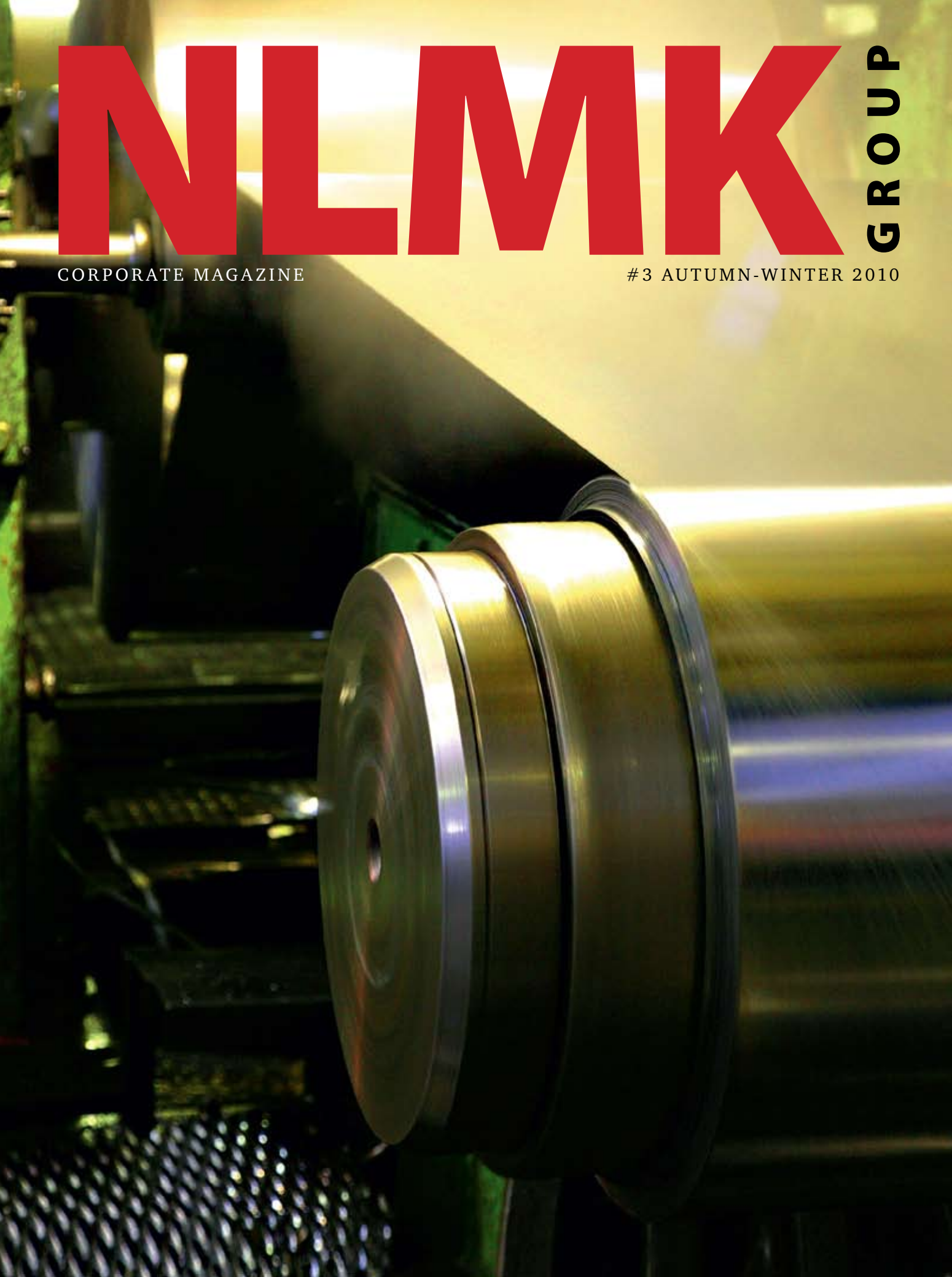


NLMK GROUP

CORPORATE MAGAZINE

#3 AUTUMN-WINTER 2010



Half a Century on the Roll

One of NLMK's main units – Transformer Steel Production – celebrated its 50th anniversary. The event brought together many generations of steelmakers.



Transformer Steel Production plays a great role in NLMK's development. The launch of a specialized cold-rolled production unit turned NLMK into Russia's major supplier of transformer steel. Transformer Steel Production is our experimental platform for R&D, testing new materials, developing and implementing improved equipment, control and measuring devices and automated process control systems.

NLMK Group is currently Russia's sole supplier of transformer steel. With assets located at our main production plant in Lipetsk as well as in the city of Yekaterinburg and an output of 320 000

tonnes per year, NLMK Group accounts for around 15% of global transformer steel production.

NLMK's Technical Upgrade Program gave a new boost to Transformer Steel Production. For instance, new pickling and cold-rolling lines were launched at the Lipetsk site. NLMK is the first Russian company to master laser treatment technologies to manufacture transformer steel with low specific magnetic losses to satisfy the most demanding consumers.

More than 90 workers of the unit have been honored with state and industry awards over the years. More awards were presented at the ceremony: 6

workers received gold and silver NLMK medals; 19 people received Honorary certificates from NLMK, the Miners' & Metallurgical Workers' Union of Russia in Lipetsk and the Company's Trade Union Committee; 20 others were awarded a commendation and 5 were given the Labor Veteran title. The ceremony culminated in a Gala concert prepared by local artists and creative teams.

Altai-Koks' Coal Tar Processing Unit celebrated another anniversary – 10 years since the launch of the coal tar processing facility with a capacity of 200 000 tonnes per year. 🇷🇺



CREDIT TO DEVELOP

NLMK has signed a loan agreement worth EUR125 million with the European Bank for Reconstruction and Development (EBRD) to finance its Energy Efficiency Program with an aim to reduce the plant's energy consumption by 15% and CO2 emissions by around 1.5 million tonnes per year by 2015.

Under the terms of the agreement, the EBRD will provide the funds in two installments for 3 and 5 year terms.

The funds will be used to finance the construction of a 150 megawatt Utilization Power Plant. The plant will be fired using by-product gas from blast-furnace operations. It will also be used to finance NLMK's plans to integrate the Pulverized Coal Injection (PCI) technology into the blast furnace operations.

Galina Aglyamova, NLMK Group's Financial Vice-President, said: "EBRD loan funds will help to lower the costs of the Capex projects that will improve the energy efficiency of our operations substantially, decrease CO2 emissions, and increase NLMK's energy self-sufficiency by up to 56%." ■

TO "POSITIVE" FROM "STABLE"

Moody's Investors Service has changed the outlook for NLMK's Ba1 corporate family rating and the outlook on NLMK's Aa1.ru national scale rating to "positive" from "stable".

This rating action reflects the fact that the Company continues to demonstrate solid financial results and it maintains conservative financial policy in 2009 in spite of the challeng-



ing global environment for steel producers, the agency said in press-release. Moody's decision has confirmed the Com-

pany's high credit quality and reflects the fact that the Company continues to have one of the lowest levels of debt and leverage among peers.

Moody's notes that the Company continues to demonstrate improving profitability, sound liquidity profile, and conservative financial metrics. ■



RUSSIAN EXPORTER OF THE YEAR

Novolipetsk (NLMK's main production site in Lipetsk) has been named Top Russian Steel Exporter 2009 by the Russian Federation Ministry of Industry and Trade, confirming once again its leadership among ferrous metal exporters.

Having export traders within the Group allows the Company to quickly switch between markets. Despite the global reduction of steel consumption, Novolipetsk was able to preserve 2008 sales volumes. In 2009 Novolipetsk sold 8.4 mln t of steel products.

Export sales accounted for 77%, or 6.5 mln t, a 16% increase year-on-year. Products were de-

livered to 57 countries worldwide. South-East Asia and the EU were the plant's priority export destinations, accounting for 40% and 28% of deliveries respectively. 24% was exported to the Middle East and Turkey, and 4% to North America. The Company's export revenue totaled USD2.5 billion. ■

FOR REFERENCE

The Russian Exporter of the Year participants were assessed in 16 main industries and in the following categories: Best Industry Exporter; Best Russian Exporter to the CIS; and Most Rapidly Developing Russian Exporter. Competitive bids were reviewed by the Department of External Economic Relations based on the assessment of submitted documentation and a calculation methodology using consolidated export reporting data.

Meeting the Personnel Challenge

Skilled personnel are the backbone for the stable operations of NLMK, its competitiveness and international standing. Group companies continue to hire competent young talent, with Novolipetsk setting the pace with its well-defined and effective system for selecting and training personnel.

