

NLMK

GROUP

CORPORATE MAGAZINE

#6 2011



Dear Colleagues!



As we approach the New Year, it's traditional to review one's accomplishments. We can confidently say that 2011 was a successful year for NLMK. The past year will go down in the history of our Company and the Russian steel industry. After a 33-year break, Novolipetsk, our main production site in Lipetsk, launched the country's best ultra-modern Blast Furnace #7, named Rossiyanika, an unprecedented achievement for post-Soviet Russia. We took on this challenge, and our Novolipetsk team is already mastering the new equipment. These are the traditions of leadership!

There were many other achievements in the past year. The new blast furnace at Novolipetsk was followed by a new BOF, and significant progress was made in renovating and upgrading our rolling operations.

Technical upgrades and new technology are being introduced across all operating businesses of the Group in Russia. The new Kaluga EAF Mini Mill is being built to match the latest achievements in knowledge and technology.

We also growing internationally: we have production assets in 7 countries around the world employing 4,300 people. Our finished product sales have increased to 12.8 million tonnes, while crude steel output has grown to 11.9 million tonnes, setting yet another record for the Company. In 2011-2012 we expect the share of high value-added products in our portfolio to reach 35-36%.

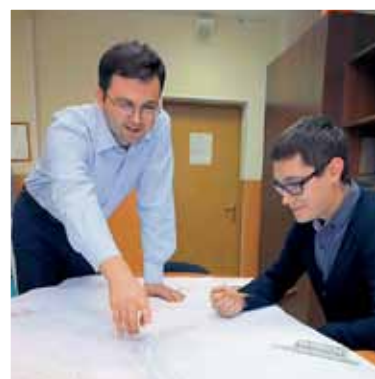
And this is only a sample. The Company is vibrant, growing, building up its technological capacity, manufacturing new types of products, and working for the benefit of its employees, shareholders and the community.

Everyone is contributing to these efforts, including VIZ-Stal, our 'veteran', which celebrated its 285th anniversary this year, and Altai-Koks, one of our 'youngest' production assets, which turned 30 years old, and also Stoilensky, celebrating its 'golden' anniversary, as well as all the other businesses within the Group.

However, it is not about the age or the number of sites. It is all about the people who strive for something better each day, who make their daily contribution to building our Company, our industry and our future. It is about each and every one of us!

Best wishes for the New Year, dear colleagues! Good luck and success in 2012!

*Alexey Lapshin,
NLMK President (Chairman of the Management Board)*



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BLAST FURNACE #7 RECOGNIZED AS HIGHLIGHT OF THE YEAR

Blast Furnace #7 wins the 2011 Highlight of the Year in Russian Metallurgy prize awarded by the Metal Expo 2011 International Industrial Exhibition.

The organizing committee of the competition made up of representatives from steelmaking, construction, and



machine-building unions and associations, and heads of R&D centers, reviewed all projects worth over USD100 million implemented in the Russian steelmaking sector over the past year.

Overall investments into the project amounted to RUR43 billion (USD1.47 billion; EUR1.05 billion). In comparison to similar leading international projects in recent years BF-7, named Rossiyanka, will ensure higher labor productivity, minimum fuel consumption, and better product quality. The project also relies on best international environmental practices, including high efficiency gas and dust removal systems, closed-circuit water circulation, recycling of blast furnace gas for use by the on-site cogeneration plant, which is part of the blast furnace facility. ■



A MILLION TONNE JOB

UZPS (NLMK's Urals-based subsidiary) produced its millionth tonne of wire.

A team supervised by Andrey Bardakov produced its millionth tonne of wire during the night shift between October 14 and 15 at the Urals Precision Alloys Plant (UZPS) which is part of NLMK Long Products. The countdown started after the wire shop upgrade in 2006. The 'jubilee' tonne was general purpose low-carbon steel wire. In 2006 the plant was equipped with advanced wire-drawing mills produced by leading international manufacturers, including German KOCH and Italian Mario Frigerio and Team Meccanica. ■

ALTAI-KOKS: SOCIAL PROGRAMMES IN ACTION

In the first nine months of 2011 Altai-Koks allocated over RUR307 million (USD10.7 million; EUR7.7 million) for various social programmes.

Among other things, about RUR103 million (USD3.6 million; EUR2.55 million) were allocated for additional compensation required under the collective bargaining agreement, and more than RUR27 million (USD0.94 million; EUR0.67 million) for protective clothing, footwear and other personal safety equipment. More than RUR15 million (USD0.5 million; EUR0.37 million) were spent on rehabilitation for

workers and their children in health resorts and children's camps.

About RUR2 million (USD70,000; EUR49,000) were paid out as financial support for childbirth and allowances for women on maternity leave with children between the ages of 18 months and three years.

Other incentives for employees in connection with professional holidays, on occasions of length of service anniversaries and retirement, and supplementary leave related to family matters amounted to more than RUR25 million (USD0.87 million; EUR0.62 million). Some RUR11 million (USD0.38 million; EUR0.27 million) were spent on financial support to Altai-Koks retirees and paid stay at the Bodrost health resort. ■



FOR REFERENCE:

The Urals Precision Alloys Plant (UZPS) is one of Russia's largest producers of metalware. The Plant accounts for about 20% of the Russian market for low-carbon steel metalware. UZPS is part of NLMK Long Products. The production facilities of the business are located in the city of Berezovsky in the Sverdlovsk region, and can produce up to 0.56 million tonnes of metalware per year.

EURO CRISIS SHOULDN'T HAVE HEAVY IMPACT ON GROUP BUSINESSES



Ms Galina Aglyamova, Chief Financial Officer, said:

“The Group’s main companies were able to maintain sales volumes, despite the market weakening, particularly in our key export market in Europe. With export sales up and the EU and US rolling assets operating at a loss, the Group’s financial performance was compromised. Nonetheless, our results allow us to steadily develop the Company, financing growth and efficiency expansion projects.

NLMK has released its Q3 and 9M 2011 financial results.

In Q3, with the Eurozone financial crisis still unfolding, steel market conditions deteriorated significantly, with a dramatic drop in prices and softening in demand occurring across the European markets. Production costs continued to grow, driven by the industry’s extended production cycle, related to the increase in the price of raw materials purchased in the previous periods.

The Company maintained high utilization rates (over 90%) despite the negative market sentiment. After the new blast furnace reaches design capacity and the new Mini Mill in the Kaluga region is launched in 2012, NLMK’s total production capacity in Russia will reach 16 million tonnes. As a result, the Company will become one of Russia’s leading steel manufacturers, ensuring a significant growth in sales and profits in the near future. ■

LIPETSK STUDENTS RECEIVE VLADIMIR LISIN SCHOLARSHIPS

Thirty best performing senior year students of the Lipetsk State Technological University (LGTU) received scholarships established by Mr Vladimir Lisin, NLMK’s Chairman of the Board of Directors.

These were awarded to students of the Metallurgy Institute, as well as LGTU students majoring in Physics and Technology, Economics, Transportation Engineering, Automation and IT. Sixty contenders completed a two-stage selection process. During the school year they will be receiving additional bonuses to their regular study grants. Contest winners are offered employment opportunities with the Company once they graduate from the University. ■



FOR REFERENCE:

The scholarship programme was instituted in 2000 for the purposes of providing supplemental social support to gifted LGTU students. NLMK currently employs 116 LGTU graduates, who had been recipients of the Vladimir Lisin scholarships while studying at the University.



REWARDING OUTSTANDING LABOR

A ceremony to present national, trade and corporate awards was held at Novolipetsk on the eve of the 77th anniversary of the first heat.

In recognition of their significant contribution to the development of the steel industry and many years of dedicated service the Order of Friendship decorations were awarded to Anatoly Knyazev, Roller at the Cold Rolling and Coating Mill, Vladimir Karpachev, Etcher at the Transformer Steel Operations, Alexander Tyulenev, Caster at BOF #1, and Nikolay Chebotarev, Gasman at Blast Furnace Shop #1. Sergey Parkhomenko, Chief Specialist at the Refractories Shop received a medal of the Order of Distinguished Service to the Country (2nd degree), and Valery Vyaltsev, a Handler at BOF Shop #2, was awarded the honorific title of Merited Metallurgist of the Russian Federation. By order of the Minister of Industry and Trade of the Russian Federation twenty-five Novolipetsk employees were awarded honorary diplomas and commendations for their dedicated work and significant contribution to the construction of Blast Furnace #7, named Rossiyanika. Another forty-five employees who participated in the project received corporate honorary diplomas and commendations, while twenty-one were awarded the NLMK Badge of Honor. ■



NOVOLIPETSK LAUNCHES NEW LADLE FURNACE

Novolipetsk, NLMK's main production site in Lipetsk, has commissioned a new 2 mtpy ladle furnace (LF).

As a result, the Company will be able to expand its product mix and improve quality by reducing the amount of nonmetallic inclusions and sulfur in its steel to 0,001%.

An advanced fume extraction and gas cleaning system at the facility will ensure its excellent environmental performance. Waste gas dust removal is 99.5% efficient. The project will increase production output by 200 ktpy, in addition to reducing the consumption

of deoxidizing agents, ferroalloys and refractories at the site.

The project was carried out together with Siemens VAI (Austria). A similar capacity LF is currently under construction at BOF Shop #1. ■

VIZ-STAL PREPARES FOR STEAM REFORMING

The VIZ-Stal Gas Shop has started preparing the site for a new steam reforming facility. This unprecedented project has been under development for several years.

Installation of the new equipment is expected to begin in April 2012. All old equipment and structures will need to be dismantled and foundations prepared for the new facility. Currently, equipment is being removed from the Compressor



Shop. The walls and the foundations will follow. The surface of the grounds outside the building has been leveled and covered with broken stone. ■

NLMK UPGRADES REHEATING FURNACE

Following its reconstruction, NLMK has started hot testing and produced the first slab at its Reheating Furnace #3, a facility for heating slabs prior to hot rolling.

Furnace capacity has increased 23% to 320 tonnes per hour. The revamped furnace will allow a 35% reduction in specific fuel consumption, decreased metal loss, lower air emissions, and stabilized rolling.

Reheating Furnace #3 is the third new type facility at NLMK's Hot Rolling



Operations in Lipetsk (Reheating Furnace #5 was revamped and commissioned in 2004, Reheating Furnace #4 – in 2007). The design features of these furnaces ensure uniform and energy efficient

SYSTEM CONTROLS

An automated system for controlling and managing the operations of the main Pumping Plant has been installed for the first time at Stoilensky's drain well.



