

# NLMK GROUP

CORPORATE MAGAZINE

#4 2011



# Business Promotes Bilateral Understanding

**T**his year more than 300 guests gathered at the Chicago Cultural Center for the First Annual Russia Day hosted by the Chicago Sister Cities International. The event was made possible through the generous support of the US affiliates of several Russian companies, including NLMK Indiana. Some 20 representatives of the Company took part in the celebrations.

The event was attended by His Excellency Mr. Sergey Kislyak, Extraordinary and Plenipotentiary Ambassador of the Russian Federation to the United States.

Mr. Alexander Tseitline, Vice President of NLMK Indiana, and Mr. Terry Laird, Director of Operations, participated in a round-table discussion with the Russian ambassador. The discussion focused on issues that impede the development of beneficial bilateral investments between Russia and the United States. And although NLMK Group itself serves as an example of very successful economic cooperation, there are a number of unresolved issues, like the delay with Russia's accession to the WTO, the continued enforcement of the discriminatory Jackson-Vanik amendment, and difficulties with obtaining visas, which all hinder improvements in the investment climate for both countries.

In his address, Ambassador Sergey Kislyak stressed that this was his first time celebrating Russia's national holiday at an event which was being arranged by the American public rather than the Embassy itself. The Ambassador noted the dramatic changes in the Russian society over the last 20 years. A new and free generation has emerged in new Russia, a generation which has not been subjected to Communist indoctrination. Terry Laird also made a speech at the event. Later there was a small show with Russian folk, spiritual and classic music and dances. The audience greeted the performances with vivid interest. Apart from representatives of the business community and the general public, the event was also attended by clergymen of the Russian Orthodox Church.

Everyone agreed that the celebration of Russia Day was a great success. Ms. Aleksandra Efimova, Co-chair of the Moscow Committee of Chicago Sister Cities International, expressed her hope that similar events would in time become an integral part of the political and cultural scene in Chicago, and would help to encourage better understanding between the people of Russia and the people of the United States, thereby promoting better relations between the two countries.



**FROM LEFT TO RIGHT:**  
ALEXANDER TSEITLINE,  
NLMK INDIANA; PIOTR  
GALITZINE, TMK-IPSCO;  
SERGEY KISLYAK, RUSSIAN  
AMBASSADOR TO THE  
UNITED STATES; SERGEY  
KUZNETSOV, SEVERSTAL  
NORTH AMERICA





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# Celebrating Metallurgist Day

**Metallurgist Day is a major holiday in Russia's industrial regions.** This year in many communities where the Company operates this occasion was celebrated by everyone, combining it with City Day celebrations, and honoring steelworkers for the greatness and beauty of their work.



**LIPETSK**  
CELEBRATING  
METALLURGIST DAY AND  
CITY DAY

**B**usiness units at Novolipetsk held their traditional ceremonial meetings to celebrate top performing employees. The President of Russia awarded the Orders of Friendship to Anatoly Knyazev, Roller at the Cold-rolling and Coating Mill, Vladimir Karpachev, Etcher at the Grain-oriented Steel Operations, Alexander Tyulenev, Steel Caster at BOF Shop No. 1, and Nikolay Chebotarev, Operator at Blast Furnace Shop No. 1, in recognition of their contribution to the

development of the metallurgical industry and many years of distinguished service. Eight Novolipetsk employees were awarded with medals of the Order of Meritorious Service to the Nation of the II degree, sixteen received the titles of Merited Metallurgist, Merited Machine-BUILDER, Merited Transportation Worker, Merited Chemical Industry Worker, and Merited Power Engineer of the Russian Federation. Andrey Yaroshenko, Director of Steelmaking Operations, received

the Merited Service to the City of Lipetsk decoration. The photos of Ivan Plotnikov, Non-grain Oriented Steel Cutter, and Alexander Stolyarov, Senior Foreman at BOF Shop No.1, appeared on the updated Reputed Workers of Lipetsk picture gallery in recognition of their performance. In addition, by order of the Minister of Industry and Commerce another nineteen Novolipetsk employees were awarded the titles of Honorary Metallurgist, Honorary Machine-BUILDER, and Honorary





Chemical Industry Worker, and 42 received letters of commendation and gratitude from the Ministry. Gold and silver Novolipetsk decorations were awarded to 80 employees, one hundred employees were recognized as Veterans of Work, and 430 received certificates of honor and letters of





**VIZ-STAL.**  
A SPORTS COMPETITION  
TO CELEBRATE  
METALLURGIST DAY

commendation from Novolipetsk management. All top performing employees were rewarded with cash bonuses. Everyone was in a great mood. There were concerts, and sports competitions, and all steelworkers and their families were invited to participate. Metallurgist Day celebrations were held in Revda, Nizhniye Sergi, and Berezovsky. More than 300 employees from NLMK Long Products received sectoral, regional, municipal and corporate awards. Among others, rollers Leonid Podchinenov and Pyotr Dryagin

were awarded the title of Honorary Metallurgist. There was great entertainment in store for the Urals steelworkers, including concerts, tournaments, competitions, contests, and shows by Russian celebrities. VIZ-Stal, another NLMK company in the Urals, hosted competitions in professional skills, two-day sports tournaments in volleyball, indoor soccer, track and field, arm wrestling, and other events. Winners were awarded with certificates and cash prizes. VIZ-Stal employees and their families were presented with



**VIZ-STAL.** TOP PERFORMERS RECEIVE AWARDS FROM CEO SERGEY MAKUROV AT A SPECIAL CEREMONY



**CONCERT  
IN REVDA**







tickets to a drama show staged by well-known actors Tatyana Vassilyeva and Efim Shifrin. On the eve of the holiday 96 VIZ-Stal employees were awarded sectoral, regional, municipal and corporate honorary certificates and letters of commendation.

