

An illustration of a person wearing a white helmet, an orange shirt, blue pants, and a yellow backpack with the 'NLMK' logo. They are riding a red bicycle on a grassy path. In the background, there is a large industrial factory with several tall smokestacks emitting smoke. The scene is framed by green trees and a blue sky with a small yellow butterfly.

NLMK GROUP

Corporate Magazine

1, February 2013

Feature Story: NLMK Europe: an Engaged and Committed Environmental Policy

Energy

Best international
practices in energy use

11

Supply Chain

Seven Steps
to Success

15

Panorama

Forged from Steel

20

NLMK GROUP

Corporate Magazine
No. 1, February 2013

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IN THIS ISSUE:

Company News

2

Grigory Fedorishin Succeeds
Galina Aglyamova as Vice President of
Finance

Sergey Filatov Heads Novolipetsk

NLMK DanSteel Produces Plate for
Off-Shore Drilling Platforms

Feature Story

4

Environment

NLMK Europe: an Engaged and
Committed Environmental Policy

Economics and Production

11

Energy

Intelligent Use

Supply Chain

15

Seven Steps to Success

Panorama

20

Steelmaking History

Forged from Steel

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4

Feature Story

NLMK EUROPE: AN ENGAGED AND COMMITTED ENVIRONMENTAL POLICY



11

Energy INTELLIGENT USE



20

Panorama

LUXEMBOURG THE STEELMAKING CAPITAL OF EUROPE

GRIGORY FEDORISHIN SUCCEEDS GALINA AGLYAMOVA AS VICE PRESIDENT OF FINANCE



Grigory Fedorishin

At the beginning of the year NLMK announced that Galina Aglyamova has decided to step down as NLMK Group Vice President of Finance to take on a new career challenge; in this position she was succeeded by Grigory Fedorishin, formerly Director of Strategy and Business Development

Ms. Aglyamova was appointed NLMK Group Vice President of Finance in 2006. Prior to that she served as NLMK's Deputy General Director of Economics and Finance. With Ms. Aglyamova as the head of NLMK's economics and finance, the company has reached a truly global status, doubling its asset value. An efficient financial strategy ensured NLMK's stability and supported its dynamic development through the crisis.

Commenting on her decision to step down, Ms. Aglyamova said: *"It has been a great honour to be a part of the*

NLMK team – they have become more than co-workers to me. I am truly proud of the fact that over my years as the head of NLMK's finances the company has transformed into a global leader. I would like to thank all my friends and colleagues for our productive cooperation."

NLMK Chairman of the Board of Directors, Mr. Vladimir Lisin, said: *"I would like to thank Galina Aglyamova for her significant contribution to the development of the company. Over her years with the company, NLMK has gained and retained the status of one of the most appealing investment cases in the metals and mining industry. I would like to separately acknowledge Ms. Aglyamova's work as Head of the Coordination Committee that managed NLMK Group companies' performance during the crisis of 2008-2009."*

Grigory Fedorishin, formerly Director of Strategy and Business Development and Member of the Management Board, will take over as NLMK Group Vice President of Finance. The new appointment displays NLMK's commitment to ensuring management succession by continuing the implementation of its strategy aimed at boosting the company efficiency.

Mr. Fedorishin said: *"NLMK Group has always distinguished itself by a unique combination of efficiency, long-term growth and business model sustainability, including financial stability. My key goal is to retain and develop this blend."*

Commenting on the change in the management team, Oleg Bagrin, NLMK Group President, said: *"I am convinced that Grigory Fedorishin, possessing practical experience in financial management, strategy development and business process optimization at NLMK, will be able to leverage it to further promote business efficiency, which is becoming the pillar of the Group strategy."* ■

Read an interview with Grigory Fedorishin in the upcoming issue of NLMK Magazine

SERGEY FILATOV HEADS NOVOLIPETSK

Igor Anisimov has decided to step down as NLMK Senior Vice President, General Director, to move on to a new appointment



Sergey Filatov

Following which NLMK announced changes to its management structure. Under the new structure, the position of Senior Vice President - General Director was abolished, and the position of NLMK Managing Director was introduced.

