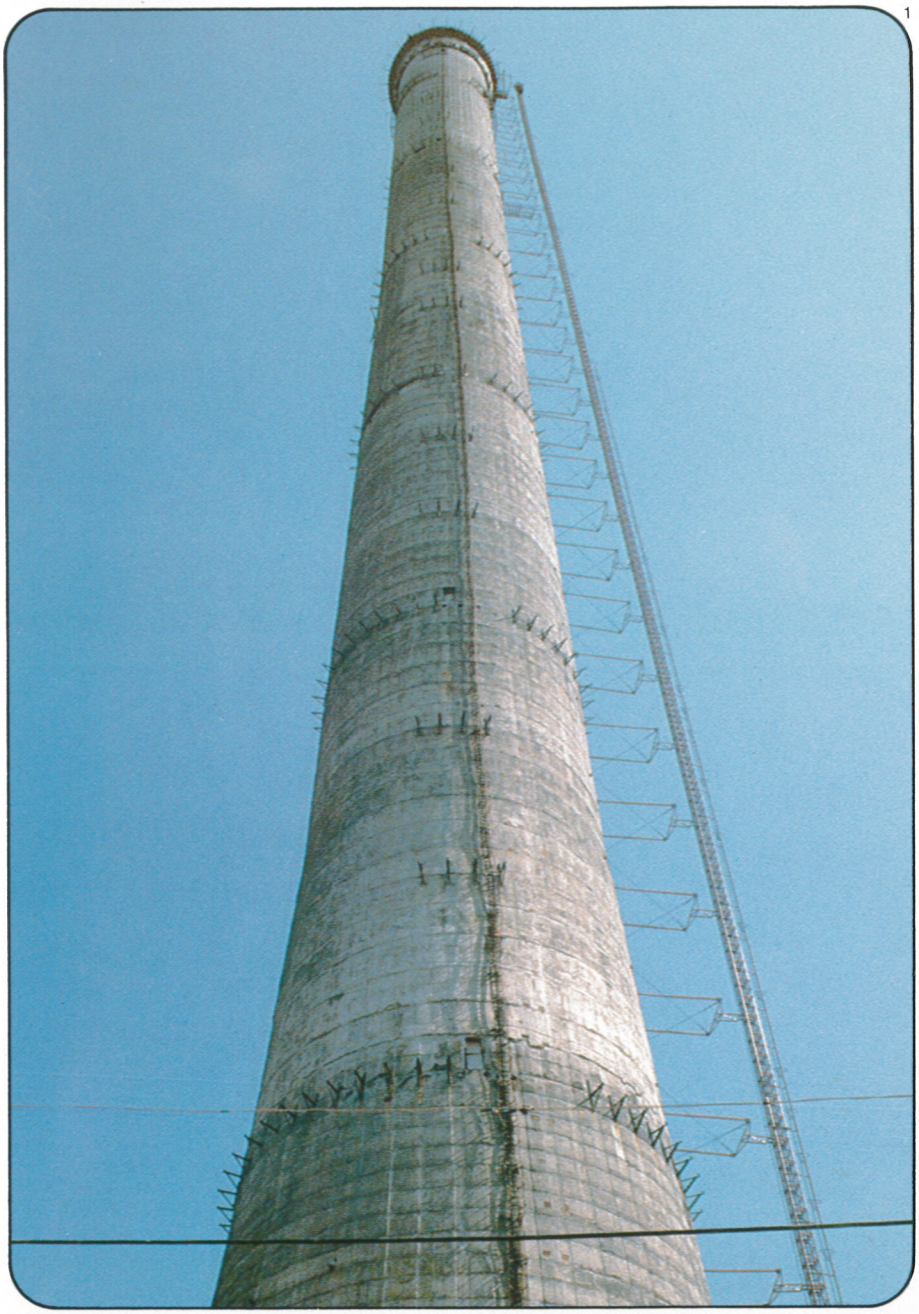
Putzmeister

Site Report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A new giant chimney with a height of 320 m.

Pumping Height of 320 m — Chimney building in Kirishi

Putzmeister has performed pioneer work in the thermal electric station already existing in Kirishi, approx. 200 km southeast of Leningrad, USSR. The chimneys which had previously been erected to a height of 180 m must be replaced by chimneys with a height of 320 m, due to advances in enviromental protection. Two large chimneys will take over the work of the existing four chimneys. The building of the towers with a height of 320 m, a diameter of 32 m which tapers off to 17 m at the top, began in the summer of 1980. The concreting work was initially carried out in a conventional manner, i.e. with a bucket, lift and wheelbarrow. In May 1981 however, it was decided to change to PM's construction site solution; founded on several records in conveying concrete to a great height.


