, large boom truck-mounted booms are significantly more flexible – here is a modern M 63-5

Better working due to vibration dampening



Without EBC



With EBC

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mounted concrete pumps are becoming
42-5

129



... as well as a M 62-6, which still has
horizontal reach even at great height

131



Dynajet high-pressure cleaner UHP 170
during coating removal at 2,800 bar

130



The M 20-4 introduced in 2005 is favoured on cramped construction sites with
difficult access

132



Formwork cleaning with Dynajet
at 350 bar

2000 2003 2004 2006 2005

Alliances, shareholdings and takeovers

In 2003, a global collaboration began between Sika AG (Switzerland) and Putzmeister AG. Within the framework of the new alliance, the know-how of both companies is combined. Through the involvement of Sika – a manufacturer with a great deal of experience of chemicals and concrete additives, among other things – Putzmeister Ibérica took over development and production of concrete wet spraying machines. In accordance with the Putzmeister strategy for large subsidiaries, Putzmeister Ibérica obtained the important opportunity to generate 30 % of its turnover in export sales.

At almost the same time (2003), Putzmeister AG took a share in the companies Brinkmann, manufacturer of floor screed conveyors and Lancy, the French supplier of pumps for mortar and for self levelling floor screed, pneumatic floor screed conveyors and concrete wet and dry spraying machines. In 2006 Putzmeister Mörtelmaschinen GmbH acquired the company Strobl, which specialised in coating technology. Its paint pumps, roller devices and pressure sprayers rounded off Putzmeister's range for the painting and interior decoration sector.

In 2006, the Esser works founding family sold the shares in their company to Putzmeister Holding. Since 1949, the Esser works have specialised in the construction of particularly wear-resistant delivery pipes for mining and the mineral industry. In the concrete pump sector, Esser is internationally considered as a leading company with highly wear-resistant dual-bearing pipes ("Twin Pipes") developed in-house. The Esser delivery pipes will also be used more in future for pneumatic stowing in mining, for gravel, sand and oil sand extraction, in coal-fired power stations and glassworks and in many other sectors. Organisationally and in its market presence, Esser will supply, also PM competitors, via their own sales network worldwide completely separately from Putzmeister.



Compact concrete wet spraying machine from the Sika-Putzmeister alliance for tunnels and galleries with a small cross section

133



The Stöbl coating technology is now also included in the Putzmeister range

134



Putzmeister Lancy subsidiary

135



Putzmeister has had a participating interest in Brinkmann since 2003

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2006 2007 2008 2009

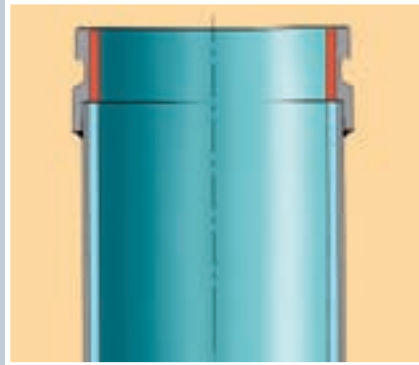
50
Years

137



Hardening of the dual-bearing pipes is complex and time-consuming. Above, a cutaway view of a dual-bearing Esser delivery pipe.

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Esser as well as Brinkmann, Lancy and Strobl continue as independent companies within the Putzmeister Group, which is under the ownership of the not-for-profit KSG foundation. Corresponding to the requirements of the global markets, they will cover differing customer requirements in the sense of multibrand marketing and are also in competition with Putzmeister companies' products.

In 2007 Allentown, a US manufacturer with a 100-year tradition from the town of the same name in the state of Pennsylvania, was taken over by Putzmeister America. Allentown has an outstanding reputation on the American continent as a provider of concrete wet and dry spraying machines, as well as pumps for fireproof mortar. The background to the takeover is the greater flexibility and specialisation of Allentown, via whose sales network the mortar pumps and so-called "small line concrete pumps" are marketed by Putzmeister America. Added to this is the sale of wetcrete concrete wet spraying machines by Putzmeister Ibérica for the North American tunnelling and mining sectors and for concrete spattering ("guniting"), which is widely used in the USA. Allentown also has an excellent reputation in the steel industry with the so-called "tundish". This involves a process for coating blast furnace discharge channel with fireproof mortar - applications and sectors in which Putzmeister America and Putzmeister Ibérica would like to grow stronger in future.

Putzmeister activities in India are being further developed according to a strategy already tried and tested at other locations.

The beginnings of Putzmeister's commitment on the subcontinent go back thirty years already. Against the backdrop of the Indian concrete sector, which is seeing tremendous growth and is protected by tariff barriers, the licensing and shareholding collaboration, which had existed since 1995, was carried over into a Putzmeister own work in Goa, designed for growth. Stationary concrete pumps in the BSA 1400 product line and truck-mounted concrete pumps with M 36 boom have already been manufactured on-site since October 2007. In parallel to this, there is expansion of a distribution structure on the subcontinent covering the whole area, which now comprises eight sales and service branches. After a transition period, the Indian Putzmeister subsidiary is trading under the name of Putzmeister Concrete Machines Pvt. Ltd., and headquartered in Goa.