GLEB POSTNIKOV, CHIEF POWER ENGINEER,
PUMPING STATION

The new system offers a real-time view of on-going processes and helps to select the most efficient modes of operation for the main pumping station, ensuring safety and efficiency of the drain well installation. Sound alarms and warning lights are used to alert the operators on duty of any irregularities in the operation of the pumping station. This helps to prevent any incidents and emergencies.

The system is expected to be upgraded in 2012 by increasing the number of equipment parameters which it controls and monitors. ■

heating of slabs resulting in high precision strip parameters during rolling. The technological capabilities of these units enable them to process both carbon and transformer (grain-oriented) steel slabs.

The project forms part of the action plan aimed at the reconstruction of Hot Strip Mill 2000 equipment with a view to expanding hot-rolled steel production at NLMK's Lipetsk site to 5.7 million tonnes.

This project, worth approximately RUR1.9 billion (USD64.7 million; EUR46.5 million), has been implemented jointly with CMI (Belgium). ■

PELLETIZING PLANT UNDER CONSTRUCTION

Stoilensky hosted a meeting of the committee overseeing the implementation of the Pelletizing Plant project. The meeting involved representatives of Siemens VAI/Outotec, Novolipetsk, Stoilensky and the Tsentrigrproruda Institute.



According to the project schedule the major part of the work will be done in 2013. This includes the construction of the baking, screening, charge preparation, and pelletizing sections, the construction of conveyor-belt galleries and reloading stations, as well as environmental facilities, e.g. electric filters, gas and dust removal systems, and stacks. Imported equipment is scheduled to arrive in the same year. Members of the oversight committee shared their comments.

Test piles have already been sunk into place. The test results will be used to design and prepare the foundations for process equipment, buildings and structures. Sinking of working piles for the plant building is scheduled to begin in late March 2012. The project is expected to be completed in 2014. ■

NEW ROLL GRINDING MACHINE PASSES WARRANTY TEST

VIZ-Stal has completed the warranty test for its new Roll Grinding Machine and signed the test completion report with Mashinenfabrik Herkules, which supplied the new equipment and was responsible for its supervised installation. After all the required documents had been finalized the new machine was put into operation.

This advanced compact machine is used to prepare roll changes for the

Reversible Mill which is currently under construction. The existing Roll Grinding Shop was lacking capacity. The machine can grind rolls with sophisticated positive and negative crowns. Its instruments allow to measure and adjust the roll crown during the grinding process, assuring high precision grinding. During the testing and commissioning experts from the vendor provided training on how to handle the new equipment to operators and maintenance staff. ■



SERGEY NAYMUSHIN, ROLL DRESSER, AND ALEXEY KIRISHEV, ELECTRICAL ENGINEER, NEXT TO THE ROLL GRINDING MACHINE (CRS)



MULTI PURPOSE STAND MAKES WORK EASIER

An advanced multi purpose wheel and motor assembly handling stand has been commissioned at the locomotive and wagons yards of the Railway Transportation Shop at Stoilensky. The new stand allows maintenance staff to use machinery for the most labor intensive tasks, making their job much easier.

Compared to similar installations the stand introduced at Stoilensky is unique. In a single assembly it combines all the necessary devices, i.e. a tilting unit, an induction heating unit, a hydraulic remover and several lifting units. The key benefit from the new stand is that it has reduced the load on the yards' travelling crane. The crane operation is now only required to place the wheel and motor assembly on the maintenance bay, and from there on everything else is done with the help of the lifting devices mounted on the stand. This helps reduce repair time and significantly improves occupational safety. ■

Microsoft Lync: New Communication Possibilities

Intra-corporate communications within NLMK are being taken to a new level. Novolipetsk employees now have a new way of communicating: Microsoft Lync.

By Oleg Bogdanov, Head of Integrated Information Systems Unit, ITD

A modern production facility is a huge and sophisticated organism. Every day each employee exchanges information with dozens and maybe even hundreds of co-workers, clients and suppliers. The purpose of introducing Microsoft Lync was to provide the employees with a means of communication

that would incorporate all the benefits of modern technology. So what is Microsoft Lync?

Many of us are used to communicating with our friends and family using such public services as Skype or ICQ and have come to fully appreciate their convenience. Microsoft Lync offers enhanced capabilities for communicating with colleagues at work, while maintaining all the

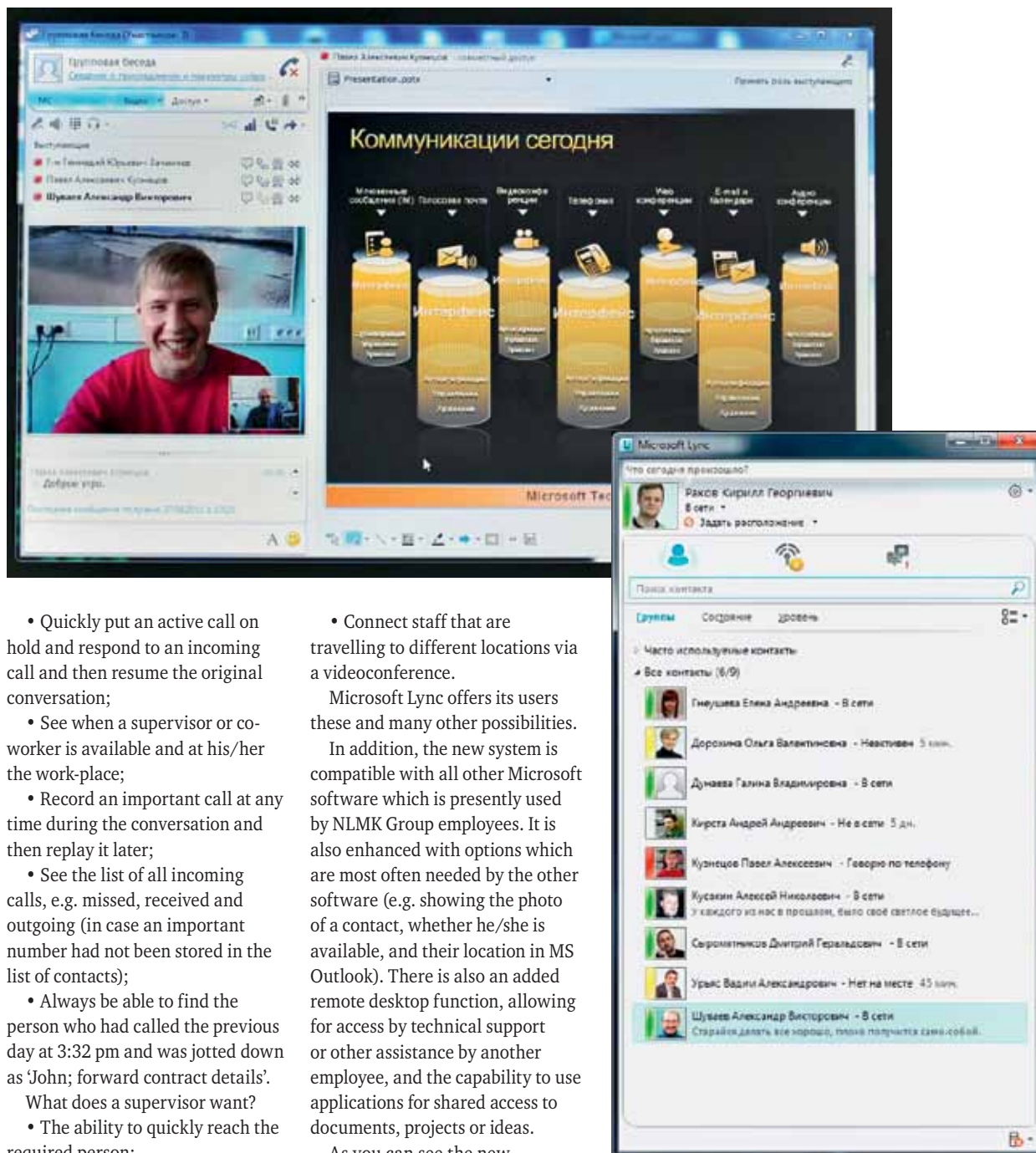
necessary features of messaging software.

Let us imagine what any Company employee would like to have when it comes to communications capabilities:

- The ability to quickly find the required person in a list of contacts, by last name, first name, part of phone number, or even part of e-mail address;
- See who is calling;



PAVEL KUZNETSOV (ITD), LEONID CHESNOKOV (CTD), AND ALEXANDER SHUVAYEV (ITD) DEMONSTRATE NEW TELEPHONE SETS WHICH OPERATE AS LYNC CLIENTS



- Quickly put an active call on hold and respond to an incoming call and then resume the original conversation;
- See when a supervisor or co-worker is available and at his/her the work-place;
- Record an important call at any time during the conversation and then replay it later;
- See the list of all incoming calls, e.g. missed, received and outgoing (in case an important number had not been stored in the list of contacts);
- Always be able to find the person who had called the previous day at 3:32 pm and was jotted down as 'John; forward contract details'.

What does a supervisor want?

- The ability to quickly reach the required person;
- See which company employee is responsible for drafting technical documents for a project, or which of the subordinates is good at making presentations;
- Easily assemble for a meeting the division heads from remote office locations (or simply from other rooms) and agree on the time, place, and topic of the meeting and the materials for it;

- Connect staff that are travelling to different locations via a videoconference.

Microsoft Lync offers its users these and many other possibilities.

In addition, the new system is compatible with all other Microsoft software which is presently used by NLMK Group employees. It is also enhanced with options which are most often needed by the other software (e.g. showing the photo of a contact, whether he/she is available, and their location in MS Outlook). There is also an added remote desktop function, allowing for access by technical support or other assistance by another employee, and the capability to use applications for shared access to documents, projects or ideas.

As you can see the new information system serves as an irreplaceable assistant, which is doing a good job of connecting businesses within the Group into a single unit and quickly addressing production challenges.

MS Lync has already been implemented at Novolipetsk, and has been deployed in test mode at NLMK Long Products and NSMMZ. The plan for the future

is to implement it across all Group businesses.

Additional information on how to use the system, articles and demonstration videos are available through the Education portal at the NLMK's corporate intranet site (<http://edu.ao.nlmk/ocs2010/default.aspx>). ➔

NLMK Commissions New Quenching and Tempering Line in Belgium

Since June 2011 NLMK Clabecq has been operating a new Quenching and Tempering (Q&T) Line used in the production of niche steel grades. This over EUR100 million project is part of NLMK Group's strategy to manufacture new types of products with high value-added and to promote innovations.

By Brigitte Simon

The new Q&T line will allow NLMK Clabecq to become one of the leading players in the niche market for quenched and tempered (abrasion resistant and high yield strength) steel.