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It all began with just a lift and wheelbarrow.

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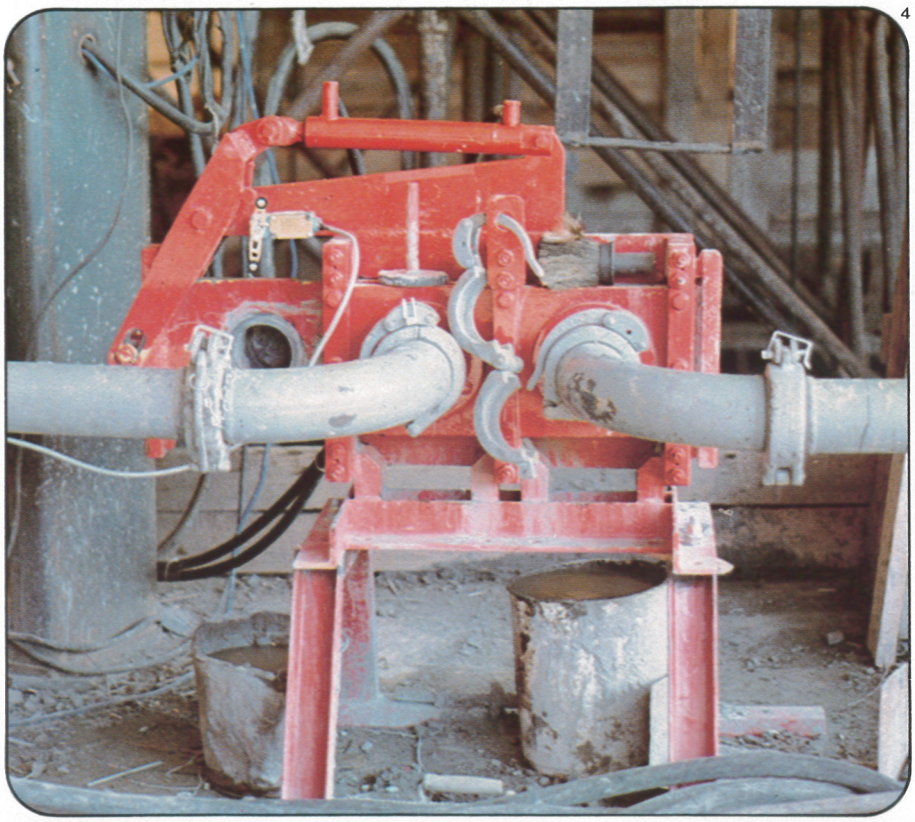
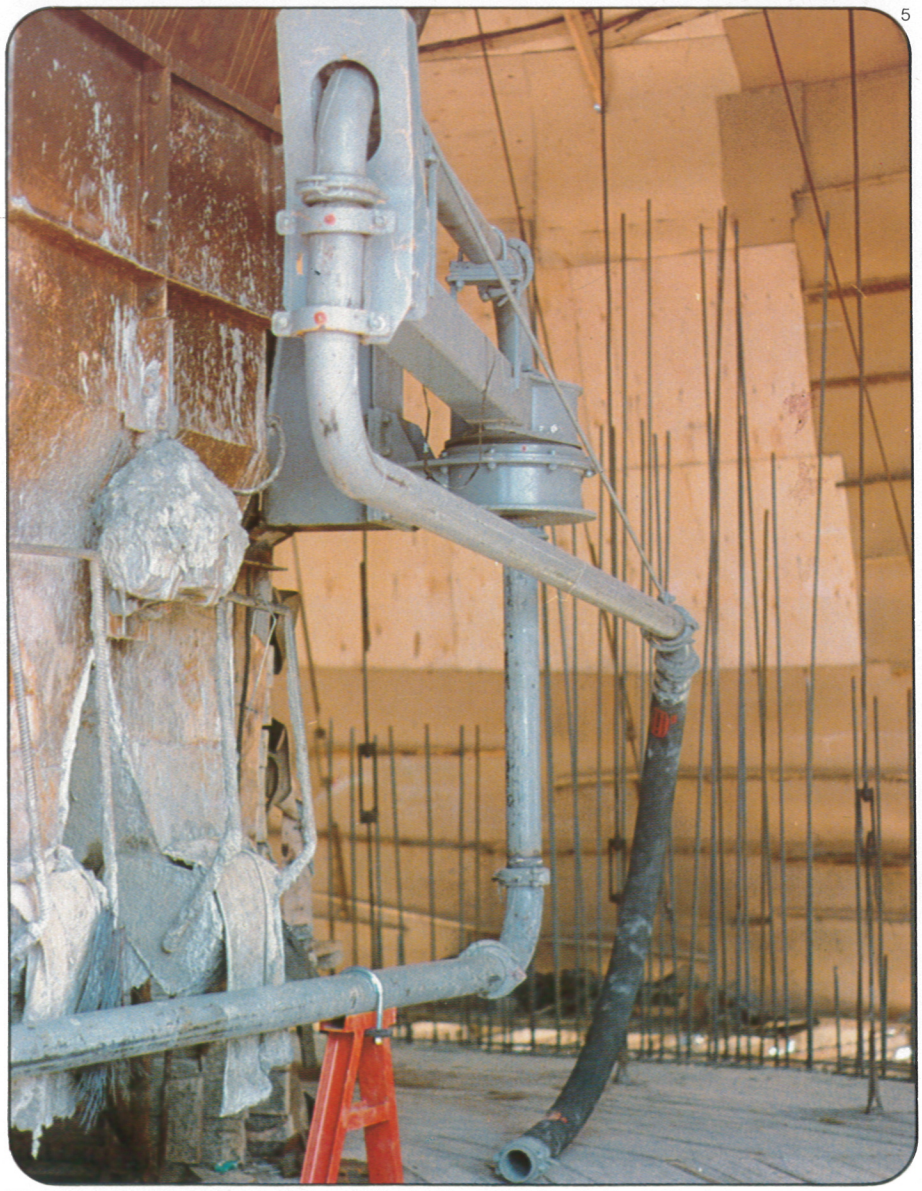
BRA 2100 heavy duty concrete pump with a 5 m³ Jumbo trough.



