SKF Quiet Running Deep Groove Ball Bearings

Designed and developed especially for wind turbine generators, SKF Quiet Running Deep Groove Ball Bearings significantly reduce noise levels and structural resonance.

Why noise and vibration are key parameters in generators

Noise is a basic environmental concern for wind farm owners, but there are other concerns too. When noise and vibration are in sync with naturally occurring harmonics within a generator, the resulting structural resonance will eventually cause premature component failures. In many cases, the component failures are unplanned because structural resonance can also mask other problems.

The SKF recommendation for quiet running generators

SKF Quiet Running Bearings were specifically designed to dampen the structural resonance that can occur between the rotor, stator and bearings. These bearings, which are less sensitive to the variable operating conditions found in wind turbines, can increase bearing service life and extend relubrication intervals.

The improvements were achieved by redesigning the brass cage, optimizing the internal geometry of the bearing and introducing a new SKF bearing specification, VQ658*.

Because they are fully interchangeable with existing deep groove ball bearings, SKF Quiet Running Bearings can be used without modifying the rotor shaft or end shield. They are available with either an optimized brass cage or the new design steel cage.



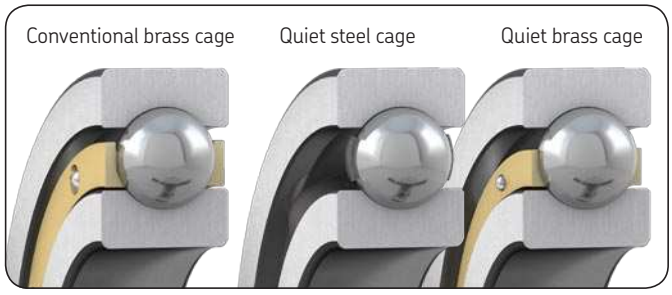
SKF Quiet Running Bearings are available with a steel or brass cage.

* VQ658: quiet running properties and specific designs which reduce noise and vibration levels in generators.

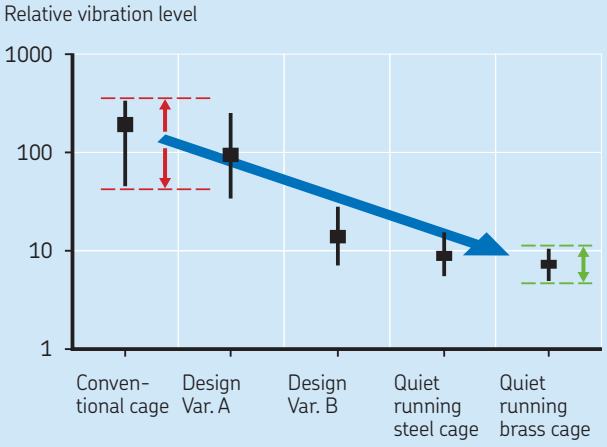
Easier relubrication and longer grease service life

The new VQ658 bearing specification includes both brass and steel cages. The design of these cages facilitates relubrication by making it easier to get more grease into the bearing free-space. Their design also maximizes the effects of the lubricant. As a result, relubrication intervals can be doubled and bearing service life is increased.

Compared to a conventional brass cage, the optimized brass cage provides 20% more free-space and the new steel cage provides 55% more free-space in the bearing to extend relubrication intervals and increase bearing service life.



Reduced noise and vibration levels with SKF Quiet Running Deep Groove Ball Bearings



SKF Quiet Running Deep Groove Ball Bearings

Principal dimensions			Basic load ratings		Speed ratings		Mass	Designation
			Dynamic	Static	Reference speed	Limiting speed		
d	D	B	C	C_0				
mm			kN		r/min		kg	–
110	240	50	203	180	6 000	3 800	9,65 11,1	**6322/C3VQ658** **6322 M/C3VQ658**
120	260	55	208	186	5 600	3 400	12,66 14,2	**6324/C3VQ658** **6324 M/C3VQ658**
130	280	58	229	216	5 000	4 500	15,2 17,2	**6326/C3VQ658** **6326 M/C3VQ658**
140	300	62	251	245	4 800	4 300	18,6 21,2	**6328/C3VQ658** **6328 M/C3VQ658**
150	320	65	276	285	4 300	4 000	22,9 25,5	**6330/C3VQ658** **6330 M/C3VQ658**
160	340	68	276	285	4 000	3 800	26,2 29,8	**6332/C3VQ658** **6332 M/C3VQ658**
170	360	72	312	340	3 800	3 400	30,84 34,8	**6334/C3VQ658** **6334 M/C3VQ658**
180	380	75	351	405	3 600	3 200	36,6 40,8	**6336/C3VQ658** **6336 M/C3VQ658**
190	400	78	371	430	3 400	3 000	42,11 47,4	**6338/C3VQ658** **6338 M/C3VQ658**

Clearances other than C3 are available upon request. A number of variants of SKF Quiet Running Bearings are available including hybrid and INSOCOAT bearings.

SKF Quiet Running Deep Groove Ball bearings contribute to high reliability in generators for wind turbines

The challenge

Nanjing Turbine, one of the largest manufacturers of generators for wind turbines in China, sought to reduce generator noise, an important issue for them as well as their customers. High noise levels in generators can indicate unacceptable production quality to wind farm owners and operators, and generate warranty claims for the manufacturer.

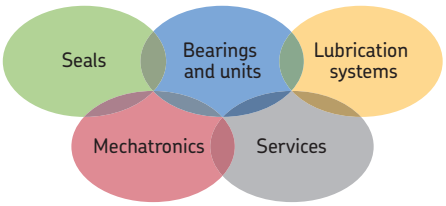
The SKF solution

SKF China, in cooperation with SKF France, proposed to Nanjing Turbine that they switch from the bearings they were currently using to the new SKF Quiet Running Deep Groove Ball Bearings for wind turbine generators. These specially designed, high quality bearings run quietly under the variable operating conditions found in wind turbines.

The results

Nanjing Turbine has reported consistently high product quality and lower manufacturing costs as a result of fewer bearing quality checks and fewer final adjustments as well as a reduction in the number of warranty claims. The company also benefited from SKF service providing more reliable lead times and deliveries to meet production demands.





The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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