The attractions of steelmaking

There is a strong focus on occupational guidance and a special programme is in place targeting school students in Lipetsk and the province with a view to encouraging their sustained interest in Novolipetsk and influencing a conscious decision on their part to select a career in steelmaking. In 2009 more than 5,000 students and their parents participated in career guidance

Altogether 46 senior year students graduated from the Young Steelworker School in the 2009-2010 school year, most of whom later successfully passed interviews and were accepted into the LGTU.

events arranged by the Novolipetsk Professional Development Department (PDD). Let us only briefly mention some of them. They include Open House Days, allowing high school students to familiarize themselves closely with various professions, training in which is offered by the Vocational Middle School No. 10 (PL-10), the Lipetsk Metallurgy College (LMK), and the Lipetsk University of Technology (LGTU). PDD staff also visited schools in the country-side with multimedia presentations about Novolipetsk youth-oriented programmes and its vocational training facilities. There are also master

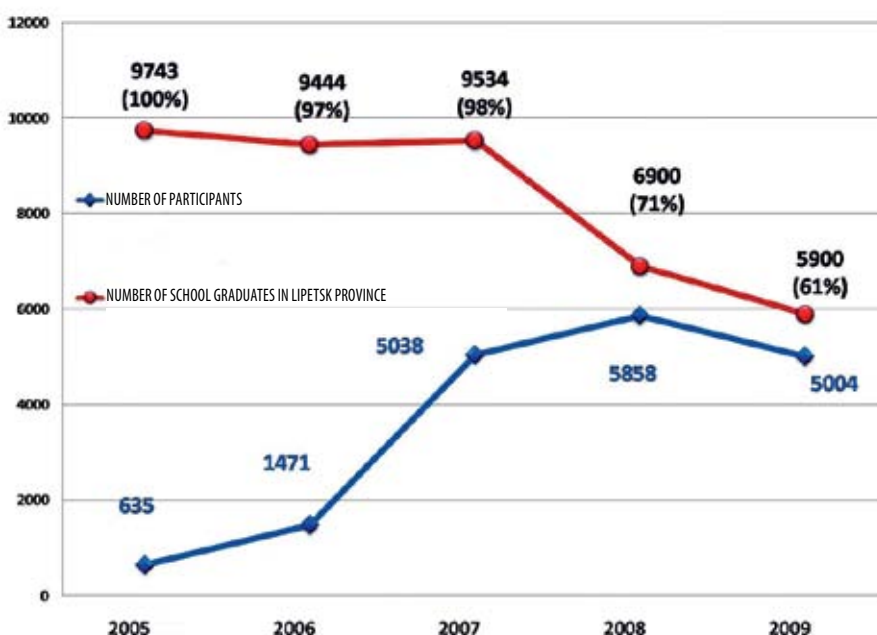
classes taught during technology workshops by winners of professional skill competitions, who link their achievements with the advantages of employment at Novolipetsk. Then there are topical quizzes, essay, drawing and applied art competitions focusing on steelworkers. The most recent competition was held in commemoration of the 65th anniversary of the Great Victory in WWII, with more than a hundred students across all school ages participating in it. The best talents and their teachers were awarded with diplomas and prizes.

School students have the best impressions of tours of Novolipetsk shops, its Swan Lake zoo and museum. Teenagers are awed by the immense size of the facility and its automation, and they begin to appreciate that employment at the Company is both exciting and prestigious. Like they say, a picture is worth a thousand words.

During school break senior grade students can be seen at the Novolipetsk Corporate Training Centre and the LGTU Professional Retraining Centre, where they learn to use Adobe Dreamweaver, Adobe Photoshop and Compass-Grafic, enabling them to create their own web-sites and presentations for educational activities.

For the first time Novolipetsk arranged classes for school students at PL-10 within the Pro-

Occupational Guidance Events Arranged by Novolipetsk





Professional Skills School program in 2010. Thirty students were taught basic skills in vocations of turner and electrician, and were also introduced to programming of electronically controlled machinery, materials science, electrical instruments and devices. At the end of the course students were required to submit examination papers. They received certificates of graduation and the best performers were awarded with prizes.

Senior grade students, who attend polytechnic classes at schools in Lipetsk, also study at the LGTU under the Young Steelworker School program, which is quickly gaining popularity. Last April saw the graduation ceremony for 24 students who had attended a three-month course of lectures covering key subjects taught at the Machinery and Machine-building, Physics and Technology, and Chemistry and Metallurgy departments, and also obtained skills in programming. Altogether 46 senior year students graduated from the Young

Steelworker School in the 2009-2010 school year, and most of them later successfully passed interviews and were accepted into the LGTU.

Lipetsk high school students enjoy a great opportunity of testing themselves in the field of research by participating in the annual Starting in Science conference sponsored by Novolipetsk. Over the past 6 years more than 300 participants benefitted from this conference. The new generation of researchers receives advice from school teachers, Company experts and the LGTU faculty. The desire for discovery is encouraged by Novolipetsk diplomas, certificates for attendance at the Eureka specialized school, and prizes.

Admissions of school graduates in 2010 show that most of the new entrants who had participated in occupational guidance activities, choose learning institutions which are of strategic importance to and offer training in professions required by Novolipetsk. Apropos, the Novolipetsk

Student targeted program provides tuition for high-school graduates admitted to major Russian higher learning establishments, including the Moscow State University, the Moscow Institute of Steel and Alloys, the Baumann University of Technology, and the Saint-Petersburg State University. In 2008 and 2009 four students completed their education with the help of this program, and another 11 joined the program in 2010. All are offered guaranteed employment by the Company and ample career development opportunities. Every year Novolipetsk reserves 500 jobs for graduates of its 'feeder' schools.

NOVOLIPETSK
YOUNG STEELWORKER
SCHOOL

Admissions of school graduates in 2010 show that most of the new entrants, who had participated in occupational guidance activities, choose learning institutions which are of strategic importance to and offer training in professions required by Novolipetsk.

Zero loss policy

With the direct support from Novolipetsk both PL-10 and LMK championed in the Education national priority project. This helped



NOVOLIPETSK
VOCATIONAL SCHOOL

Since 2005 LGTU students have been enjoying a program of complementary professional training (CPT), which is one of a kind in Russia

obtain funding for the modernization of and improvements in the instruction process, allowing for more thorough training of workers and specialists. The school and college have substantially revised their curricula and instruction program by bringing them as much as possible in line with the requirements of the employer, installed modern industrial and laboratory equipment, and renovated the classrooms. Experienced Novolipetsk specialists, including retirees, are contracted as professors and supervisors to teach students the practical skills of their professions.

We are presently using PL-10 and LMK to create an integrated personnel training facility for the steel industry. This integration of basic and secondary vocational training will produce a number of advantages,

primarily in terms of the quality of training provided to future steelworkers. Among other things, instruction will be arranged in such a manner so that the top performing students at the school are able to complete training according to specially developed programs and receive a college diploma. On the other hand, those college students who fail to complete their courses in full will obtain a blue-collar profession from Vocational School No. 10. This vocational training arrangement based on the modular skill development approach will prevent the loss of trainees.

Best rated

Aspecial emphasis continues to be placed on LGTU students. Every year thirty best students, who were selected on a competitive basis by the University and Novolipetsk, will receive an allowance of 3,000 roubles per month from Vladimir Lisin, Chairman of

the Board of Directors of NLMK. One of the key criteria for selection is the desire of the future steelworker to find employment with the Company.

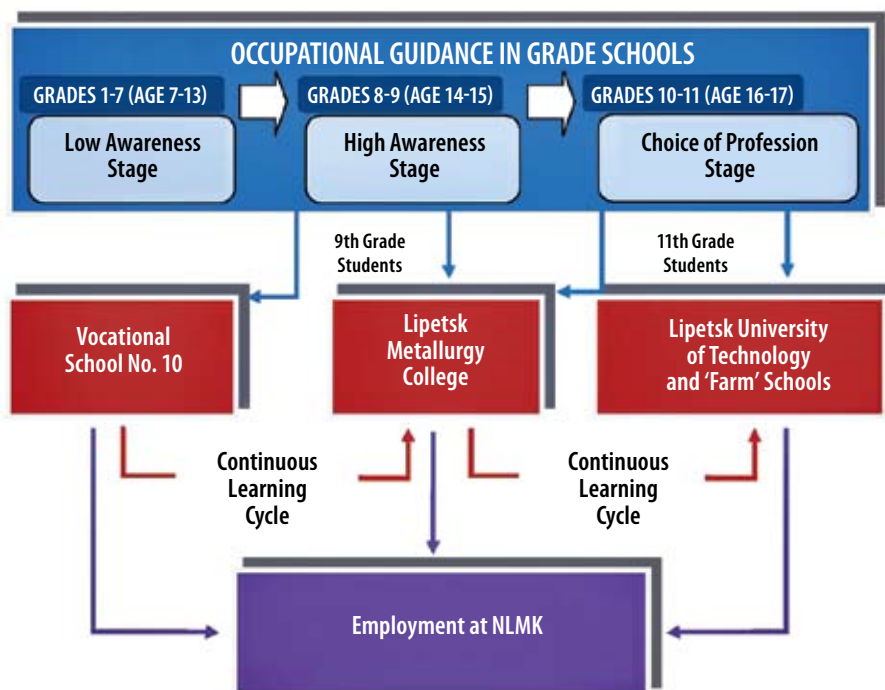
Since 2005 LGTU students have been enjoying a program of complementary professional training (CPT), which is one of a kind in Russia. The name speaks for itself, and the program provides for complementary training opportunities for students on-site at operating facilities. So far 270 students have completed this program. Under the CPT contract Novolipetsk undertakes to hire program participants upon their graduation from the learning establishment. Currently 140 students are enrolled in the program. Novolipetsk pays each student a monthly allowance of 1,500 roubles. Classes are taught by LGTU staff jointly with Novolipetsk experts; this allows students to obtain relevant skills in the profession of their choice and the ability to take proper ac-

tion in non-routine situations.

Currently Novolipetsk maintains strategic partnership agreements for training engineers and researchers with several higher learning institutions, including the Baumann University of Technology, the Moscow Institute of Steel and Alloys, the University of Voronezh, and LGTU. This allows steelworkers to update their knowledge at skill improvement courses, while the universities gain the opportunity to provide their students with practical training and to conduct their research at Novolipetsk facilities.

Every year Novolipetsk provides 4,000 workplaces for on the job and pre-graduation practical training, research and laboratory activities. This allows the students a perfect opportunity to apply their skills using operational equipment, thereby gaining some experience. Practical training activities are supervised by the best skilled employees from Novolipetsk. Students who are likely to be hired by the Company undergo their practical training in accordance with student contracts and receive a monthly allowance of between 3,000 and 4,000 roubles depending on their academic qualifications. More than 400 students sign these contracts every year. Upon completion of practical training courses students produce reports, term and graduation papers on topics which are of relevance for the Company.

Those who had completed practical training and were hired by Novolipetsk after graduation from a learning institution are provided with installation allowances ranging from 18,000 to 33,000 roubles (~USD570-1050) depending on their academic qualifications, participation in the CPT or NLMK Student programs, and prior eligibility for monthly allowances. Graduates are also paid a guaranteed minimum starting wage of be-



tween 14,000 and 23,000 roubles (~USD445-730) depending on their alma mater and academic performance. Those who are hired after completing military service also receive an installation allowance of 20,000 roubles (~USD630).