This year Zarinsk combined the Metallurgist Day and City Day celebrations for the first time. Altai-Koks and the City Council combined their efforts in preparing a great entertainment program. Shortly before the event, three company employees received great news – they had been awarded the titles of Merited Workers by the President of the Russian Federation. All in all 224 company employees received various awards. Photos of top performing workers were displayed in the Gallery of Honor, opened just before the holiday. A competition to improve site grounds was held at the plant, and winners were also announced during the Metallurgist Day celebrations. The winning teams were from Coking Shop No. 3, Automation Shop and Transport Shop. Sports

competitions were kicked off by a 3 kilometer foot race, which was won by Maksim Kuznetsov of Altai-Koks. The Top Five all-round competitions in strength gathered a large number of spectators. This entertaining event was won by the plant's Firefighting and Rescue Team. The winners were awarded with

certificates and cash prizes. The most active spectators were also awarded with presents. Festivities culminated in a grand concert in the square in front of the Metallurg Palace of Culture, with performances by popular bands Samotsvety and Chay Vdvoyom, followed by fireworks. 🌟

ALTAI-KOKS EMPLOYEES  
WHOSE PHOTOS ARE  
DISPLAYED IN THE GALLERY  
OF HONOR

METALLURGIST DAY  
IN ZARINSK. TOP FIVE  
COMPETITION EVENT





## PRESENTING NEW PROJECTS

**NLMK's Urals-based companies participated in the INNOPROM-2011 international exhibition in Yekaterinburg, where they presented new projects to develop their operations.**

Among other things, they demonstrated the ample capabilities of the Long Products Division to manufacture reinforcement bar stock, wire rod and metalware following the commissioning of the Rolling Mill in Berezovsky. The shop produces

6 to 16 gauge reinforcement bars in bales and wire rod from 5.5 to 22 millimeters in diameter using low carbon, high carbon and alloyed steel. Modern processes and technologies are capable of meeting future demand from the construction sector.

VIZ-Stal presented its Technical Upgrade Program, which targets the production of high permeability steel, a completely new product in the Russian market, and enhanced competitiveness of standard steels. Both Russian and foreign power plant engineers have already expressed high opinions of laser treatment for electrical (grain oriented) steel, which helps to improve significantly the consumer properties of steel and to enhance the energy efficiency of transformers. Industrial scale production of high permeability steel (HPS) used in the manufacture of heavy-duty power transformers will further improve their energy efficiency. In Russia, the use of HPS in transformers can reduce power consumption by 2 to 3 billion kilowatt-hours per year.

The INNOPROM-2011 exhibition was also used by VIZ-Stal to showcase its investment projects on the introduction of energy saving processes and equipment for the manufacture of electrical steel. ■

## A PLACE TO COME BACK TO

**Mikhail Shmakov, President of the Federation of Independent Trade Unions of Russia (FNPR) visits NLMK's production site in Lipetsk.**

He visited the mills, observed the operations, and talked to the personnel. Russia's trade union leader acknowledged "NLMK's solid approach to social responsibility and the active involvement of the Company's trade union."

Mr Shmakov was immensely



impressed by the new Blast Furnace #7 (BF-7) that will ensure a 40% output boost, and create 1164 jobs, including 268 at

the facility itself. Pig iron will be produced with maximum automation, resource and environmental efficiency. "It [BF-7 launch] is an event of great significance, and not just for Lipetsk, but for the whole of Russia, because it is more than just revamping and upgrades, it is about launching new steelmaking facilities," Shmakov said. He was equally impressed with the Swan Lake (the plant's little zoo), where he saw white peacocks for the first time in his life. "NLMK is one of the few companies you want to keep revisiting," he said. ■





## AMBASSADOR FROM LUXEMBURG

**Gaston Stronck, Ambassador  
Extraordinary and Plenipotentiary**

**of the Duchy of Luxembourg to the  
Russian Federation, paid a visit to  
Novolipetsk.**

The purpose of Mr. Stronck's visit was to get an up close on

the major investment projects undertaken by Novolipetsk as part of its Technical Upgrade Program. The key project of the program is the Blast Furnace No. 7, the first in modern-day Russia, built by NLMK in cooperation with Paul Wurth, a leading engineering company from Luxembourg. BF-7 was designed using the most advanced technological solutions. In fact, BF-7 incorporates all the best available technologies used in the construction and design of similar facilities.

The blast furnace is currently undergoing pre-commissioning tests. Once it becomes operational it will allow NLMK to increase the output of pig iron by 3.4 mtpa and achieve a 40% increase in steel output. Mr. Gaston Stronck shared his impressions saying that "investing in modern technology is the best strategy for a producer who is truly concerned about the future. All of this will have a definite positive impact on the competitiveness of the company." ■

## NLMK RATING RAISED TO INVESTMENT GRADE

**The international rating agency  
Moody's has upgraded NLMK's  
long-term credit rating from  
Ba1 to the investment grade  
level at Baa3. The outlook on the  
Company's rating remains stable.**

Moody's has highlighted the excellence of NLMK's resilient business model, which has demonstrated sustainable operational and financial performance despite recent market downturn. Moody's expects that NLMK will maintain its highly competitive production costs globally, benefiting from its efficient vertical integration into iron ore, coke and scrap. Moody's has also noted the positive



impact of NLMK's acquisition of the rolling assets of SIF S.A., its JV with Duferco Group, on earnings and the stability of its operations.

Ms. Galina Aglyamova, NLMK's CFO, commented: "We welcome NLMK's credit rating upgrade by Moody's. This is the third investment level credit rating to be awarded to our Company. This decision reflects the success of NLMK's consistent efforts aimed at improving our financial position and the quality of business in line with our sustainable growth strategy." ■

### FOR REFERENCE:

NLMK has been ranked amongst five Russian private companies with investment grade status for several years. NLMK is the only company in the Russian steel sector with an investment grade rating from the three big rating agencies. The Company also has an investment grade rating of BBB- with a stable outlook from Standard and Poor's and an investment grade rating of BBB- with a stable outlook from Fitch.

## NLMK CREATES US AND EUROPEAN BUSINESS DIVISIONS

**NLMK has announced the creation of its new business divisions - NLMK Europe and NLMK USA, uniting all the Group's foreign assets, including Steel Invest and Finance (formerly a joint venture between NLMK and Duferco Group), consolidated starting from July 1, 2011.**

NLMK has developed a new management structure for its international operations. Mr. Horacio Malfatto, formerly Chief Executive Officer of Steel Invest and Finance, has been appointed Chief Executive Officer of NLMK Europe. NLMK Europe Strip Products, a business unit combining European flat strip operations, will be headed by Mr. Ben de Vos, formerly a Director of La Louvière plant.

