Revival of tram bearing supplies

Successful start of Large Size Bearings production on new technologies of ZKL Brno

Cylindrical roller bearings project
**Introductory word**

Dear employees and business partners, when I am writing this article, the first half of 2013 is almost at its end; summer is coming with its holidays and first balancing to see whether the 2013 targets have been achieved or not.

The 2013 plan and targets are set to increase the sales of our products by 10 to 15% against 2012, and we would like to concentrate on the labour productivity increase. Our target for 2015 is to increase the productivity by 50%, i.e. by at least 15% in the year 2013. What are the preliminary results of the 1st half of 2013 and the 2013 perspective?

Find the answer to that in the below charts:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reality 1st half 2011</th>
<th>Reality 1st half 2012</th>
<th>Prelim. reality 1st half 2013</th>
<th>Index 2013/2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>699 735</td>
<td>666 692</td>
<td>708 873</td>
<td>1.06</td>
</tr>
<tr>
<td>Added value</td>
<td>264 775</td>
<td>269 601</td>
<td>270 389</td>
<td>1.00</td>
</tr>
<tr>
<td>EBITDA</td>
<td>97 676</td>
<td>74 374</td>
<td>85 196</td>
<td>1.15</td>
</tr>
<tr>
<td>Trading income</td>
<td>19 667</td>
<td>6 250</td>
<td>22 068</td>
<td>3.35</td>
</tr>
<tr>
<td>Personnel expenses</td>
<td>210 297</td>
<td>204 810</td>
<td>204 819</td>
<td>1.00</td>
</tr>
<tr>
<td>Productivity (PH / ON)</td>
<td>1.26</td>
<td>1.32</td>
<td>1.32</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Year 2013**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Reality year 2011</th>
<th>Reality year 2012</th>
<th>Perspective year 2013</th>
<th>Index 2013/2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>(CZK thousands)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rok 2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Added value</td>
<td>514 432</td>
<td>489 086</td>
<td>546 955</td>
<td>1.12</td>
</tr>
<tr>
<td>EBITDA</td>
<td>182 095</td>
<td>155 221</td>
<td>184 235</td>
<td>1.19</td>
</tr>
<tr>
<td>Trading income</td>
<td>34 899</td>
<td>1 006</td>
<td>33 782</td>
<td>33.58</td>
</tr>
<tr>
<td>Personnel expenses</td>
<td>419 452</td>
<td>389 126</td>
<td>412 126</td>
<td>1.06</td>
</tr>
<tr>
<td>Productivity (PH / ON)</td>
<td>1.23</td>
<td>1.26</td>
<td>1.33</td>
<td>1.06</td>
</tr>
</tbody>
</table>

1st term As is clear from the comparison, we are performing to the 2013 targets, with the exception of labour productivity. Productivity growth is a long-term challenge and, besides growing sales, represents also a criterion of competitiveness of bearings and automotive parts produced under the ZKL brand. I expect the productivity to grow mostly in the results of the second half of 2013 which are associated with putting new technologies in operation, particularly in ZKL Brno, a.s. These are:

- Cold horizontal press for production of rolling bodies up to 30mm diameter
- Installation of a new line for grinding S1 and S2 components of spherical roller bearings.

A considerable investment is the commencement of the construction of a central ZKL-CSL bearing warehouse in the premises of ZKL Brno, a.s. in June 2013. The project is funded in a developer manner by our daughter company ZKL Reality, s.r.o.

New technologies in the production of roller bearings are prepared in ZKL Klasterec nad Ohří, a.s. For this enterprise, the project of roller bearings production is one of the key development intentions that will stabilize and create the basis for the development of the production capacity. This project is important since it is coming after more than 10 years of devastation caused by an illegal declaration of bankruptcy by the bankruptcy mafia of the judge Berka in 2002. It is ironical that once this bankruptcy was terminated in a judicial settlement in 2012, the people involved in this bankruptcy were discharged in the Republic’s president Vaclav Klaus’s amnesty.

Dear employees, the time of summer holidays is approaching. I would like to wish you a pleasant holiday, many adventures in your homeland and also abroad.

I would also like to ask for understanding since, for operating reasons, the factory holiday will not be announced at certain worksites of ZKL Brno, a.s. and ZKL Hanusovice, a.s. There will certainly be an opportunity to take the leave another time.

I wish you health and joy.

Ing. Jiri Prasil, CSc.
General Director

**Successful start of Large Size Bearings production on new ZKL Brno technologies**

Last year, a new modern hall was erected in a part of the area of the original hall number 5. There ZKL Brno initiated the implementation of a large long-term plan of revitalization of the production of large-scale spherical roller and special bearings of outer diameter up to 1600 mm. The implementation of these plans has been successful so far also thanks to the remarkable support from the structural and European funds dedicated to the support of business, innovations and competitiveness. The reconstruction of the hall itself represented an investment of CZK 55.2 million, whilst an aid of CZK 22.1 million was obtained from the structural funds of the business and innovation support program. A complex worksite focused on the production of components and assembly of large-scale and special bearings has been successively built in the new modern manufacturing premises. In order to meet the high requirements for accuracy of the produced components, the entire facility is air conditioned in order to achieve constant temperature which is important mostly for measuring.

The entire production complex is divided in two sections. The worksite for the production of
Precision production takes place at another unique worksite. In a part of the hall intended for marking, clean assembly, washing, preservation and packing of large-scale bearings, company ZEISS installed a device for digital spatial measurement Prismo Navigator 10 Ultra, equipped by a measuring sensor VAST with active scanning. Thanks to the precision, scope of measuring and software equipment for evaluation of complex spatial shapes that occur on bearing components, this device is a unique device in its category installed in the Czech Republic. The range of measurement is 1600 x 2400 x 1000 mm and, thanks to an added independent plate, it allows measuring of workpieces of up to 4,000 kg. Such benefits as saving of costs on type measuring instruments, saving time for setting up measuring instruments with linear compensation of thermal dilatation of components during measuring, along with high operability of the measuring centre and the speed of evaluation of the measured values, provide fast economic return of resources incurred in this unique equipment.