Sergey Filatov, former Deputy General Director for Production and Technology, has been appointed to the position of Managing Director. He will be in charge of managing all production, technical, and repair and maintenance operations at NLMK's Lipetsk site.

Commenting on the change in the management team, Oleg Bagrin, NLMK Group President, said: *"I would like to thank Igor Anisimov for his major contribution to the development of the company. He has overseen a number of projects, the most significant being the construction of Blast Furnace #7. At the same time, I have every confidence that Sergey Filatov, with his extensive practical experience in steel production management and process streamlining, will continue to work on boosting NLMK's efficiency."* ■



NLMK DANSTEEL PRODUCES PLATE FOR OFF-SHORE DRILLING PLATFORMS

NLMK DanSteel A/S, a Danish rolling mill of NLMK Europe Plates, has started production at a new 4.2 m heavy plate stand adding new products to the company's portfolio.

The project worth of €100 million was a part of the company's strategy to leverage its strong position in the plate markets.

Igor Sarkits, NLMK Europe Plate CEO says: *"This milestone development supports our strategy to capture long-term growth in our key markets by expanding market share, introducing new products, more efficiently using sales channels and marketing as well as building our capabilities."* The new mill is designed for wider range of plates between 5-200 mm in thickness and widths of up to 4,000 mm. This expansion widens our product portfolio making the company a "one stop shop" for the customers from a variety of sectors including from the new high growth markets like off-shore drilling platform manufacturers and the off-shore wind sector. ■



NLMK EUROPE: AN ENGAGED AND COMMITTED ENVIRONMENTAL POLICY

DELPHINE BERNARD

In a constantly changing world, where competition is stiff, the secret of success is to create organizations that are able to adapt; where a culture of continuous improvement and service excellence dominates at all levels. NLMK Europe understands this concept and is committed to improving its environmental performance. This article takes a look at some of the things we are doing.

One of NLMK Europe's strategic objectives is to be a responsible company, while continuing to improve performance. *"We are developing a culture of continuous improvement at all of our sites. Our business plans have been developed based on this key strategic*

principle," notes Horacio Malfatto, CEO of NLMK Europe.

Each of our European businesses has an environmental strategy based on the international ISO 14001 standard. Our environmental teams aim to guarantee that everything possible is done to prevent



▲ Horacio Malfatto,
CEO NLMK Europe



▲ Igor Sarkits,
CEO NLMK Europe
– Plate



▲ Ben de Vos,
CEO NLMK Europe
– Strip Products

pollution, ensure that the business is compliant with applicable legislation and regulations, and that the approach taken adheres to the principle of continuous improvement. In France, NLMK Strasbourg has been ISO 14001-certified since the end of the 1990s, and NLMK Coating since 2001.

DEVELOPMENT OF ENVIRONMENTAL PRODUCTS

“Steel has real potential as an environmentally-friendly product, since it can be recycled indefinitely. Our ambition is to develop steels which have a small environmental footprint,” explains Ben de Vos, CEO of NLMK Europe – Strip Products.

NLMK Europe is already developing steel grades with improved mechanical properties (for example, high-strength steels and highly abrasion-resistant steels), and will continue to innovate in this area in the future. *“These product ranges allow the construction of lighter-weight high-power machinery and equipment, reducing overall greenhouse gas emissions,”* explains Igor Sarkits, CEO of NLMK Europe – Plate. *“Cars built with the advanced steel grades that we have developed*

are safer, lighter, and have lower emissions levels,” says Giuseppe Pratolongo, CTO of NLMK Europe – Strip Products.

CONSOLIDATING OUR LEADING POSITION

In Belgium, NLMK Clabecq will soon obtain ISO 14001 certification. *“We want to enhance our image as a socially-responsible company in the eyes of both our employees and residents of the surrounding area. ISO 14001 certification would consolidate NLMK Clabecq’s place as the leader in the production of plate,”* explains Igor Sarkits.

