Testing lubricant additives

Graph of temperatures for 6305 bearings for different types of lubrication

New products

Gearing up for the ZVL cycling race

... and many more interesting articles ...
Dear readers, colleagues and supporters of our company

You hold in your hands the first issue of the ZVL SLOVAKIA company magazine. We have given the idea of publishing our own company magazine a good deal of thought for some time now. And now is the right time to publish it. Are you asking yourself just what you can expect from the ZVL LOŽISKÁR magazine? We’ve created regular sections in which we’ll continue to provide you with information on various activities and news from our company.

The new magazine does not seek to record everything all the time as its limited scope would simply be insufficient. That is why we have created this magazine all by ourselves and it is about us; likewise it serves as an encouragement to all to provide interesting suggestions of topics to share with others. I believe that we have made the right decision and the magazine will provide readers with a great deal of useful information to help them navigate through our product line and learn more about ZVL’s cultural and social environment.

We look forward to welcoming you as one of our regular readers and please feel free to send comments and observations to the following email address: srovokova@zvlslovakia.sk. And with that, I welcome to the world the first issue of our ZVL Ložiskár magazine and wish it the same amount of success as our ZVL enjoys! Let it thrive!

Ing. Martina Surovková
Marketing Manager and Editor-in-Chief of the Magazine

A word from the company’s CEO

Dear friends of ZVL, the words contained in the company magazine are backed by the efforts of many who have strived to “create, bring to life and fill the magazine. It is a tool for expressing our company’s thinking and the latest events. It will also serve as our company memory, orientation and introduction.

I am very pleased that the idea of creating this magazine for all supporters of ZVL has developed beyond a simple idea and we’ve been able to establish a “mini” internal editorial board that prepared the publication of the first expanded issue. We want to use the magazine as a means of informing our employees, business partners and all the friends of the company on the latest news and to commemorate shared moments from company events and experiences.

After all, one thing connects us all. Dutiful work and the success of the company and motivation of our working team. Quick response to market demand, precise information, handling customer requests in a timely manner and the complexity of bids combined with willingness and a professional approach have been the most important factors is creating our team and building relationships with customers and business partners. We continue to work on gaining positive references and our responsible work has brought us more and more satisfied customers. The entire team at ZVL SLOVAKIA is clearly behind our joint success.

Ing. Martin Mravec
CEO and Chairman of the Board of Directors

History of the magazines from the local bearing maker in Žilina

ZVL LOŽISKÁR magazine can date its roots back to 1990. The local bearing maker in Žilina published the Žilinský Ložiskár magazine.

The management of the state-owned enterprise at the time and the KOVO trade union’s council were responsible for its development. The editorial board, however, was faced with a very difficult task at the time. The board was faced with the challenge of securing interesting content and regularly evaluating the magazine. We believe that the audience will welcome the current magazine, just as it did its predecessor, as an excellent tool for getting to know the ZVL brand and the bearing market.

From the Žilinský Ložiskár archives
Bestselling bearings in 2013

Top medium and large dimension bearings for the heavy industry segment

<table>
<thead>
<tr>
<th>Spherical roller bearings</th>
<th>d = 1320 mm</th>
<th>D = 1600 mm</th>
<th>Mining industry</th>
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</thead>
<tbody>
<tr>
<td>248/1320CAF3W20</td>
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<tr>
<td>230/1000KYN3/M</td>
<td>d = 100 mm</td>
<td>D = 150 mm</td>
<td>Mining industry</td>
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<tr>
<td>230/690W33M.C3</td>
<td>d = 670 mm</td>
<td>D = 980 mm</td>
<td>Mining industry</td>
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<td>Huller bearings</td>
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<tr>
<td>201/1120DMA</td>
<td>d = 1120 mm</td>
<td>D = 1600 mm</td>
<td>Power industry</td>
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<tr>
<td>804195</td>
<td>d = 760 mm</td>
<td>D = 1150 mm</td>
<td>Power industry</td>
</tr>
<tr>
<td>564509.A</td>
<td>d = 650 mm</td>
<td>D = 990 mm</td>
<td>Power industry</td>
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<tr>
<td>Ball bearings</td>
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<tr>
<td>6096M.C3</td>
<td>d = 480 mm</td>
<td>D = 700 mm</td>
<td>Steel industry</td>
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<td>6080M</td>
<td>d = 400 mm</td>
<td>D = 600 mm</td>
<td>Mining industry</td>
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<tr>
<td>6072M</td>
<td>d = 560 mm</td>
<td>D = 540 mm</td>
<td>Mining industry</td>
</tr>
</tbody>
</table>