The complexity of operation is supplemented by a laser marking device which facilitates to imprint products with e.g. identification data, according to which production records can be resolved. The existing system of electrochemical marking allowed only general identification, and depended on the expensive production of marking templates. The quality of imprint also depended to a great extent on the accuracy of the operating staff.

Other devices that significantly change the character of the assembly and the operation as such are the washing and preservation chambers with closed fluid circulation and efficient vapour and aerosol separation system without which a clean and dustless operation of the assembly cannot take place.

Once the new technological plants were installed they began to be utilized very intensely. The innovation plans already included customer requirements for large scale and special bearings that we were not able to satisfy due to the deficit in the necessary machines and equipment.

The production has been enriched by spherical roller bearings, roller bearings, tapered roller bearings and special roller bearings that have not been yet produced due to their dimensions and precisions.

Since the production commencement, the below bearings were implemented, for instance:

- 60/630M radial ball bearing
- 511/500M radial ball bearing
- 613/1060MA radial ball bearing
- PLC 412-63 roller bearing
- PLC 612-42 tapered bearing
- PLC 612-43 tapered bearing
- PLC 612-44 tapered bearing

The production of the following bearings in being prepared:

- PLC 412-64 roller bearing
- PLC 612-45 tapered bearing
- 230/500E33MH spherical roller bearing
- 240/96E33MH spherical roller bearing
- NU 31/500M roller bearing
- PLC 512-73 special split spherical roller bearing

Only the weight of rolling bodies in certain bearings exceeds 15 kg, so there is nothing surprising about the fact that the total weight of bearings is usually above 1 ton.

I would almost forget the last necessity of the new production. Putting all plants into operation, production preparation, preparation of NC programs, provision of materials, construction and production of needed tools and aids and perfect production organization would be impossible without the effort, devotion and accuracy of tens of employees of all areas of production preparation and management. Also, the servicing of new technologies requires higher education, experience and responsibility of operating staff. I would like to thank to all those who participated in this for their work in the production start-up and return to the tradition of large scale bearings in ZKL Brno.

Ing. Vansa Vladimír
Process engineer,
ZKL Brno, a.s.
ZKL Group at the trade fair HANNOVER MESSE 2013

The HANNOVER MESSE 2013 trade fair which this year takes places on April 8 to 12, 2013, is a combination of eleven prominent trade fairs: Industrial Automati-on, Motion, Drive & Automation, Energy, Wind, MobilITec, Digital Factory, ComVac, Industrial Supply, SurfaceTechnology, IndustrialGreen-Tec and Research & Technology. This is the most significant technology event worldwide. This year, the HANNOVER MESSE 2013 trade fair was attended by a total 6550 exhibitors from 62 countries. Our company could not miss this unusual opportunity to present its products, make new business contacts and meet a lot of foreign partners in a short time at one location.

The corner stand of the ZKL concern, occupying the area of 75m², was located in hall 24. At the ZKL stand visitor could see a presentation of extended assortment of ZKL hybrid bearings for traction motors. Within the trade fair, business and engineering negotiations were held at our stand attended by prominent partners from the OEM and EDU sphere and, last but not least, by our key distributors from such areas as Thailand, Turkey, India, etc.

Main topics of the trade fair HANNOVER MESSE 2013 were: industrial automation and IT, power technologies and environmental technologies, technology of drive and fluid technology, industrial sub-supplies, production technologies and services and also research and development. This year’s partner country of the HANNOVER MESSE 2013 trade fair was Russia. For that reason, the trade fair was opened on April 7 3013 not only by the Germany’s chancellor Angela Merkel but also by Vladimir Putin, the president of Russia. The 3000 invited guests included representatives of the ZKL concern, specifically Michal Zafirelis, CEO of ZKL Bearings CZ, a.s., and Jiri Prasil jr., manager of the department for commercially technical support of sales.

Total number of the trade fair visitors amounted to some 225 000 including 50% visitors from the European Union member states and 20% visitors from the south, eastern and central Asia. Most visitors came from Germany, The Netherlands (3500) and China (3400), then India, Italy, Austria and Denmark. A significant portion of visitors arrived from Thailand, Spain and Turkey.

Once again, we would like to thank to the existing and new business partners for visiting the ZKL stand at the Hannover trade fair, and we look forward to the continuing intensive cooperation and common development of trade activities of ZKL worldwide.

Marta Pernicova
Assistant CEO,
ZKL Bearings CZ, a.s. & Marketing,
ZKL Bearings CZ, a.s.

Next trends of ball bearing assortment extension in ZKL Klasterec nad Ohri

Simultaneously with the development of ball bearings extending the existing assortment and supplementing catalogue bearings, ZKL Klasterec have been searching new trends to apply special types of bearings, utilizing our experiences in the production of ball bearings and for the most part also in the introduced technologies.

One of these trends is development of bearing for farm machinery where customer required non-standard design against the commonly offered types. This sphere seems perspective, and customer is willing to face a higher price against the standard types that they would probably get cheaper from Asian suppliers and cooperating dealers.

The attached figure shows in the right an image of such bearing that is currently being developed, and will soon be handed over in samples for tests at the customer. Apart from the appearance of the outer ring that is obvious at first sight, there is a feature that our products do not usually have, and that is an additional so-called “gothic” shape of the raceways that leads to four-point contact in radial loading of the bearing. This feature is quite unusual to us in terms of the construction and technology, and so we consider it an innovation.

