

INTRODUCING MES SYSTEM IN ZKL BRNO PLANT



Interview with
Jiří Prášil, Jr.

page 4



Bearings for mineral
processing *pages 6–7*



Reconstruction of
hardening plant *page 3*

Read further in this issue:

Strengthening of the
machine fleet in ZKL
Kláštorec nad Ohří

page 5

Introducing: Ložiska
Mělník s. r. o. *page 8*

ZKL webinars *page 12*

Opening speech



Dear business partners,

I am glad to be able to talk to you on the occasion of the publication of the June issue of our ZKL News magazine. At present, we are all affected by the negative mood caused

by the global SARS Covid-19 pandemic. For all companies and entrepreneurs, this is a very difficult period due to the impossibility of rational planning, because we do not know how the demand will develop in the future. Therefore, we need to stick to facts that can be relied on. These are:

- audited results of 2019,
- development of a portfolio of bearings for environmental technologies and rail transport,

- expansion of the business strategy with leading customers in China, Russia and India,
- a qualified team of workers and technicians running modern technologies in manufacturing plants in Brno and Klášterec nad Ohří.

Following the above, we can present you with the economic results we achieved in 2019 and our current plan for 2020 compared to the previous periods of 2017 and 2018. Everything is summarised in the following table.

These relatively good economic results have been achieved through the successful development and management of the manufacturing of bearings for wind farms and rail transport, and the development of trade in ZKL bearings in China, Russia, India and, last but not least, Western Europe.

The 2020 plan is based on the assumption that stable demand for large-scale bearings will continue, especially in China, India and partly in Western Europe. Despite the current

constraints, we expect demand to remain with large industrial companies in Russia and India.

Even if the above assumptions are fulfilled, we will certainly have a lot of hard work ahead of us in 2020 to meet the targets we have set.

In conclusion, I would like to thank to all of our business partners, workers, technicians and managers for their work in 2019. I also wish that we could really meet the 2020 goals and thus maintain the tradition of the ZKL Group as a reliable and promising partner. My thanks also go to our employees, who conscientiously perform their work tasks even in today's difficult conditions and do everything to ensure smooth running of the production and dispatch of ZKL bearings to our customers. And last but not least I very much appreciate those who help in their free time wherever help is needed.

Ing. Jiří Prášil, CSc.

General Manager of ZKL, a. s.

Indicator	2017	2018	2019	index 2019/2018	2020 plan
Sales revenues (CZK thousand)	1 053 295	1 068 895	1 112 304	1.04	1 251 050
Operating result (CZK thousand)	383 400	406 353	439 329	1.08	481 255
EBITDA (CZK thousand)	122 948	131 715	158 642	1.20	163 831
Productivity (Added value / Personnel costs)	1.30	1.30	1.41	1.08	1.48

Manufacturing of the largest thrust spherical roller bearing in ZKL Brno



The ZKL Group strengthens its position in the field of large-sized bearings, not only thanks to large investments in new machinery and technological equipment, including digitization of the manufacturing, but also through deepening its know-how provided by its technical and development base, company ZKL – Výzkum a vývoj (Research and Development). With these steps, ZKL confirms its long-term goal of being the largest manufacturer of large-sized and special bearings in Central Europe.

A tangible proof of this philosophy is yet the largest thrust spherical roller bearing of the 294/950EM NF series with a massive brass cage, which was manufactured at the ZKL Brno plant at the end of February this year. A bearing with an outer diameter of 1,600 millimetres and a weight of 3,070 kilograms will be used in the air pre-heater of the thermal power plant. The bearing placed high demands on the production. Technology faced a difficult task of ensuring strict geometric parameters at competitive

costs. The complexity of this task depicts a view of the handling of the workpiece, when, for example, a single rolling element – spherical roller – weighed less than 40 kilograms. However, with the use of our own know-how, all critical points were successfully overcome, and the bearing was delivered to a satisfied customer.

In the second half of this year, we will face a similar giant task: For our foreign customer, we will produce an even larger thrust spherical roller bearing 294/1000EM NF, with an outer diameter of 1,670 millimetres and a weight of 3,350 kilograms.

Ladislav Bohuslav

Process Engineer, ZKL Brno, a. s.



Reconstruction of heat treatment plant: New equipment

In the 3rd quarter of last year, we started the reconstruction of part of the heat treatment plant with shaft furnaces that are used for hardening the largest bearing rings, especially for the wind power plants and power engineering programmes. The hardening capacities help us increase the newly designed and manufactured technological equipment for heat treatment of bearing parts with a diameter of 1,800 to 2,000 millimetres from the company Realistic, Karlovy Vary. The equipment consists of a hardening electric furnace with a protective nitrogen atmosphere and a hardening salt bath. The requirement when creating the design was that we wanted to harden more bearing rings at the same time than were able to before on gas furnaces. However, this significantly complicated mainly the construction preparation of the building for the installation of technologies. Technological sumps had to be built, which required excavations to a depth of 4.5 meters below floor level. We encountered a lot of problems, from the need to ensure the statics of the building during the excavations, because the excavation extended to the base of the load-bearing columns, to layers of incredibly strong concrete under the floor and old sewer pipes. Due to the low clear height of the hall, most of the work also had to be done without modern technology. But in the end, everything



went well and in November we were able to install new equipment.

