



SOLUTIONS FOR THE CEMENT AND MINING INDUSTRIES

BRANDS OF NSK EUROPE

NSK

RHP *bearings*



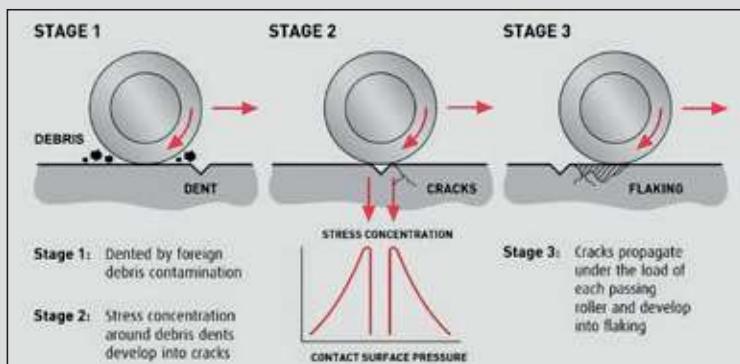
www.nsk.com/eu-en/

IN CONDITIONS WHERE LUBRICATION IS LIKELY TO BECOME CONTAMINATED, NSK TOUGH STEEL DELIVERS AS MUCH AS 10 TIMES THE OPERATING LIFE OF GENERAL CARBURISED STEEL ALTERNATIVES

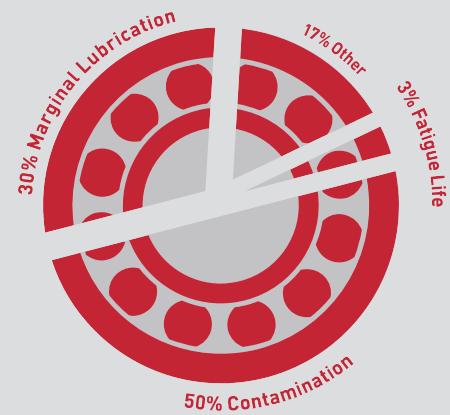
In the cement and mining industry, where conditions mean that lubricants are at constant risk of contamination, the service life of conventional bearings may actually be as little as 20% of the catalogue life.

Under such conditions, however, NSK Tough Steel delivers as much as 10 times longer bearing operating life than conventional carburized steel alternatives.

Reliability is the key to hitting production targets. Contamination, an ever present in the sector, is the enemy of reliability as it undermines machinery and causes unplanned downtime. On top of this, water, heat, dust, vibration and load can all have a huge impact on performance. NSK's solutions are designed to maximise uptime through increased reliability, reduced maintenance and extended bearing life.



Surface originated flaking in contaminated environments

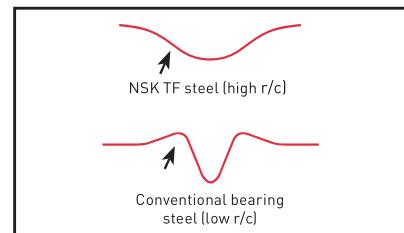
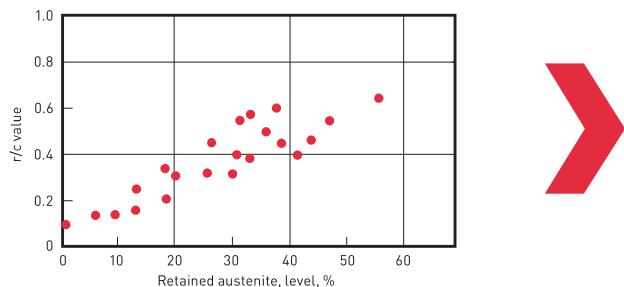


UP TO 80%
of premature bearing failures
are caused by contamination
and lubrication issues



HOW NSK'S TF STEEL HELPS TO INCREASE BEARING SERVICE LIFE

Innovative and patented heat treatment technology optimises the quantity of the retained austenite.

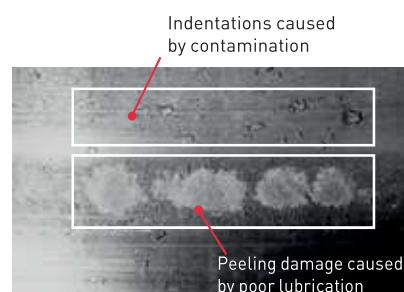


Reduced stress at dents shoulders during contamination

Special elements are added to the steel alloy

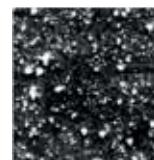
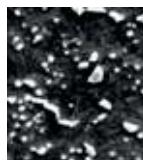
Hi-TF: chrome and manganese

Super-TF: chrome and molybdenum



Higher raceway hardness and resistance to wear

Advanced carbonitriding to extract a greater amount of fine-size carbide and carbonitride



Increased toughness of the steel with superior ability to resist hoop stress and slow down the spread of flaking

IN CONTAMINATED ENVIRONMENTS
Versus ordinary carburized steel:

Hi-TF: 7 times
Super-TF: 10 times

WEAR AND SEIZURE RESISTANCE
Versus SUJ2 steel:

Hi-TF: 20% higher
Super-TF: 40% higher

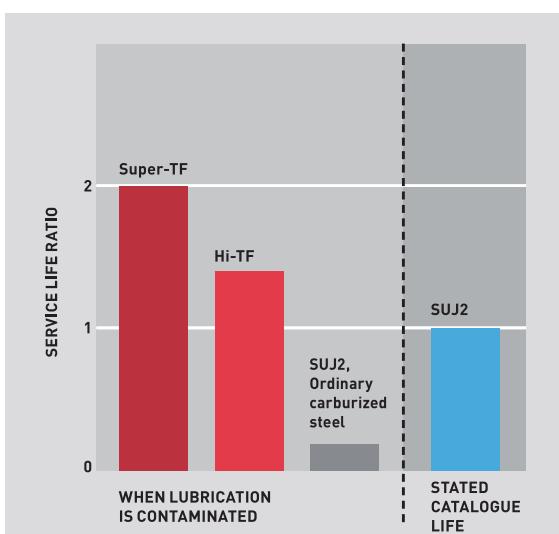
HOW MUCH BETTER IS TF STEEL?
Approximate life extension comparisons