Steel with exceptional properties

The annual capacity of the new line is 250,000 tonnes; this means that one third of the production of NLMK Clabecq will pass through the Quenching & Tempering. By manufacturing niche products

the Company is in the position to become the leader in the sector.

"With our Clabecq, Verona and DanSteel production assets we are already Europe's third largest producer of steel plate. Now our objective is to become the leader in the market for hardened and tempered steel plate," says Horacio Malfatto, CEO of NLMK Europe, during the inauguration ceremony for the Q&T line, which took place on October 28, 2011. The ceremony was attended by senior NLMK managers, division heads at NLMK Clabecq, project team members, local authorities, bankers and journalists.

"At the time when the investment programme was approved the shareholders (then NLMK and Duferco) defined a new direction for the development of rolling operations in Clabecq by deciding to focus on specialized grades of steel. It should be noted that they demonstrated an excellent ability to see how the markets would develop," Mr. Malfatto adds.

"In challenging times for the Belgian steel sector this project is a wonderful example of NLMK Group's strategy. Our goal has always been to develop all our newly acquired assets as much as possible by improving them



HORACIO MALFATTO, CEO OF NLMK EUROPE, AND IGOR SARKITS, CEO OF NLMK EUROPE PLATE, DURING THE Q&T LINE INAUGURATION CEREMONY ON OCTOBER 28, 2011



THE INAUGURATION CEREMONY INCLUDED A TOUR OF THE NEW Q&T LINE

to the required level. We have fairly ambitious plans: we want to become the leading producer in the market for durable and high-strength steel plate, especially thin plate,” explains Igor Sarkits, CEO of NLMK Europe Plate.

The first example was DanSteel, a company established in 2002. NLMK managed to turn around an almost bankrupt Danish business

and make it one of the most successful manufacturers of plate in Northern Europe.

Horacio Malfatto and Igor Sarkits expressed their gratitude to all those who had been part of the effort to build and operate the new line: the Duferco Engineering team, the Clabecq project team, operations and technical staff, and the sales division.

The right strategy

NLMK management, at the time together with the Duferco Group, confirmed the decision to invest in the creation of a new Q&T line in 2009, notwithstanding the global economic crisis. This required some courage and clear strategic vision.

“This investment project is fully in line with the Group strategy of innovative development. The

About NLMK Clabecq

The Belgium-based NLMK Clabecq employs 530 people. The Company is the main producer of thin steel plate within the NLMK Group. Company products are known for their surface quality, flatness and tight thickness tolerances. The plant is located close to the seaport of Antwerp, at the heart of Europe’s largest transportation network, allowing the Company to deliver steel plates to many countries across the world, with about one third of its sales going to destinations outside Europe.

NLMK Clabecq has always been at the forefront of innovation. For example, in the early 1980s it became the first steel rolling company in Europe to



introduce an accelerated cooling system. In 2007 NLMK Clabecq became the first steelmaker to win the prestigious

platinum prize from its customer, Caterpillar, in recognition of the high quality of its production processes.



THE NEW Q&T LINE IS EQUIPPED WITH AN INNOVATIVE INFORMATION SYSTEM

Q&T LINE IN FIGURES

September 2009:
Construction begins.

June 6, 2011:
First products manufactured.

Total investments:
over EUR100 million.

Design capacity:
250,000 tonnes per year.

Sixty employees.

Two steel grades, Quard® and Quend®, are exported to more than 40 countries.



CORE TEAM OF NLMK CLABECQ EMPLOYEES OPERATING THE NEW Q&T LINE

new blast furnace at the main production site in Lipetsk, the modernized continuous casting machine, and the new degasser, all rely on the best available technology, allowing NLMK to produce high quality slabs required for the production of quenched and tempered steel,” explains Marc Bianchi, Sales & Marketing Director - Q&T and Export at NLMK Europe – Plate. “Apart from manufacturing abrasion resistant grades of steel the new line will also produce

high elasticity steel, which is used, for example, in manufacturing extendable crane booms.”

Competent and motivated employees

Duferco Engineering was trusted with the job of managing the project.

The technical design work was the effort of a combined team of engineers from Duferco Engineering and NLMK Clabecq.

“The fact that we now have the

opportunity to manufacture these products is a source of pride not only for Company employees, but also the Company management which was willing to entrust NLMK Clabecq specialists with the job of implementing the project,” says NLMK Clabecq COO Alain Vermersch. “With the new Q&T line, which is equipped with an innovative information system, we have achieved a true technological breakthrough. I would like to highlight the efforts of our staff,



NEW UP-TO-DATE FACILITY SPECIALIZES IN MANUFACTURING NICHE PRODUCTS

who are enthusiastic about getting the new skills required to operate modern technology. Thanks to this project, which has allowed us to gain access to new markets for high value-added products, thereby securing the Company's future, the team spirit at NLMK Clabecq is as strong as never before."

Protecting the environment: a key priority

With the new Q&T line, NLMK Clabecq will be in a position to manufacture steel plate with lower weight and improved mechanical properties. This makes the products more environmentally friendly because they require less raw material for production while

offering an extended service life.

The interaction between the new line and the environment was conceptualized already at the design stage: it incorporates a soundproofing system and minimizes reliance on artificial lighting, creating a more comfortable working environment for the employees. 🌱

ABOUT NLMK EUROPE PLATE

NLMK Europe Plate combines several European steel plate manufacturing assets, i.e. NLMK Clabecq, NLMK DanSteel (Denmark) and NLMK Verona (Italy). The production synergies between these three businesses which specialize in different grades of steel allow NLMK Europe Plate, Europe's third-largest producer of steel plate, to offer its clients a complete range of products.

Ambitious investment programmes are also under way in Denmark and Italy. The size of the investment programme

for NLMK Verona, started in 2006, is EUR90 million. Core objectives include the reconstruction of the continuous casting machine, construction of a new continuous furnace with a view to improve energy efficiency and to lower production costs, and also the construction of a new line for finish rolling and thermal treatment of large gauge plate. The latter project, aimed at producing very thick gauge plate, complements the project completed in Clabecq.

In 2011 NLMK DanSteel commenced a large scale investment project to install a new stand for the rolling mill. The unit will become operational in 2012.

The project involves the replacement of the Quarto mill stand with a new more powerful stand. The primary objective of the project is to provide the capability for the production of thick plate up to four meters wide, which will allow the Company to retain its leading position in the market for steel used in the manufacturing of windmill power generation installations and offshore platforms. Earlier, a machine for hot straightening of plates had been installed. The overall cost of the investment programme for DanSteel between 2008 and 2012 is about EUR150 million.

VIZ-Stal: Transforming the Experience

VIZ-Stal's unique feature and its weak spot both stem from the operation's focus on a single product, transformer (grain-oriented) steel, which is in high demand in the global markets. Fierce competition between thirteen international manufacturers is prompting the Company to keep searching for new opportunities to improve its competitiveness. The objective is to manufacture a wide range of transformer steel grades, from mass market to premium, in order to serve as many customers as possible. Sergey Makurov, Chief Executive Officer at VIZ-Stal, discusses the outlook for his business and market developments.

By Vera Stepanova,
Expert-Urals Magazine

Q: Mr. Makurov, where does the Company currently stand in the global markets, given that the financial crisis has intensified the competition in the markets for transformer steel?

A: Just as before the crisis, NLMK Group accounts for about 10-11%

of the global market. However, stronger competition was not the only consequence of the crisis; it caused a radical change in the market, turning it from a seller's market into a buyer's market. Previously, the lack of free capacity drove electrical steel prices up and maintained them at a fairly high level, while the buyers and intermediaries had access to 'cheap' money and would build up their stockpiles of raw materials. Currently, however, demand for electrical steel is significantly below supply. On the one hand, the customers no longer have the ability to hoard stock steel; they don't have access to readily available funding and have become more demanding. On the other hand, China, which used to be a major market, had launched two domestic transformer steel production facilities before the crisis hit, covering about 75% of the country's domestic demand. This caused international prices to decline. Previously they were several times higher than domestic prices in Russia, and now they are almost equal. The world markets today continue to be dominated by buyers, and global manufacturers have idle capacities. According to various estimates this is likely to continue until 2014 or 2015, when things turn around back to a producer's market.

Q: Since China is taking action to seal off its markets from imports, which regions would you focus on?

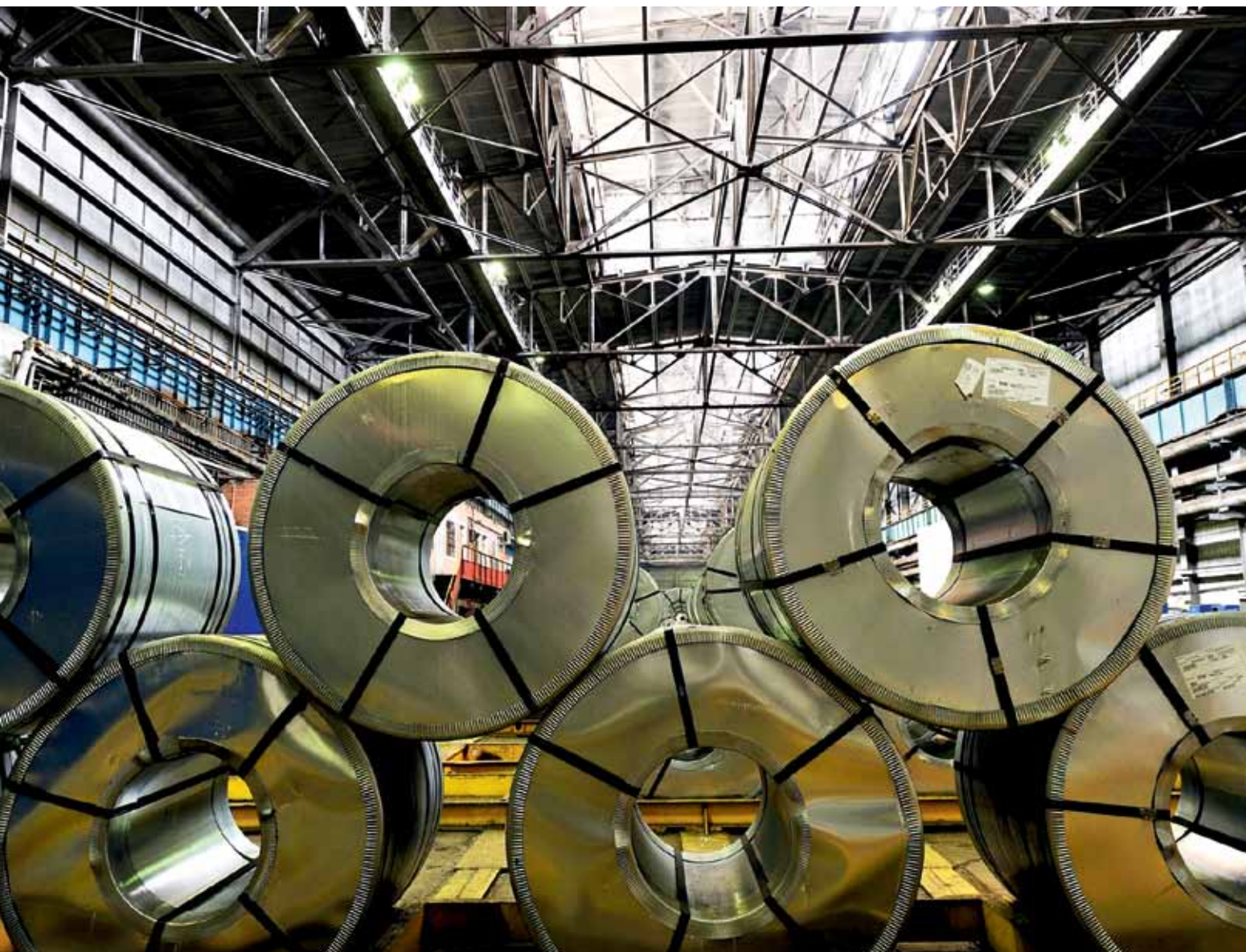
A: Over the past two years Europe has been a major customer, accounting for 30 to 35% of our sales. However, we see India as the most attractive and promising market for us. Firstly, apart from Africa it is the only market in the world which lacks the inputs for the production of electrical equipment: there are no domestic producers of electrical steel. Secondly, it is the world's second largest country in terms of population, while electricity consumption remains extremely low. NLMK, as well as other global producers, perceives India as the most promising market with the highest growth capacity. Unlike China, which has reached the point of saturation, or South-West Asia, where the competition is very strong.