What is it new in?

The gas heating furnace has an inner diameter of 1,900 millimetres and a working depth of 2,000 millimetres. This means, that it enables simultaneous heating of, for example, three TPRM 240/900 rings. The inner muffle of the furnace, which ensures even heating by distributing heat from the radiators, is made of stainless steel. The working



millimetres. This device is also controlled by the Siemens control system with automatic regulation. The content of the tank is over 56 tonnes of dissolved quenching salt AS140. Such a large amount of quenching salt hardly heats up during quenching, and therefore guarantees perfect and fast cooling of the components needed to form the desired structure.

To be able to operate the complex of hardening equipment, it was necessary to replace the existing crane with a new one with a capacity of 3 tonnes. The equipment of the shaft furnace workplace is complemented by washing spray equipment from the Summa company based in Šumperk. Washing takes place in two phases to ensure the highest possible cleanliness of the washed parts. After saturation with quenching salt, the rinsing water will be returned to the hardening tub, which effectively reduces consumption. The load-bearing capacity of the rinsing table is adapted to the hardened batches and reaches 3 tonnes of one washed batch.

After performing the necessary tests and verifying the quality parameters of the tempered components, serial operation was started at the beginning of January 2020 on all new devices.

New technologies increase the hardening capacity of large components by as much as 75 percent.

Ing. Vladimír Vansa
Technical Department
ZKL Brno, a. s.



space is sealed, and technological nitrogen serves as the working atmosphere. This ensures smooth surface of hardened parts without scale and high decarburization of the surface. The furnace is controlled by the Siemens control system. Control is performed only by selecting the right program from the control panel memory. The system also records the entire process, making it possible to retrospectively analyse the conditions for individual hardened batches. The furnace has a very good thermal insulation and low electricity consumption.

Another part of the plant complex is a hardening heated tub. This is the largest non-detachable part ever installed in ZKL Brno. The tank consists of a cube with internal dimensions of 4,000 × 3,000 × 2,500 millimetres, and the installation of it in the heat treatment plant was really very "tight". The tank is equipped with external insulation, electric heaters and air cooling. It allows hardening of components up to a diameter of about 2,000

Interview with CEO of ZKL Bearings CZ, a. s.

This year, the ZKL Group introduced another element of the so-called Industry 4.0, which focuses on machine monitoring. Jiří Prášil Jr., the Executive Director of the ZKL Group, spoke not only about this novelty, but also about the successes of ZKL, the current production strategy and the current situation around coronavirus.

Mr. Director, it's only been a few weeks since you introduced another Industry 4.0 technology at ZKL, can you please introduce it in more detail?

It is an MES system, which is used to digitize the production and monitor our manufacturing machines. We implemented the system at the end of the first quarter of this year. At the moment, we are starting a trial operation and training staff. We have already had our first positive results in the last month.

Can you bring the machine monitoring process closer?

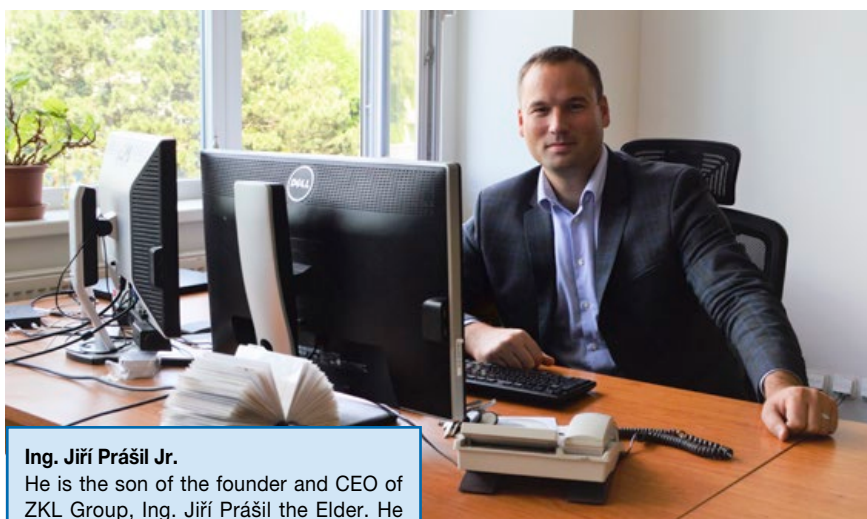
The primary goal of this system is to optimize the process towards the greatest possible use of our machines. Then savings can be associated with this. Companies that do not have this system often only have to estimate the usability of machine from standards, which ultimately translates into higher costs. This is however eliminated thanks to our intelligent monitoring, we are able to see real time of production, and thus the real costs. The system thus helps us find out how much real time we use for a specific operation, how much time is needed for adjustment or repair, or how much unused time remains. Time is the most important parameter that affects the cost of the production process.

Is cost the only criterion?

Only in part. In addition, it is necessary to take into account the capacity that the production has, but may not use it yet. Therefore, we monitor the increase of OEE parameters, which is the usability of machines. So, we now know that it is not necessary to buy a new machine right away but, on the contrary, make more use of the capacity of the existing ones.

What led you to purchase this system?

