

PROJECT REPORT

Augsburg, 10.07.2024

30 years of reliable connection - PCI and Sika products in the Channel Tunnel

Construction of the century: the Channel Tunnel

On May 6, 1994, the time had come: the Channel Tunnel was opened with a festive ceremony. It has now been connecting Great Britain and France for 30 years - despite Brexit. One component of this engineering masterpiece is the performance grout PCI Vergussmörtel 50*. And: Sika was also involved in the construction of the Channel Tunnel.

The history of the Channel Tunnel dates back to the 19th century when the first plans for a fixed connection between England and France were developed. But it took more than 180 years before the project was actually started. In 1986, British Prime Minister Margaret Thatcher and French President François Mitterrand signed the contract to build the Channel Tunnel. Construction began the following year.

A technical challenge

With a total length of around 50 kilometers, including 38 kilometers under the sea, the Channel Tunnel is one of the longest underwater tunnels in the world. Construction at this depth and length placed enormous demands on the construction process. The engineers had to use state-of-the-art technology to bore the tunnel through the English Channel.

The Channel Tunnel comprises three tubes: two for rail traffic and a service tunnel. The service tunnel serves as a safe escape route for passengers and staff, houses important infrastructure for ventilation and enables regular inspections, repairs and maintenance work - without disrupting regular train traffic. In September 1991 and March 1992, PCI advised the builders on the performance grout for the cable grooves in the service tunnel.

Sitz der Gesellschaft:
PCI Augsburg GmbH
Piccardstraße 11, 86159 Augsburg
Postfach 10 22 47, 86012 Augsburg
Tel. +49 (8 21) 59 01-0
Fax +49 (8 21) 59 01-372

www.pci-augsburg.de

Geschäftsführer:
Joachim Straub
Frank Rösiger

Registergericht:
Amtsgericht Augsburg, HRB 6355
USt-IdNr.: DE811143409

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Grouting cable grooves in the service tunnel

Cable grooves were integrated into the floor of the service tunnel to lay electrical cables. These cables were used to supply power to inductively guided special vehicles from AEG. Two grooves were milled into each of the existing tracks of the service tunnel. The workers inserted copper cables with PVC hard sheathing into these grooves. These were routed from one carriageway to the other every 2.25 km to enable the crossover sections to be crossed as planned. The cable grooves were then sealed by grouting the joints.

Resistant performance grout from PCI

The English-French construction committee placed strict requirements on the material required. The performance grout had to withstand the load caused by the vehicles regularly driving over it with a total weight of approx. 9 tons. It also had to be non-flammable and able to withstand temperatures from -10 °C to +45 °C. And it had to withstand the salty air with a relative humidity of between 30% and 90%.

Based on these requirements, PCI recommended the performance grout PCI Vergussmörtel 50*. The company Otto Alte-Teigeler GmbH Spezialbau Verkehrsflächen carried out the job on site and filled the grooves with the colored PCI Vergussmörtel 50* performance grout after the cables had been laid. From June 1993 to October 1993, between 5,000 and 6,000 meters were completed every day. In a total of 11,500 hours of precision work, 202,000 meters of induction joints were filled with millimeter precision using laser technology and 15 x 30 mm diamond tools developed for this purpose at the time.

While PCI made the cable grouting in the service tunnel possible with high-quality, permanently functional performance grout, Sika supported the construction of the Channel Tunnel with concrete admixtures for segments and concrete repair products.

Quality that lasts

Since its opening, the Channel Tunnel has developed into an important trade and transport link and is therefore of enormous economic importance for Europe. People and goods have

been travelling quickly and reliably between Calais and Folkestone for 30 years. A milestone made possible by top technical performance - and the use of high-quality construction materials.

Project data

Project:	Channel Tunnel from Calais to Folkestone
Completion year:	October 1993
Task:	Grouting grooves in the service tunnel
Products used:	PCI Vergussmörtel 50* Sika: Concrete admixtures for segments and concrete repair products
Company:	Otto Alte-Teigeler GmbH Spezialbau Verkehrsflächen, 76467 Bietigheim-Baden
Contact:	PCI Augsburg GmbH Piccardstraße 11, 86159 Augsburg Phone +49 821 5901-0 E-Mail: pci-info@pci-group.eu www.pci-augsburg.de

*No longer available, replaced by the products PCI Repaflow, PCI Repaflow plus and PCI Repaflow Turbo.

** Source of information on the Channel Tunnel: [25 years ago: Opening of the Channel Tunnel | Hintergrund aktuell | bpb.de](#) (only available in German)

Images



The Channel Tunnel has been connecting France and Great Britain for 30 years. The performance grout PCI Vergussmörtel 50 was used to fill the cable grooves in the service tunnel.
([Link](#) to high-resolution photo)*



*The service tunnel provides access to the tunnel for maintenance and rescue vehicles, among others.
([Link](#) to high-resolution photo)*

About PCI

PCI Augsburg GmbH is part of Sika Holding CH AG & Co KG 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 about 1,150 in Europe and generated sales of almost €320 million net in 2023. Further information about PCI on the Internet at www.pci-augsburg.de.

About SIKA AG

Sika is a specialty chemicals company with a leading position in the development and production of systems and products for bonding, sealing, damping, reinforcing, and protecting in the building sector and motor vehicle industry. Sika has subsidiaries in 101 countries around the world and manufactures in over 300 factories. Its more than 27,500 employees generated annual sales of CHF 11.24 billion in 2023.

More information at: www.sika.com/.

Press contact:

Dr. Susanne Herchner

Manager Corporate Communication and Press

PCI Augsburg GmbH

Tel.: +49 (821) 5901-464

Fax: +49 (821) 5901-540

E-Mail: susanne.herchner@PCI-group.eu