In 2004 in Russia, the newly founded subsidiary "OOO Putzmeister-Rus" succeeded the Putzmeister liaison office, which had been active from Moscow since 1993

In Turkey Putzmeister has had a participating interest in cooperation partner Tatmak for many years. Under licence from Putzmeister, Tatmak manufactured large quantities of both stationary concrete pumps and truck-mounted concrete pumps. Since October 2007, concrete pump assembly and increasing local production has taken place in the modern, newly constructed Cerkeskoy works belonging to the Putzmeister Turkey subsidiary, established in 2007, approximately 80 km north-west of Istanbul (see page 47).

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"Guniting" is widespread in the USA

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The new Putzmeister works in India

141



The newly constructed Putzmeister works in Turkey

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The liaison office in Moscow became the "Putzmeister Russia" subsidiary in 2004

2003 2004 2005 2006 2007

Holding structure for the Putzmeister organisation

In the Spring of 2007 the Putzmeister Group adopted the new Putzmeister company structure PMO 2008, now trading solely under the KS foundations as a GmbH. It aims to create smaller, flexible and more growth-oriented business units with independent entrepreneurial management. Size must not become a disadvantage. Numerous contributory measures have since been implemented according to plan.

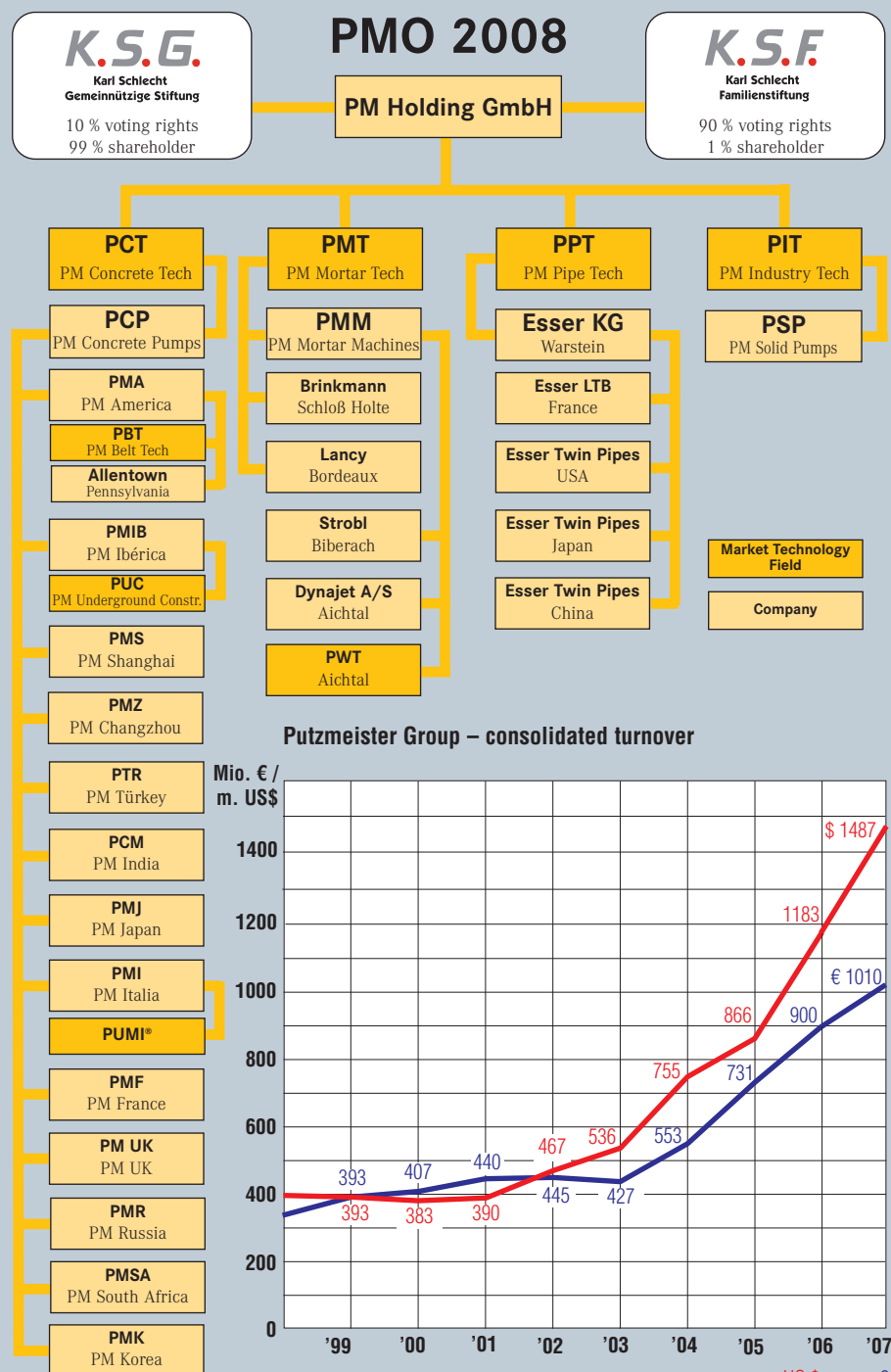
The new structure now breaks down Putzmeister activities by function into so-called Market Technology Fields (MTF):