The key factor was the continuous growth in demand for large-sized bearings. In order to be able to satisfy the demand, we proceeded to greater digitization of the manufacturing processes. Thanks to this, we can make the most of the machinery we have. Of course, if necessary, we are able to expand the purchase of other means



Ing. Jiří Prášil Jr.

He is the son of the founder and CEO of ZKL Group, Ing. Jiří Prášil the Elder. He holds the position of Executive Director of the ZKL Group, and also of the ZKL Bearings CZ business company, which is a part of it. Prior to that, he worked as a production and subsequently executive director of the Hanusovice plant of the company. He also previously worked for the company as a technical support manager and application engineer. He graduated from the Brno University of Technology.

of production. However, we always try to behave like proper economists and, first of all, make the most of our available capacity.

However, MES is not the first element of Industry 4.0 to be implemented in ZKL, is that right?

Exactly. In addition, we have an established SAP ERP system, and also a process system WindChill. It manages the offer of a new bearing, manufacturing of new types or the complaint procedure. For the future, we are also thinking about the reimplementation of the ERP system, we are tentatively planning this step for next year. We expect the new ERP system to integrate with the MES system.

Opportunities to invest in digitization and further development depend on profit. How does ZKL stand in this direction?

I dare say very well. In the last three years, we have been continuously increasing our EBITDA thanks to the diversification of our business

activities and channels. This year, its value could be double compared to 2017. This allows us to make further investments, whether in machinery or new products.

How has the diversification of business activities manifested itself over time?

We try to focus more on large customers. Quality is our number one priority, which is why we also supply bearings to the wind power plant segment, where this aspect is extremely taken care of. We also had to completely refurbish our machinery to be more productive, and to keep our technologies able to maintain the tolerances and technological quality to the standards required by the customer.

And let's move to the present or near future?

We are growing, we have new customers in China, we are also working on an interesting project with a large American company. The goal is also a project that we have internally called "large-size bearings project number 3". This includes, among other things, the purchase of additional capacities and machines. We would like to double our turnover in this segment by 2022 and increase it by another 17 million euros.

Is it related to the growing demand for large types of bearings, which you have already talked about?

Definitely. However, another trend can be observed all over Europe: not only is the demand rising for the production of large-size, but also special bearings. Standard catalogue ones are rather in decline, there are thousands of manufacturers making them, while companies often turn to the cheap and non-European ones. However, specials are on the rise, which we also observe at ZKL. We have the largest turnovers in this segment.

And are you planning further expansion?

Yes, this can be shown well on bearings for concrete mixer trucks. We currently produce about 40,000 of them a year. So far, we have offered 3 types of bearings in this segment, but now we are working on expansion to be able to respond flexibly to growing demand. Focusing on special bearings makes sense to us, as evidenced by the length of the contract for the supply of bearings to the railway industry. After four years of cooperation with Russian Railways, we are now extending the contract for another three years.

> continued on next page



Interview with CEO of ZKL Bearings CZ, a. s.

Is it a long-distance run?

Clearly, it is a long-term business. However, once the manufacturer proves successful, it gets more and more space. This model is relatively expensive in terms of time, preparation of contracts and technical solutions. We however have sufficient capacity for this, and we can also rely on our Research and Development, which performs analyses and maintains contact with the customer.



Our long-term goal is therefore to become a leader in the segment of large-size and special bearings. We have very good preconditions for this, as our turnover is growing steadily.

We can't avoid the main topic of these weeks – coronavirus. How do you perceive the current situation in ZKL?

I believe that the current state and the need to adapt to it will help us with a deeper integration of digitization, whether in the internal processes in the company or, for example, in the order systems. If we are to be successful in the future, we must continue to increase productivity. For example, in the trade we will try to transfer existing customers to online ordering, in manufacturing plants the ERP system will plan directly for us, and the same system will take care of finance and cash-flow management – the system can already do that for us. As for current events, in the first quarter we recorded a year-on-year sales growth of 15 percent thanks to long-term contracts. The question remains what the rest of the year will look like, it is difficult for us to estimate it at the moment, given the dynamic global development.

What are the biggest questions?

The COVID 19 pandemic has caused the global economic impact. The future will depend in particular on when the restrictive measures of individual



member states will be released and how quickly will the world economy be restored. A big question mark also hangs over foreign exchange rates, where we are not yet able to estimate the trends.

What is the situation in ZKL now?

By the end of May, about seventy percent of our employees were working online from home. Now we are returning to normal mode. Even during the emergency, our production was running full capacity. However we have seen a decrease in demand and new orders for third and fourth quarters of this year especially in the MRO segment. We are catching up this decline now by the focus on the OEM segment. By the end of August, we will expand the production of large-sized bearings, we have already ordered two new carousels, and in the autumn, we will also install the largest grinder to date.

Strengthening of the machine fleet of ZKL Klášterec nad Ohří, a. s.

We constantly strive to optimize the manufacturing processes aimed at customer requirements and the new market environment by increasing the quality parameters of the designed bearings and expanding the product range. Machinery innovation also goes hand in hand with this activity. In 2020, the ZKL Klášterec nad Ohří technology fleet will be expanded with new machines. Four machines will be installed in the spring months, and another three by the end of the year.