What 2013 brought us

Business year 2013 saw a continuation of the negative trends from the on-going economic crisis, the effects of which have been felt in industry and in the global economy.

Our company’s challenge was to more effectively meet the expectations of customers and to increase the efficiency of internal processes to contribute to stability and an increase in competitiveness. We were able to mitigate the effects of the crisis while maintaining and even increasing employment.

In our 45th year and despite the on-going crisis we managed to record a slight increase in our primary export markets in terms of total revenues compared to the previous year even as we continued to financing upcoming investment projects. These were focused primarily on acquiring and increasing warehousing and operations space by nearly 30%, constructing new training areas for employees and investing into machinery and equipment that made a major contribution towards increasing labour productivity and the overall performance of the company.

Professional approach to world industry

We created our motto at the beginning of 2012 and most certainly you have encountered it numerous times. Perhaps you noticed it on all our new promotional and marketing materials and on our website. All of these materials have undergone a dramatic redesign. The philosophy behind our motto is based on our conduct, ambitions and goals. It represents everything for which we as a company along with the ZVL brand and the team of our employees stand. We want to deliver a professional performance in everything we do. Employees are professionals and specialists in all their individual areas of expertise, we seek to create a motivating work environment based on openness, respect and teamwork-based cooperation. A professional approach towards resolving special requests helps our customers find the correct and optimum solutions.

45 years on the market

2013 was a varied year for all of us at ZVL, both professionally and outside of work.

One such event was undoubtedly the commemoration of the 45th anniversary of the company’s establishment. Yes, bearing production began with great fanfare at the factory in Bytčica 46 years ago in January 1968. This was more than an anniversary; it was also a look back at an unrepeatable period in which we relied heavily on the will to chase after objectives and a vision. In terms of the life of the company, the 45-year period was anything but short. It was a process of continuous exploration learning and reacting to the growth of the company and changes on the market. Today we continue to develop the company using these many years of tradition and above all else we believe in the ZVL brand. We continue forward with our defined long-term objectives.
We’re now the exclusive owners of the ZVL brand in Slovakia and the Czech Republic

On 26 March 2013 we became the exclusive owner of the ZVL brand in Slovakia and the Czech Republic.

Our European ZVL brand is currently registered in more than 90 countries around the world and our goal remains to strengthen this position around the world. Our current product portfolio comprises a broad range of bearings from ball bearings to roller bearings, spherical roller bearings and other types of bearings in standard and special configurations, from miniature to large dimension sizes.

We are conscious of the fact that we must continue to support the brand and ensure its competitiveness.

Unified design of ZVL promotional materials

At the end of 2013 a new series of promotional materials for the company’s primary industrial segments were released - specifically for bearings for heavy industry, the agricultural industry and electric motors.

We prepared the printed versions of these materials in three languages - in Slovak, English and Russian based on the requests of customers and the markets we serve. Additional materials in German and Spanish have been prepared in electronic form. All of these materials are available for download from our website in the Promotional Products section. A regular visit to this section of our website ensures you keep up to date with the latest versions of these promotional materials in .pdf format and have access to new materials as they are released.

Billboard campaign continues

ZVL SLOVAKIA, a.s. has continued with its billboard campaign since February 2014 featuring a unified design, which was launched in the previous year to mark the 45th anniversary of the establishment of the company. The billboards are located on the main access roads to the centre of Žilina as depicted in the illustration.

ZVL SLOVAKIA, a. s. at the International Engineering Fair in Brno

Participation at the Engineering Fair in Brno lives up to our expectations. Our primary objective in attending this fair was to strengthen the ZVL brand on the market, emphasize its identity and commemorate a major milestone in the history of the company: its 45th anniversary.