Every young employee may participate in corporate adjustment and mentorship programs, including Young Professional,

Housing for Young Steelworkers, professional skill competitions, Engineer of the Year, Specialist of the Year, and Young Leader contests and activities.

It is only natural that this year Novolipetsk was recognized as the leader in the first national rating of employers partnering with higher learning institutions in the country, compiled by the Russian Union of University

NOVOLIPETSK
CLASSES AT THE VOCATIONAL
SCHOOL



Presidents. During the awards ceremony at the Lomonosov Moscow State University Stanislav Tsyrlin, NLMK Vice President for HR and Management System, received winner diplomas in the Best Occupational Adjustment Practices for University Students and Largest Youth Employer nominations.

ies programs hosted by VIZ-Stal. Instruction begins with a safety briefing, a tour of the facility, and then highly skilled mentors are assigned to each future young professional. The mentors introduce the young people to the workplace, processes, equipment, industrial economics and safety, help them collect material for

(NSMMZ) is another business within the Group which cooperates closely with the UGTU. Last year NSMMZ had arranged for a day trip to the university's School of Metallurgy for a group of senior grade students from a number of schools in Revda. They met with the deans of the school and its departments, and obtained detailed information about the university's admission policies and various occupations in high demand in the industry. A similar event will also take place this year. This year the Company also hosted the Test Yourself as a Future Student competition. NSMMZ is offering an allowance to top students training in professions required by the Company. A total of 16 UGTU students had received the allowance, and ten of them are already employed at NSMMZ. In addition to UGTU students, every year NSMMZ also welcomes for practical and pre-graduation training students from other higher learning institutions in the Urals, including the mining, railways, and economics universities.



UGTU STUDENTS AT
NOVOLIPETSK

Targeting the Younger Generations

Other NLMK Group companies are also targeting the younger generations. VIZ-Stal has enjoyed a long-standing strategic partnership with the Urals Polytechnic College and the Urals University of Technology (UGTU). VIZ-Stal currently employs 200 graduates of the UGTU. The Company also cooperates closely with other higher learning institutions in the Urals. Through joint projects newcomers are assisted with obtaining any practical knowledge that they may lack.

Every year some 150 students participate in practical stud-

their term and final papers, provide them with blueprints, background reading and technical information. Often students would pursue their pre-graduation practical studies with the same units where they had completed their practical training earlier. This expedites adjustment for future VIZ-Stal employees.

Creation of a talent pool is also significantly enhanced when promising future employees, who had completed secondary vocational training, are admitted to higher learning institutions and the employer pays for a part of their tuition. For example, of the 203 graduates of the Urals Polytechnic College, thirty-five subsequently received university degrees while already employed by the Company.

The Nizhneserginsky Steel Hardware and Metallurgy Plant

Creation of a talent pool is also significantly enhanced when promising future employees who had completed secondary vocational training are admitted to higher learning institutions and the employer pays for a part of their tuition

In 2009 Stoilensky also participated in the Federal Student Trainee Program. The Employment Centre at Sary Oskol assigned 22 young professionals for practical training at the Company, and three of them were later hired as Stoilensky employees. The Company spends several million roubles to provide training in a variety of occupations and formats of instruction. For several years now Stoilensky has been sponsoring Municipal School No. 27; many graduates from this school subsequently enrol in the Moscow State Mining University and after graduation return to their home town to find employment at Stoilensky.

Altai-Koks has for a long time maintained close cooperation with learning establishments in Zarinsk, Barnaul, and Kemerovo. Cooperation with the Vocation-



al School No. 41 in Zarinsk began in 1989. In fact, the school was established for the purpose of training employees for Altai-Koks, including repair workers, welders, electricians, coke chemical production operators, masons. The Company currently employs 748 former graduates of the school.

Cooperation agreements with the Altai University of Technology (AUT) in Barnaul have been in place since 2004. Three hundred and thirty AUT alumni form the core of the Altai-Koks specialist workforce. Every year the Company offers trainee practice opportunities to between 16 and 40 students from various schools of the university.

Altai-Koks' contacts with the Kuzbass University of Technology in Kemerovo also received a

new impetus, given the shared interests in training specialists in coke chemical operations, primarily in the field of chemical technology for natural fuels and carbon materials. Initially the contracts would cover only training paid for by the Company; since then resident instruction programs have been funded by the government or a combination of government funding and a lump-sum earmarked donation from the Company. So far this cooperation has helped train 38 specialists through resident training programs, with 10 persons graduating from KUT in 2010. Another 35 employees completed tuition-based distance learning programs. Currently the Company employs 67 KUT graduates, mostly in senior positions of foremen, shift su-

pervisors, and deputy shop supervisors.

In 2009 and 2010 Altai-Koks hired 10 graduates of various learning institutions, including five from the KUT, two from Vocational School No. 41, and one each from the AUT, the All-Russian Finance and Economy Distance Learning Institute, and the Modern Humanitarian Academy. It's gratifying that many of those hired are following in the footsteps of their parents; this means that new professional dynasties are created, a feature common to all businesses within the Company. ❖

Alexander Alekseyev

VIZ-STAL
PRACTICAL STUDIES FOR
STUDENTS OF THE URALS
METALLURGY COLLEGE

Altai-Koks has for a long time maintained close cooperation with learning establishments in Zarinsk, Barnaul, and Kemerovo

Managing the Managers

The NLMK Team Leader 2020 program was launched earlier this year. Its objectives, features and implementation is discussed by Stanislav Tsyrlin, Vice President for HR and Management System.



Since the name of the programs mentions both 'leaders' and 'NLMK' I have been asked how it differs from the NLMK Young Leader contest. The difference is that the contest is a contest, where you accept applications from anyone who wants to participate, and the Company imposes

The company needs creative and innovative managers capable of propelling it further

almost no restrictions on eligibility, apart from age and minimum length of service requirements; the participants then receive their assignments, and the winner is determined on the basis of how the assignments are performed.

NLMK Team Leader 2020 is not a contest, it's an educational project targeting young managers and intending to train an elite group of Company managers for the future. The linchpin issue is whether today's managers will be replaced by fighters

or observers, by activists or spectators. The Company needs creative and innovative managers capable of propelling it further. Abilities, however, are not akin to a handkerchief, which one can pull out and spread out, abilities reveal themselves when people are trained; and the more challenging the tasks faced by a person in training, the better and fuller will the abilities develop. The new program takes this into account. We used a competitive selection process to create a team of young mid-level managers below the age of 35 that would undergo 6 five-day training sessions during the year. They will also meet with senior Company management and members of the NLMK Board of Directors, learn English on a self-study basis, read scientific and technical literature, do homework received by e-mail, and produce a business project, either individually or in collaboration with others.

Team Leader is more appropriately compared with the NLMK Young Professional educational project, albeit with some important distinctions. The NLMK Young Professional project targets graduates of higher learning institutions who have only recently joined NLMK and have very little practical experience, a shortcoming of the national education system. To a certain extent the project helps overcome this by allowing former stu-



dents to face the real operational needs of the Company; quite often this has to be done, as they say, by starting with a clean slate. Participants in the NLMK Team Leader 2020 program are in many ways accomplished managers. They have different jobs and duties, but they all have shown their worth. They are Novolipetsk Economic Department Head Maria Lavrentyeva, and Olga Koreneva, Head of Internal Audit at NLMK-Urals; also Alexey Popov, Head of Novolipetsk Repairs Unit, who manages more than 3,000 employees, and Boris Parshakov, Head of Section at VIZ-Stal Cold-Rolling Shop, among a total of 22 altogether. Another feature, as the name suggests, is that this is the first time that an educational project is implemented across all of the Group businesses, not only at the parent company level. In



addition to the sixteen managers from Novolipetsk it also involves managers from Stoilensky, Altai-Koks, VIZ-Stal, NSMMZ, and NLMK-Urals.

The Team Leader program is in many ways unique in terms of its instructional content. Classes are taught by leading Russian and foreign professors and managers. For example, the program was kicked-off by Stanislav Shekshnya, professor at INSEAD, one of the most prominent international business schools; he has worked for Western and Russian businesses, and authored numerous books and publications. When it comes to professional managers, I would mention the presentation made by Alexander Waechter, Managing Director at Citigroup Russia, who had previously worked in Switzerland. He is well familiar with both the European and Russian business en-

vironments; he knows what and how to compare.

The program does not in any way see its objective as cramming someone with knowledge. Today people can obtain knowledge on their own either from books or from the Internet. The project's objective is to teach a manager how to manage. For these purposes we rely on interactive methods when trainees interact with their instructors and each other. We focus on the following priorities: 'what leadership is about and how one becomes a leader'; 'how to achieve results through effective business communications'; 'how does one measure professionalism'; and 'how perceptions of business ethics differ in Russia and abroad'. These are important elements of knowledge for a manager, and they are usually not covered by the national higher education system.

The program also focuses on issues from an operational angle, e.g. business economics and finance, and the integrated business model. The latter, by the way, was covered via the world's most popular business simulation, the Global Management Challenge, where one can even participate in world championship competitions. The most recent championship in Canada was won by a team from the National Economy Academy under the Government of the Russian Federation. Members of the same team later organized a business management simulation in Lipetsk. Program participants were divided into five teams representing five imaginary businesses with equal starting conditions. The idea was to win in a competitive contest between the teams. They had to act and make many decisions with tight deadlines and limited

ROPE TRAINING SESSION



**PARTICIPANTS IN THE TEAM
LEADER PROGRAMME WITH
VLADIMIR LISIN, CHAIRMAN
OF THE BOARD OF DIRECTORS
OF NLMK**

The Team Leader program is in many ways unique in terms of its instructional content. Classes are taught by leading Russian and foreign professors and managers

resources, which proved to be a great experience for the managers. It was fun, exciting and fair.