Mr. Igor Sarkits, formerly a Director of DanSteel, has been appointed CEO of NLMK Europe Plate Products.

Mr. Paul Fiore will continue as President & COO of all USA production companies.

Mr. Robert Miller has been appointed to the position of President, NLMK USA, responsible for strategic planning and procurement, finance, IT, sales and marketing. NLMK Europe is a manufacturer of innovative flat products combining all of NLMK Group's European production and distribution facilities. The

**HORACIO MALFATTO,**  
CEO OF NLMK EUROPE



**ROBERT MILLER,**  
PRESIDENT OF NLMK USA

division employs 3 000 people at six production sites specialized in hot rolling (including thick plates manufacturing), cold rolling and coating (galvanizing and pre-painting) and a network of steel processing and distribution units in close proximity to the end users. NLMK's industrial model is unique for Europe and is based on the efficient supply of semi-finished products from Russia to flexible high quality European processing facilities, close to key customers. NLMK has successfully implemented this model at DanSteel, a Danish plate producer, where it has been applied since 2002.

NLMK Europe comprises two business units, Strip Products and Plate Products.

Strip Products unit has an annual production capacity of 2.6 million tonnes at three production sites, NLMK La Louvière, NLMK Coating,

NLMK Strasbourg, and a network of service centres. Plate Products unit has an annual production capacity of 1.93 million tonnes at three production sites, NLMK Clabecq, NLMK Verona, NLMK DanSteel. The synergies between the three facilities allow NLMK to offer its clients a full scope of products ranging from very thin/narrow to very thick/wide plates, as well as tool steel.

NLMK USA has a diversified base of flat steel producing assets comprising three production sites at NLMK Indiana, NLMK Pennsylvania (formerly, Duferco Farrell) and Sharon Coating, manufacturing slabs, hot-rolled, cold-rolled and galvanized products. It has an electric arc furnace (EAF) steelmaking capacity of approximately 730,000 metric tonnes and hot-rolling capacity of 2.7 million tonnes. The new division brings synergies through a common distribution structure offering a wide range of steel products to the construction, pipe and tubes and machinery sectors in the United States.

The creation of new divisions was followed by the renaming of the entities previously forming part of Steel Invest and Finance. 🌟

### Former name

### New name

NLMK Europe	
Strip Products	
Duferco La Louvière	NLMK La Louvière
Duferco Coating (Beautor)	NLMK Coating
Sorral	NLMK Strasbourg
Plate Products	
Duferco Clabecq	NLMK Clabecq
Dansteel	NLMK Dansteel
Verona Steel	NLMK Verona
Trading and service centers	
Duferco Transformation Europe	NLMK Distribution France
Duferco La Louvière Sales	NLMK Sales Europe
NLMK USA	
Duferco Farrell Corporation	NLMK Pennsylvania
Sharon Coating LLC	Sharon Coating



# BF-7: The Pinnacle of Paul Wurth/NLMK Cooperation

**Only a few days before Blast Furnace No. 7 goes on-line at NLMK's Lipetsk site.** Alexander Sutormin, Editor-in-Chief of the NLMK Group corporate magazine, interviewed representatives of Paul Wurth, the company that was the general designer and general contractor for the construction of BF-7. Steffen Koler is Senior Marketing Manager with the Paul Wurth Corporate Department, and Nicolas Mosel from the Sales and Project Implementation Department is the Project Manager for the construction of BF-7.



STEFFEN KOLER,  
SENIOR MARKETING  
MANAGER, CORPORATE  
DEPARTMENT, PAUL WURTH

**Q: Gentlemen, why do you think NLMK chose your company to design and build BF-7? Do you have any past experience working with the Soviet Union or Russia?**

**SK:** We believe that the reason why our company was selected for this job

is trust. NLMK blast furnace operators and engineers have trust in Paul Wurth technology, and in our experience with large-scale internationally acclaimed projects. Paul Wurth began supplying technology to the Soviet Union in 1976. Ever since we have been continuously developing our cooperation with clients in Russia and the CIS. We believe that this

market has great potential, it is one of the key markets for our international operations.

A representative office of Paul Wurth has been active in Russia since 1992. In addition, in 2004 we established a subsidiary, Paul Wurth Kovrov ZAO, which is a Russian corporation and is also involved in the BF-7 project.

**Q: Is BF-7 your first project with NLMK or have you had prior experience working with Novolipetsk steelmakers?**

**SK:** It was exactly at Novolipetsk that Paul Wurth launched its first project in the Soviet Union in 1976. It involved the delivery of the bell-less top charging system for BF-6, launched in 1978. We are proud to have NLMK as our longest-standing client in your country!

In 1995 we signed our first contract in modern-day Russia with NLMK for the installation of a bell-less top charger at BF-5.

Later we delivered automatic gas supply connector systems for blowing that ensure the safety of secondary steelmaking operations. These were used at NLMK's BOF Shop No. 1 for the very first time in Russia. In addition, TMT, our subsidiary, supplied equipment for the cast house, and the measuring device and mathematical model for process improvement at BF-5. In a way, BF-7 is the culmination of our long-term productive cooperation.

**Q: It has been opined that Russian business owners are reluctant to invest in the modernization of their companies. Does this seem true to you?**

**SK:** I don't see much of a difference compared to other countries. There will always be companies which practice a more responsible approach towards investments in developing their business, and there will be those which invest less. NLMK is definitely one of the leaders, given its long-term upgrade and development programs. Comparing Russia to other parts of the world, starting from around 2000 blast furnace capacity upgrade efforts in your country have been on par with Western Europe and exceed those in the United States.

**Q: What considerations were taken into account during the design of BF-7 and what is the concept underlying its construction? Did you face any challenges because of this and how did you overcome them?**

**NM:** BF-7 design is based on Paul Wurth's modern technological ideas which have been tested successfully in several blast furnaces across the globe. The BF-7 concept was a collaborative effort; it encompasses all the special requirements from NLMK, the local environment, and applicable Russian Federation











NICOLAS MOSEL,  
PROJECT MANAGER FOR THE  
CONSTRUCTION OF BF-7

standards, and incorporates best available technology solutions. Some challenges had to be resolved during the construction phase. The first challenge was to clearly define the responsibilities of NLMK and Paul Wurth in terms of the workload and deliveries. The second challenge was to select and apply a number of new technological solutions which had not been used before by NLMK experts. For example, the closed water circuits which are used to cool the casing of the furnace. We are confident that the combination of new technology and existing operation and maintenance skills will result in very strong performance by BF-7.