Everyone at NLMK Europe is committed to an environmental approach. Sub-contractors are also part of this effort, and are helping to reduce our impact on the environment. NLMK Europe is looking to develop a responsible and sustainable approach to meet the requirements of its shareholders, its customers, its staff, and the local environment. By the end of 2013, the total amount invested by NLMK Europe in environmental sustainability projects will reach €15 million.

NLMK Europe’s Environmental Policy

- Sustainable development as a balance between environment, economy, and society
- Complying with environmental protection regulations
- Continuously improving our environmental performance, including always acting responsibly towards our neighbors, preventing as far as possible any harmful environmental impact, and where some emissions are unavoidable, reducing levels of air, water, noise, and soil pollution
- Developing, implementing, and improving production methods which have minimum environmental impact
- Developing and manufacturing products which incorporate environmentally-friendly features in terms of usage and recycling
- Effective use of natural resources and energy
- Eliminating waste
- Optimizing the use of our co-products and eliminating final waste
- Commitment of every employee, and particularly of management, to environmentally-friendly production
- Encouraging environmental awareness through information and training
- Communicating with all interested parties

Environmental projects completed/ in progress:

- Involvement in a **participatory, continuous improvement approach** (5S, TPM, 6SIGMA, etc.) at NLMK La Louvière, NLMK Coating, NLMK Strasbourg, NLMK Clabecq, NLMK Verona
- Obtaining/maintaining **ISO 14001 environmental certification** at NLMK Strasbourg, NLMK Coating, NLMK Clabecq (in progress), NLMK DanSteel A/S
- **Waste management** (optimization of waste sorting) at NLMK La Louvière, NLMK Strasbourg, NLMK Coating, NLMK Clabecq, NLMK Verona, NLMK DanSteel A/S
- **Noise reduction** (cladding, acoustic panels) at NLMK La Louvière, NLMK Clabecq, NLMK Verona, NLMK DanSteel A/S
- **Improving energy efficiency** (investments, energy balance sheet) at NLMK La Louvière, NLMK Coating, NLMK Strasbourg, NLMK Clabecq, NLMK Verona, NLMK DanSteel A/S
- **Prevention of soil pollution** (sealed plates) at NLMK La Louvière, NLMK Clabecq, NLMK DanSteel A/S



End of 2009: new pusher furnaces help improve product quality still further

REDUCING OUR IMPACT ON THE ENVIRONMENT

Environmentally-friendly use of resources and minimizing energy consumption have become priorities for the Group. NLMK has invested, particularly in Europe, in improving its environmental performance.

Through its environmental policy, NLMK Europe has sought to change the way it operates. Improved energy efficiency allows the economic, environmental, and social costs associated with energy consumption to be reduced.

The European organization has better technology at its disposal, allowing it to modernize its facilities and optimize the environmental and energy-efficiency performance of its production systems. *"We have increased the potential for energy savings through targeted modernization and optimization of our facilities. This has allowed us to reduce operating costs and to reassess the efficacy of our tools,"* explains Horacio Malfatto, CEO of NLMK Europe.

REDUCING NATURAL GAS CONSUMPTION

Improving our environment and reducing energy usage are priorities for NLMK Europe. NLMK La Louvière, NLMK Clabecq, NLMK DanSteel A/S and NLMK Verona have all invested in new reheating furnaces for slabs and ingots.

At Clabecq, the new furnaces have contributed to better control of slab heating temperature and to a reduction in the specific consumption of natural gas. The burners in the new reheating furnaces are of a special type known as 'on/off'. *"The system is designed to save natural gas. Once the set temperature has been reached, the burners go out. The heat in the furnace is produced by flameless combustion (70% of the flame lies in the infrared spectrum, where it is not visible). The burners switch on again when the lower temperature limit is reached. This type of burner produces lower nitrous oxide emissions during the combustion of natural gas. This system is one of the most advanced in Europe,"* explains Pierre Gilson, Environmental Coordinator of NLMK Clabecq.

At La Louvière, a new walking beam furnace has been installed to replace a pusher furnace. This tool has been designed using improved technology, resulting in a 39% decrease in natural

gas consumption, and improvements in quality and production.