- Putzmeister Concrete Technology "PCT". The legal controlling company for this largest MTF is Putzmeister Concrete Pumps GmbH, which since 2008 has continued the concrete pump business of the former Putzmeister AG after the reorganisation.
- Putzmeister Mortar Technology "PMT". Represented by the 100 % shareholdings in Putzmeister Mörtelmaschinen GmbH (PMM) and Lancy as well as the shareholding in Brinkmann GmbH & Co KG, consolidated in the controlling company Putzmeister Mortar Technology GmbH "PMT".
- Putzmeister Industrial Technology "PIT" with "Putzmeister Solid Pumps GmbH" (formerly PAT), newly established in 2008.
- Putzmeister Pipe Technology "PPT" with Esser Werke GmbH & Co.KG and its shareholdings.

Each Market Technology Field can incorporate different companies. Larger business units such as PCP will be or are already divided into increasingly corporately managed divisions – which when there is the appropriate growth, can legally become stand-alone entities (for example, the Putzmeister Belt Tech (PBT) division at PMA, Putzmeister Underground Concreting (PUC) at Putzmeister Ibérica; the PUMI® Division now at Putzmeister Italy, the Putzmeister Water Technology (PWT) division at PMM, etc.).

Each division/business unit has full decision-making authority on the subjects which affect their own operational business. Key strategic issues and matters affecting the whole Putzmeister Group, however, are co-ordinated and decided synergistically with

the higher level Putzmeister Holding GmbH (PMH). The objective of this change to the Putzmeister organisation is to make optimum use of the growth potential of each Market Technology Field.



Two records for the 50th anniversary

There are situations which can be influenced or even brought about. And there are events whose scheduling, with the best will in the world, is not predictable – they simply happen! This seems to be the case with the two world records, which Putzmeister will establish somewhat coincidentally (or should we call it "incidentally"?), at the same time on the company's 50th anniversary: the supply of by far the largest truck-mounted concrete pump and the new all time high in high-rise concrete pumping.

Thus Putzmeister is presenting for the first time at the end of May the new M 70 large boom truck-mounted concrete pump with 5-arm technology. The mammoth truck-mounted concrete pump is constructed on a 10-axle articulated lorry and is impressive for its dimensions alone. The gross weight of this machine is less than 80 tons. Putzmeister developed the M 70-5 for the US market initially, a European version is being worked on. The boom, base structure and pump unit are constructed together with the independent power unit on a 5-axle articulated lorry. During pumping operations, the tractor unit remains connected to the semi-trailer and acts as a counter-weight. The decision to build this machine was taken at Putzmeister in Spring 2007. The first M 70 mammoth concrete pump is destined for a customer in Sacramento in the US state of California, and there are further orders.



The Burj Dubai in April 2008 – concreting of the 159th storey at 606 m is completed



The M 70-5 in an articulated lorry configuration for California



For the construction of the Burj Dubai, at over 800 m shortly the tallest building in the world, several Putzmeister high-pressure concrete pumps have been used since 2005. Its own record in vertical concrete pumping of 532 m set in 1994, had been surpassed time and again by Putzmeister in the past months with every concreting section and the world record in high-rise concrete pumping was topped by 606 m in April 2008. For an output of 28 m³/h, the concrete pressure in the end was 200 bar, so the super high-pressure pump still had considerable reserves left. This performance was possible, among other things, due to the commitment of the local Putzmeister agent German Gulf Enterprises and the founding family Eller. Find out more about this Putzmeister dealer and its difficult beginnings in the following pages.

A reliable on-site partner for over thirty years

In addition to its own export organisation and foreign subsidiaries, Putzmeister has also been working together with expert dealers and local distribution partners in numerous countries since the early 1970s. As a shining example of commitment and reliability, the Putzmeister agent German Gulf Enterprises Ltd. (GGE) should be mentioned here. It has been representing Putzmeister for over thirty years in the United Arab Emirates (UAE).