The first stage of strengthening the machine fleet is taking place within the project "Introduction of the manufacturing of agricultural bearings" and they are machines for finishing the outer and inner bearing rings and bearing ring raceways. These are innovative special ball bearings based on the design of higher-generation wheel ball bearings, which are designed to be fitted in modern agricultural technology. CNC machines will be acquired for precise grinding of surfaces, faces and collars and for superfinishing of bearing rings with an outer diameter of 20 to 150 millimetres.

The second stage of the machine upgrade process includes the installation of three CNC machines for precise grinding of raceways, internal diameters, and for superfinishing the raceways of bearing rings of large deep groove ball bearings with a diameter of 190 to 420 millimetres. These machines will be purchased as part of the construction of a development centre through the innovation project "Centre for Industrial Development and Innovation of Thrust Bearings". After the commissioning of the development centre, equipped with suitable technology for grinding raceways and holes and for finishing the ground surfaces by superfinishing, we will have the opportunity and suitable conditions to further develop a range of bearings over 190 millimetres up to a diameter of 500 millimetres. There will be a drastic improvement in the quality parameters of the raceways (roughness, corrugation) of the bearing, as well as reduction in rolling resistance, thus extending the service life and reducing the energy requirements for the operation of these bearings. With their parameters, the bearings produced in this way will be closer to the low-energy bearings of the competition.



Ing. Jarmila Bůchová
Project Manager ZKL Klášterec nad Ohří, a. s.

Installation of a machine for precise grinding of BDLZ 120 CNC HP arms

Mineral processing

Stone mining and its processing are among the industries with very demanding operating conditions. The components of machines are exposed to significant temperature fluctuations, high dust, humidity, as well as vibration and shock loads. Service and maintenance is very demanding, and unplanned outages are a constant risk. Component suppliers must keep up with the development of technologies, increasing demands on safety and environmental protection, as well as customer requirements for the most economical operation of equipment. ZKL, a traditional Czech manufacturer of spherical roller bearings for heavy industry, is able to reflect these requirements in the development of standard and special spherical roller bearings, as key components of mining and mineral processing industry equipment. ZKL thus offers a wide range of technical solutions for individual segments of this industry.



Bearings in crushers

Crushers are devices, the purpose of which is to crush stone or other crushed material into the form of grains. There are many designs and types of crushers. The most used are jaw, impact and cone crushers. Each type

index. The disadvantage of operating this type of crusher is high dustiness, noise level and higher service costs.

For all types of crushers however applies, that the bearings used in them are exposed to high impact loads and excessive dust. Bearing manufacturers are therefore responsible for the introduction of a bearing with the highest possible load capacity and the highest quality of processing of functional surfaces. On the other hand, the user of the bearing is responsible for its regular maintenance, especially for proper re-lubrication, so that there is always fresh lubricant inside the bearing. ZKL fulfils its role by introducing spherical roller bearings in the New Force generation, which are comparable in their performance parameters to premium brands on the market.

Spherical roller bearings of the 230, 231 and 223 series with normal radial clearance or C3 play, are most often mounted on eccentric crusher shafts. ZKL supplies bearings in the EMH NF design, i.e. bearings with a one-piece solid brass cage, for a complete range of outputs and sizes of crushers.

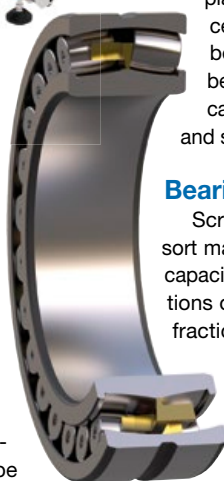
crushing and crushers. There are oscillating screens, drum screens and more. In this chapter we will focus on vibrating screens.

The basic part of vibrating screens consists of vibromotors or eccentrically unbalanced shafts, which cause a circular or elliptical oscillating movement of the entire screen. It is mounted on springs and, by its oscillation, moves the sorted material over the surface of the sieve, which results in its sorting. Experience from the given application shows that common designs of spherical roller bearings with brass or sheet metal cages, which are mounted on eccentric shafts or in vibromotors, do not stand up and premature failure occurs. For this reason, ZKL has developed special spherical roller bearings for vibration applications and designated them with the EMHD2 suffix. The vast majority of these are bearings of the 223 series. An exception may be the bearings of the 222 and 233 series. ZKL offers a range of these bearings with a bore diameter from 40 to 200 millimetres.

Practical experience has proven that the operating temperatures of bearings in the EMHD2 design are 5 to 10 °C lower compared to conventional designs. This has a positive impact on the service life of both the bearing and the lubricant, which allows service intervals to be extended. In general, bearings in EMHD2 design can be recommended for any vibration application. In

> continued on next page

has its advantages and disadvantages. Jaw crushers have a simple construction, lower operating costs compared to other types, and show high reliability. On the other hand, they are not suitable, for example, for crushing reinforced concrete, the grains of this material show inferior shape properties. The advantage of impact crushers is a large degree of crushing, high performance and excellent grain shape



Bearings in vibrating screens

Screens are devices that are used to sort material by fraction at lower material capacities. Screens sort material by vibrations or rotation, while the finer-grained fractions fall through the sieve and the coarse-grained ones travel along the surface of the sieve and return, for example, to the crushing phase. There are several ways to sort material, as in the case of