We thanked our business partners for their cooperation and support for helping develop the ZVL brand on the market during the „ČAŠA VÍNA” ancillary event held at the trade fair. The milestone of 45 years represents a tremendous challenge for us going forward and binds us to continue providing reliable and effective solutions along with quality products. At the same time we’d like to thank all of these who supported us by visiting our stand and expressing their confidence in us. We can only fulfil our plans and strategies with the support of our satisfied customers.

Elmia Subcontractor 2013 in Jönköping, Sweden

Attendance at this fair represented the culmination of the 2013 trade fair season. The 30th annual trade fair confirmed its supremacy in its area of specialization in Scandinavia welcoming more than 15311 visitors from 29 countries.

ZVL SLOVAKIA, a.s. attended the event in cooperation with the Slovak Chamber of Commerce. Along with other Slovak companies we presented ourselves at this major trade fair thanks to sponsorship from the Ministry of Economy of the Slovak Republic. The product portfolio of the traditional Slovak ZVL brand was the subject of interest from potential new customers. Participation at the fair had the intended effect. New information and interest in the ZVL brand indicate another route forward in developing and strengthening its position on the Scandinavian market.

Tradition, reliability, quality.

www.zvlslovakia.sk
ZVL’s expedition to India

We presented ourselves to pulp and paper machinery producers at the PAPEREX 2013 trade fair.

ZVL SLOVAKIA, a.s. along with its Indian partner NBU Bearings participated in the 11th annual international exhibition and conference for the pulp and paper industry held in New Delhi, India from 24 - 27 October 2013.

This exhibition and conference is known for the high professional level of its visitors and all major paper producers and subcontractors for this industrial segment were in attendance.

The ZVL SLOVAKIA stand was located in Hall 12. ECO DELTECH, which is a distributor of ZVL bearings for the paper industry in the New Delhi area, also presented at our stand and has been the exclusive representation of our brand on the Indian market since 2010.

During the exhibition we continually registered a high level of professional attendance to our stand and interest in ZVL products as well as interest in explaining the history of the ZVL brand.

A professional seminar was held for pulp and paper industry producers in conjunction with the PAPEREX 2013 exhibition in New Delhi in order to present the ZVL brand and products.

The seminar was organized through ECO DELTECH in cooperation with NBU Bearings, which is our exclusive representative of the ZVL brand in India. More than 50 professionals from the pulp and paper industry attended the seminar. We consider this event to be a tremendous positive given the fact that we saw high interest and demand for our bearings during the presentation of the brand and our product portfolio.

ZVL SLOVAKIA, a.s. culminated its expedition to India on 28 October 2013 by hosting a seminar for bearing distributors and stone processors in the Bangalore region. A professional seminar was held in conjunction with the PAPEREX 2013 exhibition to present the ZVL brand and products.

The seminar was organized through ECO DELTECH in cooperation with NBU Bearings, which is our exclusive representative of the ZVL brand in India. More than 50 professionals from the pulp and paper industry attended the seminar. We consider this event to be a tremendous positive given the fact that we saw high interest and demand for our bearings during the presentation of the brand and our product portfolio.

What else to add at the end?

The Indian market is one of the most important export markets for ZVL SLOVAKIA, a.s. and we expect a significant expansion of our sales portfolio there. All of the selected marketing communication tools and sales activities directed towards increasing the market share of the ZVL brand on the Indian market are priorities in our future sales strategy. The primary strategic task for the company moving forward is to continue to build sales infrastructure by reinforcing its image on markets where the ZVL brand is already established and where it has the ability to expand its potential. India is indisputably one of these strategic markets. Our primary objective in travelling to India was successfully achieved. We noted a tremendous level of interest in information related to the ZVL brand and its products on this market. Active participation in trade fairs and marketing support for this demanding market through these seminars and business meetings contributed to a strengthening of the image of the company on the Indian market and to increasing the level of information among professionals from the bearing industry as well as the identity historical context of the ZVL brand. We expect more positives from these events to be reflected in company earnings and completed marketing activities on this demanding market in the near future.
Effects of nano-additive fortified lubricants on ZVL bearing service life

ZVL SLOVAKIA, a.s. as the first company of its kind in Slovakia participated in the testing of the new Nanotech N1 additives for lubricants and their effect on increasing the service life of bearings, which was clearly exhibited in the form of a 100% extension in bearing service life.