Also, proper sealing and corrosion protection is greatly emphasized which leads to even stronger need to deal with technologies of electropolishing.

In this sphere of bearing for farming technology we have been taking certain steps to verify our capabilities in the production of additional types of non-standard bearings - see the figure on the left. There the difference against the assortment commonly produced in ZKL Klasterec is directly visible, and brings a number of process complications in terms of shapes, material, its thermal processing and finally also more complicated assembly processes. At the moment we cannot say that everything goes without problems and in short terms but, in any case, it brings new experiences that can be utilized for potential coming requirements for non-standard bearings in the farming technology segment. Also there we encounter significant competitors and pressure to have as low prices as possible. Only time will show that our effort was not in vain, and will bring new production opportunities in the area of non-standard bearings and bearing units.

Ing. Josef Hrabeta
Development & Design Manager
ZKL Klasterec nad Ohri, a.s.
Evaluation of projects supported by public resources

At the beginning of this year, the opponent council met in three companies of the ZKL concern headed by the representatives of the Ministry of Industry and Trade of the Czech Republic to approve the solutions of projects aided by public resources within the TIP program. In two cases these were final opponent procedures of managing of a total of 4 projects that were completed as of 31. 12. 2012, and once the subject of negotiation was the evaluation of the current state of solving two running projects. Please read brief information about the results of the negotiation, as well as about the solution of the projects concerned in the below article:

On March 5, 2013, final opponencies were held in ZKL Brno to the project with registration number FR-TI1/046 “Research and development of construction and technology of large scale bearings”, and to the project with registration number FR-TI2/316 "Research and development of construction and technology of special tapered units for railway carriages”. The results of solution were defended by the project carrier’s representatives - ZKL Brno along with another participant of the solver team - ZKL-Research & Development. Based on the submitted reports and answering all questions, the solution of both projects was approved. Successful defence of solution was supported also by protocols with test results, customer references and presentations of new work sites where new bearings are produced. That large scale bearings and railway bearings are currently among the main development branches of ZKL Brno, is a fact. The production of large scale bearings for opening a new hall corresponds with strict requirements for the quality of these products. The results of the other project which was the development of tapered units for rail vehicle axes were even evaluated by external opponents as excellent (“E”)! The information on the actual outcomes of this project can be found in the article News on rails.

Two weeks later, on March 19, 2013, planned opponent procedures of two projects almost did not take place. Winter returned to Moravia, and the arrivals from Prague and Brno to ZKL Hanusovice were severely complicated by newly fallen snow. Despite that, everybody met at the planned time and in the planned location. The subject of meeting was continuous opponencies of the project FR-TI1/345 “Applied research and experimental development of centrifugal casting for brass cages of spherical roller bearings of EMH construction”, the carrier of which is the host ZKL Hanusovice, and of the project FR-TI4/247 “Research and development of construction and technology of power efficient spherical roller bearings with brass cage” of the carrier ZKL Brno. Within the negotiation on the course of the first project solution, the development of 14 types of cast-iron moulds for casting of shape semi-products of brass ridge cages was completed, upon which these were released into the series production. Based on the obtained results, the implementation team is now capable to design one-sidedly toothed cast-iron moulds, thus increasing the efficiency and economy of the production of cages for the EMH spherical roller bearings. Within the discussion over the second project, the solution of the applied research and experimental development phase was approved, and the results of the phase concerning precision edging were recommend for implementation. The meeting included inspection of the work sites for the production of brass cages.

Last opponency was held on April 16, 2013, at the premises of ZKL-Research & Development. For many attendees this was the first opportunity to visit the company. Therefore the meeting included an excursion in new laboratories. The subject of the meeting was final opponencies to projects that were also finalized at the end of last year. These included the project registered under number FR-TI2/298 “Research and development of edging of bearing components in recess and rotary manner”, and the project under registered under number FR-TI2/221 “Research and development of bearings for traction motors”. Whilst the first project was about the new edging methods and their laboratory testing, the meeting on the results of the other project could be directly presented with produced samples intended for laboratory testing. The present thus could take in their hands a hybrid bearing with ceramic balls, or a bearing with insulation ceramic coating on the outer ring surface. Both designs prevent electric current from passing the bearing which is a relatively key requirement in the location of traction motors.

The opponencies approved a number of new products and technologies for the series production in ZKL. Besides the technical solution of project results it was re-confirmed that the projects in ZKL are solved purposefully by professional solver teams, and the planned resources were incurred efficiently, and correspond with the achieved results.

Ing. Vladimir Zikmund
Senior Project Manager
ZKL Vyzkum a vyvoj, a.s.
Innovations and new types of ZKL bearings

One of the regular actualities of our magazine is the information on new ZKL bearings that were recently launched in the market, or were at least to a substantial extent upgraded. In the period from the beginning of this year till the end of April, the ZKL's production assortment was extended by a total of 37 types of bearings. The new bearing assortment concerns mostly radial spherical roller bearings that from the base of the ZKL Brno's production program. The production program has been constantly extending even in the production plant ZKL Klatner nad Ohri. Again, as is clear from the overview, the standard bearing assortment of general use is supplemented by new special bearings, large scale bearings and four-row tapered bearings which are mostly produced for specific applications of our customers. The dimensions and parameters of bearings are stated in the attached tables. If there are no data in the table it means that the bearings are either not made with tapered hole, or the revolutions for oil lubrication need not be stated for sealed bearings with permanent filler of plastic lubrication.