**Q: What makes BF-7 distinct? Is it different from facilities used in the West, is it inferior or superior?**

**SK:** Blast Furnace No. 7 is the first furnace in the former Soviet countries designed by a foreign company. The Soviet blast furnace design has a long tradition and Paul Wurth had the opportunity to share experience with your engineers. We would like to stress that many ideas suggested by engineers from Lipetsk and Russia were incorporated into the design

and construction of BF-7, making it truly a product of international cooperation.

**NM:** Essentially, any blast furnace is unique, and is distinguished by a distinct combination of raw materials, the design philosophy and the expectations of the client. It is therefore very difficult to make comparisons between blast furnaces. But just by seeing this facility once you can tell that it is different in terms of scale. More importantly, BF-7 is equipped with all appropriate safety features, in full compliance with Russian requirements applicable to metallurgical operations. Many other metallurgical facilities dim in comparison to the size of BF-7 and the extent of modern technology it utilizes. NLMK can be truly proud of its new and modern facility. And Paul Wurth, in its turn, will take pride in it as one of its latest and most advanced designs.

**Q: Please tell us more about the various processes and equipment proposed by Paul Wurth for BF-7? How would NLMK benefit from their use?**

**SK:** Firstly, it is the design of the blast furnace. It is a free-standing furnace utilizing modern refractory and cooling solutions which include

copper cooling plates and a thin-walled riser equipped with closed-circuit cooling systems, and a most advanced air supply system for cold air blasting. This will ensure high operability and a long service life. An up-to-date charge make up solution, bell-less top charging, pulverized coal injection, reliable hydraulic equipment at the foundry, multiple process data recorders and a top notch automation system employing mathematical models and the Sachem expert system will ensure BF's sustained performance in line with expectations and contract requirements.

**Q: What will be the environmental impact of BF-7 operations? Can you really say that you have done your best and have employed the most effective methods to minimize the blast furnace's environmental footprint?**

**NM:** The project utilizes all the best available technology to protect the environment. Dry scrubbing of waste gases is performed in a high-efficiency tangential cyclone installation which is followed by wet scrubbing. This approach helps to reduce significantly the amount of dust collected during wet scrubbing. The dust which gets separated in the cyclone can be further processed at the sintering plant for further use in the blast furnace. This will reduce the amount of waste requiring recycling or disposal. The bell-less top charging system employs nitrogen for secondary pressure equalization, and this helps reduce atmospheric emissions of contaminated blast furnace gas. A silencer is used to reduce noise generated by the pressure equalization equipment to acceptable levels. The cast house air cleaning system was designed in such a way so as to provide a comfortable working environment. The use of blast furnace gas to generate electric





power is a distinctive feature of the environmentally friendly operation of the new facility.

**Q: Did Paul Wurth gain any new experience from the project?**

**NM:** Absolutely, we have gained and continue to gain new experience and expertise from the Lipetsk project. This is part and parcel of our business – one never stops learning while implementing a project. For example, compliance with the requirements imposed by Rostekhnadzor (Russian engineering regulator) was an important challenge for the Paul Wurth team, and is one of the lessons learned from this project.

**Q: What are your plans for further cooperation with NLMK?**

**SK:** We are currently building pulverized coal injection installations for blast furnaces Nos.



3, 4, and 5. The same technology will later be installed at blast furnaces Nos. 6 and 7. We see potential for further upgrades of blast furnaces, coke chemical operations and sintering facilities. Some of our technology and solutions can obviously help the

Lipetsk operation become more profitable, more energy efficient and environmentally safe than it currently is. In addition, once the new BF-7 facility is started up, a regular exchange of information will become the basis for expanding our cooperation even further. 🚀



# Young Leader is a Proud Name

NLMK Group businesses have concluded the Young Leader contests, which aim to identify and support talented workers under 35 years of age and create an environment for their professional and career advancement.



NOVOLIPETSK. YOUNG LEADER CONTEST. FINALE

**A**t Novolipetsk the contest was timed to coincide with the 50th anniversary of the first manned space flight. Some 737 contestants participated in the qualifying round, but only 12 of them made it to the final round, held at the Lipetsk Palace of Culture. They faced the challenge of displaying their debate skills and erudition and the ability to be a team player while maintaining their distinct individuality. In other words they had to prove that they are

leader material in front of a huge audience of spectators and fans. Mr. Alexander Trunin, Deputy Division Chief and Head of Technology Management Office, fared best in the tests and won the contest. Second place went to Mr. Maksim Panarin, Unit Foreman at the Water Supply Shop, and Ms. Natalya Lipskaya, Programmer, was the third runner-up.

Novolipetsk has been holding such contests since 2005, and since then more than 90 finalists

have been included in the database of promising employees.

VIZ-Stal was holding the contest for the second time and this may explain why the competition was so intense. The winner had to show great self-control and ability to operate under pressure. Mr. Dmitry Ananyin, Process Automation Unit Foreman, was able to display these qualities and combine them with a wonderful sense of humor, winning first place. Second place went to Mr. Alexey Malyshev,



VIZ-STAL. YOUNG LEADER CONTEST. A CHALLENGE



NOVOLIPETSK. ALEXANDER TRUNIN, WINNER OF THE YOUNG LEADER CONTEST





VIZ-STAL.

YOUNG LEADER CONTEST  
WINNERS (FROM LEFT TO  
RIGHT): ALEXEY MALYSHEV,  
DMITRY ANANYIN, VIKTOR  
SYCHEV, AND IVAN SINITSYN



ALTAI-KOKS. YOUNG LEADER CONTEST. A CHALLENGE

Electrolysis Operator , Gas Shop.  
Mr. Viktor Sychev, Electronics  
Engineer, and Mr. Ivan Sinitsyn,  
Heat Treater, Rolled Products and  
Pipes, shared third place.

At Altai-Koks the audience  
held their breath to hear the  
name of the winner. It was Mr.  
Anton Bukin, Operator at the  
Coking Shop. Ms. Olesya Prosova,  
Personnel Training Engineer,  
won second place, and Mr. Alexey  
Chirkov, Traffic Controller at  
the Railway Shop, came third.  
Tatyana Kunina, an accountant,



was awarded the Spectator's  
Choice prize.

