

# PROJECT REPORT

Augsburg, 3 Nov, 2020

PCI accompanies refurbishment of listed Maggi water tower in Singen with building materials and advice

## Concrete refurbishment in airy heights

At a height of 32 meters hollow layers, a cracked screed and a heavily corroded reinforcement pose a special challenge for concrete repair. Even more so when the surface is circular and has a slope - as in the case of the Maggi water tower in Singen am Hohentwiel. The refurbishment was tackled by the contracted specialist tiling company with the support of PCI Augsburg GmbH. From many years of experience owner Marc Waesse trusts in the building materials of PCI and appreciates the comprehensive advice during planning and the support on site.

The listed water tower on the Maggi factory site in Singen, Baden-Württemberg, was built between 1907 and 1909 and is one of the first significant reinforced concrete buildings in southern Germany. The novel construction method had become established in Germany at the beginning of the 20th century and shaped the entire century. The water tower, a masterpiece of formwork and concreting technology, still supplies drinking water to the Maggi plant which has been located in Singen since 1887. With its 45 meters, the building can be seen from afar and is a landmark of the company site as well as the town of Singen. In 2019, the uppermost arcade was in need of renovation: the screed was cracked and showed hollow layers. The local tile specialist M. Waesse was commissioned with the concrete repair.

### Reliable workmanship with PCI products

The family business, managed in the second generation by Marc Waesse, is specialized in tiling, but due to its many years of activity it is also very experienced in the field of floor

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renovation. "It pleased us very much to receive such a special refurbishment order, moreover at the Maggi water tower, as a specialized tiling store", Marc Waesse tells. "I immediately contacted Markus Nagel, the PCI consultant in charge. He has already supported us several times in projects and, like my father, I trust PCI's special products without reservation, especially in delicate jobs such as concrete refurbishment. They are well coordinated and guarantee a durable solution." After a joint on-site visit Markus Nagel in coordination with PCI application engineer Rainer Schölch worked out the refurbishment recommendation which the specialist company implemented as follows on the approximately 38 square meter arcade at a height of 32 meters.

### **Exposure and derusting**

First, the craftsmen removed all loose and cracked screed parts. They ground off the exposed concrete surface with a diamond grinder and then vacuumed the floor with an industrial vacuum cleaner. What was revealed were reinforcing irons, some of which were completely rusted. After uncovering the reinforcing bars and blasting them bare, the corrosion protection PCI Legaran<sup>®</sup> RP was applied. Mixed with water and easy to apply, PCI Legaran<sup>®</sup> RP, when applied twice, offers high corrosion protection against chlorides and other corrosion causes, is waterproof as well as resistant to weather and frost. The material was transported to the site by freight elevator while the workmen had to climb 252 stairs each to get to the site.

### **Repair mortar as bonding slurry and finishing coat**

On top of the well-dried corrosion protection, the craftsmen applied PCI Nanocret<sup>®</sup> R4 PCC to the matt-damp substrate. The fiber-reinforced repair mortar serves as a bonding slurry in the first application and as a high-strength final coating in the second application. Like all products of the PCI Nanocret<sup>®</sup> family, PCI Nanocret<sup>®</sup> R4 PCC scores with a very dense mortar structure due to highly optimized nano-cement needling process. PCI

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Nanocret® R4 PCC offers permanent reliability for concrete components that are exposed to strong weathering influences like the Maggi water tower: The mortar is waterproof, resistant to weather conditions and frost de-icing salts, has a very high resistance to carbonation and chloride penetration - and complies with the following regulations:

- - Certified to EN 1504-3 Class R4
- - Meets the requirements of Rili SIB (guideline for protection and repair of concrete elements)/ ZTV ING
- - Conforms to stress class M3 according to repair guidelines and DIN 19573
- - Listed as repair mortar according to ÖBV (Austrian quality label)

An unusual feature of the repair project at the Maggi water tower was the circular sloping floor surface. Mark Waesse explains: "You don't have a substrate like this every day and it requires experience, expertise and the right building material. With PCI Nanocret® R4 PCC we were also well advised in this respect. The mortar is supple and easy to work with. In addition, Markus Nagel was always on site and provided assistance. We very much appreciate the comprehensive advice from PCI. We can deliver good, reliable work and benefit for future applications."

### **Sealing for lasting reliability**

In the next work step, the craftsmen applied the special primer PCI Epoxigrund 390 to the dry concrete surface as a reliable bond for the subsequent sealing with PCI Supracolor. The polyurethane sealer is easy to apply due to its good flow and protects the floor surface permanently: PCI Supracolor is UV stable and weather resistant. "The concrete repair on the Maggi water tower was a special work assignment," say master tiler Marc Waesse and PCI technical consultant Markus Nagel in retrospect. "As a team, we mastered this challenge well and to the client's complete satisfaction."