Within the current innovations and introduction of the production of new ZKL bearings, there are works in progress in gradual introduction of bearings with precision and parameters complying with the NEW FORCE standard in the entire production assortment of bearings, therefore the below charts do not show the NEW FORCE bearings in the usual manner **.

Radial spherical roller bearings

Yet the majority of customers associates this particular type series of bearings with the ZKL brand. With regard to the use of spherical roller bearings in industrial branches which are essential for the further development of ZKL, the innovation of this assortment is constantly paid a special attention. In the monitored period, 22 new types of these bearings were upgraded or newly launched in the series production. Out of the above quantity, there are 15 types of bearings with massive one piece ridge cage EMH, 6 types with sheet cage PH, and 1 EMHD type is in a version for vibration environment.

Ball bearings

In the past period, 5 new types of ball bearings were launched in the series production. Out of these, two types are in the group of large scale single row ball bearings, and 3 types fall in the sealed two row angular contact ball bearings. One of the first types of bearing group is the bearing 60/630M, and the other type is the bearing 619/750MA. The latter named is a very narrow bearing with a two piece brass cage guided on outer ring. The series of sealed two row angular contact ball bearings was extended by types 3204A-2RS, 3205A-2RS and 3206A-2RS. These bearings have plastic cages, and are filled with plastic lubricant Alvania RL3 throughout their service life.

Axial ball bearings

This type series is another group of products that is paid special attention in ZKL. Since the beginning of the year, 8 types of axial ball bearings were either launched in the series production, or upgraded. One type, the bearing, is launched into production with sheet cage. Other bearings extend the production assortment of bigger bearing dimensions of series 512, and bidirectional series of series 522 with massive cage. The biggest new axial ball bearing is the bearing 511/500M, also with massive cage.

Four-row tapered bearings

In this construction group, a new type 36044 was verified. It is a representative of a new type series produced in ZKL. The bearing has pressed cages of steel plate, and axial clearance in the bearing within the range of 0.25 to 0.40 mm is set in the assembly.

Special bearings

In the special bearing group, The production of a new roller bearing PLC 412-63 was verified, which is designed for a foreign customer as a substitute for the yet used bearing of another manufacturer. The bearing has a steel pin cage.

Important:

<table>
<thead>
<tr>
<th>Bearing indication</th>
<th>Main dimensions</th>
<th>Basic load capacity</th>
<th>Limit frequency for lubrication</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC 412-63</td>
<td>d (mm) x H (mm)</td>
<td>d (mm) x H (mm)</td>
<td>d (mm) x H (mm)</td>
<td>d x H</td>
</tr>
<tr>
<td>51232M</td>
<td>110 x 190 63</td>
<td>110 x 190 63</td>
<td>110 x 190 63</td>
<td>110 x 190 63</td>
</tr>
<tr>
<td>5120M</td>
<td>130 x 190 45</td>
<td>130 x 190 45</td>
<td>130 x 190 45</td>
<td>130 x 190 45</td>
</tr>
<tr>
<td>5120F</td>
<td>150 x 190 50</td>
<td>150 x 190 50</td>
<td>150 x 190 50</td>
<td>150 x 190 50</td>
</tr>
<tr>
<td>5223M</td>
<td>150 x 190 50</td>
<td>150 x 190 50</td>
<td>150 x 190 50</td>
<td>150 x 190 50</td>
</tr>
<tr>
<td>5224M</td>
<td>170 x 240 97</td>
<td>170 x 240 97</td>
<td>170 x 240 97</td>
<td>170 x 240 97</td>
</tr>
</tbody>
</table>

**NEW FORCE bearings in the usual manner**

- **K** - dynamic load capacity (kN)
- **C** - static load capacity (kN)
- **W** - with plastic lubricant Alvania RL3
- **20** - with cylindrical hole (kg)
- **05** - with tapered hole (kg)

Reference:

- ZKL News June 2013 No. 49
Conference of authorized distributors 2013

On the days of May 16 to 17, 2013, a traditional yearly meeting was held with authorized dealers that represent ZKL in the sale of the ZKL bearing assortment in the territory of the Czech and Slovak Republics, Poland and Hungary. This year, the meeting took place in South Moravia in the Sladovna hotel located in the town of Černa Hora.

At the beginning of the conference, the chief executive office of ZKL Bearings CZ, a.s. Michal Zafířík familiarized the authorized dealers with the current development, investments and further development intentions of ZKL. One of the considerable investments for 2013 is the commencement of the construction of a special logistic centre in Brno that will contribute to improve flexibility of the ZKL’s bearing assortment dispatch to business partners.

The next part was dedicated to the presentation of the jointly achieved business results and situations in individual territories in 2012, as well as the intentions for the year 2013. The following program contained presentation focused on the support of sale by the marketing department, technical sale support and the ZKL logistic department.

After the presentations of the ZKL concern’s representatives, the conference continued in a joint discussion that included topics presented by the authorized dealers concerning the improvement of cooperation in order to increase the sales of ZKL bearings in the above named territories. At the end of the official part, the trade representatives received a small gift as acknowledgements for the support of the ZKL bearing assortment sales.

The official part of the conference was followed by an afternoon and night informal part that included an excursion of the local renown brewery with guided degustation of their products. Those who were interested could play a bowling tournament and utilize other facilities that the Sladovna hotel offered (for instance a wellness centre).

The evening gathering gave rise to a number of individual talks concerning mutual cooperation.

The entire evening was accompanied by a musical band, and the participants often danced on the local dancing floor.

On May 17 those who were interested could see the ZKL Brno production plant that focuses on the upgrades of the bearing assortment, production of special large scale bearings, new production hall and investments in new technologies. The excursion included an inspection of other ZKL background – a commercially-technical centre, a bearing test room or a special workshop of ZKL Vyzkum a vyvoj, and other.