And of course, there were no  
losers in this contest of  
intelligence, youth and energy.  
Every participant may be  
considered a winner, if only for

daring to stand up to the  
challenge. The contestants have  
made new friends, enjoyed an  
exciting experience, and have  
proved to all that they can be  
leaders notwithstanding their  
young age. 🍀

ALTAI-KOKS.

WINNERS OF THE YOUNG  
LEADER CONTEST: OLESYA  
PROSOVA, ANTON BUKIN,  
AND ALEXEY CHIRKOV



## AUTOMATED TRAFFIC CONTROL

**Within the framework of its project to automate traffic control operations Stoilensky has successfully completed start-up and adjustment activities for the data collection and processing server. A total of 124 vehicles, from buses and passenger cars to specialized mining vehicles, have been equipped with on-board systems, including controllers, sensors, wiring, antennas and safety devices.**

All of this has allowed improving controls over vehicle operations through continuous monitoring of vehicle locations and movement, fuel consumption and proper use. After reviewing the data Stoilensky was able to reduce equipment down-time, lower maintenance costs and increase the effectiveness of its vehicle fleet operations. Unit consumption of diesel fuel was reduced by almost 9% compared to last year, and the savings covered half the cost of the project.

Another 116 transportation and specialized vehicles are expected to be linked to the automated traffic control system in the near future. ■



## MODERNIZATION COMPLETED AT SAL-7

**VIZ-Stal completed comprehensive modernization of the SAL-7 Straight Annealing Line. This will improve the consumer properties of steel products.**

The cost of the project was around RUR86 million (~\$3 million; €2.1 million) and involved a complete refurbishment of the strip

cooling and drawing system, the installation of a heat straightening roller, and the implementation of a system for on-stream measuring of the magnetic properties and features of electrical insulation coating.

The final stage of the project was the installation of a new machine for applying electrical insulation (magnetoactive) coating, which will improve the dielectric properties of steel. ■

## NEW ARRANGEMENTS AT THE OPEN PIT

**Construction work continues in the Stoilensky open pit on a new mining transportation system. The goal: to increase the scale of stripping operations.**

The plan is to construct a new railway station, Otvalnaya, at the western edge of the pit some 40 meters above the existing Alexandrovka station. This will allow stockpiling more overburden without occupying additional space.

The Otvalnaya station is already equipped with a railroad track. Overhead conductor wire supports are being installed and work is also under way on connector spans between Otvalnaya and Zapadnaya, and Otvalnaya and

Alexandrovka stations, and the access tracks to the tiers on the western dump. The new system also involves setting up a railway post at the +210m mark, to enhance the productivity of the



mining transportation equipment. Its primary purpose will be to separate the traffic for the removal of the Strelitsa motor dumping site, which will be completely removed by rail. ■

## INSTALLING A NEW MILL

**Equipment installation for the new Reversing Cold Rolling Mill at VIZ-Stal is well under way. The mill will have a capacity of 75 ktpy and is intended to play an important role in the production of high permeability steel (HPS).**



The RUR1.4 billion (~\$48.5 million; €34.9 million) project is being implemented jointly with Andritz Sundwig (Germany). It is one of the major elements of the plant's Technical Upgrade and Development Program. It will boost NLMK Group's HPS capacity from 60,000 tonnes, currently produced at the Lipetsk site, to 130,000

tonnes. Most of the larger units of the new rolling facility have already been installed, including the stand, the decoiler, two reversible coiling machines, delivery lines and carts for loading and removing coils, and several smaller units. A team of eight experienced rolling-mill operators is being trained to operate the new equipment. ■

## UNDER ONE ROOF

**An important development has taken place at VIZ, where the metalware shop, including the cutting and stamping units, as well as the resistance welding and powder coating units have moved to the tub and sink shop.**

At its new location all the metalware equipment has already been installed and renovated, and a new powder coating line has been procured.

A continued process was impossible at the original location: degreasing and

welding were performed on the first floor, while the coating was applied on the second floor. Now the whole process is concentrated in one place, precluding downtime and transportation costs associated with the delivery of components from one shop to the other. ■



## A MACHINE FOR THE WELL

**High precision screw cutting lathe delivered to mechanical shop at Stoilensky's drainage well.**

The lathe is designed to perform a variety of turning



operations and to cut metric, inch and modular threads. The machine is capable of processing parts up to two meters in length at great speed and with good quality. The new machine will be operated by Ivan Shokov, an experienced turner who has devoted several decades to his profession. ■

## EXPANDING THE PRODUCT MIX

**Berezovsky begins manufacturing new products – # 14 and # 16 coiled reinforcement bars in two different strength grades: the A400 hot-rolled bars and the A500C thermo mechanically treated bars.**

"This is a challenging shape and we had to resolve a number of issues in order to start producing it.

The first batch has been shipped to the construction of Olympic venues in Sochi. There is strong demand in the market for coiled bars, and many businesses are equipped to handle coils," said Evgeniy Gurban, Director of the Berezovsky Rolling Shop. Earlier the Company had launched the production of 6 to 12 millimeter bars.

NSMMZ is currently the only factory in Russia that reliably produces A500C TMT bars in coils

in the 6 to 16 millimeter diameter range. In the future the business intends to produce the full product range in order to target a larger segment of consumers. ■





# The Tin Illusion

**What do a powerful Ancient Egypt pharaoh and a sophisticated Silver Age artist have in common?** Or an ardent French revolutionary and a mystic symbolist writer from early 20th century Russia? The answer to these questions is most unexpected: they all loved toy soldiers.



A TIN SOLDIER IN A MOLD  
AFTER CASTING

**F**or many people toy soldiers are a very serious thing. They devote all their passion to playing or collecting toy soldiers and are willing to pay a fortune for a good collection. At one point Nicholas I paid 150,000 guilders to the craftsmen of Nurnberg for a scaled-down copy of the Russian army!

On the other hand, there is little doubt that through games humans acquire relevant

experience. On an impromptu battlefield a certain part of the world magically unravels before your eyes as something quite simple and easy to understand. For example, Maurice, Prince of Orange, one of the founding fathers of the Netherlands army, would first practice any military action by playing toy soldiers with his military commanders.