4 The two distributors are loaded via this transfer tube. Switch-over via hydr. drive.



5 PM distributors in idle position, folded up on the steel housing of the climbing device.

Routine for the PM Elephant

The PM Elephant concrete pump which was used had a 150 mm cylinder diameter, an electric motor with 132 kW and could deal with concrete pressures of up to 206 bar. The requested output of max. 20 m^3/h was easily provided. Another very important part of this successful idea was the 5 m^3 PM Jumbo trough which was flanged on to the pump. The trough could accomodate all of the concrete which was brought by the dumper truck and then mixed it up homogeneously once again. The PM high-pressure "Zentrifix" line was used as the delivery line. It guarantees absolute high-pressure imperviousness and an almost frictionless flow of concrete, even for lines of only 100 mm internal diameter. Two mechanical PM distributors for placing concrete, with a reach of 10 m, were placed on the climbing head of the form. The loading was controlled via a transfer tube with an electrohydraulic drive.

Crushed grain aggregate concrete

Concrete of the B 40 quality grade, which is often transient in consistency, was made out of 0–2 mm natural sand and crushed grain. A retarding additive with a life of max. 5 hours was also added for when the mix had to be pumped to a great height. The slump measure lay between 8 and 10 cm. Altogether approx. 2500 m^3 of concrete, in loads of 40 to 80 m^3, was loaded for the building of the first chimney.

No trouble caused by coldness and height

The PM Elephant concrete pump also had to cope with the renowned cold weather in the USSR. But even this was no problem. There was no non-productive time during the whole operation due to the reliability of the machine and capability of the qualified operating team. The delivery line system was cleaned from top to bottom. A cleaning ball was pushed through the line by compressed air. The shut-off valves and the transfer tubes direct the residue concrete directly into the truck tipper. The pump itself was cleaned by pumping the sponge ball in reverse.

The concreting work for the first chimney was completed on 15th April, 1982. The PM Elephant concrete pump had successfully mastered the final 320 m pumping height.

New possibilities in pumping technology had been opened up in Russia. Now it is possible for chimneys of this size to be errected during the limited warm summer months. Building time can be halved!