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## Project data

Project:	Concrete refurbishment in airy heights
Subtitle:	PCI accompanies refurbishment of listed Maggi water tower in Singen with building materials and advice
Location:	Singen am Hohentwiel
Project size:	38 sqm
Completion year:	2019
Task:	Removing the cracked, hollow-layer screed in the uppermost arcade of the water tower and repair of damaged concrete
Products used:	PCI Legaran <sup>®</sup> , PCI Nanocret <sup>®</sup> R4 PCC, PCI Epoxigrund 390, PCI Supracolor
Applicator :	Fliesenfachgeschäft M. Waesse, Singen
PCI adviser	Markus Nagel
PCI application technician	Rainer Schölch
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**Images:**



*The listed Maggi water tower, landmark of the company location and the town of Singen, was due for refurbishment. PCI products were used for the concrete refurbishment.  
Link to high-resolution [Photo](#)*

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*Construction site at a height of 32 meters: The screed on the uppermost arcades of the Maggi water tower was cracked and showed hollow layers. The reinforcement of the concrete was heavily corroded.*  
Link to high-resolution [Photo](#)

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*The hollow screed was removed down to the solid, load-bearing concrete ceiling.  
Link to high-resolution [Photo](#)*

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*A special challenge for the concrete repair was the circular sloped floor area. After uncovering the screed and derusting the reinforcing bars, PCI Legaran® RP was applied as corrosion protection.  
Link to high-resolution [Photo](#)*

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*As a high-strength finishing coat, the craftsmen applied the fiber-reinforced repair mortar PCI Nanocret® R4 PCC.*

*Link to high-resolution [Photo](#)*

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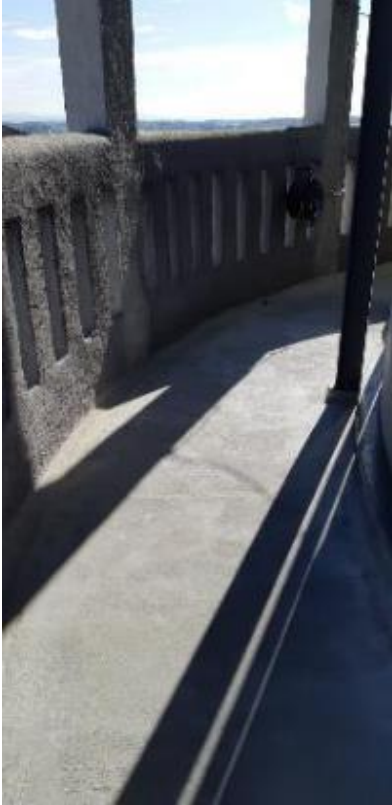
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For reliable adhesion of the subsequent sealing with PCI Supracolor, the floor surface was primed with PCI Epoxy Primer 390. [Link to high-resolution Photo](#)



The Maggi water tower in Singen, a masterpiece of formwork and concreting technology, was refurbished on the top arcade with PCI products and is now well protected against all weather influences. [Link to high-resolution Photo](#)

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#### About PCI

*PCI Augsburg GmbH is part of MBCC Group and leader in the tile laying materials sector for specialist firms in Germany, Austria and Switzerland. In addition, the company supplies product systems for waterproofing, concrete protection and repair, as well as a complete product range for the flooring sector. The PCI Group employs a staff of more than 1,200 in Europe and generated sales of significantly over €300 million net in 2019. Further information about PCI on the Internet under [www.pci-augsburg.de](http://www.pci-augsburg.de).*

#### About MBCC Group

*The MBCC Group is one of the leading suppliers of construction chemicals and solutions worldwide and has emerged from the carve-out of the former BASF Construction Chemicals business from BASF Group. We offer innovative and sustainable products and solutions for the construction industry across different sectors, such as buildings, structures, underground construction, new construction, as well as for renovation. Our strong brands Master Builders Solutions®, PCI®, Thermotek®, Wolman®, Colorbiotics® and Watson Bowman Acme® are well established in the marketplace. With our innovations, we address sustainability challenges in the industry. MBCC Group consists of approximately 70 legal entities worldwide and is home to around 7,500 construction experts in over 60 countries. For more information go to: [www.mbcc-group.com](http://www.mbcc-group.com).*

*We build sustainable performance.*

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