"The installation of a new furnace has made a huge contribution towards improving energy efficiency, as well as bringing about a considerable reduction in greenhouse gas emissions," comments Kenny Schoutteten, Environmental Coordinator at NLMK La Louvière. Natural gas consumption in the second furnace has also been reduced from 1.8 to 1.4 GJ/t (gigajoule/tonne) following maintenance work.

At Verona, new high-efficiency reheating furnaces have replaced the old ones in the rolling mill area. A walking beam furnace for slabs up to 400 mm thick, with modern burners and three batch furnaces for ingots, has reduced gas consumption by 30%, with a similar reduction in CO₂ emissions. Efforts to reduce the energy consumption of the electric arc furnace have already resulted in a reduction from an average of 430kWh/t to 400kWh/t, and work continues to improve these figures still further.

"With the new furnaces in the rolling mill area, we have increased production and reduced CO₂ emissions and specific consumption of natural gas. Thanks to these investments, we are able achieve more uniform reheating of high value-added steel and at the same time reduce our facility's environmental footprint," comments Federico Musoni, Environmental Coordinator at NLMK Verona.

At NLMK DanSteel A/S, a new plate mill from SMS Siemag was introduced in 2012, with installation work completed in less than two months. The rolling mill is intended to produce high grade plates up to 4 m in width and 30 m in length, with gauges of between 5 and 200 mm, and is the most modern rolling mill in Europe. The plant also has a new grinder and roll shop, as well as a new hot leveler from Siemens. The two heating furnaces have been rebuilt to enable them to handle the new sizes and are currently being optimized. NLMK DanSteel A/S is continuing to work on reducing energy consumption and will optimize the benchmark for kWh per tonne of steel plate as well as for the consumption of Nm³ natural gas per tonne of plate once the new machinery has been in operation for a period of time.

The new rolling mill is more environmentally friendly than the previous fifty-year-old rolling mill, which has now been sent for recycling. The new mill considerably reduces the amount of oil spilt into the cooling water and waste water systems.

By investing in these types of equipment, the companies have underscored their commitment to increase high value-added steel production while also incorporating environmental considerations into all of their projects. These investments have proven to be very effective in reducing energy consumption and air pollution.



MANAGING WASTE WATER...

In most industrial manufacturing processes, a significant proportion of the water consumed is discharged into the surrounding area. Certain types of waste water must be properly processed due to the variety of potential pollutants present. At NLMK Strasbourg in France, rainwater was previously collected in a sump and released into the River Rhine. Preventing the discharge of liquid waste into watercourses is one area of environmental policy where the company has made significant progress.

Over the last two years, NLMK Strasbourg has improved its ability to collect and process rainwater and road runoff to better protect the groundwater. Two reservoirs for recovering water, one 810 m³ in size, and the other 170 m³, have been constructed. *"The project involved linking up the old sumps and all the man holes (openings to the sewers) to the two recovery basins (called pools) belonging to NLMK Strasbourg. Everything has been channeled: the rainwater and road runoff is recovered, then treated in a sedimentation tank and a degreaser (installed under the road), before being released clean, with all hydrocarbons and suspended substances removed, into the open basin of the port via a flow limiter,"* explains Bertrand Lachaud, Operations Manager.

...TO PROTECT THE ENVIRONMENT

As part of a comprehensive management strategy for its cooling water circuits, NLMK La Louvière intends to construct a new treatment facility for waste water from hot rolling.

The project will be implemented in two phases. *"The first stage will allow us to comply with legal environmental requirements and with international standards in our sector,"* explains Kenny Schoutteten, Environmental Coordinator at NLMK La Louvière. Filtered backwash waters will be sent to a new water treatment facility with reuse of purified water.

The second phase will introduce improvements to the interior of the hot strip mill *"in order not to clog the heat exchangers and ensure that they can operate at full thermal power,"* explains O. Alonso, Maintenance and CAMM Project Coordinator. A supplementary sedimentation system will be installed before the filter bank to eliminate suspended particles from the water.