The quality of the lubricant used with a bearing is a major factor in extending the service life of bearings. Current developments in the area of the application of solid additives to conventional lubricants has made great strides, which has opened up new opportunities to ensure that customer requests can be met in terms of extending bearing service life.

ZVL SLOVAKIA, a.s. decided to test the effects of new additive technology using the WS2 nano-particle within its development program; this nano-particle is recognized for its exceptional resistance to high temperatures and high pressure whereby its structure and morphology create a unique mechanism for releasing tribofilm, which is induced by the friction during the process of lubricating contact surfaces. The addition of new inorganic additives to ordinary oils and greases used to lubricate bearings in different applications has resulted in a major decrease in wear on the active surfaces of bearings, a decrease in friction and as a result, a decrease in operating temperatures. The multi-layer WS2 nano fullerene, which works on the basis of “dual lubrication”, is responsible for an improvement or a specific regeneration of the damage on the surface as a result of operating wear.

ZVL SLOVAKIA, a.s. joined the project with Nanotech N1 s.r.o. which represents the multinational company Nano Materials Ltd in Slovakia. This company received the prestigious Nano SOTM Award from Nanotech Briefs and is the first company to successfully and commercially produce inorganic WS2 nano fullerenes and nano tubes using exclusive patented platforms based on technology developed in the Weitzmann Technology Institute.

The testing was conducted following ZVL SLOVAKIA, a.s. registered on the portal for the sole purpose of advertising ZVL bearings are available on this portal from our distribution partners.

Since April 2014 we have been a registered member of the EBM SERVICE sales portal where we regularly update our available products and stocking levels for engineering companies in the Czech Republic and Slovakia.

The testing was conducted following ZVL SLOVAKIA, a.s. regulations in a comparative manner, whereby two randomly selected groups of bearings were collected from a single production batch. The first group was tested using lubrication oil without additives and the second group was tested using lubrication oil containing the additive mentioned above from Nanotech 1. Another two groups of bearings were selected in the same manner for testing the lubrication grease with additive from Nanotech N1.

RESULTS FOR OIL LUBRICATED BEARINGS:
The tested batch of twenty five type 6305 bearings lubricated with pure OL-46 oil without additive reached a statistically calculated service life of 501 hours, corresponding to a basic dynamic load capacity $C_r = 22751$ N and a result of 109.9%. The tested batch of twenty five type 6305 bearings lubricated with oil containing the Nano Save 1 additive reached a statistically calculated service life of 983 hours, corresponding to a basic dynamic load capacity $C_r = 28488$ N and a result of 137.6%. These results clearly indicate that the effects of using the Nano Save 1 additive in OL-46 bearing oil resulted in a nearly 100% increase in the service life of these bearings and a roughly 25% increase in their dynamic load capacity.

RESULTS FOR GREASE LUBRICATED BEARINGS:
The tested batch of eight type 6202-2ZR bearings lubricated with polyurea lubricating grease (RAS) with no additives reached a statistically calculated service life of 430 hours, corresponding to a load capacity of 8024 N and a basic dynamic load capacity result of 113%. The tested batch of eight type 6202-2ZR bearings lubricated with the same basic RAS lubricating grease and with the Nano Save 1 additive achieved a statistically calculated service life of 892 hours, corresponding to a load capacity of 10235 N and a basic dynamic load capacity result of 144%.

Comparing these results clearly shows that the effects of adding the Nano Save 1 additive to RAS group lubricating greases leads to a 100% increase in the service life of these bearings and a 30% increase in their dynamic load capacity.