A highlight of the fourth training session was a three-day rope training exercise. I am convinced that it helped future leaders of the Group to get to know each other better, and for many it became

an opportunity to make friends. A cohesive group of professionals who think alike is a management team shareholders can only dream of. I think that the organizers of the rope training exercise succeeded in their job and we will continue to hold these exercises in the future.

Project participants received an important emotional boost when they met with NLMK Board

of Directors member Karl Doering and Chairman of the Board Vladimir Lisin, who replied to all their questions openly and in great detail. The meetings took place as part of the third training session and lasted for several hours.

The fifth training session took place in Belgium, and involved professors from the INSEAD international business school. A tour of the company businesses in Belgium provided the Group leaders with yet another opportunity to expand their horizons and to get acquainted with Western approaches to tackling issues. It's no secret that labour productivity in Russia still significantly lags behind Western Europe. I think that our young managers have benefited substantially from this training session in terms of their own experience.

The sixth and final session will serve to summarize the training experience for the young managers. But this will not see the end of the NLMK Team Leader 2020 program. It is almost certain that the program will continue in the future, because its objective is to create a core of future Group leadership, comprising talented, vibrant, and result-oriented managers, and this cannot be done in just one year. For 2011 we will develop an educational program for the next team of young managers. For this year's participants we will also design individual plans for further development. What we have already achieved in terms of development for the first 22 young managers makes us confident of the wonderful prospects for our Company. ✚

Quality is Our Pivot

After joining NLMK Group VIZ-Stal received a major impetus for development. Of course, this wasn't done for the sake of development itself. Then why? Olga Chubanova and Natalia Kachmasheva discuss this with Sergey Makurov, Chief Executive Officer of VIZ-Stal.

Question: Mr. Makurov, what are the objectives of the large scale modernisation of the Company?

Answer: In short, this is done in order to realign the business with the forward-looking needs of the markets. Hence, rather than increase the volume of existing products the primary objective of the technology upgrades at VIZ-

The Technical Upgrade Program comprises 10 investment projects to build new and modernize existing capacity, and thereby installing the technology chain required to produce HPS

Stal is to produce high permeability grain-oriented steel (HPS). HPS properties allow for reduced losses during transmission and transformation of electrical energy. This steel has high induction levels and low unit magnetic loss levels. Since energy efficiency is becoming a global practice, it would be silly if we did not respond to this.

Together with our colleagues from Novolipetsk we have recent-

ly visited three businesses in Italy (SEA, LTC, and Nuova Eletrofer) and one in France (France Transfo). During our meetings we registered keen interest in supplies of HPS from Russia. It is certain that demand for this product will grow and we need to keep up with the times.

The Technical Upgrade Program comprises 10 investment projects to build new and modernize existing capacity, and thereby installing the technology chain required to produce HPS. NLMK intends to spend RUR8.4 billion (USD265 million) on modernizing the facilities used for the production of oriented steel at Yekaterinburg. Once the capacities are commissioned in 2015, oriented steel will account for about 30% of total output.

Q: That is the forward-looking plan. And what is happening now?

A: Now customers have a special focus on the quality of steel, primarily its electromagnetic and consumer properties, e.g. unit loss levels, noise in finished products, surface quality, etc. Keeping this in mind we designed a special program worth RUR190 million (USD6 million) to improve the competitiveness of our products. By April 2011 we intend to increase the share of high quality steel to 90% of total output. And we are currently ahead of schedule, as they say. In 1H2010 output of 1st and 2nd grade high quality steel reached 85%.

Through several measures we achieved 3 to 4% reduction in unit magnetic losses in 0.27 and 0.30 millimetre thick steel, compared to 2008. In addition, the introduction of laser treating of steel helped reduce these losses by a further 5 to 8%. We intend to expand the laser treatment operations. There is demand in the world market for our products, as evidenced by our contracts with major power equipment companies like ABB, Siemens, Areva, and Schneider Electric. This means it has competitive advantages. And it is yet another confirmation that we have opted for an appropriate development strategy, which is two-pronged: we are both improving existing technology and introducing new and more advanced technology.

However, we have yet to reach pre-crisis sales levels. We are still



Profile

Sergey Makurov was born in 1972 in Pervouralsk. Trained in metallurgy and management. Graduated from the Urals University of Technology (UGTU), majored in pressure treatment of metals, and management. Completed top manager training course at the Urals-Siberian Business Institute as part of the Management Program.

In 1995 joined the Verkh-Issetsky Metallurgical Factory, from which VIZ-Stal was spun-off. Previous positions include shift supervisor, rolling unit supervisor, cold-rolling shop supervisor, and deputy Chief Commercial Officer. In 2008 was appointed Deputy CEO for Operations. Since January 2010 is the CEO of VIZ-Stal.



operating in a user-driven market, where the demand for oriented steel is much below the supply. According to some data, globally there remains a surplus of about 500,000 tonnes, making it a very competitive market. But our efforts to improve the quality of steel, to expand our product portfolio in terms of available thickness, combined with our flexible pricing policies and logistics, are not at all in vain. In 2Q2010 we saw a rise in demand for VIZ-Stal products, which allowed us to reach an average monthly output rate of 14,000 tonnes beginning in April. Today the Company is operating at almost 100% of its capacity.

Q: VIZ-Stal products with improved consumer properties find buyers in international markets. What about domestic developments?

A: The Russian market is fairly conservative. Even during the

crisis demand did not change and, according to our estimates, remains at its lower boundary of around 40,000 tonnes per year. And in most cases it is steel 0.30, 0.35 and 0.50 millimetres thick. Steel 0.27 millimetres thick will require Russian power industry manufacturers to use more sophisticated technology and processes. Nevertheless, domestic manufacturers are gradually recognizing that thinner steel has better electric characteristics, and with laser treatment it acquires additional properties of significance in the power sector. There is growing interest in these products from domestic businesses also because the power sector is tightening the requirements for transformer quality.

I believe that the recovery in the domestic market for oriented steel may in the future be driven by foreign investors. For example, Siemens, one of the power equipment heavyweights, is building a

manufacturing facility in Voronezh. If one considers that Voronezh is only 100 kilometres away from Lipetsk, it is very likely that the German company intends to buy HPS from NLMK, especially since they are aware of our modernization plans.

Therefore, it is possible that domestic demand for oriented steel will increase.

Q: Did the global economic crisis have any impact on your technology upgrade plans?

A: It did not have any critical impact, although in late 2008 in view of the economic developments we had to adjust the timelines for some activities. Overall, technical upgrade efforts continued. It was, in fact, in 2009 that we introduced the laser treatment installation and the machine for threading rollers used in coating.

In 1H2010 output of 1st and 2nd grade high quality steel reached 85 percent

Q: Which investment projects are under way in 2010?

A: In 2010 funding for VIZ-Stal modernisation efforts amounted to RUR640 million (USD20.2 million) which is twice as much as in the previous year. We are in the process of constructing a reversing cold-rolling mill with a capacity of 80,000 tonnes of steel per year. We will finish work on the foundation and begin to install equipment by year-end. It has been 20 years since we last commissioned this type of machinery and it's a tremendous responsibility for everyone in the Company. But I am sure that we will manage and commission it in 2011. And

In 2010 funding for VIZ-Stal modernisation efforts amounted to RUR640 million (USD20.2 million), which is twice as much as in the previous year

then we will need to master the operation of the mill while other HPS equipment is being installed. Soon we will be completing the construction of eight high temperature annealing furnaces. We will first launch two of the furnaces and the rest will be commissioned before year-end. This will improve the consumer properties of steel, and also reduce by at least 40% the energy consumption per tonne of product at this processing stage.

By the way, reducing production costs is yet another strategic objective which we need to attain through modernisation efforts. One of the most efficient ways of doing this is by reforming natural gas. The new method for producing hydrogen will consume 37 times less electricity than currently required. Once we commission the reforming installation in 2012, VIZ-Stal will reduce electric power consumption by an average of 7.2 million kilowatt-hours per month. We are now tying in the proposed installation to fit the local conditions. The equipment itself will be manufactured by the US-based Hydro-Chem in

2011, and installation work will begin thereafter.

We have already completed almost half of the efforts required by the Technical Upgrade Program, and are now quickly making up for time lost because of the economic crisis. In parallel to aforementioned work we will also undertake a turnaround program targeting the insulation units and the horizontal decarbonisation furnaces.

However, it is one thing to modernize existing and to install new equipment, and it's an altogether different job to master the process of making HPS. The latter may prove to be an even more important task than the former. Our in-house researchers are tackling this together with experts from Novolipetsk, conducting joint research and experiments. Trial batches of rerolling stock from Novolipetsk are used for test production of 'energy-efficient' oriented steel.

Q: You mentioned cost reduction. If our understanding is correct, this applies to each and everyone involved in production operations. What does this 'austerity policy' mean in practical terms?

A: Unfortunately, and I will need to say this again, the situation in the world market for electrical steel has not improved significantly yet – supply exceeds demand and prices continue to fall. We are gradually filling up our order book, but we should not expect revenues to rebound to pre-crisis levels. If one wants to mitigate the unfavourable market factors, one needs to rely on better use of available in-house options. Firstly, as discussed earlier, modernisation facilitates cost reduction. Secondly, the cost reduction program calls for tight financial monitoring of expenses. Today every unit within VIZ-Stal is required to meet specific targets for

conserving all types of resources and materials. Unit managers answer to the Company budget committee for any overruns. And we scrutinize the costs on a monthly basis.

However, and I would like to stress this, our austerity measures are pursued within reasonable boundaries, without jeopardizing priority social projects. Steelworkers and their children continue to receive treatment and to spend their vacations in health resorts in Russia; they continue to receive cash allowances for emergency needs. We continue to look after our retirees; better yet, we have increased our financial contribution to the VIZ Veterans Fund in connection with the recent anniversary of the victory in WWII. We keep the generations in close touch with each other, by arranging celebrations for merited Company employees and their meetings with the young.