Today, when we mention toy

soldiers, we usually have in mind figurines made of tin, not least because of the famous Hans Christian Andersen tale. However, toy soldiers weren't always made of tin. In 2000 B.C. the children of Ancient Egyptian pharaohs played with soldier figurines made of gold, stone or clay. During the Middle Ages future knights were taught the basics of military craft with visual aids in the form of figurines



**NAPOLEON** AND HIS SON PLAYING WITH TOY SOLDIERS ON A MAP IN THE EMPEROR'S STUDY AT THE TUILERIES PALACE

made of wood, which would depict in every detail the outfits and weaponry of one army or another. Precious metals were also used to make these teaching aids.

Small-sized depictions of saints, things quite remote from the military realm, were the precursors of tin soldiers. The former adorned the headwear of European pilgrims on their journey to sacred places during the Middle Ages. Once the pilgrimage was completed the figurines would be given away to children. Craftsmen took note of the children's delight with the figures of saints and began making tin animals, peasants and, later,

soldiers. Nurnberg became the largest producer of tin figurines and its craftsmen were considered to be the best in Europe, and the city itself gained a close association with tin figurines. In Russia after Peter the Great shops that sold tin soldier figurines were referred to as 'Nurnberg shops'. In the 19th century a special 'Nurnberg standard' for toy soldiers was established, requiring an infantry soldier figurine without a hat to be 32 millimeters tall, while a figurine of a mounted soldier had to be 44 millimeters tall. The famous tin soldier from the tale by Andersen was made in accordance with the

#### THE BRITISH ROYAL HORSE ARTILLERY

(MADE BETWEEN 1893 AND 1946); MUSÉE DE L'ARMÉE, PARIS



**TOY CHARIOT WITH TWO HORSES** (WOOD, BRONZE), ANCIENT ROME, 1-2 CENTURIES A.D.; THE BRITISH MUSEUM



**SMALL CANNON,** A TOY OF THE KING OF ROME (SILVER, METAL), CIRCA 1815, MALMAISON

Nurnberg standard.

Apart from Nurnberg, some French cities also maintained long traditions of making three-dimensional figures from metals. By the 19th century French craftsmen had also developed a standard of their own, which was later adopted as the international standard. The 'French standard' required figurines to be somewhat taller than those made in Nurnberg, with a height of 50 millimeters for an infantry toy soldier, and 60 millimeters for a mounted toy figurine.

In Russia there was no large-scale production of tin figurines

**TOY CANNON, OWNED BY NAPOLEON'S SON** (STEEL, WOOD, IVORY); EARLY 19TH CENTURY; FONTAINEBLEAU MUSEUM



**PAVLOV TOY BATTERY,** BY K. DANILOV





**TIN SOLDIER MADE**  
IN MODERN TIMES.  
A MOUNTED KNIGHT  
OF THE 13TH CENTURY.

before the Russian Revolution. But there were Russian collectors, known for their passionate love for military figurines. Their collections had thousands of pieces and were considered to be some of the largest in the world.

Peter III, who was known for his admiration of the military traditions of the Prussian Army under Friedrich the Great, owned a very impressive collection. Striving to reform the Russian Army in line with the Prussian, Peter started to acquire toy soldiers for demonstration purposes. Eventually he managed to assemble an impressive collection of figurines made of tin, lead, clay and even three-dimensional figures made of cotton wool and held together with powdered sugar.

Peter III's hobby was inherited and continued with great enthusiasm by his son, Paul I, and then grandson, Nicholas I. Some of the most fascinating pieces in the collection of Paul I include tin cannons that are exact replicas of contemporary artillery guns and are capable of firing.

Nicholas I significantly enriched the collection by commissioning the Heinrichsenns, leading Nurnberg

**TOY SOLDIER OWNED BY**  
THE KING OF ROMÉ;  
335 MILLIMETERS TALL;  
MUSÉE DE L'ARMÉE, PARIS



**TOY MAMELUKE, OWNED BY**  
NAPOLEON'S SON; MUSÉE  
DE L'ARMÉE, PARIS



**SWEDISH INFANTRY ATTACK SET; MADE BY V. NUJDIN FOR THE SWEDISH ROYAL COLLECTORS SOCIETY**

craftsmen, to manufacture figurines of soldiers of the Russian army in 1854. The toy regiments of cuirassier guards, hussars, dragoons, and infantrymen, all 60 millimeters tall, arrived in Russia during the reign of Alexander II.

The interest in military figurines in Russia surged in the late 19th and early 20th centuries. Almost every boy and even grown men in affluent families would have their own collections of toy soldiers. However, tin soldiers continued to be

manufactured abroad only, and the prices remained high. Alexandre Benois, famous Russian artist, at the age of 8 a commander of several hundred toy soldiers, remembers: "When it came to tin soldiers, I had a special weakness for those that were more expensive and were something of an aristocracy. These were 'round' and 'salient' figurines, and the cavalry were mounted on their horses and for greater stability were equipped with a brad that would fit into a hole in the mount's saddle. Once dismounted, these riders looked very amusing. All these domestic military types were



imported from abroad and were fairly expensive.”

Alexandre Benois maintained his passion for tin miniatures throughout his life. After the Russian Revolution his collection became part of the toy collection at the Hermitage.

It is common belief that playing with tin soldiers is an exclusively male pastime. Like many other stereotypes this one is also occasionally proven wrong. Lidiya Ivanova, the daughter of Russian Silver Age poet, writer, mystic and philosopher Vyacheslav Ivanov, grew up in an environment where the military theme, to put it mildly, was out of favor. Nevertheless, she claimed that her favorite pastime was playing with tin soldiers. For

hours she would engage in ‘table-top warfare’ with one of her father’s frequent guests, often distracting him from the purpose of his visits. The guest was none other than the prominent symbolist poet Andrey Bely.

After World War II, in Russia as well as elsewhere in the

world, tin figurines became an object for collecting or a means of recreating historical events. This latter sentiment towards tin figurines is shared by historians Mikhail Loshkovsky and Alexander Lyubimov, who in the Soviet Union have made a significant contribution to reviving the popularity of the military history miniatures, as the familiar tin soldiers are officially referred to in academic parlance. When delivering lectures about battles from Russian and foreign history Loshkovsky and Lyubimov would always accompany their presentations with demonstrations using tin figurines. Loshkovsky later demonstrated the same battles to the production crew of ‘War and Peace’ when they were preparing to film war scenes.