Q: In early October NLMK acquired National Laminations, a service center in India. What opportunities does this offer to the Company?

A: Establishing our own service center in this country has long been on the Group's agenda, because we can only deliver products to India by sea. This implies a significant lag of more than three months between the time when an order is placed



SERGEY MAKUROV, CHIEF EXECUTIVE OFFICER, VIZ-STAL



and when the finished product is delivered, while our competitors can do the same in about a week's time. And while large customers may afford to wait this long, the smaller ones cannot. India has a very large number of buyers who only require 5 or 10 tonnes, i.e. one or two coils. Hence, the acquisition of a service center allows us to expand our presence in the Indian market and to reduce the distance to the customer. This particular service center is also attractive for logistical reasons, because it is situated in close proximity to seaports, through which we

transport most of our steel, and it has adequate storage capacity, which allows us to achieve our strategic objective of expanding our presence in the market.

Q: Before the crisis more than 80% of transformer steel produced in Russia was exported. Is the domestic demand for this product increasing, given that the power sector companies continue to propose investment programmes?

A: Based on preliminary estimates for 2011 we are seeing increased demand in the domestic

market, albeit at a small rate. It is difficult for me to say what is driving it. For the time being we can only state this as a fact. One keeps hearing about the power sector investing significant amounts into equipment modernization. However, as producers of the key input for transformers we have yet to feel the impact from that. Yes, there is an upward trend, but it is not showing rapid growth. It is too early to say that there is any indication of growing domestic demand.

Today many components and ready-made transformers are imported, and not just for re-sale,

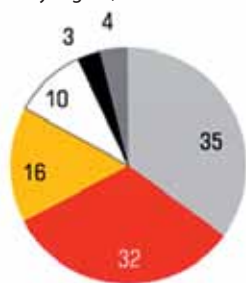
but directly by large Russian power generation companies. It is hardly a secret that they procure network and distribution transformers from foreign manufacturers. I would understand if these were international majors, like Siemens or ABB, but a growing number of imports are originating from China. I also believe that Russia and our domestic producers of electrical equipment should learn from the Chinese how to protect themselves and our market.

Q: Are you referring to the request by Chinese producers to raise the duty applied to transformer steel imported from Russia ten-fold?

A: They proposed to the Chinese government to set it at 65%. China is expecting that very soon another two large domestic producers will emerge and that their capacity can be used to substitute remaining imports and also to export products. We have no doubt that the Chinese government will support domestic companies. But not necessarily in such a drastic manner. Earlier, a duty of 25-26 % had been set for American producers, which spells death to the competitors, irrespective of the quality of their products.

EURASIA ACCOUNTS FOR THE BULK OF RUSSIAN TRANSFORMER STEEL SALES

VIZ-Stal's sales by region, %



Source: Company data

Q: Is there any competition in the Russian electrical steel market?

A: It is very weak and only applies to prices. Domestic demand, including CIS countries, is only about 40,000 tonnes per year, of which, according to our estimates, no more than 2,000 tonnes were imported under one pretext or another.

Of course, the domestic market is gingerly testing imported steel. However, both direct consumers and resellers note that our steel has better properties, and this is important for end customers. We have yet to catch up with the Japanese and are marginally below Korean producers, but in comparison with comparable steel from Russia, Germany and the United States we are on par. I make no comparisons with China. Let me put it this way: production of transformer steel requires a certain amount of experience and some accumulated achievements. When you have the money and the will to do it, it is not difficult to put equipment in place. China is good proof of that. But then it is quite challenging to achieve significant performance, primarily in terms of quality.

Q: What should be the domestic market protected from, then?

A: From imports of finished electrical equipment. So that our customers would manufacture more transformers and, therefore, purchase more domestic steel and copper, wire and insulation. And instead of importing transformers Russia would attract customers who require transformers. For example, for the technical upgrade programme we acquired transformers from one of our customers in Russia, even though we could afford to procure them from our other customers in Europe.

Q: Are you operating below capacity?

A: Quite the contrary, we have full capacity utilization. Mainly because we had found a way to improve the quality of our products at the right time. Of course, because of the financial crisis we were forced to suspend the implementation of our large-scale technical upgrade programme in 2009 due to lack of available funds. But that does not mean that we have abandoned investments altogether. In a highly competitive environment there is greater demand for steel with better consumer properties. This is why we continued with projects which have a short payback period and do not require significant investments. Ultimately, we were first able to reduce specific magnetic losses by 3-4% in 0.27 and 0.30 millimeter gauge steel. Then over a period of two years we phased in a laser treatment facility. It allowed us to reduce the specific losses in electrical anisotropic steel by 8 to 10% on average. Currently the share of premium grade steel accounts for more than 90% in our total output.

The new product helped us to gain a certain niche in both international and domestic markets. In particular, Siemens says that our steel, which is produced using traditional processes and then treated with laser, is a particular type of product which may occupy a niche between traditional and high-permeability or premium transformer steel, manufactured using the HIB process.

Q: When do you intend to enter the high permeability steel market?

A: Once we complete the technical upgrade programme. Some of the facilities required for that are already in place, e.g. the laser treatment facility and the high temperature annealing furnaces. Now we are completing the assembly of the new cold rolling mill and expect to begin utilizing

it next year. We are also in the finishing stages of designing a thermal treatment line.

Q: Are you confident that the new capacity will be adequately utilized?

A: Presently all consumers of electrical steel are moving away from products manufactured using traditional processes and towards steel with improved properties, in particular, electrical properties. This is one consideration.

Secondly, large and serious consumers prefer to procure steel from manufacturers that are able to offer an extended range of various grades of steel. It is more convenient for them to get everything from a single source, because in addition to addressing logistics issues they can expect a discount and deferral of payment. This is why we need to expand our product mix to manufacture a complete range of transformer steel grades.

Q: Are you facing the challenge of increased production costs?

A: To a certain extent the technical upgrade programme is aimed at achieving a significant reduction in the cost of manufacturing transformer steel – by 20% on average. The natural gas reforming facility will allow us to achieve a 37-fold reduction in energy consumption. We will use it to generate hydrogen required in the production of transformer steel. We currently rely on electrolysis to generate hydrogen.

When it comes to raw materials used in production, we have been competing for steel supplies since 1995. The re-rolling stock is supplied by Novolipetsk and we pay for it in cash. Steel savings are therefore a top priority for all our employees. And we have something to be proud of.

Q: What is your vision for VIZ-Stal 10 or 15 years from now? Does the plant have a long-term development strategy?



A: Our key objective is to expand and strengthen our market position. We are also thinking of producing 0.18 millimeter gauge steel, which is already produced by our competitors. I am confident that the new capacity will allow us to go ahead with these plans. And, of course, I have very strong hopes for

the domestic market. Assuming that Russia wakes up and starts growing at rates similar to those in China, we should be able to increase our domestic sales and will have to further expand our capacity in order to provide the country with the required amount of electrical steel. 🇷🇺

NLMK Knows How to Handle Waste

As part of the EcoRegion International Environmental Forum held in Lipetsk on October 26-27th NLMK hosted a round-table discussion on industrial waste recycling.



RIGHT TO LEFT: STANISLAV SAVELYEV, CONSUMER RIGHTS PROTECTION AND HUMAN WELFARE FEDERAL SERVICE, LIPETSK DIVISION HEAD; YURI LARIN, VICE PRESIDENT FOR DEVELOPMENT AND ENVIRONMENT, NLMK; ALEXANDER KOROBENNIKOV, DEPUTY HEAD, LIPETSK REGIONAL GOVERNMENT

By Yulia Taranova

Participants to the round-table discussion that brought together regulators, businessmen, senior managers, and researchers, exchanged views on waste recycling solutions.

In his presentation Yuri Larin, NLMK's Vice President, Development and Environment, shared the Novolipetsk experience in waste recycling:

"We have always faced a number of challenges. First and foremost, the imposing amount

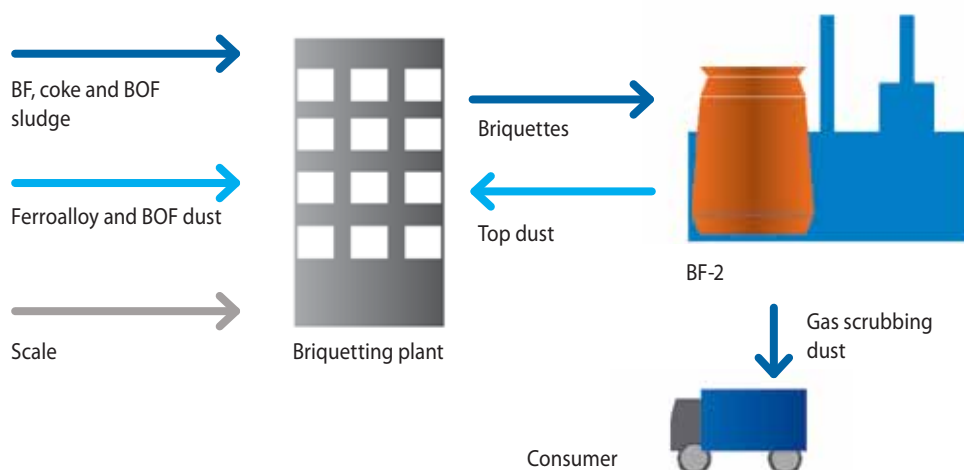
of stockpiled waste, which would be impossible to recycle over a couple of years. Secondly, the volatile market environment, which often impedes the opportunities to market the already recycled waste. This is the reason why there is no demand for some 1.3 million tonnes of steelmaking slag. Another difficulty is posed by the inadequate regulatory framework governing the handling of waste and utilization of recyclable matter. And, finally, another major impediment is the absence of a developed infrastructure for waste recycling."