From the first roughcasting machine in the Gulf to the world record in high-rise concrete pumping

GGE was founded in 1974 in the Emirate of Sharjah by Rudi Eller as a dealership and service station for Putzmeister and Atlas Weyhausen. During his time in the region there was no hint of the extent of the current construction boom or the strongly growing financial and services sectors. Instead of palm-lined boulevards, dusty and unsurfaced sand tracks connect-

ed the settlement areas of the seventh Gulf Emirate. In the past 34 years, GGE has earned a distinguished reputation in the region as a committed and capable partner in the new and rental machinery business and has specialised, amongst other things, in maintaining hydraulic components. We had the opportunity to have a talk with German Gulf founder Rudi Eller (born in 1939), excerpts of which are reproduced here.

? Mr Eller, what actually made you emigrate to the Gulf States in the 1960s? And how does one live there as a foreigner?

! There was no talk yet of emigration then, in 1965. At the time I still worked for a German company, Beton-Monierbau. We constructed harbour facilities and jetties on the Gulf coast. There were no roads. To go by car from Sharjah to Dubai, you either had to drive through the sand dunes or via the compacted beach along the coast. We were accommodated in a small camp; we built the houses ourselves.





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Rudi Eller has been on hand over four decades of change in the Gulf States (III. Eller)



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? How were buildings constructed in the Gulf then?

! At that time, the locals – mostly fishermen and pearl divers with their families – still lived in huts made of coral material. Later the walls were made of clay and hollow blocks, and the roofs were mostly covered with dried palm fronds. Now I am experiencing the fourth building generation: at first the buildings only had a ground floor. Then there was a phase, in which two and three storey buildings were built. Later, houses with ten to twelve floors were standard. And now people are working on buildings here which are over 800 m high.

? How did German Gulf come to be founded?

! At the start of the 1970s, I went back to Stuttgart initially. Then shortly after the first oil crisis (1973) I was drawn back to the Gulf again with my family. At the time, something like an awakening could be felt in the region. Most of the proceeds from the oil business were no longer flowing abroad, as had previously been the case. Instead, a large part of the funds was reinvested in the oil-producing countries. And construction began. So I, together with my local partner Abulrahman M. Bukhatir, founded a business, a plastering business; because one thing was immediately apparent to me: there was not yet much to see in the way of technology and mechanisation on construction sites in the Arabian Gulf. Through my work in Stuttgart in the gypsum business I knew, however, that completely different results could be achieved with mechanical plastering. After very modest beginnings, I was then soon working with five people and



At the port of the Emirate of Sharjah (circa 1965) (Ill. Archiv Eller)

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The Dubai Creek, an estuary approximately 14 km long, divides the city of Dubai into a northern and a southern half. The picture is from around the middle of the 1960s. (Ill. Archiv Eller)

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A Krupp semi-trailer vehicle brings the new stationary Putzmeister concrete pump to the construction site. The photo is from circa 1980. (Ill. Eller)

a P13, a Putzmeister mortar pump which is incidentally still being built today. Spraying mortar onto the wall may already have been widespread in Germany at the time – for us in the Gulf, however, it was a sensation. Through the fact that we worked with the plastering machines and also gave practical demonstrations, we were able to advise other prospective customers much more believably, and finally convince them to purchase a mortar pump, than if we had been simple dealers.

? Were the locally manufactured mortar mixtures comparable with those in Germany?

! No, not at all, there were nasty surprises at the start. Because the sand eroded by the sea had too many coarse and too few fine particles, and could therefore not be pumped. There were constant blockages. And when the hoses have to be cleaned five times in a morning, this costs not only time but brings with it a lot of aggravation. We then worked closely together with the Stuttgart company Karl Epple, which manufactured dry mortar. Epple was only able to improve our mortar mixtures using chemical additives to a limited extent, however.

So we had still not solved our fundamental problem. We then hit upon the idea of constructing our own dry mortar works. This was a decisive step forwards, for now we could precisely control the composition of the plastering materials. After numerous attempts, we finally succeeded in manufacturing mortar mixtures which were suited to local requirements, which could thus be used in the heat here, because the plasters made according to German formulae were completely unsuitable. Sometimes they could not even be pumped. Or they hardened too quickly. Or there were cracks. Plaster and mortar are highly complex and a science in themselves.

? Was mechanical plastering even worthwhile in the UAE at the time?

! Once we had solved the material problems, I handled even really large projects with my team of plasterers I remember a contract from Abu Dhabi, where we mechanically plastered a whole district with around 500 houses, with a team of more than 100 men at peak times. That dragged on for 15 months. Everything really had to be well organised there and the preliminary work completed – i.e. electrical systems installed, corner rails laid, windows masked, etc., otherwise the advantages of mechanical plastering are soon lost again. Because, of



The façade of the 321 m high 7-star hotel Burj al Arab is based on the sail of a dhow (Arabic cargo boat). The concreting was performed using a stationary Putzmeister concrete pump, serviced by German Gulf

course, while work goes more quickly using the mortar pump, operating staff wages are also higher. And then there are also the higher material costs for the machine plaster. Works dry mortar and plastering machines were therefore in direct competition to the cheap workforce who mixed their cement plaster on the construction sites themselves. And there was more: when plastering by hand, so when trowelling, nowhere near as much force is needed as when smoothing using a 1.5 or 2 m long levelling rod. And many worker were simply not fit enough to do this in the high temperatures here, so it was very difficult at the start to earn money using the new technology.