The change in sentiment towards tin miniatures encourages the emergence of a large number of figurines other than of military denomination. In addition to warriors and military hardware modern-day craftsmen also create figurines of politicians, historical personalities, or use tin to depict household scenes. Paintings are often used as a source of imagery. In 2000 V. Nuzhdin, a Russian sculptor, made a figure of Emperor Alexander I based on his portrait from the Military Gallery of the Winter Palace, possibly the most famous portrait of the emperor on a horse. A. Mitelev, another Russian artist, used Kotseba’s painting of ‘Suvorov Crossing the Panixerpass’ to create the ‘Suvorov Crossing the Alps’ series. 🇷🇺

**TIN SOLDIER MADE IN**  
MODERN TIMES. A HORSE  
GUARDSMAN WEARING  
1855 UNIFORM.

### Sudden Death

Just like real-life soldiers, their tin replicas can ‘die’ of causes other than battle. One of the worst things that can happen to them is the so called tin plague, i.e. the ability of tin to expand dramatically at temperatures below 13.2 degrees centigrade, when tin turns brittle and disintegrates. If a piece of tin which had been exposed to low temperatures touches another piece of tin which had been kept in a warm place, the latter would also get ‘infected’. And even though tin soldiers are only one third tin and are less susceptible to the tin plague, they should not be exposed to cold temperatures. A sharp fall in air temperature in the storerooms of the Suvorov Museum in Petersburg caused damage to very valuable collections of tin soldiers.



# The Streetcar Story

Streetcars have been around for more than a century and a half, and have long become a part of our culture as well as a reliable means of travel.

**T**he streetcar is the travelling companion of modern-day civilization which emerged with the development of large industrial centers. As they continued to grow, they exposed urbanites to horse-drawn wooden trams, cable cars running on tracks, and steam-powered streetcars.

It is no accident that streetcar systems became the symbols of many cities (e.g. the cable cars in San Francisco, the old electric trams in New Orleans, or the

historic lines in Lisbon), and local authorities are making efforts to preserve them.

The first horse-drawn trams, i.e. a variety of railroad where passenger cars were pulled along tracks by horses, appeared in 1828 in Baltimore in the United States. But even they had predecessors: in the early 19th century, when steam engines were far from perfect and could not generate enough power, certain cargo was carried from one town to another by railroad on

horse-drawn carriages. And long before steam engines, small trams drawn by all kinds of animals had been used in underground mining operations. The modern day streetcars are descendants of these trams.

It is worth noting that the horse-drawn trams turned out to be a rather awkward means of travel in an urban environment. The tracks would project above the ground a good 15 centimeters, becoming a major nuisance for other traffic. It was only in 1852 that the French inventor Alphonse Loubat, living in New York, designed the grooved rail which could be recessed into the pavement and still prevent the wheels of the carriages from skipping off the tracks.

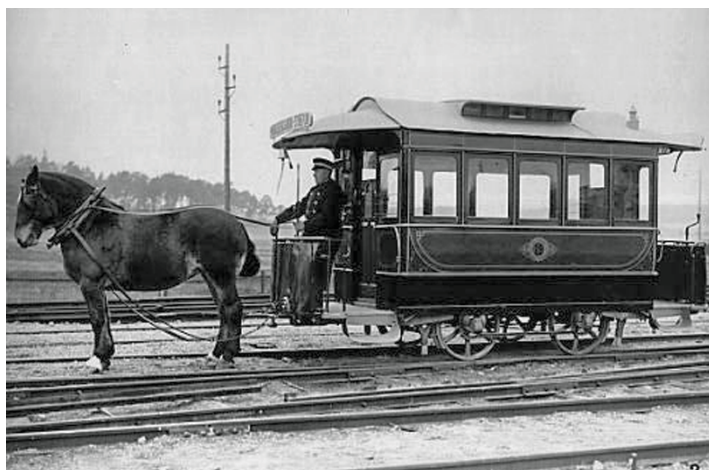
Once the challenge of protruding tracks had been resolved there was no stopping the development of urban railroads. Streetcars were gaining greater popularity from Sydney in the East to Buenos Aires in the West.

As the number of passengers increased, the design of the streetcars changed also. Formerly made of wood and resembling large carriages, from which they had descended, the streetcars began to “dress up” in steel. Eventually the streetcar became one of the most reliable means of transportation and modern full-metal cars can run for more than 40 years. Later the cars gained greater agility, as the first streetcars experienced difficulties with the handling of turns. The greatest remaining challenge was animals used to

**A HORSE-DRAWN TRAM**  
IN LONDON IN THE 1890'S



**A HORSE-DRAWN STREETCAR** IN SWEDEN IN THE LATE 19TH CENTURY





pull the cars. Horses, sometimes replaced with mules, were very expensive: they would tire quickly, fall ill, disobey, soil the streets, and, finally, needed to be fed.

There were some early attempts to run small steam engines in city streets, but these proved to be an inadequate solution in an urban environment.

In the meantime several large European cities started to develop a system of streetcars driven by cables. The design of this system is fairly unsophisticated. A continuously moving cable driven by large reels is laid along the tracks, and the streetcar attaches itself to it using a 'hook' of a special design. Once the car approaches a stop, the conductor would disengage the 'hook' and the streetcar would come to a halt.

The first cable-car line was launched in London in 1840, but the cables available at the time proved to be unreliable, and were soon replaced with steam engines. The idea was then developed by the Americans. Their research helped to design a truly efficient cable system, which later crossed

the ocean on a return journey. The longest cable-car lines were built in Glasgow and Edinburgh, in the northern part of the United Kingdom. Over time the cable-car system in Glasgow was converted into a cable-car metro.

The first electric-powered streetcars appeared almost simultaneously in different parts of the world in the 1880s. In 1881 the famous German engineer Ernst Werner von Siemens built an

electric-powered streetcar line in a Berlin suburb; a similar line was inaugurated in London in 1883; and 1885 saw the first attempts to use electricity for powering streetcars in Baltimore.

