Press release

Hybrid bearings from NKE are suitable for tough industrial applications

Steyr, Austria, June 2021. Industrial applications in challenging environmental conditions call for special bearing solutions. Bearing manufacturer NKE Austria GmbH has developed hybrid bearings for precisely these applications. Their advantages are presented here.

NKE hybrid bearings consist of ultrapure steel bearing rings and ceramic rolling elements made of bearing grade silicon nitride Si_3N_4 . "At first glance, this material pairing is highly unusual, but it offers many advantages in an enormous range of applications, which significantly increases the reliability of the overall system," says Michael Rössl, Application Engineer at NKE in Steyr, Austria.

The silicon nitride rolling elements are 60 percent lighter than those made from steel and are suitable for very high rotating speeds. "Consequently, NKE hybrid bearings can reach limit speeds that are over 20 percent higher than conventional standard bearings," says Rössl. "Even at these very high and demanding speeds, NKE hybrid bearings demonstrate excellent performance characteristics and minimal running noise. There are therefore particularly well suited for use in high-speed electric motors."

The ceramic rolling elements have high wear resistance and can achieve better results under extremely demanding conditions, such as poor lubrication, thereby extending service life significantly. "The very good 'dry-running properties' of a hybrid bearing play an extremely critical part in substantially enhancing the reliability of an application," adds the application engineer.

The tribological properties of a hybrid bearing are very good due to the special material pairing of ceramic and bearing steel. Very little frictional heat is generated, even at high speeds. "In turn, this also means that there is less power loss at the bearing and by extension in the application as a whole," explains Rössl. "Moreover, a hybrid bearing has a low breakaway torque."

NKE AUSTRIA GmbH
Im Stadtgut C4
4407 Steyr
Austria

T: +43 7252 86667
F: +43 7252 86667 59
E: office@nke.at
www.nke.at

Sparkasse Oberösterreich
IBAN (EUR): AT18 2032 0321 0038 5529
IBAN (USD): AT55 2032 0321 7561 4086
SWIFT: ASPKAT2LXXX

DVR-Nr.: 0861910
HRB: FN 145391k
Firmenbuch: LG Steyr
UID/VAT: ATU40756605
EORI: ATEOS1000003220

In addition, the service life of the bearing is extended by the use of ultrapure bearing steel. The rolling elements are corrosion-resistant and have very high rigidity. The raceway and roller geometry of the hybrid bearings have been specially optimised to guarantee perfect contact geometry and high load capacity. "The hybrid bearings can also offer good protection against 'standstill marks', also known as 'false brinelling'," Rössl explains another advantage of the new bearings.

Typical applications for hybrid bearings include electric motors (AC/DC), wind turbine generators, high speed applications or traction motors for railway vehicles. "In fact, hybrid bearings with ceramic rolling elements are primarily designed for applications in which maximum electrical isolation is required and/or high speeds are involved. Hybrid bearings offer maximum isolation protection because the ceramic rolling elements themselves have an electrically insulating effect and thus prevent a corresponding passage of current," says Rössl. "The use of frequency inverters often causes electrical damage to the bearing. With lower currents, a bearing with an electrically insulating coating among other measures can help to alleviate this. But only a hybrid bearing offers optimum protection against very high currents."

And the service life of the bearing can be extended substantially in other applications as well through the use of rolling elements made from silicon nitride. The table below provides an overview of the most common hybrid bearing applications and the advantages of the bearings.

ADVANTAGES OF HYBRID BEARINGS WITHIN DIFFERENT APPLICATIONS:	Electrical insulation	High speed suitability	Extended service life	High wear resistance	Low running noise behaviour	Insensitive to false brinelling	Low friction	High rigidity
Electrical Drives - Electric motors - Generators	X	X	X	X	X	X	X	
Wind - Wind Generators	X	X	X	X	X	X	X	
Mechanical Drives - Gearboxes		X	X	X		X	X	X
Railway - Traction Motors	X	X	X	X				
Pumps & Compressors		X	X			X	X	