We would like to thank to all business partners for their attendance at the conference and their active and positive approach, and we believe that the next common meeting will be beneficial for further development of mutual cooperation in the current year 2013, as well as in the coming period.

Jarošlav Kammerer
Chief of OS 35 and 36
ZKL Bearings CZ, a.s.

ISMS implementation in ZKL Hanusovice, a.s.

Upon the successful certification of the integrated management system when the EN ISO 14001- standards (the environmental management system and the OHSAS system of occupational health and safety management system) were integrated in the ISO TS quality management system, our customer Audi comes with another requirement for the implementation of the information security management system according to the EN ISO 27000 standards.

What is ISMS?

Human society goes through continuous development. At the beginning of the 20th century, the most valuable article were raw materials, i.e. merchandise produced from them. In time, the majority of money transferred to the service market. Today, at the beginning of the 21st century, we live in an information society. It is no longer important to produce something, but to know how to do this (know-how). Information has the highest value in every branch; including public administration. Information has to be understood as property, and so it has to be protected accordingly. The production sphere, upgrade and “electronization” of which is more and more pressurised, is constantly challenged for instant adoption of adequate security measures.

Information security

The concept of information security is understood and targeted protection of information, information systems of companies (institutions), provision of safe communication among information system users, and also protection of people and property as such. The Information Security Management System is a complex set of measures and requirements necessary to ensure protection and safety of information, know-how and property of a company or an institution, both in private sector and public administration.

ISMS functions on the basis of internationally acknowledged standards - ISO/IEC 27001-2005; the ISMS tool is thus a tool to ensure information security. Why ISMS in particular?

The European Union currently pays special attention to the modern methods of information system security management. There are two main advantages: unification and saving time and financial resources.

Security provisions according to ISMS

In order to create consolidated information protection of company, a detailed definition of potential risks of attack, damage or information misuse has to be figured out, and a group of rules created in order to assure efficient management. The main objectives of the security measures are:

1. Prevention of occurrence of damages in safety incidents, including impacts of potential medialization; 2. Prevention of information leak, know-how included, and information about clients (citizens); Working out emergency plans; 4. Definition of personal responsibility of concrete person for information at worksites.

Standard ISO/IEC 27001:2005

The ISO/IEC 27001:2005 standard is an internationally recognized standard of information security providing support for the establishment, introduction, operation, monitoring, maintenance and improvement of the Information Security Management System (ISMS).

Standard ISO/IEC 27002:2006

The ISO/IEC 27001:2005 standard is an internationally recognized standard of information security defining a group of procedures leading to the provision of security in organizations. The standard adjusts concrete procedures, and is divided in ten general categories. The categories describe not only the procedures for handling information inside an organization, but also outside of it – by a third person. The above procedures comply with the international and national legal standard.

In February 2013, the implementation of requirements of the above standards was initiated in ZKL Hanusovo-vice with an intensive support of an external advisory firm and IT department of ZKL a.s.

Ing. Vladimír Brhel
Information Security Manager
ZKL Hanusovice, a.s.
India – New strategy and results

India, considered rather a subcontinent than just a country, represents a country of significant opposites. Many domestic companies think it is too big, not enough transparent and not always safe. But, although this country provokes respect, it represents one of the most perspective market economies in the current world.

A great advantage for our company is our long-term knowledge of the Indian market, and good results achieved in the past ten years. However, in time every economy changes and develops, and every enterprise is obliged to react right to the new conditions.

This March we took part in a business mission to India headed by the ministry of industry and trade M. Kuba, within which also the International trade fair for machinery was held in Mumbai where our company actively participated.

ZKL, as a member of a mixed India-Czech work commission, obtained many interesting contacts and topics for direct cooperation from prominent Indian firms and entrepreneurs. This fact proved

Since this February, when we cancelled the existing exclusive cooperation with a Calcutta distributor ZKL Bearings (INDIA), we have begun to build a new distribution network consisting of five potential distributors and at the same received first direct orders from customers, we found out that this new strategy is very interesting and right even in terms of economic efficiency of business cases.

One of the key steps is also opening a representation office ZKL Bearings CZ Mumbai which was approved for registration by the central RBI bank. The director of this office will be Mr. Bipin Kulkarni, an experienced expert in ZKL bearings. For some time we have been organizing frequent acquisition tours to the territory, and we have a serious intention of establishing a joint venture in India.

We believe that, in cooperation with the local trade mission MPO in Mumbai and with the support of the economic departments of the New Delhi embassy, we will manage to continue in further growth of the import of our bearings to India.

Ing. Jan Rott
Business Team Manager
ZKL Bearings CZ, a.s.

International trade fair in Serbia

On the days of May 13 to 17, 2013 ZKL, under the sponsorship of the Ministry of Industry and Trade, attended the 57th International Trade Fair Tehnika in Belgrade as a traditional Czech manufacturer of bearings, where the company presented its production program of roller bearings. The priority objective of the ZKL’s participation in the Belgrade trade fair was mapping the market potential in terms of the demand for ZKL bearings and extension of the distribution network. This year’s trade fair was held in the spirit of innovations and innovative projects, under the motto “A STEP INTO THE FUTURE”. The exhibition program included all technical spheres, new technologies, science, railway transport, innovations, process technologies, CNC machine tools, new and synthetic materials and a number of other products. The fair was attended by about 800 exhibitors of all over the world. The Czech exposition was traditionally located in the hall number 3, and the branch partner was the Association of the Czech Railway Industry Enterprises. On May 14, a seminar and workshop was held within the Czech official participation, the key part of which was presentations of Czech exhibitors. On behalf of ZKL, the presentation was given by Jana Parízkova. The organization went smooth and many visitors attended, including representatives of Serbian media.

