Customer reference case

Large wastewater pumps

Engineering support, bearing arrangement and CircOil lubrication systems

SKF solutions help London's Lee Tunnel redirect millions of gallons of wastewater every hour

SKF supplied a range of bearing and lubrication solutions for a major pumping system serving London, meeting critical performance demands in the customer's 54-tonne pumps.

A monumental challenge

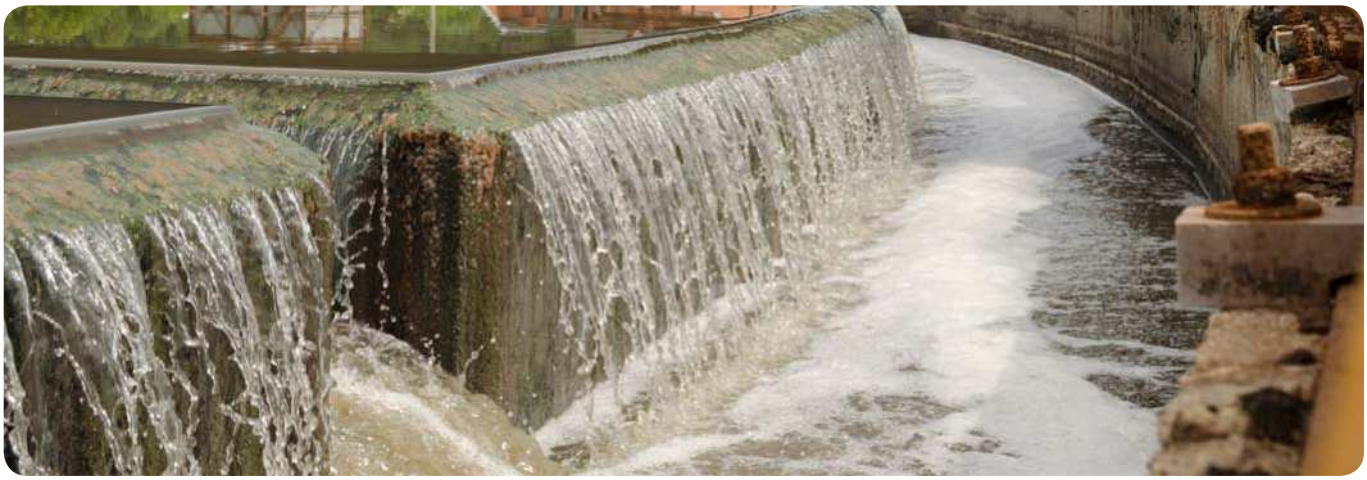
Every year, a staggering 39 million tons of sewage and storm water overflow into the River Thames. London's 150-year-old Victorian sewer network simply can no longer accommodate the sheer volume of sewage and rainwater. Protecting this dated sewer system and London's growing population from this overflow is a critical and immediate challenge for the city. Billons have been invested in London's Lee Tunnel project to redirect the overflow and relieve London's storm water and sewage overflow issues.

At the heart of the Lee Tunnel is a sophisticated pumping system with massive, 54-tonne wastewater pumps. The pumping station operates in a shaft 80 metres deep. This makes maintaining and servicing the pumps extraordinarily challenging.

SKF's customer, Georgia Iron Works in Grovetown, Georgia, was tasked with building these pumps – their largest wastewater pumps to date. A reliable, heavy-duty and robust design was required to achieve performance levels unprecedented in any such application of this type, especially with a project of this magnitude and high visibility. A total of six identical pumps were needed.

The pumps not only need to be able to process major flows of wastewater, but also be capable of withstanding the contamination and wear of foreign bodies contained in the sewage. So, GIW needed an extremely robust bearing solution that was able to cope with extreme and widely variable loads.

This offering is part of the SKF BeyondZero portfolio of products, services and solutions designed to help our customers reduce environmental impact. To learn more, visit **www.beyondzero.com**



SKF solutions: engineering support, bearings and lubrication systems

SKF provided engineering support, including modelling and calculations, to assist in the bearing arrangement selection which consisted of three bearings and was based on similar existing GIW designs.

SKF spherical roller thrust bearings weighing 220 kg with a bore size of 340 mm were used to support main thrust loads. SKF tapered roller bearings weighing 108,3 kg with a bore size of 280 mm support radial load at the drive end of the shaft as well as any reverse thrust loads, and SKF spherical roller bearings weighing 205 kg with a bore size of 400 mm support the radial load at the impeller end of the shaft.

The SKF bearings provide heavy-duty, high-quality components for the pumps to handle the demanding loads and reliability demands of the application. These pumps are mounted in a remote location 80 metres below ground, which means servicing the pumps is a major undertaking. However, the tough SKF bearings minimize the likelihood of expensive downtime.

SKF CircOil Systems

SKF has also produced four SKF CircOil Systems for the project and received a further order for two additional units. The SKF CircOil units contain a unique Accumulator Run-down Hydraulic circuit that protects the bearings in the event of power failure for two additional minutes so that the main pumps can be safely stopped without bearing damage. This was vital in the Lee Tunnel installation because the pumps were being located so deep below ground.

The ultimate benefits

By choosing SKF support and solutions, GIW did more than equip these large pumps with bearings that simply satisfy fatigue life requirements. They selected bearings and lubrication systems with proven quality, reliability and superior engineering support. With these bearings, each pump, together with its SKF circulating oil lubrication system, is well equipped for optimal field performance in this application.

According to Robert Visintainer, the vice president of engineering for GIW, “Our experience with the quality of SKF bearings and the technical support provided by SKF engineers has always been outstanding. Given the importance of this project and the demand for long-term reliability, with pumps mounted 80 metres underground, we were confident that only SKF bearings should be used.”

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