Putzmeister P 13 mortar pump on a construction site in the Gulf

? Do you also remember the early years as a concrete pump vendor?

! Of course! Almost simultaneously we were preparing the market for concrete pumps. We introduced Putzmeister concrete pumps here in the Gulf for the first time in 1975. As regards pumping, the machines were less sensitive than the mortar pumps with respect to the material. Instead there was a new problem now due to the lack of mixer capacity during pump filling. Our small mixers had a capacity of perhaps 50 to 100 l/min, and even if four of these mixers were positioned at the concrete pump hopper, no more than 10 or 15 m³ of concrete came into the formwork per hour. We therefore needed efficient concrete mixing works. German Gulf and Epple then founded a joint company – CONMIX. And this company then constructed a concrete mixing tower system with integrated dry mortar mixing system. Now - in the second half of 70s - we were able to load the large truck-mounted concrete pumps with 31-metre boom and 120 m³ output per hour using truck mixers holding 6 or 7 m³. We were the first to pump mortar and concrete in the Middle East. In the United Arab Emirates in any case, this made Putzmeister and Gulf the pioneers in this area. This means we first had to gather experience in extreme climatic conditions, of course we also had to learn the hard way and did a lot of convincing.

? The sale of concrete pumps is one thing, but the machines also had to be serviced, especially in this extreme heat in the UAE and with the fine sand which penetrates everything?

! The service provided by German Gulf received unrestricted appreciation from customers (and those of the competition – everything gets around quickly in this sector) right from the start. And it went down well that we never abandoned customers, despite some setbacks. Because for us, the deal did not end with the sale of a new machine; we wanted the customer to be able to use it, to be satisfied and to have no unnecessary downtimes. This means we carried out repairs on the construction site or – if this was not possible – immediately made a replacement machine available. This of course included training the machine operators and stockkeeping for the most important replacement and wear parts. Naturally that cost us a lot of money, but the customer was able to continue working. Incidentally, this attitude towards the customer has been retained by German Gulf right up to the present day.

? Did Putzmeister really have to adapt its concrete pumps to the extreme conditions in the Gulf?

! Over the years, we had problems with the concrete mixes, the grading curves often lay beyond pumpability. We then ordered concrete pumps from Putzmeister which were specially suited to conditions in the UAE. This concerned, among other things, the electrical system, delivery cylinder, the S transfer tube, the tapering in the pressure pipe and the cooling system. Not everyone at Putzmeister supported us at the time, but we asserted ourselves. And the result, i.e. the very high market share, proved us right to the present day.

Now, the quality of the concrete is no longer an issue, there are ultramodern mixing plants everywhere. The sand from the coast is no longer used at all now, instead the material is processed from the old river beds, but we predominantly process broken material here. Inspection of mixture breakdowns has now become standard. Service also plays an ever more important role, but also the availability of replacement and wear parts as well as the provision of training.

A very important mainstay of German Gulf is the hydraulics department, with its highly-qualified employees and a very well-equipped workshop. This is certainly a big

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Sheikh Zayed Road is the showpiece boulevard of Dubai. Here dozens of architecturally ambitious high-rise buildings are strung together.

advantage and strengthens our position in the market. We represent Bosch-Rexroth and other manufacturers of hydrostatic actuators and control systems not only in the UAE, but also in the neighbouring states of Kuwait, Bahrain, Muscat and Oman as well as Qatar. In Europe it is rather unusual for more than one competitor to be represented by the same dealer. But here in the Gulf, it is seen as practical: because different brands of hydraulic components are often found in our customers' machinery. And we cannot say then that we only repair the defective part from one manufacturer and not another – no customer would accept that here!



A look inside the German Gulf Enterprises modernly equipped hydraulic workshop (III. Eller)



The Palm Jumeirah is one of several artificial island groups which are being created or are already finished off the coast of Dubai. Putzmeister concrete and mortar pumps are involved almost everywhere on construction of the infrastructure as well as villas and apartment complexes.

? Then things have been only been on the up for German Gulf since the start of the 1970s?