During the fair, ZKL representatives were invited to the Czech embassy in Belgrade where a cocktail party was held on May 15 at the evening hours with the participation of railway representatives from the Serbian Republic, Cerna Hora and the Republic of Serbian Bosnia and Herzegovina, as well as other Serbian institutions.

The entire event was traditionally organized by AZD on the occasion of their participation in the trade fair. About 60 visitors was welcomed by the Czech ambassadors in Serbia, Mrs. Hana Hubackova, and General Director of AZD Praha Mr. Zdeněk Chrdle. During the evening, ZKL representatives addressed the representatives of the Serbian Republic and Cerna Hora railways, they agreed on the possibility of future cooperation in the area of railway bearings.

Many visitors showed their interest in the ZKL stand.

During the trade fair there were realized commercial and technical negotiations with important potential customers together with the participation of ZKL authorized distributor for Serbia.

Jaroslav Kalábek
Application Engineer - Assembly
ZKL Výzkum a vývoj, a. s
Upgrade of techniques of measurement

Another step in the measurement technique upgrade was, in the beginning of this year, a purchase of a new roughness meter made by Mitutoyo, type SJ-411 f, for the workshop measurement centre.

This new measuring instrument replaced a much older and defective type Talsurf of German company TaylorHobson (in operation since the 1990’s) which was about a year and half ago put even by the manufacturer of it on the list of instruments which would have no future service support, or just a possibility of purchasing shortage genuine spare parts.

From the very beginning the offer of AQUASTYL SLOVAKIA s.r.o. for the upgrade of the old instrument was considered, but the tender procedure proved that the costs on this operation would be too high (in thousands EUR), comparing to the purchase of a simpler new modern device. Despite that, AQUASTYL SLOVAKIA s.r.o. was selected for the next tender round, along with other chosen companies, such as Mahr, Mitutoyo Cesko s.r.o. and TaylorHobson Ltd.

All the above named companies were able to offer the required instrument according to the technical criteria with only one small deviation. With regard to the fact that measurement technique in the bearing industry is a very specific discipline as such, a problem was encountered in the measurement of the surface roughness of raceways when some of the offered instruments were finally evaluated as nonconforming due to small range in axis Y which, in this case, means perpendicular stroke of sensor against the measuring travel in axis X. This was finally resolved by Mitutoyo Cesko s.r.o. through a possibility of delivering special sensors capable to eliminate the problem.

After longer debates on potential solutions with other potential suppliers, and after some visits of their presentation stands at the International Trade Fair for Machinery in Brno, we accepted an invitation for the presentation of machine SJ-411 with the use of our bearing components for measurement directly at the Mitutoyo Cesko s.r.o.’s training centre in Teplice. There they demonstrated to us in a quite convincing manner directly in the practice that the issue of insufficient stroke of the sensor was actually eliminated in a simple but very efficient solution, and the instrument offered by them thus fully met our requirements.

PhDr.Lukas Blazek
KMS Manager
ZKL Klasterec nad Ohri, a.s.

New technology of edging raceways of inner spherical roller bearing rings

As we all have noticed, customer requirements for the quality of the bearings produced by us have been recently increasing. Taking a look at the machines the majority of which have already passed their best age, we sometimes deny to believe that we are capable of meeting these requirements. Thanks to the experiences of some of our employees we however keep satisfying the requirements of customers in terms of quantity and quality required, although often at the expense of higher amount of rejects.

Yet, we have to go further and not rely only on the skills and experiences of our workers. Therefore we decided to purchase new machines for edging of inner ring raceways of radial spherical roller bearings. These machines that are developed in cooperation with the Czech company HiPo Strakonice reflect all the experiences we obtained during the production of bearings in Brno. These machines are AGL 175 and AGL 400, where the number indicates the maximum inner ring diameter that can be edged on the machine. This range will enable us to cover the entire spectrum of inner rings in the series production. The machines are built on the bases of machines AGL 125 which are well known by the ZKL Brno workers. As a matter of course, both machines will be controlled by CNC; entering new components will proceed in user clear screens that were configured directly by the ZKL Brno representatives. In order to maintain the accuracy of shapes, the machines will be provided with a dressing diamond pulley, edging in supports is a matter of course. The AGL 175 machine will be supplied with an orifice grinder SIW 5 which will complete the technological unit and, thanks to the interconnection of both these machines (AGL175 and SIW5) through automatic handling, we will have an efficient and productive worksite for grinding spherical roller bearings.

Our experience demonstrated what direction should we take in the selection of new machines, and I believe that all the above named machines will mean a great benefit for the factory, and that in the future they will fully replace the existing non-productive conventional machines.

Ing. Petr Smerek
Engineer Director, ZKL Brno, a.s.

New central ZKL warehouse

Improvement of warehouse capacities, improved quality of services and saving total costs on transport and logistics. We believe that all this will bring the construction of a central warehouse for finished products.

The commencement is planned for the second half of 2013. The goal of the project is to increase the capacity of finished product warehouse, and improve the overall efficiency of our warehouse management, in order to be able to react more flexibly to our customers’ orders. The area of the warehouse will be 3000 m2 with total capacity of height storage of 9200 palette locations and 715 palette locations in 8 towers of the Kardex warehouse system. The new warehouse will utilize the most sophisticated logistic technologies. We will utilize the barcode technology to control the flow of palettes and finished products. The process will help us speed up significantly, and optimise all the warehouse management processes. Considering the designed layout of the warehouse and the technologies used, we will be able to provide for the warehouse transmission in the amount of CZK 1.16 million in a single-shift run and with 40% less employees. Pilot run of the new system should be triggered in the beginning of 2Q / 2014.