Examples of commonly used ZKL bearings on crusher shafts

ZKL bearing	d [mm]	D [mm]	B [mm]	C _r [kN]	C _{0r} [kN]
23124EW33MH C3 NF	120	200	62	575	798
22330EW33MH NF	150	320	108	1,520	1,850
22356EW33MH C3 NF	280	580	175	3,840	5,340
23176EW33MH NF	380	620	194	4,380	7,960

Mineral processing

Examples of commonly used ZKL bearings for vibration applications

ZKL bearing	d [mm]	D [mm]	B [mm]	C _r [kN]	C _{0r} [kN]
22314EMHD2 NF	70	150	51	376	402
22320EMHD2 NF	100	215	73	750	842
22326EMHD2 NF	130	280	93	1,180	1,380
22334EMHD2	170	360	120	1,670	2,280

applications with vibration accelerations higher than 5 g, the EMHD2 version is already irreplaceable.

Spherical roller bearings of the 223 series have a guaranteed safe mutual misalignment of the rings of $\pm 3^\circ$. However, this information does not apply to applications where the load rotates, i.e. to vibration applications.

The maximum permissible dynamic mutual misalignment given here is in the order of tenths of a degree, depending on the lubricant and cooling system used. For more detailed information, we recommend that the Technical Support Department is contacted.

Technical parameters of EMHD2 bearings

- Increased accuracy of the inner geometry and inner diameter of the bearing.
- Brass cage guided on the outer ring of the bearing.
- Radial clearance C4 at all times.

Bearings in belt conveyors

Belt conveyors are used to transport crushed material over long distances. They are often located in inaccessible locations and are exposed to very adverse weather conditions. Each servicing or unplanned outages thus require significant costs. With these devices, more than anywhere else, customers emphasize the reliability and maintenance-free operation of individual components.

Belt conveyors consist of drive and driven main rollers, tension rollers and idle rollers. Drive, driven and tensioning rollers are usually mounted in spherical roller bearings. ZKL, as one of the world's few bearing manufacturers,



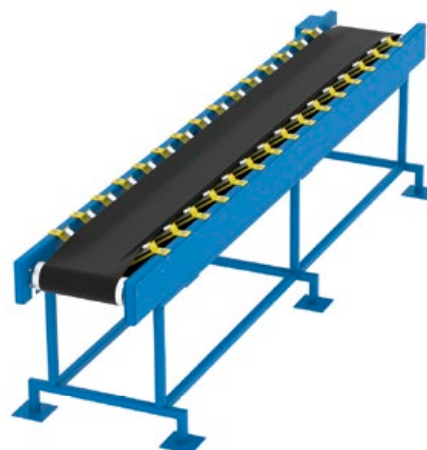
offers its customers sealed spherical roller bearings. They meet the strictest requirements for operational reliability. The bearings are equipped

with a contact lip seal made of NBR (up to 110 °C) or HNBR (up to 150 °C) and, as standard, are lubricated with plastic lubricant ZKL LVT 2 EP grease (up to 110 °C). The seal prevents the ingress of dirt into the inner space of the bearing and, in combination with a correctly made house seal (the labyrinth house seal and the inner space of the house is filled with plastic lubri-

cant), is an ideal solution for the given application. The practice shows that sealed spherical roller bearings achieve 2.5 to 3 times the service life compared to open spherical roller bearings.

is safe to operate the bearings with a maximum mutual misalignment of the rings of 0.5° . ZKL currently offers a range of sealed spherical roller bearings with bore diameters from 25 to 320 millimetres. For detailed information about the range and its benefits, we recommend contacting the Technical Support Department.

Ing. Jan Křemen
Head of the Technical Support Department
ZKL – Výzkum a vývoj, a. s.



Examples of commonly used ZKL sealed spherical roller bearings

ZKL bearing	d [mm]	D [mm]	B [mm]	C _r [kN]	C _{0r} [kN]
B2-2205-2RSN TM NF	25	52	23	47.5	50.2
B2-2216-2RSN TM NF	80	140	40	246	295
23152-2RSH TM NF	260	440	144	2,560	4,130
23164-2RSH TM NF	320	540	176	3,560	6,150

New centreless grinder

Last year, great asset was added to the machine fleet of ZKL Brno plant. It is a BB 400ST CNC centreless grinder, which has significantly expanded the existing capacities for grinding rolling element casings in the segment of large bearings. This is a very useful innovation for ZKL Brno factory. Firstly, this machine is able to grind all types of manufactured rolling elements from rollers through radial and axial spherical rollers to tapered rolling elements. Secondly, it has a wide working range – it allows grinding of elements in the range of diameters from 50 to 250 millimetres. The largest rolling element ground on this machine so far was the axial spherical roller of the 294/950EM NF bearing weighing almost 40 kilograms!



The BB 400ST CNC grinder is equipped with an automatic loading system, which gives it maximum autonomy, simultaneously minimizing the need for operation. With this solution, ZKL Brno plant meets the current trend in the engineering industry, which is maximum production automation.