! No – by no means. There were also times, when things were not going so well. Because every political crisis here in the region has immediate effects on construction activities and investments. I still remember well the outbreak of the civil war in Lebanon (1975-1990) and the Iran-Iraq war (1980-1988), where I could hear of the thud of the shells. When Kuwait was occupied during the first Gulf War (1990-1991), we were evacuated. When they tell you that the last Lufthansa flight from Dubai leaves at 3 pm, it's not quite what you expect. The second Gulf War (2003) and the Afghanistan War (2001) had similar economic effects, if only temporary. In recent years, however, things have improved sharply, and in the UAE we have growth the likes of which has never been seen. Correspondingly, the construction boom has also developed. German

Gulf still had around 100 employees in the middle of the 1990s, now there are almost 500. The business is booming, which is of course due to the fact that there is the right market for it here. But how all this developed – that is a dream, that is madness!

? Mr Eller, what conditions must be right in order – as you managed it – to be so extraordinarily successful?

! Yes, there are certainly a lot. I think to be successful, a series of factors play a part. First, one must have an idea – and I had a lot of those – and then the idea has to be implemented. In my opinion, this involves a realistic assessment of the situation, specialist knowledge, enthusiasm, competitive spirit, positive and also economic thinking as well as willingness to make decisions. Moreover, you should be trustworthy and reliable and be true to your word, even if it is against your own – short-term – interests.

Diligence and perseverance must not be lacking. A further prerequisite is, of course, that there is a market and the basic conditions are fairly suitable. Just as important, too, are the employees. To motivate them and win their trust is essential for a well-functioning company. Of course it also requires fair wages, recognition – above all, however, mutual respect and appreciation. And we seem to have got that right.

I have let myself be guided as far as I could by the virtues mentioned and also had the required amount of luck. Above all, however, the boundless support of my family and God's blessing were the key to my success. In conclusion, I would like to thank all our business partners – and here very particularly Putzmeister – for their excellent collaboration!"

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On the numerous high-rise construction sites in the Emirates, not only Putzmeister concrete pumps, but also stationary concrete placing booms are used

? How is German Gulf prepared for the future?

! Today, German Gulf Enterprises is managed by Rudi Eller's son, Richard Eller. "It is already gratifying to know that the company is in good hands. The smooth concreting at the Burj Dubai at a height of over 600 m is certainly our finest hour as a Putzmeister agent. My son got very involved in all the preparations. I am very proud of Richard", adds Eller senior, visibly satisfied. The company now represents more than two dozen well-known companies in the UAE. In a few months, GGE will relocate its head office from Sharjah to Dubai 10 km away, to modern offices and an expanded service area. This is not due to the work on the Burj Dubai (which will be nearly completed by then), but due to the many customers based here and the large number of new projects. (See also www.german-gulf.com)



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The generation change at German Gulf is prepared. Pictured are Rudi and Richard Eller. (Ill. Eller)

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Dubai and the Sheikh Zayed Road at night. The picture was taken from the Burj Dubai from a height of approximately 500 m.

1989 2000 2001

A glimpse into the future of Putzmeister

For five decades now Karl Schlecht has led and accompanied the development of Putzmeister. How does he see the tasks or possible problems of the Putzmeister Group in the coming years?

KS: "The future of the Putzmeister family of companies will be best safeguarded, if we continue along our previously adopted path consistently in terms of our tried and tested company philosophy and by maintaining our principles. In doing so, with a view to the many emerging global markets, we want to concentrate primarily on our growing core business worldwide, namely on the pipe delivery of particularly difficult media and the activities directly related.

With more local presence and with innovations in everything we do, we see the best opportunity to safeguard our traditionally healthy growth under our own steam with a solid equity capital endowment of at least 40 %. This means after three tremendous growth years and investments in new works, that a consolidation process is taking place at present. Further steps to expand will be limited by the capital resources earned. We will, however, strive for growth in



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Businessman and benefactor



In 1998 Karl Schlecht transferred 99 % of the shares in his company, Putzmeister AG, to the Karl Schlecht non-profit foundation (KSG with 10 % of voting rights), 1 % is retained by the Karl Schlecht Family Foundation KSF (90 % of voting rights). Thereby the company is protected in future from being broken up in the case of succession and from being split up. The private wealth of the Putzmeister founder remains separate from this.

Karl Schlecht prepared for this step for a long time and considered it well. "You can't take it with you. Benefactors are not only patrons and philanthropists, they see themselves also as investors for a good cause. So they are also businessmen, who - as usual in economic life - act of their own accord." For them entrepreneurship means "time and again rising above oneself in pursuit of a vision and at the same time pulling others along too, so that everyone wins. "As a benefactor and businessman, he wants to set good things in motion, which will stand the test of time.

future too, through continuing further development of our company management. Because due to the competition from the Far East, which is catching up quickly and has cost advantages, we will have to adapt to the tempo there. Thus more effective working, ongoing learning and continuous training will become even more important in future. With our expanded company academy and Human Resources Management, the course for this is set."

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Putzmeister Holding presents to international students at the new Exhibition Centre in Stuttgart

With foundation assets at current market volumes of almost € 1 billion, KSG is one of the largest non-profit foundations in Germany. However, it currently invests in selected projects "only" approximately € 750,000 annually from the yields of the foundation capital stocks of € 15 million. KS: "We reinvest the Putzmeister profits in the family of companies to build confidence for our customers."