Bc. Andrej Klim
Logistic Department Manager
ZKL Bearings CZ, a.s.
New men's changing room in ZKL Brno a.s.

New changing rooms for men in ZKL Brno a.s. In 2013, ZKL Brno decided to invest a considerable amount in the improvement of the social background of its employees by building new changing rooms in the facility No. 32. The building was so far utilized only in part for the engineering section, DTS, storage and for women’s changing rooms. As you can see in the image No.1, these areas were quite damaged before the reconstruction.

The reconstruction and building of the background for the changing rooms was secured by a Brno company Romex s.r.o. which won the tender for this contract. The construction site was handed over on February 15, 2013, and the work was handed over successfully on April 18, 2013. This was followed by furnishing of the changing rooms.

The changing room has a total floor area of 750 m², and is divided in two rooms + social settlement. One room is reserved for the series production workers, and the other one for the single part production workers. Both parts are connected through a common social settlement – showers, bowls and WC. Water in the showers has a unique preset temperature and, in order to prevent waste of water, every shower is equipped with a timer that stops water in certain intervals.

New locking lockers were purchased for the changing rooms in which workers can keep their personal things and work clothes.

The changing room is now fully at disposal and, by the end of May, all misters working in ZKL Brno will successively move their things there.

Ing. Petr Smerek
Engineering Director
ZKL Brno, a.s.

ZKL news on rails

The new ZKL bearings that were last year awarded the annual ACRI 2012 prize were already introduced in the last edition of this magazine. Since these bearings are supposed to form the base of the ZKL’s production assortment for rail vehicles very soon, we will certainly dedicate them more space in the future editions of the magazine. The below article states at least the most important recent events that slowly open the door to the ZKL bearings to new projects.

Based on the practical experiences and long-term tests, ZKL keeps dealing with the development of new designs of tapered units for rail vehicles of both passenger rail and tram transport. The PLC 810-13.1 bearing unit (TBU130x230) is approved for location of tram transport. The PLC 810-13.1 bearing for rail vehicles of both passenger rail and tram transport. The PLC 810-13.1 bearing for rail vehicles of both passenger rail and tram transport.

Another result we can present is a new design variant of the PLC 810-13.B.1 bearing, intended for the use at higher speeds, successfully passed the tests in a special test room in the Testing Centre VÚZ Praha – Cerhenice. The test verified the reliable function of the bearings for the use in trains with speed up to 200 km/h even with smaller wheel diameter. The above information confirms the previous results of the past years’ tests that were performed with the original bearing chambers designed for City Elephant. The last test was conducted in bearing boxes of Flirt electrical units provided for the tests by the Stadler company. These chambers have a different design of bearing location. First of all, the bearings were tested at maximum rotational test frequency of 28.2 s⁻¹, which equals the speed of 220 km/h of these trains. This test frequency of rotation was achieved only after certain adjustments of the test station.

Another result we can present is a new design of tapered unit with PLC 810-15.A.1 (TBU133x210) designation for the location of a new tram wheel set. The initial PLC 810-15.1 (TBU130x210) bearing design is engaged in operation tests. The new bearing differs from the general design by a changed inner ring hole diameter. Both types feature a plastic cage, and are filled with a premium quality plastic lubricant. Thanks to the yet good test results, a sales contract was entered into for the supplies of new modified bearings.

Roller bearings still remain the basic production assortment of the axle ZKL bearings. Upon the past year’s introduction of new plastic cages, which are also verified for the operation up to 200 km/h, we have extended this year’s offer by the so-calledgradation bearings. These are bearings with smaller inner ring hole diameter for the use in wheel sets with reworked pins. The portfolio of these bearings is stated in the ZKL’s catalogue. The most recent axle roller bearing is a pair PLC 410-53/54.2 with a plastic cage, both-sided coverage and permanent plastic lubricant filler. The bearing is currently tested in the Testing Centre VÚZ Praha.

The results of tests and new experiences from operation mean for ZKL further important steps leading towards even a broader extension in the ZKL axle bearing applications, both inland and abroad. All new bearings will be exhibited in the ZKL exposition at the Czech Raildays 2013 in Ostrava.

Ing. Vladimir Zikmund
Senior Project Manager
ZKL Vyzkum a vyvoj, a.s.
Revival of tram bearing supplies

The history of tram transport dates back to the second half of the 19th century. It was operated in Brno from 1869, and belongs to the oldest in the Czech Republic. In Prague it was operated from 1875, and belongs to the largest in the Czech Republic. At that time they were horse trams.

In the second half of the 20th century, there was one of the main tram manufacturers in the Eastern block countries in the former Czechoslovakia - CKD Tatra Praha. In the years 1950 to 2003, this company produced 20 000 trams, and some part is still in operation in the Czech Republic and also in Slovakia, Hungary and in the countries of the former Soviet Union. These wagons were mostly fitted with bearings produced by ZKL. These included e.g. axle bearings 23220MC3, bearings in traction motors and bearings in drive transmissions.

The ZKL trademark has been slowly coming back in the equipment of trams of the current Czech producer of rail vehicles, company Skoda Transportation,a.s. New bearings of the PLC 810-15 series were developed for that company. It is a two row closed tapered unit sealed with a contact rubber sealing. The bearing serves as axle bearing, and it has to meet high requirements in terms of the service life for the first service interval. The design of it originated based on the knowledge and experience in the development of similar bearings PLC 810-13 that are used in vehicles of suburban double deck units "CityElephant".