Like never before today it is important both to preserve and to augment the traditions of robust professionalism, which were established by earlier generations. VIZ-Stal's main strength and, if you like, our key competitive advantage is our competent, skilled, and solid team of employees, who are capable of learning quickly and going further. At the core of our workforce are people who have been with the Company almost since the time when the cold-rolling shop first became operational. They created a special corporate culture, which is valued for its continuity. The Company employs 16 multi-generation dynasties of employees. And look at the young staff that we are hiring - bright, talented, and skilled in their jobs! With a team like this there is no doubt that we will overcome the challenges, master new products and strengthen our share in the global market of oriented steel. 🌀

Olga Chubanova, Natalia Kachmasheva

NLMK-Long Products: Development Guidelines

Created in 2009, NLMK-Long Products is called upon to improve the effectiveness of the Group's long product business, to reduce the costs across the production chain from scrap collection and processing to production of high value-added products, and to optimize the product portfolio and the distribution system. Alexander Burayev, Chief Executive Officer of NLMK-Long Products, tells the story of how the Company is meeting these objectives.



ALEXANDER BURAYEV,
CHIEF EXECUTIVE OFFICER OF
NLMK-LONG PRODUCTS

Let's begin with a brief overview of the Company itself, which manages the Long Products Division of NLMK, employs 11,000 workers, and produces one out of every 7 tonnes of steel made by the Group and 20% of Russia's reinforcement bars and low carbon hardware.

The largest unit within the division is the Nizhneserginsky Steel Hardware and Metallurgy Plant, or NSMMZ, which consolidates all of the steel-making capacity dedicated to long products. NSMMZ is a modern industrial business, which is developing at a quick pace and focuses on persistently improving the quality and introducing new products into the range. It operates three production sites, including the electric-arc facility at Revda, with a capacity of 2.2 million tonnes per year, and the long product rolling mill-250 at Nizhnie Sergi, with a capacity of 1 million tonnes of rolled products per year. And earlier in 2010 NSMMZ welcomed the newly built rolling shop at Berezovsky, which is in many ways a unique facility for Russia, equipped with a rolling mill-150, capable of producing

another 1 million tonnes of rolled products annually. Also, the Uralsk Precision Alloys Factory, UZPS for short, has specialized in manufacturing steel hardware since 2004; it boasts a modern drawing facility, a fasteners shop located at Berezovsky, and a nailery shop at Revda.

Let me stress one more time, that while NSMMZ and UZPS are already operating, we are also keeping in mind the fairly soon to be completed KNPEMZ, an electric steelmaking facility currently under construction in the Kaluga region. In 2012 we expect to commission both the melting and the rolling shops at this site. This will boost NLMK-Long Products' rolling capacity by an additional 900 000 tonnes per year. In terms of liquid steel output, we intend to increase our capacity to around 3.7 million tonnes over the next several years; we are also considering the expansion of the rolling capacity of our Long Products Division to 3.6 million tonnes of long products and structural shapes at some time in the future.

In addition to steelmaking, another important part of the division includes Vtorchermet NLMK, a group of scrap collecting businesses. An in-house scrap collection operation is of strategic importance, and requires as much attention as steelmaking, since scrap is the key input for our melting op-

erations, NSMMZ and the Kaluga plant currently under construction. Vtorchermet NLMK, however, supplies scrap both to NLMK-Long Products as well as the other NLMK businesses. Presently, our network provides 75% of the scrap required by the Company as a whole, even though the Vtorchermet NLMK capacities allow us to process more than 3 million tonnes of scrap per year. In reality, we are still quite below that level, and it will require some effort to get there. But the strategy is clear – the regional scrap collection networks will need to be expanded and the efficiency of existing operations will have to be improved.

As regards our products, our biggest 'seller' would be the reinforcement steel, which we produce both as bars and in coil. In addition, we manufacture rods, both low carbon and for welding, and various types of wire, whether plain, zinc-coated or for welding, and also nails, fasteners, mesh, etc. These are primarily used in the construction business. Re-bars and, say, VR-1 wire is used in the manufacture of various reinforced concrete structures.

Rod is used in the manufacture of wire and products made thereof. A large part of our rod products are supplied to the UZPS and other manufacturers. In addition to the construction sector steel hardware is also used in machine-building and the furniture industry.

We see our core objective in extending the range of high value-added products and expanding into new segments of the market

My assessment of the market situation is moderately positive. Demand is recovering, but at a very sluggish pace. There is no mention of pre-crisis levels of consumption, that's why our plans assume a moderate growth in sales. Under the circumstances we see our core objective in extending the range of high value-added products and expanding into new segments of the market. We can only lose if we sit and wait for the markets to recover.

What exactly are we doing? Let me dwell on just the key efforts. Since the commissioning of the rolling mill at Berezovsky we have already introduced dozens of products. These include Class A500C and Class A400 reinforcement bars in the 6 to 16 millimetres range, and wire rod in the 5.5 to 16 millimetres range; these include both low carbon steel grades, as well as high carbon and special welding grade steels used in super duty items, for example, welded seams of pipes in oil and gas mains. I should also mention wire rod made of the St70 grade steel, which is further processed into steel rope, bead and spring wire, and copper-coated welding wire.

At our long products line at Nizhnie Sergi we are manufacturing heat-strengthened At800 type reinforcement bars, including in the most popular 10, 12, and 14 millimetre sizes. These products are certified under the voluntary Mosstroyserifikatsiya certification program.

All of the above allowed us to broaden our opportunities, to expand into new segments of the market, including very promising ones which involve welding materials and rolled steel for the machine-building industry. And this opens a direct path towards expanding the range of high value-added products. In this connection, a key focus of our efforts is to expand the range of available steel grades. In addition, we are very much looking forward to bringing



ROLLING MILL AT
BEREZOVSKY

on stream our operation in Kaluga, which will both increase our output and give us a logistical advantage in terms of our business in the central parts of the country, and will also help to expand our portfolio of products, and make our product mix more varied. In addition to reinforcement bars KNPEMZ will also produce angles, channels, and beams.

Generally speaking, in the medium term not only do we plan to maintain our share of the long products market, but we also want to expand and strengthen it as much as possible.

The future development of NLMK-Long Products does not depend only on introducing new types of products or their quality. It is no secret that at the time of its acquisition by NLMK the Company was significantly indebted and virtually on the brink of bankruptcy. To this day its operations are sustained primarily by the financial support from NLMK, which restructured the debt and paid off the external creditors. Financial rehabilitation and reduction of the debt burden on the businesses within the Long Products Division is another pressing task, and once resolved it will help the divi-

sion become stronger in a market-oriented environment.

The path to effective development of the businesses within the Long Products Division lies through coordination of all business processes and management systems. Several fairly significant steps have been taken in this direction. As mentioned earlier, the steel melting and long product manufacturing operations were consolidated with-

In the medium term not only do we plan to maintain our share of the long products market, but we also want to expand and strengthen it as much as possible

in a single company, the NSMMZ, and NLMK-Long Products and Vtorchermet NLMK managing companies were established. The scrap collection network is undergoing reorganization, with 15 or 16 larger inter-regional units replacing numerous regional outlets. In other words, the process chain, beginning with scrap collection and ending with sales of finished products, should be made to operate like clockwork. This is where we can benefit from the experience of Novolipetsk and other businesses of the Group. We are part of a large and strong Company and operate by relying on all of its potential. ➔

NLMK - US Operations: Corporate Synergies in Product Development

Since the acquisition of Beta Steel (now NLMK Indiana), a team has worked diligently to transform and enhance the specialty product line at Duferco-Farrell (DFC) into a more highly-value added, profitable and diversified offering to the customer base. Without a melt shop at DFC, the historical issue in achieving viability with this product line has been raw material sourcing. Without the capability to predict what material was coming in at what time, significant variation in process routings to force fit a non-optimum substrate size to a customer order (while still meeting metallurgical requirements) was a difficult endeavor.

JASON ADAMS
VICE PRESIDENT
NLMK INDIANA



Chemistry

When NLMK Indiana became part of the US Operations, they had never before produced a viable high carbon / alloy steel product. The process of collaboration began with chemistry. The team worked to define variants of ASTM-defined chemistries that would not only meet stringent customer requirements, but would be compatible with the cold rolling and annealing operations at DFC. The team went to work to develop improvements to clean steel practices, reducing residual levels, improving sulphur control and reducing nitrogen entrainment in the liquid metal at the melt shop. All of these efforts at NLMK-IN have led to a highly competitive chemistry that currently out-performs other domestic EAF mills in the realm

of the High Carbon and Alloy steels.

Hot Rolling

From there, team efforts began at both the NLMK-IN and DFC hot strip mills to improve capabilities to hot roll these more challenging grades. The increased concentration of elements in the steel such as carbon, manganese, and silicon increase the rolling loads which works against efforts to reduce thickness and increase width. Despite these limitations, and after a large number of controlled trials, both hot strip mills have worked to match their rolling capabilities, which provides the Company with the option to hot roll the material from an NLMK-IN slab at either location. This allows for quick reaction to changing market conditions. Through optimization of reheat temperatures, Level 2 automation modelling, and fine tuning of the thermo-mechanical processing parameters at each mill, we have been able to achieve a gauge width combination of 2.28 X 1,092 mm and 2.54 X 1,245 mm on grade SAE 1050. This puts NLMK-IN and DFC in the position of one of the few US producers of these grades that can optimize the customer's process efficiency by rolling to wide widths as high

as 1,245 mm. Service Centers can cut more mulds out of a single master coil thereby improving their own internal efficiencies. Similar achievements have been made on SAE 1074, 4130, 4140, and 5120 alloys. Quality standards have been carefully evaluated at the downstream pickler. The material is flat, on-gauge, maintains good surface quality and exhibits a symmetric across-width gauge profile optimized for ultra-tight restricted gauge tolerance control in the cold mills.

