
Renewable energy industry

Little Mill – Pontypool, Wales

SKF Explorer spherical roller bearings

SNL plummer block housings



SKF bearings changed after almost 80 years of service

The village of Little Mill, near Pontypool in Wales, have just replaced their SKF bearings as part of major refurbishment project. Although they had not been used since the mill closed in 1945, during which time the entire site has gradually fallen into disrepair, the old bearings were found to still be in operating condition.

Built and first opened in 1817, the Mill originally ground flour for the villagers of Little Mill, using a large pitchback design of water wheel. By 1927, a second smaller pitchback wheel had also been installed to enable the mill to generate electricity for the village and both wheels continued to operate until 1945 when the entire mill site was closed down. Over the following years the site became completely neglected until it was eventually purchased for conversion to a private house; rather than destroy the redundant water wheels, the owner,

Alan Steel took on the project of restoring them to working condition.

Deciding firstly to restore the smaller wheel that had been used for electricity generation, Alan discovered that the original SKF bearings, which had been installed in 1927, were still in place and in working order.

The generating wheel measures 14 feet in diameter, is 4 feet wide, constructed of wood with oak buckets and drives a gearwheel that is 9 feet in diameter, with 200 teeth, reducing to a small 17 toothed gear to produce an extremely high gear ratio. The buckets each hold up to 10 gallons of water and are arranged in a pitchback design, with water being supplied in a conventional fashion near to the top of the wheel; but unlike a normal overshot wheel however the exhaust water flows away from, rather than against, the direction of rotation. This enables it to turn freely with comparatively little water and significantly improves the efficiency of the wheel.



To modernise the wheel, the old bearings were replaced by new SKF equivalents, supplied through BRAMMER, an SKF Authorised Distributor, with SKF Explorer spherical roller bearings being used as an alternative to the ball bearing units that had been fitted originally; with the bearings held in SNL plummer block housings.

As a result, the wheel can easily be turned by hand and requires just two buckets of water to give it sufficient momentum to operate, with efficiency ratings of up to 90% being possible; it is now capable of generating enough electricity to power 25 households.

During the refurbishment it was also discovered that both the lay shaft and the original water wheel centre shaft incorporated even older SKF bearings that were, incredibly, in a good enough condition to perhaps have been reused. However, these too were replaced with modern SKF versions as part of the complete restoration plan.

Alan commented, *'It is incredible that, despite being neglected and exposed to all environmental extremes, these bearings have withstood the test of time without any kind of maintenance, with some of the bearings even being found in full working order. As a result of this, I knew that by choosing modern SKF bearings for the refurbishment that they will help to keep the wheels turning for perhaps another century, if not longer!'*



The old bearing housings and fixing plate



SKF Explorer spherical roller bearing

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