There are two ways of grinding on the new machine: double-groove or single-groove technology. The choice of technology depends on the size and weight of the rolling elements. Rolling elements up to a maximum diameter of 150 millimetres, length of 200 millimetres

and a maximum weight of 15 kilograms can be used for double grooving. For larger rolling elements with a diameter of 151 to 250 millimetres, length of up to 250 millimetres and maximum weight of 40 kilograms, it is then necessary to choose the single-groove grinding technology.

Purchasing a new grinder for ZKL Brno factory significantly contributed to the increase of the quality and productivity in the operations of grinding the casings of rolling elements for large-sized bearings.

Ondřej Mágr
Chief Grinding Technologist ZKL Brno, a. s.

We are introducing an authorised distributor of ZKL in the Czech Republic: Ložiska Mělník s. r. o.



The company Ložiska Mělník s. r. o. was founded in 1993 by a natural person, whose aim was to build a company dealing with trade in bearings of domestic and foreign production. Over time, the range of goods was growing steadily, and the company gained a strong position in the Czech and foreign markets as a reliable partner for a comprehensive solution for the transmission of driving force. Professional approach and customer care are our top priorities.

There is a branch in the town of Slaný that is available for our customers, which has been in operation since 1997. In 2019, we also opened a branch in Chomutov for our customers.

The business company Ložiska Mělník s. r. o. was built in 1999 from a natural person. It further develops the idea of satisfying all real wishes of customers, offering them the widest possible range of quality goods. From the very beginning of the company's operation, we have been promoting the sale of the ZKL Group's bearing range through its authorized distribution network. Together, we have managed to implement several important projects, whether it was the manufacturing of large-sized bearings, or the supply of

bearings for rail vehicles. Our cooperation with the ZKL manufacturing plant has deepened over the years, thanks to which we managed to get the most important customers on the Czech market. In addition, we were able to invite them to a presentation and demonstration of the ZKL manufacturing plant, or its certified bearing testing laboratory and, last but not least, to the International Engineering Fair in Brno, where ZKL presents itself every year.

Thanks to these successful results in the sale of the ZKL bearing range, at the beginning of 2019 the company Ložiska Mělník s. r. o. was approached by the ZKL Group for direct cooperation. We gladly accepted the challenge, thus obtaining an authorised distributorship. We will work intensively to move this important step even closer to our customers, so that we are able to offer them a comprehensive quality range and the service of a leading domestic manufacturer of bearings. We believe that we will succeed.

Ložiska Mělník s. r. o.



ZKL's activities in Latin America

ZKL at the Expoagro 2020 trade fair, the most important event in the agricultural sector in Argentina

The ZKL Group once again attended the most important trade fair in the agricultural sector in Argentina. We had our own stand at the event, to which a number of end users and bearing distributors were invited. Our goal was to ensure that they learn more about our production and news, while strengthening our ties with local importers of our brand in the country.

The Expoagro trade fair took place in the city of San Nicolas in the province of Buenos Aires from 10 to 12 March on an area of 220,000 m² and was visited by more than 100,000 visitors. Over the course of three days, 580 exhibitors had the opportunity to present their products and services, exchange contacts with potential customers and establish cooperation. The fair was originally scheduled to take place until March 13, but unfortunately the fourth day had to be cancelled as part of the preventive measures against the spreading of the new coronavirus in the region.

Despite the uncertainty that currently permeates the entire agricultural sector, the fair showed that the sector is constantly expanding and evolving, mainly due to its ability to innovate and develop new products. This is exactly why Argentina ranks among the world's leading producers in the field.



The Covid-19 pandemic, which did not avoid the whole territory of Latin America, also suspended our other planned activities,

situation that has resulted in binding global quarantine measures in all Latin American countries, the affiliate was forced to temporarily curb various promising negotiations with various companies in several industries, including the steel and railway sectors. Until the situation improves at least a little, we will mainly maintain telephone and electronic con-



tact with our current and potential customers so that all negotiations and other matters continue as far as possible within the current possibilities.

Finally, we would like to remind you that next April we will attend the Expomina trade fair, one of the largest trade fairs in the mining industry. The fair will take place on the newly set date of April 27-29, 2021 in Lima, Peru. As last year, ZKL will, through its subsidiary ZKL Rodamientos S.A., present its latest innovations and products developed in our manufacturing plants.

Silvina Tomassoni
ZKL Rodamientos, S.A.




Through its subsidiary in Latin America, the ZKL Group also planned to participate in the Expomin 2020 trade fair in Chile, the second announced exhibition on the South American continent. Unfortunately, this event had to be postponed due to the coronavirus pandemic. The new date was set for November 9-13, 2020.


such as participation in the already postponed Expocorma 2020 trade fair (wood processing industry), which was to take place at the end of March this year. As part of this fair, a number of accompanying end-user visits were planned with our local distributors in various industries in that area.


As a result of an unexpected pandemic





Contact details:

 Pablo Mendez +54 9 11 3944 - 6505
Silvina Tomassoni +54 9 11 6241 - 7681

 pablomendez@zklgroup.com.ar
stomassoni@zklgroup.com.ar

 Pablo.mendez998
stomassoni

 zkl_rodamientos_sa

 www.zkl.eu

Bearings for railway transport

The market potential and trend in the development of bearings for railway applications is given by the trend in the railway transport in general. This mode of transport is one of the most ecological and economical, and therefore it is currently supported not only by the governments of individual countries, but also by the European Union. The current situation on the railway market calls for a lower environmental footprint, higher energy efficiency, an extension of the service interval and the associated coordination of bearing maintenance, meaning fewer train shutdowns during its life cycle.