Finishing & Routing Optimization

After we had established a consistent supply of high quality incoming hot bands from NLMK-IN (which constitutes about 85% of the current supply base for the Specialty Products Division), the Finishing Operations of cold rolling, annealing, and tempering were able to be fine tuned for operational efficiency and product property levels. The next focus was to optimize the manufacturing process flow of the steel by routing as much as possible within capability to DFC's lower cost, high productivity, 5-stand tandem mill, making that mill one of the only of its design in the country



that can produce restricted tolerance cold rolled high carbon specialty products. Routing to the tandem mill vs. the Z-Mill reduces the routing cost by nearly US\$18 per ton. The balance of the material is routed to the Sendzimir (Z) Mill. With the lightest possible hot band gauges incoming from both NLMK-IN and DFC, in many cases we were able to reduce the routing step by one cold reduction and annealing stage, thereby reducing the overall cost of the routing by up to US\$68 per ton. Additional routing optimizations have been possible to develop the product into one that has a high degree of formability after spheroidize annealing, which affords the customer base great flexibility in the intricacy of the parts they can fabricate from our steel (many of which ultimately become components in automobiles and other high end heat treated applications).

Results

Through optimization of chemistry, hot rolling practices, finishing operations, and routings, we have developed a product that is superior to our competitors in the industry from the standpoint of chemistry control, gauge control, properties, steel cleanliness, and formability. Reduction of routing operations have led to improved profitability on the product line. Operationally, DFC is producing between 5,000 and 7,000 US tons per month relative to the 10,000 US tons per month capacity of the shop. NLMK-IN has produced just under 25,000 US tons year to date of specialty products (hot bands) for DFC with the aggregate product mix increasing from 8% to over 12% between the months of January and July. Product quality aggregate rejection rate is less than 0.25% of shipped

tons. And as a result of the successful collaborative efforts between NLMK-IN and DFC, the Specialty Products Division has acquired 25.2% of the total US market share for these products (Q1 2010 statistic, Source: Association of CR Strip Producers). Given the challenges associated with producing products such as these, there are not many in the industry willing to participate in this market. As such, NLMK-IN and DFC, through these efforts and the continued hard work of the Commercial Group to develop the business, has established a solid hold on this niche market which will be quite sustainable in the long term. ☺

HOT-ROLLING SHOP AT
NLMK INDIANA

Through optimization of chemistry, hot rolling practices, finishing operations, and routings, we have developed a product that is superior to our competitors in the industry.

Jason Adams,
Vice President, NLMK Indiana

Nature Conservation: Strong as Steel

NLMK is consistently reducing its negative impact on the environment. The Company succeeded in achieving sustained environmental improvements.

This was most certainly taken into account when Novolipetsk was awarded the National Ecology Prize. The award was founded by the V.I. Vernadsky Foundation and the RF State Duma with the support of the Council of the Federation and the Government of the RF, and is awarded to businesses which show strong corporate social responsibility and develop and introduce environmentally friendly, energy and resource efficient processes.

In 2010 the contest covered 7 nominations. Novolipetsk was awarded a diploma and a statuette in the Innovative Environmentally Efficient Industrial Processes nomination for its success in implementing the Process Water

At the main site in Lipetsk annual spending on environmental programs increased by more than 3,000 percent from RUR130 million (USD4.1 million) in 2000 to more than RUR4 billion (USD126 million) in 2010

Supply Modernization project. The new closed-loop water recirculation system in 2009 helped Novolipetsk become the first Russian integrated steel company to stop discharging industrial effluents into the Voronezh River. The modernization of the water supply system ensured improved treatment of effluents to a standard that allowed the same water to be reused. As a result the intake of fresh water from the river by Novolipetsk was reduced three-fold. The Company continues its

efforts to reduce the use of water from the river for process needs, with a view to eliminating the use of river water altogether, and to rely exclusively on waste water treated to meet process requirements.

Reductions in the environmental footprint are directly related to sustained increases in environmental investments by the Company. For example, at the main site in Lipetsk annual spending on environmental programs increased by more than 3,000% from RUR130 million (USD4.1 million) in 2000 to more than RUR4 billion (USD126 million) in 2010. According to the regional office of Rosgidromet (the environment watchdog) the integrated atmospheric pollution index in Lipetsk declined three-fold to 7.4 in 2009. This reduction was in a significant manner assisted by the decommissioning of four obsolete coke batteries, reconstruction of the gas exhaust ducts at three converters, installation of modern air scrubbers and other environment-oriented activities.

This year an important project to reduce the atmospheric impact was completed in the metal slag processing shop. By introducing an efficient water-based slag quenching process we were able to halve emissions of hydrogen sulphide. Previously, slag was cooled by abundant amounts of water, leading to excessive amounts of water vapor

and hydrogen sulphide. The new quenching system sprays the water evenly and suppresses emissions. This is achieved with a system of special sprayer nozzles, piping and a control panel.

The next project at the main production site in Lipetsk will target sintering operations, where the central dust exhaust system for sintering machines Nos. 3 and 4 will be renovated, reducing their environmental impact by 40% and reducing by 28% the atmospheric emissions of dust from sintering operations. This will be brought about by the replacement of obsolete equipment with modern electrostatic precipitators. All collected dust, which contains iron ore, will be recycled for sintering purposes.

We are currently removing old installations, and once dismantling is completed, we will be installing 1,640 tonnes of new equipment. The project is worth around RUR1.2 billion (USD38 million).

Other NLMK Group businesses have their own environmental achievements. Obsolete operations, including the casting and mechanical shop, the open-hearth shop and a rolling mill, had been decommissioned at the NSMMZ Nizhnie Sergi site, reducing atmospheric emissions from 2600 tonnes in 2003 to 266 tonnes in 2009.

Over the last decade VIZ-Stal has reduced its atmospheric



emissions 4.3-fold. Last year the business reduced waste generation by 41%, including a 31% decrease in waste dumped at the Lesnoy landfill. It also launched efforts to introduce a process to recycle magnesia and use it in the production of refractory materials. This will allow VIZ-Stal to sell its waste for third-party recycling, and to reduce waste generation by another 40% in 2010. This will eliminate any further dumping of waste at the Lesnoy landfill. A project to reclaim the landfill successfully passed an environmental review by the government in 2006. Between 2007 and 2009 we repaired and built an access road for heavy machinery, and prepared the topsoil. This year a team of environment activists from the Company planted more

than 200 pine and birch trees in addition to those planted earlier.

Stoilensky is also pursuing land reclamation efforts. However, this is proving to be quite a challenge, as its CEO Alexander Gorshkov reported to the Governor of Belgorod Province at a meeting of mining business managers in Sary Oskol. A local law governing land reclamation, currently a work-in-progress, should help remove administrative barriers which impede restoration of soils. In the meantime Stoilensky is making progress with other nature conservation measures. These include reconstruction of the air scrubbing system at the underground mine car repair shop, replacement of dust exhaust system fans in the repair and construction shop, and reconstruction of the com-

bined supply and extract ventilation system in the power supply shop. The rotating furnaces at the claydite plant have been relined, resulting in lowered atmospheric emissions.

Altai-Koks is also increasing its outlays for nature conservation purposes. Last year it achieved an almost 5% reduction in atmospheric pollutants. VIZ-Stal is proud of the nightingales singing at the site, and the coke and chemical producers in the Altai have something to be proud of as well. Birds like to dwell on the plant premises, a hare was sighted once, and recently people saw a hedgehog looking for a place to stay. You would agree that this tells more about the state of the environment at Altai-Koks than any words can describe. 🌿

NOVOLIPETSK
THE SWAN LAKE

Promoting a Healthy Lifestyle

One can't claim that people fail to appreciate the benefits of a healthy lifestyle. Then why is it that some don't always value it? Maybe, it's because a healthy lifestyle has not become an inner motivation for them. How does one promote the desire for a healthy lifestyle? How does NLMK motivate its employees to lead a healthy life? This is the focus of our discussion with Sergey Melnik, Director of Personnel and General Issues at Novolipetsk, who was interviewed by Alexander Sutormin.



AS: Mr. Melnik, how do you make sports and physical fitness a part of everyday life for Company employees? We know that physical exercise is an important element of a healthy lifestyle.

SM: I would add that it's not just healthy living; exercise is also an element of the social environment. We often forget that the more than familiar term 'physical culture' stands for something which helps humans develop in a more robust and balanced manner. In Ancient Greece they would say "He's unsightly, because he can neither swim, nor read".

At Novolipetsk we very much appreciate the significance of sports for steelworkers, whether on their jobs, or at home, and keep a close eye on related issues. It is important for us that everyone is healthy, content and happy. When an employee knows that it's not just the performance of the production targets that the business asks of him, he treats his job differently. On the other hand, it's long been known that when you have more sports

activities, you get less sick-leave claims. It means that a healthy lifestyle also has an economic angle to it.

Novolipetsk provides every opportunity for those who wish to maintain a healthy lifestyle and to stay in shape. In 2008 we completed renovations at the Novolipetsk Wellness Complex, which hosts various sporting and public events; in winter one can participate in cross-country skiing races and use the skating rink, while summer events include track and field competitions (the running tracks were upgraded to a new synthetic surface), as well as football, mini-football and other matches. A firing gallery and trap-shooting range is available for aficionados of shooting sports. In 2009 we commissioned the Sportpark, a 4,000 square meter facility located in a wooded area and boasting several well equipped sporting courts and sites, including Lipetsk's only indoor squash court, two tennis courts, a gym with exercise equipment, which surpasses anything in the capital of the province, aerobics classes, billiards rooms, and a bowling alley, which is gaining popularity among local residents; also, a sauna, a hydro-massage pool, and a child care centre, where kids can play while their parents exercise.

At the production site itself we also have 4 indoor gyms and 27 wellness centres with exercise machines and equipment, saunas, billiards rooms and whirlpool baths. NLMK employees can use these wellness centres free of charge, while the Sportpark and Novolipetsk Complex charge average market prices for their services, and Novolipetsk employees enjoy discounts. In addition, the steelworkers and their families are invited to participate in annual events, when sports facilities can be used free of charge, e.g. the Bring Your Family Along programs, when one can arrive at a winter sports facility at a certain time and enjoy skiing or skating at their preference and free of charge. In other words, if a steelworker wants to become healthy, there's ample opportunity to do that. It's exactly the case when one's desires can be accommodated by our facilities.