...and even steam locomotives

Waste has always been a pressing problem for Novolipetsk. During the Soviet era a landfill was created to store 'low hazard solid waste'. Back then, however, production waste was not sorted and was simply dumped in one pile. Allegedly, there may even be decommissioned steam locomotives deposited at the bottom of the pit. Whether this is true or not will become known by 2020, when we expect to recycle all the landfill waste.

Innovative solutions (sludge processing)

Waste briquetting process



We rely on well-tested processes for converting slag at Novolipetsk: slag is cooled off, then iron-containing components are removed from the slag and recycled; then slag is crushed by using crushing and screening machinery.

As a result, almost 100% recycling can be achieved: the metal is returned to steelmaking, and the mineral components are used to manufacture road stone for road construction. Even the dust which is generated during crushing is captured and utilized as an additive for soil stabilization. Anatoly Chetverkin, Project Manager for blast furnace waste utilization at the UralNIIAS research institution, explains other opportunities for utilizing slag:

“One solution is to use slag as construction material and additives in the production of cement, as well as in the manufacture of polystyrene concrete, a promising construction and insulation material. This will help to recycle a fairly large quantity of slag. Last year Novolipetsk had converted more

than four million tonnes of wastes, of which more than 1.5 million tonnes were recycled for use in production as inputs. The balance was utilized in the production of construction materials and for maintaining the on-site road network.”

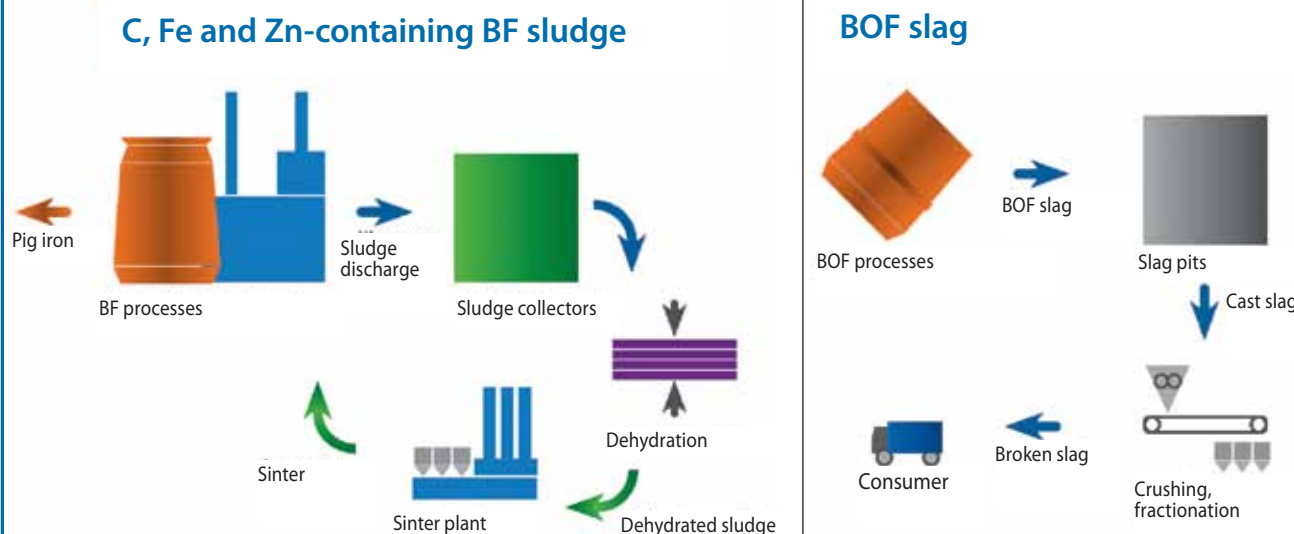
Share and share alike

Sludge, which is a waste product of steelmaking generated by wet scrubbing of gases, is a more challenging issue to address. The reason behind that is that sludge is a suspension of microscopic particles in liquid. It is difficult



FORUM PARTICIPANTS AT THE SWAN LAKE

Traditional recycling solutions



both to store and to recycle. In order for it to become formable it may take several years for the liquid suspension to dry out. Also, it contains zinc, a valuable input for non-ferrous metallurgy, but unsuitable for melting in a blast furnace.

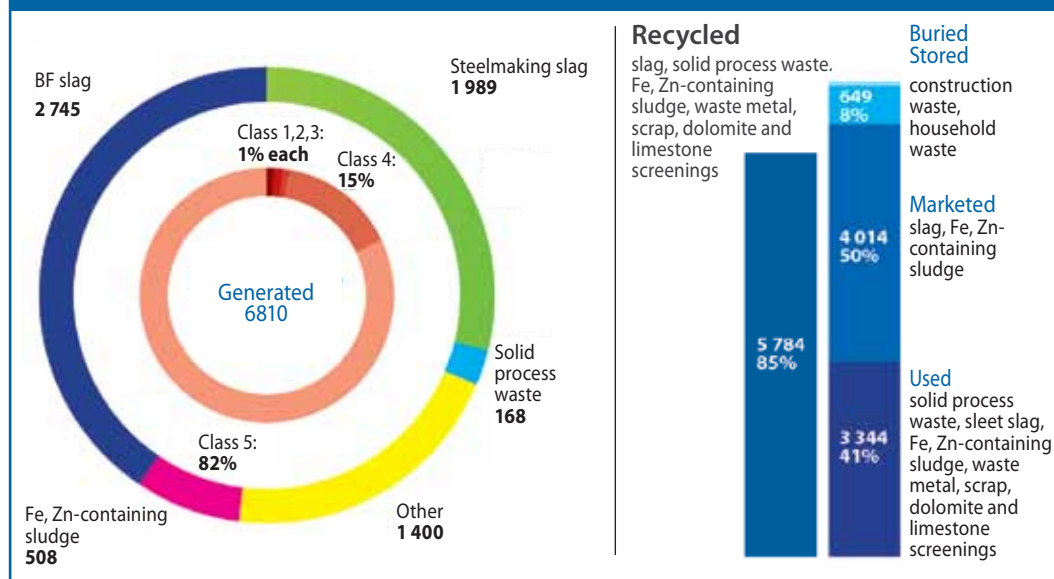
When it settles on the inner

lining of the blast furnace, zinc impairs the operation of the furnace, which may lead to incidents and other irregular events. For this reason sludge can be converted at steelmaking facilities only in limited quantities. Yuri Larin explained the innovative process for the

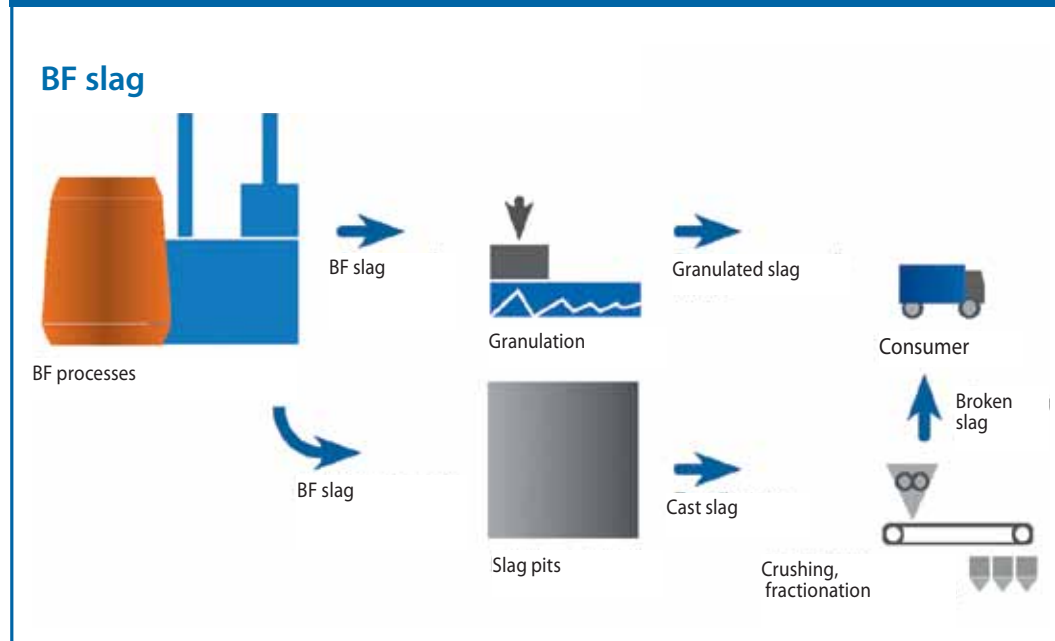
briquetting of steelmaking sludge, which Novolipetsk intends to introduce by 2020. The briquettes, which are manufactured from iron-containing sludge with other added waste matter, are suitable for melting in a blast furnace.

When operated in a special mode the blast furnace can be utilized to

Waste management, '000 tonnes (2010)



Traditional recycling solutions



remove completely zinc-containing dust and to capture it separately from iron-containing particles. The zinc-containing dust is marketed to non-ferrous metals producers, while the iron-containing dust is recycled for steelmaking.

According to the law

Presently in Russia the local governments are responsible for addressing waste handling and disposal issues; however, experience suggests that this only exacerbates the issue. The law requires local governments to arrange all waste handling and disposal activities by themselves. Effectively, the local governments simply lack the required resources and the issues remain unresolved. Often local governments exclude transportation, storage and treatment of production waste from their mandates.

The reality is that the producers themselves have to bear the burden of waste recycling. Annually, only a very small part, or about 39%, of all process waste generated in Russia is recycled.