The PLC 810-15 bearings were produced for a 100% low deck 26T tram designed for the Hungarian town Miskolc, and 28T for the Turkish town Konya. It is a fully low deck bidirectional tram equipped with sophisticated electronics. The fully low deck five-element Skoda trams meet the newest European safety standards. The tram has low operating costs since it utilizes energy recuperation in braking. Due to the fact that the electrical equipment is located on the roof of the vehicle, and the tram is over 32 metres long, it facilitates transportation of up to 364 passengers. The factor of full low deck and low entry step allows easy entry ad exit even for people with limited mobility. Through the above, ZKL comes back as a supplier to the basic tram production industry by a prominent Czech manufacturer.  

Ing. Tomas Jansa  
Rail Bearing Project Manager  
ZKL Bearings CZ, a.s.

Cylindrical roller bearings project

Currently, i.e. at the time of the 60th anniversary of the establishment of a plant for the production of ball bearings in Klasterec nad Ohri, a project is being prepared, after that long period when only ball bearings had been produced in Klasterec (that’s why the name ZKL), for the production of small spherical roller bearings and a project for the production of single row roller bearings of diameters ranging between 120 and 350 mm. This represents a challenge since for those sixty years the biggest product of Klasterec had been an axial bearing of 300 mm diameter.

Upon the project implementation, putting of adequate technology in place is presently being prepared into a building where, using the most recent findings in the progressive methods of turning operations (hard turning) and applications of new abrasive types for grinding of all machined surfaces of bearings in the best quality possible and with maximum possible reduction of handwork, with the use of modern machines interconnected through automation elements into lines with the objective of highest possible efficiency of the entire production process. For the implementation itself it is absolutely necessary to utilize the knowledge and experiences of our colleagues from Brno who already make this type of bearings, and so have practical experiences in the manufacture of these. Thanks to this cooperation the project should avoid the initial fumbling in determination of an ideal technology and setting the parameters of own production process and follow-up activities associated with the production process.

Scheme of headstock for grinding of outer and inner parts.

Another factor not to be left out is the automation of measurements and provision of the so-called pedigree for every single bearing produced in these lines. Each product coming out of this line will be provided with a 2D code that will be used to draw information needed for trackability.

Bearing designation 2D

Once all parts of the project are taken into account, it is approved by the management and implemented, this production line should become a window case of the entire concern. To make this really happen, yet much effort has to be exerted and many obstacles overcome. Despite all the problems I still believe that once implemented and fully loaded by contracted jobs, the line will produce roller bearings comparable to those of the prominent world manufacturers.

Vaclav Hruby  
TPV Manager  
ZKL Klasterec nad Ohri, a.s.
Preparation of new technology for pressing of spherical rollers

Due to the development of the production in ZKL Brno, pressing of rolling components is currently being implemented on a new technology. The machine used is a single-step forging press S 210, capable of producing rolling elements of the following types: spherical rollers, rollers and tapered rollers in the range from Ø 12 mm to 30 mm.

This project is implemented with the support of the Ministry of Industry and Trade in order to increase the competitiveness of the enterprise. Some tests have already been conducted at the supplier of the technology; the tests were both successful and sometimes less successful in producing the desired parameters of the semi-product for further processing in ZKL Brno. The produced sample pieces were sent to ZKL Brno, then machined to final dimensions to be later subjected to further testing.

Currently we cooperate with the supplier in resolving some issues that have been encountered. Upon the successful completion of the tests, the technology will be moved to ZKL Brno and incorporated in the machinery of the plant. The technology will help to enhance the quality of the semi-products for edging, and to prolong the service life of bearings. In terms of logistics, having our own machine will facilitate us to react more flexibly to the requirements of our customers. Thus the already known ZKL trademark will achieve higher competitiveness in the market of roller bearings.

Ing. Petr Smerek
Engineering Director
ZKL Brno, a.s.

Green flow in ZKL Klasterec

At the end of 2012, the ZKL Klasterec a.s.’s management was visited by one of our key customers - SKF Österreich AG, Steyr. The main objective of the visit was to help us improve the supplies of bearings and reduce the number of annual complaints to zero to be able to get on the VIP list of SKF suppliers.

Facing the challenge, we began to implement the Zd4S program in Klasterec which was recommended to us by SKF. One of the main criteria of the program is the introduction of "Green flow".

Green flow begins already at the first inspection of material, and continues through the entire production process all the way to final storage of finished bearings at the dispatch. The Green flow system requires maintenance of the colour distinction of the transport cages of the manufacturing. Suitable colours, such as green, blue and white, are used for a good product. Yellow colour indicates a nonconforming but repairable product. The last colour, red, is intended for a nonconforming product that cannot be reworked - a reject that has to be locked in a reject separator and must not get back in the Green flow. To make the entire flow work, the layout of individual production workshops has to be kept; it means that final products have to be stored at reserved locations only that are demarcated both horizontally and vertically. The Green flow system additionally involves due identification of material that is released from the receipt location, as well as identification of dispatch notes. Prior to the commencement of any operation, every employee is obliged to check the performance and release of product from the preceding operations; use calibrated gauges only, regularly record measured values and maintain the instruments accordingly with the binding documentation.

Regular employee training is among the Green flow standard. It is important that every employee knows that kind of work they perform at the moment, and for which customer it is intended.

In Klasterec we currently continue in the performance and improvement of Green flow with the assistance and supervision of SKF experts. In the first half of May another consultation was held focused on Green flow, along with an audit at the hardening shop. The next SKF visit is planned for September this year.

We were pleased that the audit was a 98% success and, using the words of a SKF expert in hardening and thermal treatment, he would not be afraid at all to buy and use our bearing in his own car in terms of hardening. It means great acknowledgement to us for the effort we have been exerted in the introduction of the Green flow beyond the frame of our regular work duties.

Michal Knybel
Press Shop Supervisor
ZKL Klasterec nad Ohri, a.s.