Mr. Schlecht sees in his decision to start a non-profit foundation above all an expression of gratitude. The serious Rotarian wants to fairly pass on what is achieved in his lifetime to society and thereby, at the same time, contribute to the future security of his company. For the "rich" are proverbially actually those who can do without the most.



Former Chancellor Helmut Schmidt and Karl Schlecht in discussion at a Global Ethic Foundation event in May 2007

It is KSG's task to help communicate more effectively than before the experience, values and company knowledge gained to young people internally and externally. From his own experience, it is important to benefactor Mr. Schlecht to make Putzmeister management aware of the value of traditional virtues and the human qualities gained from them which are important for a rich life. He also places great value on nurturing employees in the in-house company academy, getting them to take a business approach and to see each grow noticeably. Mr. Schlecht also strives for this aim by occupying two chairs at the Universities of Hohenheim and Stuttgart, financed by KSG. Moreover, he assists research and dissertations for an "economic global ethic charter" at Professor Dr. Hans Küng's Global Ethic Institute in Tübingen.

Endowed Chair of Entrepreneurship



The Endowed Chair of Entrepreneurship (SEH) with a professor and six scientific staff is part of the science faculty at the University of Hohenheim. The task of the SEH, among other things, is the promotion of science and exploration of the human factors which contribute to the success of a good company. The SEH will be closely linked in future with St. Gallen University (Switzerland) and should therefore to a greater extent contribute to entrepreneurial thinking in German-speaking universities.

Endowed Chair of Wind Energy



Since his youth, Karl Schlecht has been fascinated by the recovery of natural energy. Even later, as a student, the subject of wind turbines stayed with him. This is the context in which Karl Schlecht's commitment to the

Endowed Chair of Wind Energy (SWE) at the Institute for Aircraft Construction at the University of Stuttgart should be understood. KSG currently finances the C-4 professor with an academic staff of nine. With this KSG combines the objective of training young engineers from a whole range of disciplines to consider the technical/economic aspects of wind turbines as a whole. They are comparable in their complexity to the mechatronics of Putzmeister concrete pumps. For Karl Schlecht, scientific monitoring of the company's own wind turbines during operation is also important. The investments in wind energy are supposed to bring his KSG foundation a continuous yield for stable financing of its projects, compared to capital investments. And this is independent of the earning power of the Putzmeister Group.



Global Ethic Foundation

Not as founder, but with conviction as a sponsor, KSG has supported the Global Ethic Foundation in Tübingen for many years. The Global Ethic project developed there by the theologian Prof. Dr Hans Küng and his team follows the notion that world religions can only contribute to the peace of humanity, if they reflect on a basic consensus in relation to their original binding values, rules and tenors – and do not, as is usually the case, emphasise what separates them. The aim of the Global Ethic Foundation is therefore to mediate for interfaith and intercultural dialogue on all levels. The implementation of the Global Ethic ideal into the economy is a particular desire of KSG sponsorship. This applies especially to Putzmeister, where people of many religious denominations work together. KSG is also the main sponsor of the Tübingen Global Ethic lectures given by the former British Prime Minister Tony Blair, the former UN General Secretary Kofi Annan, Federal President Horst Köhler and former Chancellor Helmut Schmidt.

The Putzmeister founder in private

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Karl Schlecht was born on 28/10/1932 as the eldest of four siblings and grew up during the war years without a father. The family lived in Bernhausen, on the southern edge of Stuttgart airport, initially at Kirchgasse 10. In his youth, son Karl, in addition to school, helped out time and again on the small family farm. KS: "When my father returned, thank God safe and sound, from the Second World War, he worked his way up to master plasterer and in 1947 started his own business."

When his parents decided to build a house on their land in Bernhausen, Sielminger Str. 77 (now Nürtinger Str.), secondary school pupil Karl gladly helps to concrete and lay bricks. His favourite subjects during his final years at school include Chemistry, then later Physics. "Natural science research was my childhood dream", remembers Mr. Schlecht. In 1951 he sat his school-leaving examination, the 'Abitur': "After leaving school, however, I had only one wish, to become a good mechanical engineer, a path which my father had dreamed of. To this day it is the best career for me", he says.

During secondary school and while training to become a mechanical engineer at TH Stuttgart, he supplemented his pocket money by helping his father on construction sites. Here he earned enough to finance his studies and pay for the upkeep of his Lambretta Roller scooter.

After his studies, his mother wanted her eldest to apply for a (supposedly) secure position as a staff engineer in a well-known company. This was probably down to the initially disappointing experiences building his first mortar pump, which Karl had started on during his 7th semester.