AS: How many Novolipetsk employees engage in sports and physical fitness activities? Who supervises the wellness efforts, how are they managed?

SM: Statistics show that some 10% of Company employees engage in sports and fitness activities on a regular basis, and it's difficult to say how many do this



occasionally or as the need arises. By the way, we have no intention of training the steelworkers to become record-setters or merited athletes. We have a different objective of encouraging people to look after their health and to kick bad habits. And I should say that gradually people are changing their attitude. The average age of our employees is diminishing; we are hiring young professionals who are serious about their career growth. They feel it is important to be fit.

Here's another indicator. In the 8 months since the beginning of the year NLMK commissaries have sold 30% fewer cigarettes than in the same period

last year; and 42% less compared to 2008. Of course, one explanation may be that steelworkers are buying their cigarettes elsewhere, but I think this suggests an appreciation of the simple truth that smoking is bad for one's health.

Skilled doctors and medical assistants employed by the polyclinic and 19 medical stations operated by the Novolipetsk Medical Centre (NMC) non-profit partnership are regularly advising about the hazards of smoking and alcohol abuse as part of their public education efforts. It pays to spend money on promoting a healthy lifestyle, when it would otherwise be spent to pay sick-

leave benefits. At the production site itself smoking is only allowed in specially designated places. Sales of tobacco and alcohol are banned at Novolipetsk wellness facilities. The emerging desire to lead a healthy lifestyle has brought about a sustained decrease in incidence of disease resulting in temporary disability.

AS: I believe we have somewhat digressed from the core topic...

SM: Right, trade union committees and fitness activists spearhead the sports efforts at

Statistics show that some 10 percent of Company employees engage in sports and fitness activities on a regular basis

various units of the Company. I can't possibly list all the corporate sporting events, but I'll mention some of them. For example, we hold annual competitions between sections of the Young Professionals School as well as intra-shop tournaments in a number of sports. The Personnel and General Issues Directorate organizes bowling and billiards tournaments at the Sportpark Wellness Complex, inviting any number of teams from any unit within the Company. I don't need to mention the benefit of tournaments for team-building, it is common knowledge. But the team spirit lingers beyond the sports court. Without a sense of fellowship, in my view, one cannot excel at the workplace.

The key event, of course, is the Corporate Olympics. More than 3,000 employees of the Company and its subsidiaries, represented by the Novolipetsk trade union, compete every year. In 2010 forty teams applied for the competitions, and the selection of sports activities, including swimming, volleyball, chess, basketball, football, darts, a total of 15 altogether, was expanded to include petanque. We developed a special scoring system to determine the overall winner. The current leader in the 2010 Corporate Olympics is the joint team of the Security Directorate and the Novolipetsk Private Security Firm. Other units, including the Railroad Transportation Department, the Repairs Unit, the Converter Shop No. 1, the Non-grain-oriented Steel Unit, the Cold-Rolling and Coating Unit, the Engineering Centre, the Power Supply Centre, among others, are also strong in sport promotion efforts.

AS: Are the fitness activists and Corporate Olympics winners incentivized in any manner?

SM: Naturally. It has become a good tradition to announce the

outcomes of tournaments at ceremonies and to celebrate the winners. Shops and units which excel at Corporate Olympics events receive grants, and in addition to diplomas and prizes they are awarded with certificates allowing them to purchase athletic equipment. Diplomas and prizes are also awarded to fitness activists and events participants. In 2009 we named the top 10 athletes of Novolipetsk and will continue to do this every year. I'll indulge myself and name them: Nikolay Pushilin, Repairman at the Railroad Transportation Department; Nadejda Predeina, Inspector of Raw Materials, Semi-Finished and Finished Products at the Cold-Rolling and Coating Unit; Vladimir Yudin, Chief of Security, Security Department; Boris Ktorov, Bureau Chief, IT Department; Lyubov Grigorova, Shift Supervisor, QC; Tatyana Emelyanova, Development Engineer, formerly of the R&D Department; Alexander Gladyshev, Electrician at the Power Supply Centre; Alexey Lifanov, Ladle Operator at Converter Shop No. 1; Timur Makarov, Process Engineer at the Hot-Rolling Unit; and Sergey Babeyev, Security Guard at the Novolipetsk Private Security Firm. By the way, many of them successfully represented NLMK at national and international tournaments. Notwithstanding their busy work schedule they find the time to train. Their love for sports is really impressive.

AS: I wonder what you intend to do in the future to further develop interest in sports and hence to promote healthy lifestyles and build a larger following?

SM: We intend to equip the wellness centre at Novolipetsk with new exercise equipment, to introduce corporate fitness programs, and workplace exercise regimens. We shall host tennis and squash tournaments at the

Sportpark, helping to expand the list of events during Corporate Olympics.

AS: This is very good, but a healthy lifestyle assumes, in addition to physical exercise, other things, say, a proper diet and rest...

SM: When it comes to diets, the canteens at Novolipetsk offer a common menu at a single price for all employees, and we do our best to keep the meals balanced in terms of nutrients. We have been focusing on this for the past five years with certain success. According to the doctors at the NMC (a scientific center) the incidence of gastrointestinal diseases at Novolipetsk has contracted three-fold. Three-fold! Among other things, possibly because we only use organic products to prepare the food and don't use any additives. We make our own fruit and vegetable preserves for the winter season. It's cheaper and healthier that way.

When it comes to rest, let me mention another telltale figure: in 2010 some 2,500 steelworkers, mostly employed in unhealthy occupations, benefitted from health improvement programs at the Parus and Sukhodolye preventive sanatoria, free of charge. I believe that this figure is additional proof of how we care for the health of our employees.

AS: I don't expect that you would contest the statement that managers set an important example in promoting an interest in healthy living? Do company managers appreciate this?

SM: The majority of them do, of course. Mind the list of top athletes of the year, half of them are managers. For example, Boris Ktorov, a mountain climber, scaled mountains more than 7,000 metres high, the Lenin Peak and the Korzhenevskaya Peak in the Pamir. In 2009 in Australia Vladimir Yu-



din won a gold medal in beach volleyball at the World Masters Games. Here is a name from a different list: Dmitry Vassilyev, Chief of Metallurgical Equipment Mechanical Assembly Shop (MEMAS), made the top 10 of Lipetsk athletes following the Municipal Olympics. He plays for the MEMAS football team and strongly promotes wellness by participating in competitions. The same is true for Sergey Malinin, Chief of Automobile Transportation Department, Andrey Maksimov, Chief Specialist for Technical Upgrade and Capital Construction at the Water Supply Shop, Dmitry Sukijajnen, Chief of Technology Bureau at the Dynamo Steel Unit, Roman Kostin, Senior Supervisor at MEMAS, as well as for many other managers. The list can go on and on...

AS: Let's do as Russian fabulist Krylov suggested "why take the trouble to count up your friends?

Would it not be better to take a look at yourself?"

SM: I do my best to keep in shape. I can do sixty push-ups in one minute, like a sergeant in the US Army. I keep barbells both at home and at work, and they don't gather dust. I bought a pace counter to challenge myself and walk at least 5 kilometres a day.

AS: Who was your childhood role model?

SM: My father. He has a military background and is a merited gymnast. I also joined the military and qualified for merit as a gymnast. I am grateful to my dad, who made me do physical exercise every morning. Gradually, I began to enjoy it, and later could hardly imagine my life without it. Everything else, as they say, was achieved by private effort, including the athletic merits. In the eighth grade I brought a power bar home from school and trained using my own meth-

od. The military service helped my physical training, and I continue to benefit from it.

AS: Based on your personal experience, what would be your advice to the steelworkers?

SM: It's a challenge to demand more from oneself. And the most challenging part is to look after one's health, even though we all want to be healthy. I would like people to remember that their health is in their hands. And it's never too late to care for it. Notwithstanding the medical progress, medicine will never rid us of all the ills. Once again, only we ourselves can make our health better! Instead of dreaming of some wonderful cure all or other miraculous remedies one should live an active and healthy life, condition oneself, and engage in sports and exercise.

Your health is your inner joy. And it's in our hands. 🧘

Alexander Sutormin

A Song in Metal

Musical instruments are companions to technological progress. Especially those made of metal. Ever since they first appeared several thousand years ago, they have been developing in line with the progress in metallurgy, mechanics and other sciences. Modern musical instruments made of metal are sophisticated, high-tech and also very beautiful things, which are often created through the collaborative efforts of several craftsmen.

The very first musical instruments appeared in very ancient history. Some 40 to 35 000 years ago people were already making primitive horns, mouth harps and drums from at hand materials like wood, stone or bone. Later people began making musical instruments from metal. The latter, given the state of the mining and metals industry of the time, were bronze, copper, gold, and silver.

It is difficult to say when exactly the first metallic musical instruments appeared. Like everything associated with the arts they would develop from items which originally had a strictly utilitarian purpose. For example, since time immemorial bells were used by shepherds, or shamans would employ them to banish evil spirits; brass horns were used to signal commands to troops; and kettledrums were beaten to welcome kings. Gradually the sound produced by metallic instruments attracted the interest of 'professional' musicians. By 2000 B.C.

metallic instruments would be heard at noble feasts and during street performances in Ancient Egypt and Assyria. Quite often the transition from everyday life to the stage would be accompanied by changes in the design on account of developments in metallurgy and technology. This is why many of the musical instruments, notwithstanding their long history, are very young. Just like music itself.

Idiophones and Bells

Idiophones, musical instruments capable of producing sound without preliminary transformation, were one of the first metallic instruments. Basically, anything can be used for an idiophone, especially a piece of metal; humans would simply use any metal plate or any piece of metallic household ware, like a scythe, a knife or a pan, and play it.

Bells of various sizes were the most popular metallic idiophones used by many people around the world.



