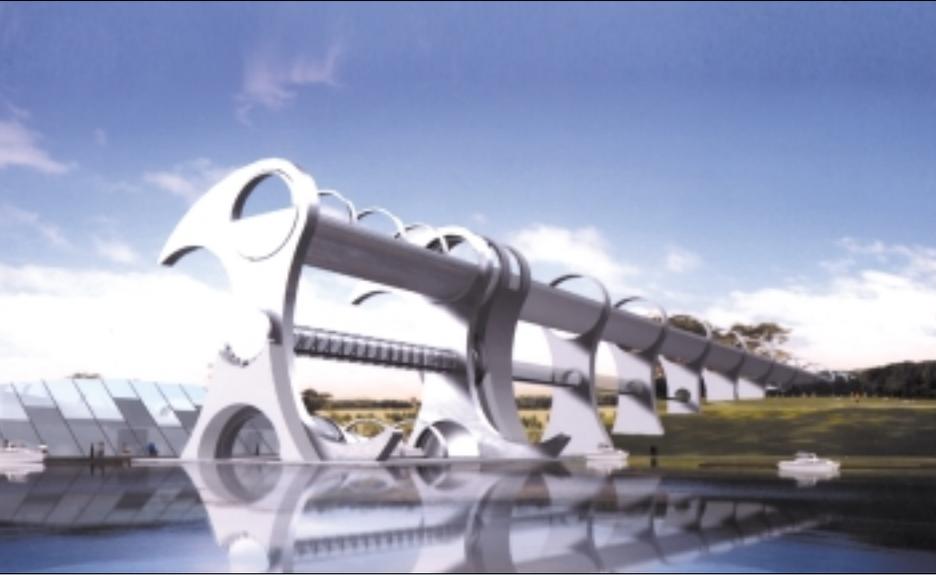


SKF Reliability Systems



Where there's a wheel there's a way

The Falkirk Wheel, the world's only rotating boat lift, relies on specially designed SKF bearings.

The Falkirk Wheel boat lift is the centre piece of the Millennium Link, a £78m project led by British Waterways, to reopen and reconnect two canals between Glasgow and Edinburgh.

The wheel measures 35 metres in diameter, with an axle length of 28 metres, and will transfer boats between the two canals over a vertical gap equivalent to the height of eight double decker buses.

The wheel's arms are shaped in the form of a Celtic axe and rotate in a continuous circle, 180 degrees at a time. The wheel simultaneously lifts and lowers a pair of 22 metre long caissons, each holding a payload of 300 tonnes, including water and up to four boats.

To support the wheel, SKF developed a bearing solution which uses a pair of purpose-designed, four metre diameter, three row, bearings.

One bearing is positioned at each end of the wheel, with outer rings bolted to the support structure and inner rings bolted to the arms. The inner ring of one bearing is equipped with gear teeth to transmit the rotational drive to the wheel.



Engineering solutions

Proactive Reliability
Maintenance (PRM)

Integrated Maintenance
Solutions (IMS)

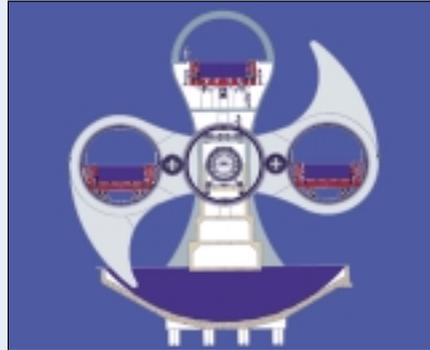
Condition monitoring
services

Maintenance services

Refurbishment services

Training courses

continued overleaf...



SKF designed the slewing bearings to be positioned on a horizontal axis to support the specified combinations of radial and axial load. When the wheel is fully loaded, it weighs 1,800 tonnes, which results in a radial load of 9,095 kN per bearing. Each slewing bearing has three rows of cylindrical rollers, one row to support the radial load and two rows, with smaller rollers, to support the axial loads and tilting moments. The very low friction torque of the SKF slewing bearing design means that a drive torque of only 2,972 kNm is required to rotate the wheel.

The bearings are fitted with their own integral seals and have been designed to have a life expectancy of 120 years. SKF also supplied external seals with 4 metre and 2.5 metre diameters, specifically designed to withstand the conditions found in such heavy-duty applications. These CR seal designs will prevent any ingress of water into the bearings during use.

SKF also provided crossed-roller bearings to support the idler gears, which will keep the caissons level at all times. The caissons are supported by and rotate on a set of radial wheels on circular rails, with each wheel mounted on two SKF sealed spherical roller bearings.

The Falkirk Wheel is an excellent example of the unique capability of SKF Reliability Systems to design, manufacture and install special purpose bearing solutions for the rotating parts of prestigious civil engineering projects.

SKF can provide full project management capability to ensure the highest level of quality, reliability and integrity of any bearing arrangement.

For further information on how SKF Engineering solutions can benefit your company, contact your SKF Reliability Systems representative or visit us on-line at www.skf.co.uk/reliability

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