ENVIRONMENTALISTS AND STEELMAKERS SHOWED INTEREST IN THE ENVIRONMENTAL SOLUTIONS USED AT NLMK'S BF-7

And given the lack of waste management infrastructure, the bulk of the waste is buried. Today the stockpiles of unrecycled waste are estimated at 31 billion tonnes. And this figure keeps growing year after year. Novolipetsk fully

assumed the responsibility for waste handling without waiting for assistance from the government. One significant legislative consideration which is raising concerns on the part of Novolipetsk environmental managers relates to



EDUARD SCHEGLOV, HEAD OF BLAST FURNACE OPERATIONS AT NOVOLIPETSK, DESCRIBES THE CONSTRUCTION OF BF-7 TO FORUM PARTICIPANTS

the distinction between waste and recyclable matter.

“Before imposing harsher penalties for waste storage, we first need to understand what should be defined as waste and what should be defined as recyclable matter,” says Vladimir Alentsin, member of the Nature Use and Environment Committee of the Russian Chamber of Trade and Industry. “In reality, most of the waste generated by any production facility can be recycled.”

How is it done elsewhere?

Japan is the unchallenged leader when it comes to waste management. In Japan 99% of associated products are produced from recycled matter. The sector utilizes steelmaking capacity to convert dust and waste on site.

The production of manganese alloys generates large quantities of gas, part of which (carbon dioxide) is 84% utilized as a

source of heat for drying wet materials. In addition, most of the operations in Japan rely on dry scrubbing of gases, when no sludge is generated. 🌱

FIGURES

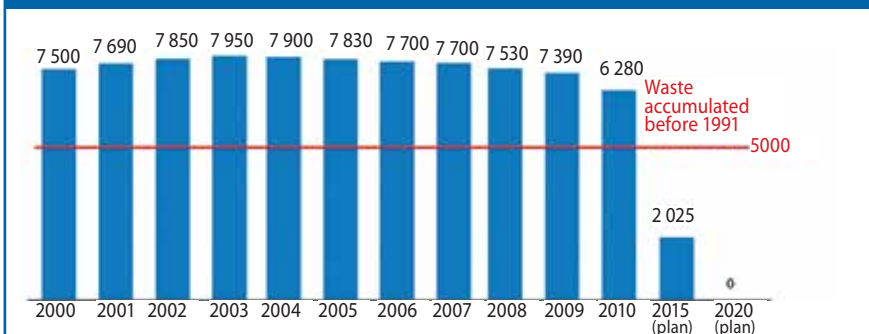
Since 2003 Novolipetsk has recycled 1.5 million tonnes of previously stockpiled industrial waste

*Novolipetsk spends **RUR60 million (USD2 million; EUR1.47 million)** every year on recycling waste stored at its slag pit*

All previously accumulated waste from the slag pit will be converted by 2020

Next year the recycling rate for previously accumulated waste will be increased by 50%

Slag pit waste accumulation



“You can’t just discuss waste all the time, you need to take action”

Valentina Chizhikova, Chief Environmental Officer at Novolipetsk, talks to Yulia Taranova about waste in general and about how Novolipetsk handles its industrial waste.

YT: Ms. Chizhikova, in October Novolipetsk hosted a round-table discussion on waste management as part of the EcoRegion international conference which was held in Lipetsk. What were the highlights?

VC: Our section had several presentations offering worthwhile and very original ideas both in terms of technology and in terms of systemic solutions.

I was fascinated by the presentation by Mr. V. Alentsin from the Nature Use and Environment Committee of the Russian Chamber of Trade and Industry, which focused on how handling of waste is organized at the regional level. He mentioned that businesses should not worry about converting their own waste. It sounded like a paradox. However, waste recycling, as it turns out, is a completely stand-alone area of operations. And whoever handles that operation is converting waste into a certain product. In this fashion the producer is relieved of the costs associated with waste conversion and may use the extra funding for development, technology improvement, and production process modernization; while the waste conversion business generates profit by marketing products made of converted waste. In the end both businesses become more efficient.

YT: This would happen in a perfect world. And what is reality like?

VC: In real life, of course, it is quite different.

The infrastructure for waste recycling in Russia is underdeveloped even for the most ‘conventional’ waste generated by any operation, not only steelmaking, i.e. used tires, mercury light bulbs, wood waste products, used oils and lubricants, broken glass, reinforced concrete waste, etc. For this reason the waste conversion businesses, which recycle waste into other products, are, in fact, charging a fee for accepting waste, and the fee is often set at monopolistically high levels, given the absence of competition. Therefore, the producer in any case incurs a cost associated with waste conversion.

Or a different thing can happen. Say, a certain business generates waste. The applicable fee for the storage of waste is significant on account of an upward adjustment. The business is willing to dispose of the waste without charging for it. Now, let’s assume there is an investor willing to convert this waste. They enter into a purchase contract at some token price of, say, three rubles per tonne. Based on that contract (and the price of three rubles) the investor then develops a business plan, designs processes and procures technology,



VALENTINA CHIZHIKOVA, NOVOLIPETSK CHIEF ENVIRONMENTAL OFFICER

and launches its operations. All of a sudden the waste generator realizes that someone wants its waste and can make money with it. As they say, no one wants to give away a lucrative business. So the waste generator starts raising the price for its waste, and now wants to sell it for thirty rubles, instead of three. Without taking into account the fact that the investor has already incurred certain costs and that its business plan assumes the price originally agreed upon.

And now let’s assume that even with an increased price the investor can remain viable, make a profit, etc. The waste generator would then say if you can afford to buy our waste for thirty rubles, then you can just as well pay three hundred.

And that would be the end of the waste conversion business.

YT: But why does that happen?

VC: Waste recycling is a business, and like any business it involves certain risks, the main of these being market risks. Nevertheless, it is quite realistic for a waste recycling business to make a return.

YT: And what does that require?

VC: The legislation makes municipal and local governments responsible for waste handling. The job of the government is to introduce a system for handling waste, and not just household waste; they need to take into account the demand for various types of businesses specializing in the recycling of certain waste, they need to bring the private sector on-board, resort to administrative incentives, e.g. allocating land plots, providing infrastructure support, etc., and financing.

In general, some sort of strategy needs to be developed in order to deal with waste conversion issues at the regional level. You can't just talk about waste all the time; you must take some action as well.

YT: There is also this issue of making a distinction between waste and recyclable matter?

VC: You must understand that any waste has a resource component, either as a physical input, or as a source of energy. Hence, I believe that waste should be treated as recyclable matter.

The law of conservation of matter applies in this case: you manufacture a product, and sometime later, once it depletes its consumer value, it will turn into matter again. You can again extract it, restore it and manufacture one or another product.

This is especially true for iron. In fact, a whole branch of steelmaking is based on the use of recyclable waste, i.e. scrap. The paradox

is that this recyclable resource is listed in the official catalog of wastes, in other words, it is classified as waste!

YT: So scrap is waste after all?

VC: Yes, and this served as the key argument for the need to come up with a legislative definition of the terms "waste" and "recyclable matter"; this is what we proposed in a legislative bill. We need to draw a clear line between what we define as recyclable matter and what we define as waste, because this would make a very significant impact on the administrative management models: the requirement to obtain a license, reporting on storage of waste, etc.

YT: Some say that waste is as good as oil.

VC: That, of course, is an exaggeration. Today, if some business is involved in waste conversion, it first needs to identify the production process which will generate the waste that may then be recycled into marketable products. In addition, you also need to have some infrastructure in place, some industrial businesses or other consumers who would use the products. This implies that other types of business need to develop; so, you see, quite a handful of things need to be done.

YT: What about zero-waste production?

VC: Obviously, you can't produce something without generating waste; even the most efficient system, the biosphere, generates waste.

Let me tell you this: we have had some experience with zero-waste production ideas in the 1970s. In reality, it significantly impairs the performance of the core business process. In the meantime, specialization always provides for strong performance both by the 'core' producer and by those who are focused on handling only waste or by-products.

Some additional technology or process is always required in order to minimize waste generation. This implies that the cost of implementing and operating this technology or process will add to the cost of the core product, thereby depressing the economic performance indicators.

YT: How does Novolipetsk manage its waste? An ideal arrangement for waste processing is yet to be found.

VC: Firstly, Novolipetsk does not generate 'typical' waste, the conversion of which we were discussing earlier, but instead generates waste that is specific for the steelmaking industry and is characterized by its bulkiness and large weight.

This 'heavyweight' waste includes slag from blast and basic oxygen furnace processes and iron-containing sludge from the sintering, blasting and BOF operations. Blast furnace slag is processed into two products, i.e. granulated slag and graded road stone, which are in strong demand in the market. Graded road stone is used in road construction, while granulated slag is supplied to cement manufacturers.

Steelmaking slag is allowed to mature for twelve months and is subsequently processed into graded road stone with the metallic scrap element removed from it. All the scrap and also about half of the generated steelmaking slag is utilized in on-site production processes, e.g. scrap is fed into the BOFs as part of the charge, while slag is used for preparing sinter and blast-furnace charge. The remaining graded steelmaking slag is used in road construction or for land reclamation purposes.

Secondly, Novolipetsk enjoys two important advantages when it comes to waste recycling and conversion. We know how to process and recycle certain types of waste in a way that allows us to either manufacture



marketable merchant products or to neutralize them in a way that is environmentally safe and harmless to humans. The bulk of the waste is recycled for further use in the production process. This is referred to as 'in-house recycling'.

Sintering process sludge is recyclable and is fully utilized in the sintering charge. BOF sludge is procured by cement manufacturers as an iron-containing additive.

YT: What about the rest of the sludge? Can't it be re-melted in a blast furnace?

VC: The balance includes blast furnace sludge from current operations and sludge accumulated in clearing pools. The use of sludge as a component of sintering charge is limited due to the high content of zinc.

Higher quantities of zinc in the blast furnace can lead to the scaffolding, causing serious furnace upsets. Hence, a special process was proposed which makes it possible to achieve complete recycling of zinc-containing sludge in the blast furnace.

YT: What does that process involve?

VC: The process is briquetting, or the so-called 'third-stage lumping' after sintering and pelletizing. The briquetting process is different in the

sense that sintering and pelletizing involve thermal treatment, while briquetting does not use heat and relies on cold lumping. In turn, this means that there is no discharge of carbon monoxide, nitrous oxides, sulfur, or dust.

By utilizing this process we shall be able to recycle all the previously accumulated stockpiles of iron-containing sludge. Currently, because of the limitation on zinc content, we can only recycle 180,000 tonnes of sludge from the ponds every year. And the briquetting plant will allow us to recycle up to 700,000 tonnes of wastes.

YT: Is there any economic benefit from this?

VC: Oh, yes, this is a very lucrative project. It allows us to resolve yet another issue. It also has environmental considerations, but mostly relates to inputs. The briquettes made of zinc-containing waste are only a component of the charge, intended to be melted in a blast furnace under special conditions and with a closed-circuit gas scrubbing arrangement. As a result, while making pig iron we shall also simultaneously produce zinc concentrate, which is an excellent and, most importantly, high-demand input for the non-ferrous metals industry.