THE KEYBOARD OF A CARILLON

The musical bell is believed to have originated in ancient China. It was in China and as early as the 6th century B.C. that bells tuned to a certain tone came into existence. Two centuries later Chinese craftsmen began making carillons, assemblies of bells of various sizes where each instrument produced a single note. The most sophisti-



ANCIENT CHINESE BELLS

The inventor of music

The myths of many ancient civilizations suggest that music and musical instruments were invented by gods, who then gave them to humans. In Ancient Egypt goddess Hathor was



believed to be the mother of music, joy, and dancing; in Greece the Muses were patronized by Apollo, who invented the lyre, while another god, Pan, invented the pipe. The Slavs named their god of music and musical instruments Bayan, and later the

same name was used to describe a well-known variety of the accordion. Unlike pagans, Jews and, later, Christians believed that music and the instruments to perform it were invented by people. In Genesis 4:21 we find: "His ... name was Jubal [Cain's grandson]; he was the father of all those who play the lyre and pipe."



THE CARILLON AT THE PETER
AND PAUL CATHEDRAL IN
ST. PETERSBURG

cated carillon of the time, which has survived until our day, was made around 430 B.C. It comprises 64 bells, including several rather large ones weighing close to 200 kilograms.

Ancient Chinese bronze casters achieved very impressive results. These even seem unbelievable, considering that before Christ bells made in Europe, Middle East, and Western Asia would never be more than 20 centimetres tall, were not finely tuned, and were never assembled into carillons.

In the meantime Chinese metal workers continued to improve their craft and by the time of the arrival of Christ mastered the production of pig iron in large quantities. Pig iron was used for casting huge statues, symbols of power, and, of course, giant bells, many of which were more than one metre tall. The new

metal quickly found its place in Chinese music, and by the 10th century A.D. iron bells found their way all across the Middle Empire.

Unlike their Chinese counterparts European craftsmen never produced iron bells on a large-scale basis. Firstly, ferrous metallurgy remained underdeveloped in Europe for many years, and one would not even dream of casting giant, 1.5-metre sized bells. Secondly, a bronze bell produces a better sound than one made of iron. This was not critical to Chinese musicians, whose key objective was to make music according to the world order. While for a European one of the key objectives would always be to make a musical instrument more expressive. Eventually, this shaped the pan-European tradition of making bells, and bronze became its primary material.

In Europe the technology for making bronze bells was first described by Theophile, a Benedictine monk, sometime between the 11th and 12th centuries A.D. Four centuries later, in his book "De la pirotechnia", Vanoccio Biringuccio described a more advanced method for casting bells. He proposed to make a stationary mould for the future bell, and then cast special bell bronze into it directly from the furnace. Bell bronze was an alloy consisting of 78 to 83% of copper, 17 to 22% of tin, and 0.08% of other substances.

The same method with minor adjustments is still used today to make bells of all sizes.

Reed instruments. Mouth harp

The mouth harp is the only other instrument which can challenge the idiophones' claim to fame as the most ancient mu-



A MOUTH HARP

sical instrument made of metal. This instrument is common all over the world, and was made of metal wherever humans learned how to work metals. And while bells are mostly made of bronze, with the exception of China, a metallic mouth harp is in most cases made of iron.

The first metallic mouth harps were a thin plate, the exact replicas of their ancient predecessors, which were made of wood or bone. To play it, one had to hold it between the teeth and vibrate it with a finger. The musician's mouth served as the resonator. Different sounds were produced by changes in the musician's breathing and articulation, as well as by other means.

With the emergence of metallic mouth harps late in the first millennium B.C. the form of the instrument was modified. An iron frame appeared around the plate, making its sound more pronounced and louder. This new va-

riety became the most commonly known.

Gradually several world centres developed, where mouth harps were made. In Siberia, top-class mouth harps made famous the craftsmen from Tuva, Altai, and, of course, Yakutia, where the mouth harp, known as komuz, has always been the main musical instrument. Mouth harps from Kazakhstan, Kyrgyzstan, and Bashkiria also became well known.

In Europe, for many years Austria, especially the town of Molln, remained the centre for mouth harp making. By early 19th century, the maultrommen, or the Jew's harp, as it was commonly known in Austria, had become a multi-generation business for some 30 local families. Around 2.5 million instruments were produced here every year. But by the end of the century the Jew's harp lost its popularity among Europeans. It was replaced by the mouth organ, which, by the way, is made of several mouth harps.

In the 20th century the mouth harp lost what remained of its former popularity. When repressions began in Stalin's times the instrument was labelled as a vestige of the past and de-facto banned. Mouth harp craftsmen in Siberia, the Urals, and Kyrgyzstan were persecuted. It was only in the 1970s that we saw the beginning of the revival of this ancient musical instrument.

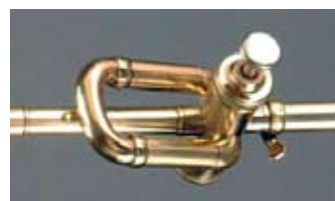
Today the mouth harp is once again popular. Since the Perestroika many nations in the former Soviet Union turned the mouth harp into their national symbol, revived the craft of making it and the art of playing it. Everywhere from Northern Siberia to Southern Turkmenistan and Kyrgyzstan workshops emerged where local varieties of the mouth harp are made and many towns opened museums to display the history and culture of this musical instru-

ment. Yakutsk, for example, hosts the World Komuz Museum. The mouth harp also regained prominence through increased interest in ethnic music, making it one of the most popular musical instruments.

Wind instruments. The trumpet

Depending on the material of which they were originally made, wind instruments are classified as either woodwind or brass. Today, however, the significant difference is in how the sound is produced, rather than the material of which the instrument is made. For example, the flute is a woodwind based on how it is played, but it is predominantly made of metal. In the same manner the saxophone, while completely made of metal, is considered a woodwind instrument. While various brass trumpets, the French horn, and the trombones today are also made of silver, copper, and other alloys.

The brass trumpet is more than 5,500 years old. The first instruments resembling trumpets were made almost 3,600 years B.C.; essentially, these were sheets of copper or bronze wrapped into a cone. Over time their design would change, while until the 17th century their purpose remained the same, i.e. to announce important events and to give signals. It was only in the 1590s that a new technological revolution happened and the trumpets acquired a shape not unlike their modern one. The so called natural trumpet was made; it was played by a musician changing the force and velocity of air blown into it. It was rather inconvenient to play and to



THE BERLIN VALVE INVENTED BY HEINRICH STOLZEL

Oriental wisdom

In Ancient China musical instruments were classified according to the material of which they were made. According to this system all instruments are classified into 8 groups, in line with the world order. Ancient Chinese philosophers believed that the universe, and music, stems from metals and stone, while all the other, less durable materials, only serve to perform and embellish the music. Because of this, small bells and their larger varieties were made of metal, since these instruments supposedly set the primary tone of a musical opus.



produce a fine melody. Nevertheless, since the 17th century trumpets would be included in orchestras on a regular basis, where they were supposed to create a celebratory sound.

A new phase in the history of brass wind instruments began in 1815, when musician Heinrich Stölzel introduced valves, which allowed producing sounds in semitones. In musical terms this meant that the trumpet became

a chromatic instrument, akin to many woodwinds.

This invention permitted composers to use the instrument for any purpose whatsoever. Even though initially the valve trumpets were far from perfect and inferior to natural trumpets. But their design continued to improve and by the middle of the 19th century these instruments began to dominate in orchestras. In 1839 a French craftsman Peri-

net proposed to use pistons instead of valves, making it easier for musicians to play the instruments. The novelty took hold and currently the piston is the most common device used for sound variation in all brass wind instruments.

The most recent major modifications in the design of the trumpet, and also the cornet and the trombone, were introduced by Vincent Bach, an American of



VINCENT BACH



THE PERINET PISTON

German descent. By the 1930s his painstaking technical work and acoustics research turned him into a leading maker of brass wind instruments. Experts agree that Vincent Bach's achievements led to a revolution in orchestral music, and the secret to its inimitable sound lies in the quality of metals used to make the instruments.

Back in 1913 the great poet Vladimir Mayakovsky, while challenging the readers to play a nocturne on a flute made of rain pipes in his famous 'Would you dare?' poem, provided a fairly precise account of the latest trends in music. Since the beginning of the 20th century musicians have been looking for and inventing new and sometimes very unusual instruments in their attempts to adequately portray modern day reality in music. One example is the thereminvox, which produces sounds with the aid of an electronic generator, and the frequency and amplitude are controlled using a vertical metal bar and horizontal metal arc. The saw occupies a place of honor among musical instruments since the middle of the previous century. Just



LEON THEREMIN WITH HIS THEREMINVOX

recently in the early 2000s Swiss musicians Felix Rohner and Sabrina Scherer presented a brand new instrument, which they claim can be played by most anybody and in any way they like. It is called the Hang and consists of two metallic hemispheres joined together.

Mayakovsky's challenge was best met by unknown authors in Dresden, where in a well-shaped yard of a local building the rain pipes are designed in such a way that every time it rains they produce sounds. Not necessarily a nocturne, but something musical, nevertheless.

The youngest

Saxophone is the youngest among wind instruments. It carries the name of Adolphe Sax, a Belgian music master, who created it in 1841.

In the 1820s then very young Adolphe Sax (1814-1894) began looking for an instrument that would fill the sound gap between woodwinds and brass wind instruments. A talented musician himself, Sax selected as his starting point the clarinet, an instrument which he played and adored very much. Replacing the straight wooden body of the clarinet with an



S-shaped one made of metal, the young inventor fitted it with a system of circular valves, a very promising de-

sign. The mouthpiece was borrowed from the clarinet without any alteration. As a result, by the late 1830s he came up with an instrument capable of producing a sound sought by Sax for so long; the saxophone's mild and full tone did not drown out the 'weaker' wind instruments, and was on par with the 'stronger' ones. The inventor never stopped improving his invention. Even after Sax's death the instrument continues to develop and get better with new features being constantly added to its design.