Today's call for the reduction of exhaust fumes and car traffic encourages the increase in rail transport, both passenger and freight. This situation is reflected in the increased demand for railway bearings and at the same time in the growth of the requirements for their useful properties. This is due not only to the great pressure on the environmental measures of the entire transport sector, but also to maintaining the quality of our bearings at the level of global competitors.

Production and connection to quality and the environment

There is an integrated system of quality and environment system established in the company ZKL Klášterec nad Ohří. This system is certified according to the ISO 9001:2015 standard, and at the same time meets the requirements of the ISO 14001:2015 standard.

Secondary goal of product and process innovations is the efficient use of energy, environmental protection and conservation of natural resources. In accordance with the improvement of the quality system and the effort to improve the company's position in the field of procurement of projects in the railway industry, in 2016 the company was also certified according to the ISO TS 22163 standard (formerly IRIS). This is a standard that was established to evaluate the quality management system for the railway industry.

We have activated measures that reduce the impact of our own manufacturing activities



Railway bogie located in front of the administrative building in Klášterec nad Ohří

on the environment, i.e. make better use of natural resources, reduce the amount of waste produced and generally eliminate the risk of environmental accidents and related environmental pollution. Attention is focused mainly on solving environmental issues in the area of air protection, water management and, last but not least, waste and packaging management.

Modern technologies

In 2015, through the Business and Innovation for Competitiveness – INNOVATION Operational Programme, we successfully introduced a new type of special roller bearing (project 4.1.IN04/335) and implemented an innovated series of roller bearings with higher dynamic load capacity (project 4.1.IN04/1924). The resulting process innovation was solved by implementing the line arrangement of turning and grinding technology in order to maximize the efficiency of the manufacturing process.

The output of project # 4.1 IN04/335 – “Introduction of a new type of special roller bearing and innovation of the manufacturing process” was the introduction of 4 roller bearing applications. The total costs incurred for

research and development amounted to CZK 48,633,376, of which the subsidy covered 39 %, i.e. CZK 19 million.

The aim of project # 4.1 IN04/1924 – “Implementation of an innovated series of roller bearings with higher dynamic load capacity” was the acquisition and commissioning of a comprehensive set of two line-arranged technological plants, including handling aids and equipping other workplaces, which ensured synchronized manufacturing of outer and inner roller bearing rings conforming to the NEW FORCE design parameters. For this purpose, a completely new technology was purchased, from lathes, grinders, superfinishes to ultrasonic washing and laser marking. This technology was installed in a completely revitalized manufacturing area. The total costs on development amounted to CZK 58,726,455, the subsidies covered 40 %, i.e. CZK 22,249,086.

Both projects engaged the experienced project team of ZKL Klášterec nad Ohří factory in a number several dozens of people.

The production range of the Klášterec plant was thus expanded to include the manufacturing of roller bearings in the segment from 120 to 350 millimetres. The innovated design documentation of these bearings was developed by the technological centre of the ZKL Group, the company ZKL – Výzkum a vývoj (ZKL – Research & Development).

These results could then be followed up by other research projects.

An example is the development of a new generation of axle bearings of the WJ /WJP design type for the storage of freight and passenger cars. These are bearings for railway applications with an extended service interval, longer service life and higher reliability. We continue the research and development trend. With regard to the optimization and automation of processes in the manufacturing of railway bearings, investment projects are being prepared in the area of control and assembly processes.

Ing. Jarmila Búchová

Project Manager

ZKL Klášterec nad Ohří, a. s.



Production line for cylindrical roller bearings

Missing information? Follow us on web and social networks!

People plan, but circumstances change plans. This is how the beginning of this year can be described. The spreading coronavirus infection has become a major global problem, affecting both each individual and the global economy. In the interest of prevention and protection of the health of the population, various measures have been and are being taken to prevent the spread of the disease and to reduce health risks. Many important trade fairs, conferences and events have been cancelled or moved to later dates. Companies limit the business trips of their employees, visits to business partners and corporate events.

We were also forced to cancel or relocate already planned events, especially our participation in world and domestic trade fairs, and we also decided not to hold the regular May conference of distributors. Although we are very sorry that we had to do that, the priority for us is the health of our employees and business partners.

In these challenging times, current and verified information is very important, which also



situation in our company, not only what's the news in the development, manufacturing and sales, but also something about the people

ZKL Group. Initially, the magazine was intended for the Group's employees as a tool for internal communication to pass information between companies. Hence its name. Over time, the purely in-house magazine has become a magazine for the general public – especially end customers and the distribution network.

The magazine is published in both printed and electronic form in Czech and English, and electronically in Spanish. According to the needs of our customers, we also translate selected articles into other world languages, such as Chinese. You can find the current issue and the archive of older issues on our website. If you are interested in the printed version, please contact your ZKL sales manager, or directly marketing via hana.luxova@zkl.cz. We will be happy to send you copies.

Stay in touch with us, read us, like and tag.
☺ We are pleased with your interest.