YT: How long will it take to make this project operational? Five years at least, I presume?

VC: No, it will be definitely less than that. Work on the design of the plant will begin in 2012. So it is not that long-term; I believe that we will have the briquetting plant by end-2015.

YT: Will we still have any waste left? Or will we have full recycling?

VC: (*Laughing.*) We certainly won't have any remaining accumulated stockpiles of blast furnace sludge by... 2020.

As regards blast furnace sludge generated today, once the blast furnaces are converted to utilize dry gas evacuation systems, the sludge will no longer be generated. This, however, will only happen over the longer term. From a technological point of view, this can be done, in fact, dry gas evacuation facilities for blast furnace gas are widely used in China and two of them are already in operation in Russia.

Theoretically, dry gas evacuation can also be utilized for BOFs; unfortunately, a sufficiently safe process is yet to be designed.

At the same time the demand for BOF sludge from the cement manufacturers is so high that I would probably avoid referring to it as waste. 🇷🇺

A Lifelong Passion

Mr Terry Laird, Director of Operations at NLMK Indiana talks about production, Henry Rifles and the US Civil War



By Alexander Tseitline

Terry Laird has just turned 59. He's been in steelmaking all his life. Through his efforts, NLMK Indiana has been consistently improving performance. In January 2011 the plant posted record output of hot rolled steel – 75,078 tons. In March, the plant's hot strip rolling mill set an all time minimum downtime of just 12.97%.

What's Terry Laird's secret?

"In my work and life I've been guided by the 5 Whys principle. Asking *Why?* once is never enough, the truth is always covered by layers of events, and you have to peel off layer after layer to get to the root cause."

Before joining NLMK Indiana in 2007, Terry Laird worked for Arcelor-Mittal. After being Head

of Hot Rolling Operations at NLMK Indiana for two years, he was promoted to the Director of Operations of the entire Portage plant.

His office walls are decorated with photos of Civil War reconstructions he took part in back in his college years. In fact, Terry is a passionate collector.

He spends a lot of his free time collecting Civil War memorabilia. This complex time in the American



history has fascinated him since his childhood. Terry's great-grandmother, who lived to 105, was born before the war started and her father joined the army, and she would often tell her little great-grandson about those times. "I think that the Civil War was a pivotal point in American history," Terry always says when asked about his passion. Back in college Terry began taking part in historical reconstructions of the period. That's where he met Civil War memorabilia collectors

and started a collection of his own. Terry still has photos in the office of him taking part in the reconstructions as a student. Terry couldn't afford new additions to his collection very often and started looking for a source of extra income. It turned out that collecting could be made into a business, and there are ways to grow one's collection without hurting the family budget. So alongside collecting memorabilia, Terry started to buy objects for resale, building up an

impressive collection of weapons, military uniforms, books and manuals, medical instruments and other war objects dating back to 1840-60. He currently has over 1000 exhibits in his home collection. Over 40 years on, Terry spends a few weekends a year at gun shows, looking for new exhibits, exchanging information with other collectors, selling objects intended for resale. "These aren't simple Sunday fairs. These exhibitions attract collectors not just from the



TERRY LAIRD'S 5 WHYS PRINCIPLE

In my work and life I've been guided by the 5 Whys principle. Asking Why? once is never enough, the truth is always covered by layers of events, and you have to peel off layer after layer to get to the root cause.



US, but also from England, Germany and even Australia,” Terry says. Terry Laird also regularly gives lectures to high school and college students. He has already authored several scientific articles and is not planning to stop at that. “I am often asked why I spend so much time on my collection,” Terry says, “Well, there are a number of reasons. Besides plain curiosity that I’ve had since childhood, collecting makes me feel like a real treasure hunter, and gives a sense of participating in great historic

events.” This unusual hobby, Terry says, has helped him find a lot of new friends and try himself at being a businessman. The most valuable item in Terry’s collection is the Henry Rifle. He bought it in 1989 for a small fortune, 3000 dollars. But the famous rifle has since earned its keep many times over. Created not long before the Civil War and manufactured in small amounts – all in all 14,000 rifles have been manufactured – in terms of firing speed this rifle was many times

ahead of all the others. It served as the prototype for the famous Winchester; Oliver Winchester was the Vice President at Henry Rifle and used it as a model when setting up his own business. Today Terry’s most valued item is priced at 45,000 dollars.

Terry has travelled almost half the world for his work and hobby. But not Russia, “Unfortunately, I haven’t been to Russia yet, but I really hope that I will get the opportunity to visit NLMK’s Russian assets sometime in the near future.” 🚀

Dinosaurs from the Pit

“Thank you for the tour of the distant Mesozoic and its fascinating marine life,” was a comment left recently by geology students from the Voronezh Public University at the museum operated by Stoilensky.



ALL THE MODELS AND VISUAL AIDS WERE MADE BY MUSEUM FOUNDER VLADIMIR BUKATKIN

By Yulia Telenkova

There is nothing unusual in this comment. During the Mesozoic the Central Russian Upland was a shallow sea, inhabited by hundreds of species of marine reptiles and fish, the fossilized remains of which are on display at the paleontology museum. The hundred million year old exhibits were discovered

during the development of Stoilensky iron ore mining pit.

Gigantic, up to 15 meters long, elasmosauria, ichthyosauria, and predatory pliosauria left traces of their presence in the sands and sandstone of the Stoilensky pit, suggesting that they had lived here towards the end of the early and the beginning of the middle Cretaceous. The deeper the ore miners delve into the sedimentary strata of the deposit, the further they move away from the planet's modern day, the more ancient and unusual are their findings.

Paleontologist by calling

Vladimir Bukatkin, founder of the paleontology museum, can talk about his exhibits

for hours on end. He developed an interest in paleontology while studying at the Odessa Public University. The director of the university's paleontology museum invited the young but very responsible student to assist him in writing his doctorate thesis. Vladimir would make impressions of teeth, bones, do research. In 1984 the hydrology engineer

found a job at Stoilensky. And his old passion for paleontology resurfaced. The fossilized remains of pre-historic reptiles which he found in the pit inspired Vladimir Bukatkin to establish a unique collection of Mesozoic exhibits. Stoilensky management supported the idea and allocated premises where Bukatkin exhibited the finds collected by him. Apart from the remains of huge pre-historic monsters the sandy clay sediments of the pit also contained the shells of ammonites and belemnites, made exquisitely beautiful by their



THE 'BACKBONE' OF THE EXHIBIT IS A STAND RECREATING THE SKELETON OF A PLESIOSAURUS ON A SCALE OF 1:1



EXHIBITS, SOME OF WHICH ARE HUNDREDS OF MILLIONS YEARS OLD, WERE FOUND WHILE DEVELOPING THE STOILENSKY IRON ORE PIT

mother-of-pearl lining, which remained intact within, and the minerals, which had deposited on their walls. Then there are the remains of strange fish, sharks, sea turtles, chimeras and even birds. The pride of Vladimir Bukatkin's collection is a pliosaurus tooth 7 centimeters long and 5 centimeters across.

Systematically arranged

Presently the museum at Stoilensky has about 1,000 exhibits. Now they are on display in a new, spacious and bright place equipped with glass showcases, stands and shelves. Vladimir Bukatkin keeps everything systematically

arranged. The 'backbone' of the exhibit includes fossilized vertebrae and teeth of a plesiosaurus mounted on a stand with a 1:1 scale model of the animal. Large reptiles are next to models of ancient sharks, ichthyosaurus and a pre-historic crocodile. The models and all other visual aids were made by Vladimir Bukatkin with his own hands. He also painted pictures of ancient pangolins that used to inhabit the areas around Oskol.

"During the nine years since the museum was opened we have seen many visitors, including foreign delegations. Company employees also drop in when they find what they see as an interesting fossil,"



APART FROM THE REMAINS OF HUGE PRE-HISTORIC MONSTERS THE PIT ALSO CONTAINS THE SHELLS OF AMMONITES AND BELEMNITES, MADE EXQUISITELY BEAUTIFUL BY THE MOTHER-OF-PEARL LINING

explains Vladimir Bukatkin. The museum cooperates closely with the Paleontology Institute of the Russian Academy of Sciences. 🌟



1 PLIOSAURUS = 5 ELEPHANTS

The pliosaurs were loners. They would eat almost anything they could find. Given their size it is unlikely that they would have had any enemies; in terms of weight and dimensions a single pliosaurus was bigger than five mature elephants. The pliosaurus would patrol its territory in search of food and to guard it against its own kin. It

would hunt other marine predators, plesiosaurs and ichthyosaurs. With its huge jaws it could snap a small animal in two. Fossilized remains of the pliosaurus suggest that they would also eat carrion, i.e. dinosaurs which drowned in the sea. The jaws of the pliosaurus are similar to that of a crocodile, except that it has many triangle shaped teeth. Once caught in these jaws escape would be impossible.

The Iron Framework of Art Nouveau

The Art Nouveau era is a sort of a pinnacle of European artistic and technical thought as it had developed over the preceding millennium. The use of steel played a special role in Art Nouveau architecture.

Benefitting from the wealth of experience accumulated over many centuries and by relying on new knowledge and new materials Art Nouveau artists would develop their creations by boldly experimenting with a combination of styles from different times and cultures. On the one hand, new metal alloys, and primarily steel, allowed the artists to work almost miracles. Buildings on the even-numbered side of Kuznetsky Most street (in the center of Moscow), re-built in the early 20th century, fascinated their contemporaries with their immense window arches. The GUM building (a large store in the Kitai-gorod part of Moscow, facing Red Square), erected in pseudo-Russian style in 1893, caused a true sensation with its glass-paned roof supported by Shukhov's lattice work.

However, in order to make the appearance of buildings more appealing, the steel structures were carefully concealed by traditional



THE RYABUSHINSKY MANSION

materials, i.e. marble, granite or brick.

Nevertheless, in their attempt to conceal the steel beams, supports and frames (lattice work roofs were an exception) Art Nouveau architects widely applied metallic decorative elements of striking beauty and sophistication. The architectural masterpieces of the late 19th and early 20th centuries fascinate the imagination with their iron false pillars, pig iron lamps in the shape of animals and plants, and curved copper door handles. And lace work balcony railings, balustrades and fence gratings were extremely popular. Cast and forged, delicately curved, with ornamental flora and fauna designs they became an inherent feature of Art Nouveau architecture.

All across Russia, from Taganrog to Vladivostok and even in small settlements around Lake Baikal,

one can come across fine examples of Art Nouveau architecture.

However, most of the architectural monuments of the era have been preserved in Moscow and Saint-Petersburg.