The conclusions reached from the testing clearly show that these WS2 derived nano-additives from Nanotech N1 have a positive effect in terms of extending bearing service life. Such gain in a more precise and objective manner for the service life of roller bearings more of these tests must be repeated and expanded beyond simple single-row ball bearings to include roller and spherical roller bearings of larger dimensions that are used in severe duty operating conditions. It is expected that the effects of the tested additives will be even more positively reflected in these applications. In any case it is clear that these new additives for lubricants open up a host of new opportunities for improving the utility, service life and quality of roller bearings.

We transitioned over our IS to send electronic invoices to customers within the digitalization process.

This step helps our company save on costs and has streamlined and made the process of sending documentation within the supply chain more efficient. We also implemented the management “DASH-BOARD” within the information system.

This provides a quick, efficient and visual overview for management in specifically defined areas of the company’s ERP enterprise system. The functionality to clearly identify items removed from stock from the oldest date of acceptance of such items into stock was improved in the ERP system as well.

Implementation of information system add-ons
Distributor certificates undergo redesign

This year for our distribution partners we issued “Authorized distributor certificates” with a new design that are valid from 1.1.2014 until 31.12.2014. These certificates also include a secure ZVL holographic sticker.

Support at distributor points of sale in 2014

In the first half of 2014 we focused on determining the needs of our business partners for marketing and sales support at their points of sale. The presentation of marketing items was communicated to all business partners and was used as the basis for summarizing requests. These marketing items will be produced and prepared based on the marketing plan for 2014 and distributed to the points of sale throughout 2014.

Please contact our sales team if you have any additional requests!

New marketing materials in 2014

**ZVL flags** have now been added to standard marketing materials already available to the ZVL distribution network (illuminated boards, stands, etc.).

Based on numerous requests and great interest from our business partners we added ZVL flags to our marketing materials. These flags are designed to be mounted on poles and come in white and blue versions. The flag dimensions are 400 cm tall and 150 cm wide. These flags are to be distributed to many of the company’s export markets.

Contact us at surovkova@zvlslovakia.sk

Advertising roll-ups for agriculture and electric motors

Following the successful distribution of advertising roll-ups about the company we decided to add roll-ups specifically focused on agriculture and electric motors into the marketing program based on your requests. These presentation materials have been completed in a number of different language options based on the needs of the specific export market.

Monitor all the latest marketing new on our website...
Current trade fairs May/June 2014

BILBAO, Spain
MOSCOW, Russia

Technical seminar in Katowice, Poland, focused on electric motors

ZVL SLOVAKIA presented at this technical conference in cooperation with its Polish distribution partner. ZVL presented a broad range of bearings for electric motors.

International Trade Fair in Bilbao, Spain

We opened the trade fair season in 2014 by attending the 28th annual BIEMH in Bilbao, Spain. This prestigious trade fair specializes in machine tools and was held 2 – 6 June 2014. ZVL SLOVAKIA's stand measured 45 m² and was used to present a broad range of ZVL bearings in cooperation with its Spanish business partner, GRUPO ROYSE. Look for more information about this trade fair in an upcoming newsletter.

Metalooobrabotka international trade fair 2014, Moscow, Russia

In cooperation with the Slovak Chamber of Commerce in Trenčín we will be participating in the METALOOBRABOTKA trade fair 2014 in Moscow. ZVL SLOVAKIA will be exhibiting in Pavilion Forum in spot B100.

What are our objectives for the near future?

We anticipate a year-on revenue increase of 10% in 2014 with increased emphasis on developing the position of the company and the ZVL brand on the market and increasing the efficiency of sales. Our primary objective for the upcoming year is building up sales structures in the markets of Russia, the Ukraine, the Baltics and South America where the ZVL brand is not yet sufficiently established and strengthening its position on its most frequent and major export markets in Europe and North America.

We believe that 2014 will see a continuation of the positive development trends based on the previous years. This year we also plan to continue to exploit various forms of marketing communications directed towards strengthening the ZVL brand on its major sales markets and reinforcing relationships with our customers.

Following the success experienced at trade fair events in the past year we will continue our domestic and export focus and our primarily objective will be to further develop sales and marketing activities that are already under way.