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Cleaning control: shut-off valves and out-flow frame provide for an easy emptying of the line.

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Large pipe elbows have been safely laid.

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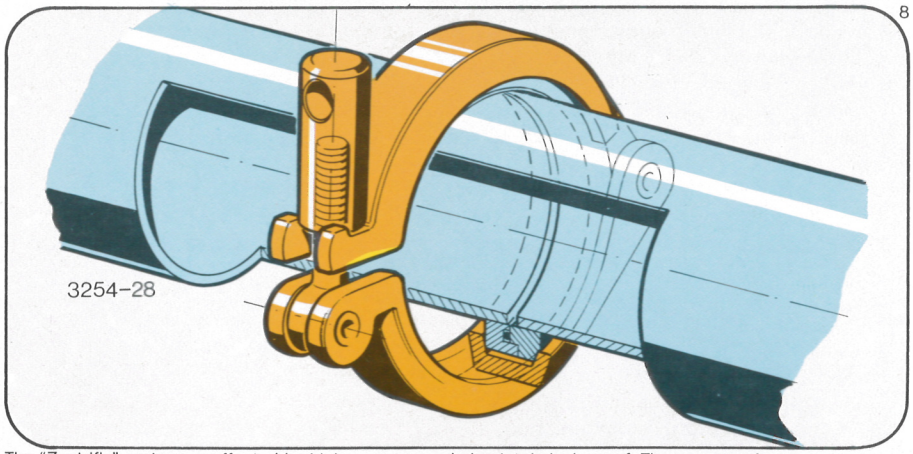

The "Zentrifix" system: unaffected by high-pressure and absolutely leak-proof. The sure way for conveying concrete to a great height.

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The PM high-pressure delivery line system laid over a length of 50 m to the foot of the chimney, and screwed down.

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Lumps of concrete of an uneven mixture are homogenised in the Jumbo through. Transporting of concrete is thus possible with a normal truck.

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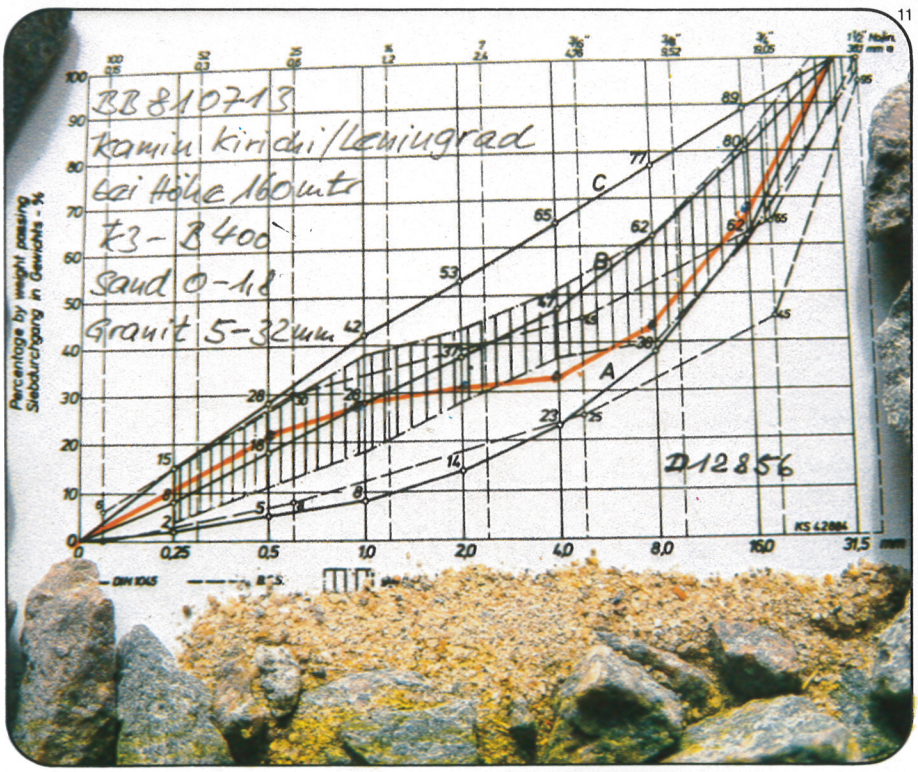

The concrete consists of crushed granite and fine river sand.

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The giant chimney is completed. It can now take over the work of the older and smaller chimneys.

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