The Ryabushinsky Mansion; museum and former residence of Maxim Gorky (Moscow)

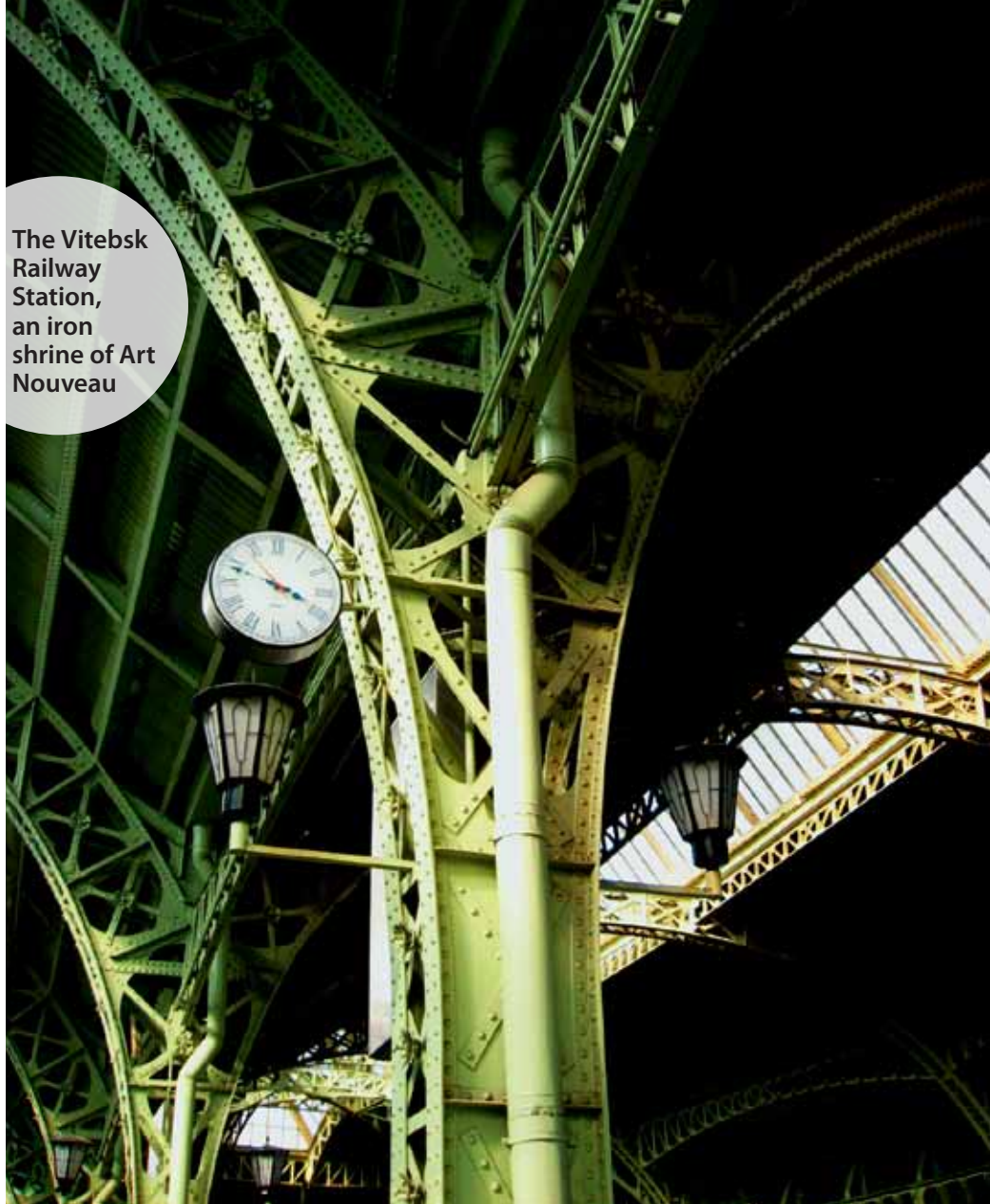
The Malaya Nikitskaya Street in Moscow is the location of an unusual house, known as the Ryabushinsky Mansion and museum and home of Maxim Gorky. This fanciful building appears to be alive; it is like a beautiful rocky island rising amidst an ocean. The 'island' is home to twisting iron trees and flowers, populated with iron snakes and singing iron birds. The Ryabushinsky Mansion was built in 1902. At the time, a short period



STEEL AND GLASS VAULTS AND DOME OF THE ROOF OVER THE UPPER MERCHANT ROWS AT THE RED SQUARE IN MOSCOW. PHOTO BY S. SHUKHOV, 1960s.



The Vitebsk Railway Station, an iron shrine of Art Nouveau



spanning the last two decades of the 19th century and the first two decades of the 20th century, art, philosophy and literature were dominated by what was later called Art Nouveau, or modern art, a distinct school of creative thought. The mansion became one of the most outstanding masterpieces of architecture of the time.

The Vitebsk Railway Station, an iron shrine of Art Nouveau (Saint-Petersburg)

The Vitebsk Railway Station in Saint-Petersburg is by right one of the most beautiful railway stations in the world. For the city it has long become more than a major transportation node, but



also an important element of the metropolitan architectural environment and culture. The modern-day building of the Vitebsk Railway Station was built in 1904 and designed by S. Brzhozovsky. The railway station struck its contemporaries by its beauty and more importantly by its unusual appearance. And it's not just a matter of style, but also of its structural design. The Vitebsk Railway Station is the only railway station in the world where the platforms are located one floor above the ground. In order to access trains passengers can use stairs or elevators, while a special luggage lift will facilitate the delivery of luggage to the trains.

Certainly, metals were widely used in the construction and design of the Vitebsk Railway Station. The roof of the building is a huge dome made of iron. The major part of the façade is occupied by a stained-glass arch, below which are laced metallic canopies of the main entrance protecting the passengers from the rain. The balconies along

the outside façade are adorned by a semi-circular iron guard rail.

The amount of steel inside is on par with the exterior of the building: iron lamps, bronze sculptures, iron spiral staircases, metallic guard rails along overpasses, and the cage of the luggage lift decorated with wrought iron leaves and flowers.

Once past the lobby passengers find themselves on the platforms, covered with wide metallic arches of the debarcadere. The debarcadere has one peculiar feature, i.e. all of its elements are joined by rivets. Overall, the debarcadere leaves the impression of a purely engineering structure and thereby is reminiscent of buildings built in later times and designed by the Constructivists in the 1920s and 1930s. V. Gerson, the designer of the debarcadere, may have been ahead of his times, but only marginally; the lines of the arches are too smooth and elegant for geometrical constructivism, while the sheet iron screens are decorated with metal flowers in the best traditions of Art Nouveau.

The Singer Company Building, an example of Imperial Art Nouveau (Saint-Petersburg)

In the late 19th century the powerful American manufacturing and marketing empire of Singer, which dominated all of the key sewing machine markets, began its productive collaboration with the Russian Empire. Soon the company had a factory operating in the country and it was time to think about establishing a permanent representative office.

The location for the representative office was chosen at the corner of Nevsky Prospect and Griboedov Canal, across the street from the Kazan Cathedral, surrounded by palaces and key government office buildings. The building was supposed to be ultra-modern and outstanding, underscoring the power and

grandeur of Singer. The original design even called for a sky-scraper not unlike the ones in America, with a steel frame, lots of glass, high-speed elevators and hundreds of offices. But Saint-Petersburg had a restriction on the height of buildings, whereby no building in the center of the city could be higher than 23.5 meters from ground to cornice. In addition, a massive steel and concrete building would eclipse the nearby Savior on the Blood Church, the Mikhailovsky Palace and many other architectural landmarks. Eventually a compromise was reached to design the building according to the most vogue and advanced European style.

The author of the project was an outstanding Russian architect Pavel Suzor. He proposed and by 1904 completed a project of a six-story building with an attic and a corner tower topped with a transparent dome and a glass globe 2.8 meters in diameter. The large window arches of the main building, decorated with dark-colored blocks, the reserved but multi-colored design, and the unorthodox tower made the 'embassy' building look both grand and lightweight at the same time. The building borrowed its steel framework from a skyscraper, making the Singer Building the first of its kind in Russia with its steel frame and cutting-edge technology. It was equipped with a climate control system, special elevators, and a system for automated roof cleaning. In addition, the building had atriums, also a novelty for that age. It was decorated with popular Art Nouveau floristic ornaments made of hammered bronze. It also has the invariable balconies with twisting wrought iron guard rails. The greatest attraction, however, are the sculptures on the façade, created by Estonian sculptor A. Adamson. On the cornice of the tower sits an American eagle with its wings spread. The edges of the window arches are decorated by





The Singer Company Building, an example of Imperial Art Nouveau





THE METROPOL HOTEL



DOME LIGHT AT THE METROPOL HOTEL

ship rostra depicting Valkyries; those holding spears are a symbol of heavy industry, in which the Singer Company was beginning to take an interest at the time, and those with sewing machines represent light industry. The glass globe on top of the tower is supported by two female figurines representing seafaring.

Art Nouveau Hospitality in Moscow

The Art Nouveau style was widely used in the architecture of hotels, a large number of which were built in major European cities at the end of the 19th century and the beginning of the 20th century. Moscow was no exception. Two hotels, The Metropol and The National, are wonderful examples of the new style.

The building of the former was initiated by famous industrialist

and philanthropist Savva Mamontov, who wanted to replace some properties he had acquired in the center of Moscow, and create a culture and entertainment facility. A tender was held in 1899 which was awarded to a design proposed by architects L. Kekushev and N. Sheyakov. Mamontov, however, approved a project by William Walcott, an Englishman, who proposed a major alteration of the old buildings, rather than their demolition. This decision was driven by the client's wish to turn the facades of the new building into a picture gallery, by decorating them with frescoes, paintings and sculptures by his favorite artists. Walcott's design matched this objective perfectly. Nevertheless, Kekushev had the opportunity to participate in this project, which took almost six years to complete

and involved the best engineering, architectural and artistic talent.

The National Hotel appeared in Moscow in 1903 through the efforts of architect Alexander Ivanov. Like many other of Ivanov's creations it bears the imprint of an earlier style of eclectics, but the metallic décor, stained glass windows, mosaics and ceramic panels help it make the transition to the modern age of Art Nouveau. The highlight is the screen above the main entrance, made of zinc.

The Art Nouveau era in European art lasted until 1914 and the beginning of World War I. The war destroyed the old European notion of the rational nature of events. It also ushered into limbo the era of Art Nouveau, the last era in European culture which sang praise to the beauty and rationality of this world. 🇷🇺



THE NATIONAL HOTEL