Ing. Hana Luxová
marketing ZKL Bearings CZ, a. s.



becomes the key to the success of any company. We are aware of this, and therefore we try to inform you regularly about everything important through our website or company profiles on social networks, such as Facebook, LinkedIn and Youtube.

Twice a year we also publish the company magazine ZKL News and in February this year we started sending electronic newsletters.

We are happy to see how our fan base on Facebook, LinkedIn and Youtube is growing. On Facebook, you can learn about the overall

who work for us. On the contrary, our LinkedIn profile is more oriented to the B2B segment. And we must not forget Youtube, where we have uploaded videos on how to assemble and disassemble bearings correctly. If you do not have the time and opportunity to attend our technical trainings in person, instructional videos are the right choice, especially for workers in technical and service positions.

The corporate magazine ZKL News has been published for 20 years. The first issue was published in 1999, shortly after the founding of the

ZKL NEWS

ZKL Group Quarterly
This Issue: June 2020

Run by Editorial Board

For needs of ZKL Group published
by ZKL, a. s., Jedovnická 8,
628 00 Brno

Phone: +420 544 135 403

Fax: +420 544 233 484

Editor in Chief:

Ing. Hana Luxová

Registered at Ministry
of Culture of Czech Republic
under Ref. No. E 11989.

Type Setting and Print:

Ideal Graphics s. r. o.
www.ideal-studio.cz



Renovation of not only railway bearings by reconditioning

The ZKL Group, as a supplier of railway axle units, ensures their renovation by reconditioning, which is an integral part of their life cycle. There are several reasons why these bearings should be refurbished:

- 1) **Economy** – refurbishing a bearing is a cost-effective alternative for the customer compared to buying a new unit.
- 2) **Environmental friendliness** – in comparison with the manufacture of a new bearing, refurbishment saves a great deal of natural resources and energy consumed for its production.
- 3) **Quality** – during the refurbishment of a bearing by professional workers, it is possible to detect a non-standard appearance of the functional parts, which may indicate a problem in the fit. This can then be resolved in time.

The refurbishment of a bearing unit itself involves professional disassembly of individual bearing parts, their cleaning, inspection of the condition of functional surfaces (raceways, clamping surfaces, etc.), and possible correction by polishing, or replacement of a defective component. A lubricant prescribed by the



manufacturer is further applied in the required amount. Once the bearing is reassembled and lubricated, the seal (cover) is pressed back. The

bearing unit prepared in this way is fully suitable for further operation.

Thanks to its knowledge and experience in the field, the company ZKL – Výzkum a vývoj, a.s. (ZKL – Research & Development, JSC) offers to its existing and new customers a professional reconditioning of both railway bearing units and industrial bearings of larger dimensions. The reconditioning must be carried out in the correct way, as unprofessional intervention in the bearing might shorten the service life, instead of prolonging it. Unprofessional reconditioning might then be, paradoxically, the reason for premature bearing failure.

We will be happy to provide you with all information on bearing renovation at support@zkl.cz.

Ing. David Macháček
Designer of bearings
ZKL – Výzkum a vývoj, a. s.

Contact details:

ZKL – Výzkum a vývoj, a. s.
Technical Support Department



support@zkl.cz



+420 544 135 412



www.zkl.cz

ZKL webinars

Technical support without the risk of infection or the need to travel

This year has brought big changes to the life of each of us. For a long time, we have been forced to face growing coronavirus infections, state borders have been closed, people have been restricted, most of us have worked or are still working, from home. And this is just a list of a few restrictions that we had to respect in the interests of public health and thus adapt to the new conditions. Some measures still apply, other restrictions are relaxed according to the current health situation in individual countries.

However, every change, even a negative one, can bring new opportunities and make us think differently. We have therefore accepted the current situation as a challenge and an

incentive to create online webinars that offer a wide range of technically oriented training without the risk of infection. We are aware that even in times of epidemic, it is essential that our customers have access to technical consultations, and the opportunity to deepen their technical awareness of our products. We know that good technical knowledge of bearings can often prevent a variety of problems from the unclear designation of the bearing to its incorrect assembly and operation, which can be fatal.

Although the situation in the world is gradually changing for the better, we firmly believe that the created webinars will become a popular and integral part of modern com-

munication and sharing of the latest information in the field. Their biggest advantage for the customer is obtaining quality information quickly, efficiently, from the environment of their own office or home security without the need to travel, i.e. with minimal demands on finances and time.

You can look forward to a number of trainings, such as:

- General training (General theory of bearings, ZKL Services, Research & Development)
- Product training (Bearings for railway applications, Spherical roller bearings)
- Technical training (Bearing lubrication, Rolling bearing defects)

Training takes place in Czech or English and is led by our experienced application engineers. We have excellent experience with training through the MS Teams application, but if you prefer another webinar platform, we will be happy to adapt to the customer.

We are still working intensively on the development of webinars and we plan to continue to expand our training portfolio in the future. We will also be happy to adapt the training to your specific requirements and create a customer-oriented webinar for you.

If you are interested in the ZKL-webinar, contact the Technical Support Department of ZKL – Výzkum a vývoj at support@zkl.cz. We will contact you and agree with you on the details.

Ing. Jan Hanáček
Application Engineer
ZKL – Výzkum a vývoj, a. s.