KS: "However, after my diploma thesis, which consisted of my first roughcasting machine - the realisation of a dream for my father - he encouraged me not to give up. I am still grateful to him for this today, because without this background I would not have been able to finance his commission to construct a roughcasting machine, nor to test it and later demonstrate it."

Karl Schlecht has always been busy since his youth. He is considered to be a versatile creative mind who gets excited about new ideas again and again. As a student he passed his L1 gliding certificate, later was one of the first windsurfers in Germany and



... with his first labour-saving "machine"

furthermore devours books. He sees himself as a maverick and does not enjoy wasting his time: "Even today, I'm not bothered what the holes on the golf course think of me." His personal circle of friends remains manageable.

Karl Schlecht married in 1964. In order to combine family and professional life as closely as possible to each other - in a spatial sense as well - the Schlecht family moved into a penthouse flat above the Echterdinger Strasse office building which was completed in 1967. Their eldest daughter Katrin (born 1965) was followed by son Martin (born 1967) and daughter Barbara (born 1968). Their little free time together, the Schlecht family enjoyed spending at their weekend house on Lake Constance. During these years, Mr. Schlecht's hobbies included sailing in his own boat (dragonboat class) and windsurfing. The fascination with wind and flying had never left him since his student days. Decades later he was to invest in wind turbines at several European locations.

At the beginning of the 1980s, the Schlecht couple separated. The son and daughters stayed with their mother at first. Following

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Karl Schlecht senior (in 1965, the father of the Putzmeister founder)



... bought with the first money he earned himself, then in 1959 came the first Porsche ...



Fascinated by wind power – whether flying, sailing or wind turbines



In 2006, the wind turbines operated by Mr. Schlecht generated three times as much power as the Putzmeister works in Germany used in the same period



Gliding certificate L1 passed – Karl Schlecht in the alpine gliding school in Unterwössen (1953)



their studies, the children went their own ways – outside their father's company. Katrin holds a doctorate and works today as lawyer in Berlin. Son Martin embarked on the career dreamed of by his father at a large Swabian car group. The youngest daughter lives at their former home. All have good contact with their father.

A very close partnership unites him with his second wife, Brigitte, to this day. In 1983, she brought with her sons Frederik and Ralf into the newly formed family and heads KSG today as Executive President. While the younger son Frederik (born 1968) worked for several years in Putzmeister sales while completing his MBA, he has since taken assumed responsibility as a sales manager at another company in the construction machine sector.

Dr. Ralf von Baer (born 1963), the elder of Karl Schlecht's two stepsons, joined the company in 2004. After a successful career as an anaesthetist and emergency doctor at a university hospital, followed by five years in a consultancy and planning business, after completing his MBA studies at St. Gallen University, he came to Putzmeister. Since 2005, Dr. Ralf von Baer has been Managing Director of Putzmeister Holding GmbH. He enjoys tackling the tasks and taking responsibility in the highly diversified group of companies. KS: "Although I am sometimes labelled as difficult and a maverick, things seem to be working quite well between us! Hopefully I soon won't need to be involved at all."

Mr. Schlecht had been taken with the Rotary network with its four pillars – the so-called Four-Way Test (“Is it the truth? – Is it fair to all concerned? – Will it build goodwill and better friendships? – Will it be beneficial to all concerned?” – since the 1990s. These four questions stand in the preamble of every contract or agreement at Putzmeister, as a way of inspiring confidence.

Karl Schlecht is still in regular contact with his three sisters and with relatives back home in the Fildern area. Here his ancestors were first mentioned in a document in 1574. Thus, he values down-to-earthness highly.

In his free time, he spends many hours at his PC, also at his holiday home in Spain. He has many ideas which he would like to put into practice and many projects to occupy him, which he actualises and updates. One time when he cannot rest is when working on a reference book, for instance. “When I get to it, I also sometimes enjoy listening to classical music and enjoy reading a good book.”

With a harmonious family life, daily swim and regular gymnastics, Karl Schlecht keeps himself fit even after his 75th birthday. No

less important to him is healthy eating. As an international-facing Swabian, he has retained his fondness for home cooking however. So since his childhood well-cooked lentils and Spätzle (noodles), Swabian pockets (homemade pasta squares) and traditional roast beef with onions and vegetables are still among his favourite dishes, preferably cooked by his wife, Brigitte, who is an excellent cook.

To this day, Putzmeister is for Karl Schlecht his fountain of youth. As Chairman of a family of companies, which in 2007 achieved a turnover of more than a billion euros and has almost 4,000 employees, Mr. Schlecht sees – in addition to seeing through his foundation projects – still enough challenges as senior technology advisor for the coming years.



KS at his 75th birthday (28/10/2007) with his wife Brigitte



Professor h.c. Karl Schlecht teaches at famous Tongji University, Shanghai



Birthday pleasures with his grandchildren



Innovation award ceremony 2007 at the Elite University, Karlsruhe



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