We are looking forward to being able to positively answer the following question at the end of the year: „Did we do the best that we could for our customers and for our company?“

The highest growth potential is forecast in the following segments:

Medium and large size bearings in the heavy industry segment

ZVL audits in 2014

News in the area of building up our quality management system is the completion of a certification audit for occupational health and safety pursuant to the OHSAS 18001 standard, which is planned for the month of June 2014.

2014 will also see the completion of a high number of third party audits. Certification audits and customer audits are all scheduled for completion. Throughout the year three of our most important business partners will conduct customer audits and positive results will be the essential prerequisite for entering new markets. All of our business partners expect the fulfillment of the high standards we have set and which are sometimes more strict than those defined by ISO standards or legislation.

ZVL SLOVAKIA is also preparing for recertification audits for the quality management system pursuant to the ISO 9001 standard and environmental management pursuant to the ISO 14001 standard, which are regularly completed by classification society Det Norske Veritas. A set of internal audits will also occur within the company, the findings of which have previously confirmed a high level of functionality of the configured internal processes in comparison with actually executed activities. The quality management system is scheduled for augmentation with ISO/TS 16949 certification, which the company previously completed. This certification will enable the company to deliver bearings to companies in the car industry, where strict quality requirements are set.
What can customers look forward to this year?

NEEDLE BEARINGS

The reliability, quality and comprehensiveness of our product range are the guarantee of our success in business. For the same reason we are bringing a new product to market in 2014 – needle bearings. ZVL SLOVAKIA’s Development Department has spent an extended period of time working of this product line to help round out the company’s currently comprehensive bearing catalogue. One given is a number of subsequent development projects undertaken on the basis of special requests.

Examples include:

The start of production for a special single-row ball bearing for use in drilling rigs used in the mining industry:
- High demands on the chemical and heat treatment and mechanical ring treatment and finish
- The use of ceramic balls

Four-row roller bearings used to install working cylinders into rolling mills in the steel industry:
- Five types of bearings are offered
- Designed for installation in the working cylinders of rolling mills as a replacement for slide bearings with the goal of increasing the precision of rolling and decreasing the amount of additives in the rolled materials
- ZVL has posted a win in a tender with a premium brand

Expansion of the range of type NNF twin row full complement cylindrical roller bearings:
- Facilitate the transmission of large radial forces at small construction dimensions
- Filled with high quality plastic lubricant
- Sealed with contact seals to prevent contaminants from entering into the roller races

We believe that professionalism and the quality of ZVL’s bearings will bring us together in 2014 as well.

International MSV Engineering Fair 2014 in Brno

Following the success of last year’s trade fair we’ll soon be meeting our business partners and customers at the ZVL SLOVAKIA stand in Brno. The applications of exhibitors at the trade fair, including the application from ZVL, are currently being processed. We’ll send out official invitations with the specific location of our booth once we are assigned space.

ZVL is full of cycling fans

Many of the team at ZVL are cycling fanatics and in addition to actively focusing on this demanding sport we decided in 2014 to financially support Cyklistický spolok Žilina (Žilina Cycling Association - CyS Žilina).

We support young cyclists - CyS Žilina

CyS Žilina is an organization primarily focused on working with youth categories and with younger students, older students and those in the cadet and junior categories. Currently 21 young cyclists are registered at CyS Žilina. Many of the former pupils of this Žilina-based cycling academy will race on professional teams this year. Brothers Juraj and Peter Sagan are continuing as key members of the Cannondale Pro Team at the highest global category. We are happy to actively share in the development of these young talents.

We are also the primary sponsor of ZVL SPORTIVA, a Polish cycling club
We’re currently gearing up for the ZVL summer cycling race

Now a tradition, the company also plans to host the ZVL SPORTS DAY this year.

In addition to traditional sports, cyclists will complete the „Bytčica – Turie – Vižňov – Rosina – Bytčica“ bicycle touring route.

The event starts between 8:00 and 9:00 AM from the football pitch in Bytčica. Interesting surprises await the participants of this sporting event. The cycling event is planned for August 2014.

Cycling races May 2014 / Halenkov

Searchable online bearing catalogue

- ZVL SLOVAKIA

PROFESSIONAL APPROACH TO WORLD INDUSTRY
Tradition, reliability, quality.

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