A major drawback of the first electric engines was that electricity was supplied via a third contact rail. One can easily imagine the hazard posed by a live bar of metal lying in the street in damp weather. The solution was supplied by

THE 1879 BERLIN TRADE  
FAIR. THE WORLD'S FIRST  
ELECTRIC-POWERED  
RAILROAD BUILT BY  
SIEMENS

STREETCARS IN PARIS,  
LATE 19TH CENTURY







THE SAN FRANCISCO  
CABLE CAR

American engineer Frank Sprague, who invented the trolley pole, a device used to collect current from overhead wires. However, it soon became obvious that the pole was only good at slow speeds because once the speed increased above a certain threshold the pole would disconnect from the overhead wire. Several experiments with a variety of current collectors resulted in the design of the pantograph in 1895,

which soon became a signature feature of every streetcar, including modern ones.

The invention of the pantograph encouraged the proliferation of streetcars across the world during the first three decades of the 20th century. Huge multiple car trains (so called tram trains with the number of cars matching regular commuter trains) were navigating across Tokyo and Seoul, Paris and

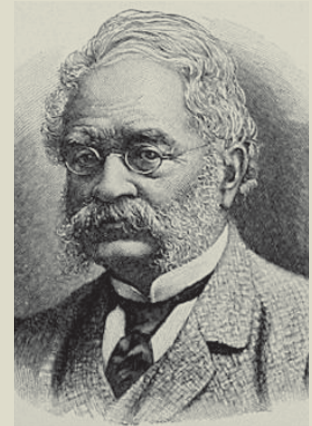
### Streetcar Trivia

■ The first passenger railway car began running in 1807 in Wales between Swansea and Mumbles. The car was drawn by horses, naturally.

■ Streetcars powered by compressed air were running between Paris and its Nantes suburb from 1876. Unfortunately, the need to build large compressor stations to recharge the streetcars and the need to do this frequently doomed the pneumatic system to a quick end.

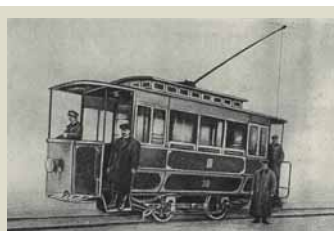
■ The '7:40' song so popular in Odessa describes a steam powered streetcar. At the end of the 19th century these were used to transport passengers in several cities, including Odessa, on account of being more environmentally friendly and less noisy than conventional steam engines.

■ The first full-time electric streetcar line was built in 1879 by the famous German inventor Ernst Werner von Siemens. It consisted of a small four-car train and a locomotive with a 3.5 horse-power engine powered by 150 volts of current supplied



over a third rail. This first streetcar was used to carry visitors at the German Industrial Exhibition.





■ Electric trams were first invented by the Russian scientist Fyodor Pirotsky. Back in 1876 he



tested the method of delivering electric current by rail, and in 1880 his electric engine was used to move a streetcar.

■ The bodies of modern-day streetcars rest on special dual-axle turnable bogies. The gauge of the streetcar track is the same as for conventional railroad tracks, i.e. 1520 millimeters in Russia, and 1435 millimeters in Western Europe. The only exceptions are Dresden and Leipzig, where



the gauges are 1450 and 1458 millimeters, respectively.

■ Apart from passenger streetcars and those used for track repairs and maintenance there are many other varieties. For example, there are special washing trains, or cars used to clear snow off the tracks. In Germany, a vacuum-cleaner streetcar is used to clean the tracks.



Mexico City, Odessa and Cairo.

In the early 20th century streetcars were more than just an urban means of transportation. Their routes were quite extensive: they would travel from one end of the city to the other and even commute to the suburbs, or occasionally connect several large urban sprawls. Belgium still operates the Coast Tram, which runs the entire length of the Belgian North Sea coast. Its streetcars cover a distance of 67 kilometers, 69 stops and 16 cities in two and a half hours. It is noteworthy that in the middle of the previous century a similar system was used to

connect Leningrad and the city of Lomonosov, standing 66 kilometers away on the Bay of Finland.

Even today inter-city streetcar lines are not such a rare sight. In the Upper Silesia part of Poland a system of streetcars runs between 14 cities. In Germany, a specialized streetcar out of Mannheim carries passengers via Heidelberg to Weinheim. And the No. 10 route of the Basel streetcar system will take you to other cities in Switzerland and even to neighboring France.

Still, today's extra-long routes are either the legacy of the golden age of the street car era, or a revival of its past greatness. In the middle of the 1930s the expansion

A STREETCAR IN MOSCOW,  
1917



A STREETCAR IN KOLKATA





A STREETCAR  
IN NEW ORLEANS

of streetcar lines in Europe and the US decelerated, and 20 years later even started to regress. As the population of cities continued to grow there was greater demand for high-speed underground trains and personal cars. From around the middle of the 1950s and for almost three decades operation of streetcars had almost ceased in the United States, Great Britain, France,

Spain, South Africa, Turkey, and other countries. The consequences were immediate: greater street congestion, environmental impact, and costlier public transportation (it is more expensive to build a subway line than a streetcar line).

Canada pioneered a revival in the use of streetcars, followed by European countries, and eventually the United States. All of a sudden it became evident that streetcars can be an efficient means of transportation, especially when combined with subway and train services. Historical routes were resumed in San Francisco, Lisbon, New Orleans, Baltimore and other places, where old-timer streetcars are running and have become a source of sizeable revenues for local governments and a point of cultural interest. 🔄



A FUTURISTIC STREETCAR  
IN STRASBOURG



A STREETCAR IN DUBLIN

## Streetcar Trivia



■ The first graffiti to appear on streetcars were created by prominent artists in the 1920s in the provincial city of Vitebsk. The drawings were made by N. Tsetlin and M. Kogan, the founding fathers of supremacist art and companions of the famous artist Kazimir Malevich.



SCENE FROM A STREETCAR NAMED DESIRE (1951)

■ Apart from the title the word 'streetcar' appears only four times in "A Streetcar Named Desire" by Tennessee Williams. The story involves one of the main characters arriving at her sister's place in New Orleans on a streetcar going to Desire Street in the Afro-American neighborhood of the city. The play was published in 1947, and a year later the streetcar was replaced by a bus.