NKE AUSTRIA GmbH
Im Stadtgut C4
4407 Steyr
Austria

T: +43 7252 86667
F: +43 7252 86667 59
E: office@nke.at
www.nke.at

Sparkasse Oberösterreich
IBAN (EUR): AT18 2032 0321 0038 5529
IBAN (USD): AT55 2032 0321 7561 4086
SWIFT: ASPKAT2LXXX

DVR-Nr.: 0861910
HRB: FN 145391k
Firmenbuch: LG Steyr
UID/VAT: ATU40756605
EORI: ATEOS1000003220

Depending on the demands of the application and the size of the bearing, the cages for the hybrid bearings are available in steel sheet, brass or polyamide; customised cage designs are also possible at the customer's request. Frequently used hybrid bearing types include deep groove hybrid ball bearings, which are available from stock or with short lead times. Other bearing types or special designs can be manufactured to customer specifications upon request. Existing bearings can be replaced easily: "NKE hybrid bearings can replace conventional standard bearings without any modifications at all," says Rössl. "No additional tools or special skills are required to replace them."

Photos:

Photo1: Deep groove hybrid ball bearings from NKE in various cage designs: with brass cage (top left), steel sheet cage (top right), polyamide cage (bottom right and bottom left)

Photo 2: Deep groove hybrid ball bearings from NKE with ceramic rolling elements and polyamide cage

Photo 3: Michael Rössl, Application Engineer at NKE in Steyr, Austria

Photo 4: Table: The advantages of hybrid bearings

Company information:

NKE Austria GmbH is a bearing manufacturer with headquarters in Steyr, Austria. The company was founded in 1996 by a group of senior staff members of former company Steyr Wälzlager. Spanish bearing manufacturer Fersa Bearings, which is specialised in the automotive sector, acquired 49 percent in NKE in 2016 and completed the acquisition with 100 percent at the end of 2018. NKE offers both standard and special bearings for all industrial applications. Engineering, product development, production and final processing of components, assembly, quality assurance, logistics, and sales and marketing are centralised at its Steyr headquarters. The factory in Steyr is certified to ISO 9001:2008, ISO 14001:2004 and OHSAS 18001. A wide range of standard bearings is available from stock or at short production lead-times. NKE also provides customized products and solutions. In addition to product development and application engineering NKE provides a full range of technical services, consulting, documentation and training. NKE’s products are distributed through 12 international offices and more than 240 distribution outlets in 80 countries.

Contact:

NKE AUSTRIA GmbH
Im Stadtgut C4

NKE AUSTRIA GmbH
Im Stadtgut C4
4407 Steyr
Austria

T: +43 7252 86667
F: +43 7252 86667 59
E: office@nke.at
www.nke.at

Sparkasse Oberösterreich
IBAN (EUR): AT18 2032 0321 0038 5529
IBAN (USD): AT55 2032 0321 7561 4086
SWIFT: ASPKAT2LXXX

DVR-Nr.: 0861910
HRB: FN 145391k
Firmenbuch: LG Steyr
UID/VAT: ATU40756605
EORI: ATEOS1000003220

4407 Steyr, Austria
Tel.: +43 7252 86667
Fax: +43 7252 86667 59
E-mail: office@nke.at
Internet: www.nke.at

PR Contact:
TPR International
Christiane Tupac-Yupanqui
PO Box 11 40
82133 Olching, Germany
Tel.: +49 (0)8142 44 82 301
E-mail: c.tupac@tradepressrelations.com
Internet: www.tradepressrelations.com

We would be grateful for a sample copy of the publication containing this article.

NKE AUSTRIA GmbH
Im Stadtgut C4
4407 Steyr
Austria

T: +43 7252 86667
F: +43 7252 86667 59
E: office@nke.at
www.nke.at

Sparkasse Oberösterreich
IBAN (EUR): AT18 2032 0321 0038 5529
IBAN (USD): AT55 2032 0321 7561 4086
SWIFT: ASPKAT2LXXX

DVR-Nr.: 0861910
HRB: FN 145391k
Firmenbuch: LG Steyr
UID/VAT: ATU40756605
EORI: ATEOS1000003220