WHEN POORLY LUBRICATED
Versus ordinary carburized steel:

Hi-TF: 4.7 times
Super-TF: 5.5 times

IN HIGH TEMPERATURES
Versus SUJ2 X26 steel:

Super-TF: 4 times



SPHERICAL ROLLER BEARINGS: VARIOUS SOLUTIONS FOR DIFFERENT APPLICATIONS

HIGHLY EFFECTIVE CONTAMINATION PROTECTION: NSK SEALED SLE SERIES



- › Robust contact seals reinforced with metal shield
- › Integral garter spring for superior sealing performance
- › Detachable design for easier mounting

LONG AND CLEAN LUBRICATION: NSK MOLDED-OIL BEARINGS



- › Extended performance with continuous supply of clean lubricant
- › Eliminates the need for relubrication, reducing maintenance costs
- › More than twice the operating life of grease-lubricated bearings in water or contaminated environments

SUPERIOR ENDURANCE OF VIBRATION AND SHOCK LOADS: NSK VIBRATING SCREENS - VS SERIES



- › Heavy-duty, solid machined-brass cage
- › Internal radial clearance C3 and C4 range set at upper 2/3 of ISO
- › Tailored tolerances to achieve proper fits

ENHANCED PERFORMANCE AND CAPACITY: NSK'S NEW ECAM HPS SERIES



- › Precision-machined, tough, one-piece brass cage with contoured roller pockets
- › Higher capacity delivered by increased roller size
- › High-speed performance and minimal operational temperature-rise

NSK'S RANGE OF BEARING SOLUTIONS FOR THE CEMENT AND MINING INDUSTRIES

SPHERICAL ROLLER BEARINGS	CYLINDRICAL ROLLER BEARINGS	TAPERED ROLLER BEARINGS	THRUST BEARINGS
			
<p>The HPS Series offers longer operating life and higher limiting speeds than conventional bearings.</p>	<p>The EM and EW Series come with high-load capacity and longer operating life. They are suitable for high-speed environments.</p>	<p>Tapered roller bearings are produced with hardened, high-carbon chromium steel allowing them to be used in arduous conditions.</p>	<p>Cylindrical thrust bearings are produced with ultra-clean steel to extend bearing life and are capable of carrying high axial loads.</p>
DEEP GROOVE BALL BEARINGS	PLUMMER BLOCKS	INTEGRATED BEARING ASSEMBLIES	SELF-LUBE UNITS
			
<p>We offer various options when it comes to deep groove ball bearings, including single- and double-row configurations, sealed and open type versions and the increased capacity HR series.</p>	<p>Split housings can be used both with double-row self-aligning ball bearings or HPS Spherical Roller Bearings. Various seal options are available.</p>	<p>High-strength housings with vibratory specific bearings reduce the need for in-house design and sub-assembly.</p>	<p>Self-Lube units come in pillow block and flange mounted configurations with one-piece cast iron and triple lip seal versions available for very arduous applications.</p>

BRÜEL & KJÆR VIBRO CONDITION MONITORING SOLUTIONS FOR THE CEMENT AND MINING INDUSTRIES



Brüel & Kjær Vibro

A member of the NSK Group

SOLUTION STREAMS AND 3 CORE INGREDIENTS

Asset Health Management

Condition Monitoring Service: Brüel & Kjaer Vibro (B&KVibro) delivers all hardware and monitors customers assets

A cloud-based solution designed both for customers with little or no experience in condition monitoring, and for experienced customers with a need to scale

B&K Vibro delivers and operate the full solution, including monitoring and analysis

BKV BEYOND®

ADDED VALUE

Empowered Maintenance

Self Service: B&K Vibro delivers the hardware and software, the customer then monitors their own assets

On premises solutions for customers with their own Condition Monitoring expertise

Tools and services which empower customers to perform predictive maintenance

ISETPOINT®

**POWERED BY
AVEVA**

Monitoring and Sensing

OEM businesses: B&K Vibro delivers best-in-class hardware for the customer to integrate into their platform

For customers who operate their own asset health management platform with the need of high quality data

We give every machine a voice, that we translate into actionable insights to boost productivity



Cabled sensors



Wireless sensors & gateways



VCM-3 / DDAU III



VC-8000

PLANT-WIDE CONDITION MONITORING SOLUTIONS: IMPROVE MACHINE UPTIME, PRODUCTIVITY, EFFICIENCY AND RELIABILITY, ALL WHILE REDUCING LIFE-CYCLE COSTS

PLANT-WIDE CONDITION MONITORING SOLUTIONS

B&K VIBRO'S PRODUCTS NOT
ONLY IMPROVE MACHINE
UPTIME, PRODUCTIVITY,
EFFICIENCY AND RELIABILITY,
THEY ALSO REDUCE LIFE
CYCLE COSTS



SUCCESS STORY:

learn more how to keep your
kiln spinning with VCM-3



www.bkvibro.com

FIND OUT MORE

about our solutions for the cement
industry at www.nsk.com/eu-en/



Global: nsk.com

ENHANCE YOUR MACHINE RELIABILITY AND PERFORMANCE BY UPGRADING TO NSK AND BRÜEL & KJÆR VIBRO.