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## Chemical industry

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Brunner Mond

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SKF Explorer spherical roller bearings

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Bespoke bearing housings

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Slewing bearings

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# SKF bearings take the strain in a soda ash plant

Brunner Mond, a world leading producer of sodium carbonate and bicarbonate of soda, has significantly reduced the problems it was facing with escalating maintenance requirements and even improved production at two of its soda ash production plants, through using SKF Explorer spherical roller bearings.

At the Winnington and Lostock plants in Cheshire, soda ash is produced from saline solutions extracted from bores and mines in North Wales and the Ellesmere Port area. The solution is mixed with kiln-fired limestone products to produce a slurry, which is then dried in large, steam-heated, rotary driers called secheurs. Heat, moisture and heavy loads all contribute to making the production of soda ash an extremely hostile environment for machinery and components – with bearings particularly affected.

SKF was asked to assess the bearings that were being used to support the massive secheurs, and also the thrust bearings used to prevent any axial movement. The company was also invited to investigate the slewing bearings used in a kiln-charging device atop giant kilns in a similar application.

The secheurs, weighing 200 tonnes, contain both steam and wet soda ash. Installed at a slight angle, they are 30 m long, 3 m in diameter and rotate at 8 rpm. Before the intervention of SKF, each sup-

port roller (two at each end) supporting a load of 60 tonnes each, incorporated two 12 inch diameter bronze plain bearings. Not only did they present production and maintenance problems upon failure, but also their oil-based lubrication system was extremely sensitive to misalignment as well as being prone to leakage. Premature failures were frequent as a consequence, and with each bearing change-out taking over two days, a new less problematic solution was required.

After in-depth discussions, SKF offered a modified design incorporating a SKF Explorer spherical roller bearing in each housing. Grease lubricated and sealed with a heavy-duty labyrinth and felt seal system, the new solution allowed the bearings to self-align with minimal resistance or effect on lubrication.



The housing was also interchangeable with the old design interfaces retaining all original alignment features, making implementation easy, and also introduced temperature and vibration monitoring as well as grease sampling access to make maintenance pro-active and simple.

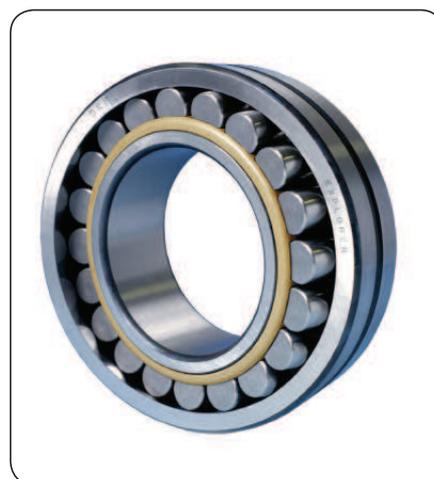
SKF was also asked to redesign the thrust rollers on each secheur, to allow for higher thrust levels that were a result of increased steam seal pressures and, therefore, further increase the efficiency of the machinery. SKF converted the original fabricated units to a heavy-duty cast SG iron design with larger, up rated bearings and a more reliable grease lubrication method for the vertical axis.

Both of these new designs of support and thrust roller have virtually eliminated bearing failures, while also improving significantly uptime and productivity at the plant.

Due to this success, SKF was also consulted on a new design of kiln loading system, which resulted in the introduction of a 2.8 m diameter slewing bearing on top of each kiln, specially designed with integrated gears and high temperature stabilisation to withstand up to 250 °C for extended periods. The new design works so well that kiln gas strengths have risen, leading to a higher yield and more reliable operation. It has also allowed the loading process to be automated, removing the need for manual operators in a hazardous area above the kilns, improving safety at the plant and allowing valuable resources to be used more effectively.



*SKF Slewing bearing*



*SKF Explorer spherical roller bearing*

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