



## **20 Years with CBE Segments: Happy Birthday Channel Tunnel!**

**St. Avertin, May 5<sup>th</sup> 2014.** The British-French construction project of an undersea link between the UK and the old continent had been officially inaugurated 20 years ago by Queen Elizabeth and François Mitterrand on May 6<sup>th</sup> 1994. CBE Group supplied segment moulds and carousel precast plant for the lining of what the American Society of Civil Engineers elected as one of the seven modern Wonders of the World: The Channel Tunnel.

Seven years before, in 1987, a small team of French engineers submitted their offer for the supply of segment moulds and the installation of a carousel precast plant at Sangatte to the construction company Eurotunnel for the concrete lining of the tunnel – CBE was born.

The objective was to construct two 7,6-metre diameter rail tunnels, 30 metres apart, 50 kilometres in length and a 4.8-metre diameter service tunnel between the two main tunnels. The service tunnel always preceded the main tunnels by at least 1 kilometre to secure the ground conditions. Precast segmental linings in the main TBM drives were used, but different solutions were applied on each side: on the French side, neoprene and grout sealed bolted linings made of cast iron or high-strength reinforced concrete were used. On the English side, the main requirement for speed and bolting of cast-iron lining segments was only carried out in areas of poor geology. The UK rail tunnels combines eight lining segments plus a key segment whereas on the French side, CBE submitted a configuration of five segments plus one key segment.

Contrary to the limited space on the English side where the precast lining factory was based on the Isle of Grain in the Thames estuary, CBE designed and installed a carousel type precast plant at Sangatte, where thousands of concrete tunnel segments had been produced. On the French side, owing to the greater permeability to water, five earth pressure balance TBMs with open and closed modes were used: two main marine machines, one main land machine and two service tunnel machines. Simpler geology on the English side allowed the use of six faster open-faced TBMs. Towards the completion of the undersea drives, the UK TBMs were driven steeply downwards and buried clear of the tunnel, where they were then used to provide electrical earth. The French TBMs then completed the tunnel and were dismantled.

20 years later, the Channel Tunnel with its annual 10 million users and 17,7 million freight transported, is mostly seen as an economic success story. On the other hand, this project that had fuelled the dreams of generations of engineers, came to be, above all, an amazing industrial adventure that led to the birth of one of the leading manufacturers of segment moulds and precast solutions, CBE Group.

*About CBE Group:*

*CBE Group is specialized in the engineering and the manufacturing of steel moulds, precast factories and maintenance equipment to manufacture concrete segments for all sorts of tunnels (subway, road, railway, cable, water...)*

*CBE Tunnels had been founded in 1987 by Robert Salmon, who managed the company until his retirement in 2005, when Didier Lefebvre, professional engineer, overtook CBE Tunnels and its industry partner MSCO in order to regroup them under the roof of the newly founded Lefebvre CEF Holding by baptizing them CBE Group. Since the arrival of CEO Didier Lefebvre sales turnover is constantly climbing: 16 million Euros in 2006 up to 25 million Euros in 2012.*

*The group unites ten nationalities speaking twelve languages. The head office is located in Saint Avertin near Tours in the Loire Valley since 2007, the group's production sites are based in L'Île Bouchard and Yangling in China.*

*CBE Group now has an experience of more than 27 years and built a worldwide reputation thanks to its presence in about forty countries and an export ratio of 95% of its total turnover. CBE Group started to develop its international vocation with its participation in the construction of the Channel Tunnel.*

*Until present, CBE Group has delivered more than*

- *370 precast facilities worldwide*
- *125 carousel type factories*
- *14 000 segment moulds*

*CBE Group's fame is based on know-how, accuracy and quality. The group is organized in three inter-connected units:*

- *CBE Engineering*

*CBE has a design office that ensures the lay-out of segment moulds, of handling equipment and precast facilities according to the customer's requirement. The design office studies all the parameters of technical and financial feasibility of the various projects.*

- *CBE Industries*

*CBE Group has its own production means, and can, upon request, significantly increase its manufacturing capacity. Machining, assembly, 3D laser tracking, automatism or vacuum devices are made by CBE and a large network of industrial partners enables the group to profit from the most advanced techniques such as the 3-D laser cutting.*

- *CBE Services*

*In 2006, CBE developed its service department in order to make a significant improvement concerning customer's satisfaction. This unit offers the following services:*

- *assembly and installation of precast facilities*
- *moulds' control and repair*
- *general and preventive maintenance*
- *service technicians on site*
- *spare parts*
- *24 hrs hotline*

*CBE Group is certified ISO 9001 version 2008.*

*For more information & pictures contact [cbe@cbegroup.fr](mailto:cbe@cbegroup.fr) or visit our website on [www.cbe-tunnels.com](http://www.cbe-tunnels.com)*