In the end, this project will enable the company to meet environmental requirements by ensuring that the water is of better quality and that it is better managed. It will also contribute to a reduction in maintenance costs and downtime. The first stage is scheduled to start by the end of 2013.

Between the end of 2008 and 2010, NLMK paved and sealed about 40,000 m² of external area and built a system to collect and treat rainwater before it is discharged. Now, rainwater which falls on the site is first treated in the new facility and then undergoes chemical analysis before being discharged.





Parameters	Emission concentration level for NLMK DanSteel's new water treatment plant µg / l	Maximum emissions level Kg / year	Drinking water quality for supply to private households µg / l
Lead, Pb	3	1.5	5
Cadmium, Cd	0.5	0.25	2
Chromium, Cr	6	3	20
Copper, Cu	22	11	100
Nickel, Ni	15 (soluble)	7.5 (soluble)	20
Zinc, Zn	100	50	100

NLMK DanSteel A/S is to begin operating a new rolling mill with cooling water cleaned in a brand new water treatment plant from Sideridraulic in Italy. The new plant was required because the new rolling mill from SMS Siemag demands very clean makeup water for the cooling process. The plant is equipped with all the necessary additives to adjust the pH, the hardness, and so on. After the mill scale has been separated, the water runs through six filters containing sand and walnut shells, and is cooled in six cooling towers. Before blowdown, some flocculent is added to settle down the sludge. A belt filter press scrapes filter cakes out into a container for recycling.

The Danish environmental authorities have confirmed that the rolling mill and water treatment plant comply with the new European legislation on waste water quality. This requires several calculations to determine the concentration of various heavy metals in the recipient Roskilde Fjord and the quality of the blowdown water. Some of the limits on heavy metal content for the water in Roskilde Fjord are stricter than the requirements for drinking water in Denmark! Nevertheless, the water can be cleaned according to these very high requirements. The table above shows the requirements.

NLMK DanSteel A/S takes a very careful, responsible attitude toward environmental issues. The company has achieved ISO 16001 certification for its energy management system and the ISO 9001 certification for quality management. The company expects to achieve ISO 14001 certification for its environmental management system in the near future.

Through these investments, NLMK Europe is contributing to the purification of water and monitoring protection of the natural environment.

DISCHARGING, A SOLUTION FOR SOIL PROTECTION

Soil is a natural resource. It is subject to degradation (erosion, pollution, etc.). Such problems need to be diagnosed so that preventative measures can be implemented.

In Belgium, NLMK La Louvière and NLMK Clabecq have improved the management of hazardous products by creating secure storage areas. The two sites have several vats where cold rolling acid, oils and greases, and other substances are stored. This reduces the risk of environmental damage caused by accidental leakage of acid or other potentially hazardous substances.

Discharging encompasses the technical operations of decanting, unloading, transfer, or transshipment of hazardous or non-hazardous solid, gaseous, or liquid products between two physical units of the same or different type: for example between two trucks, or between one truck and one tanker within the company, or between a tanker and a pipe network, etc.

"This is a risky operation which may harm the environment. Discharging requires a discharging and a prevention area to prevent any environmental pollution. The activities to be taken into account during discharging include safety in and around the discharging zone, the routes used by vehicles transporting the products, and the operations involved in preparing the vehicle or the unit to be discharged," concludes Kenny Schoutteten, Environment Coordinator at NLMK La Louvière.

REDUCING NOISE FOR A BETTER QUALITY OF LIFE

Acoustic impact studies carried out at NLMK La Louvière, NLMK Clabecq, and NLMK Verona have highlighted the major sources of noise, allowing countermeasures to be identified in order to ensure that the sites comply with applicable noise legislation in Belgium and Italy.

Cladding and an acoustic screen have been installed at NLMK La Louvière. *"The latter has allowed noise pollution from the cold rolling plant*

and the substation to be reduced," explains Kenny Schoutteten, Environmental Coordinator.

At NLMK Clabecq, *"we have installed sound-absorbing sandwich panels around the compressor hall. We have installed a low-frequency sound-absorbing muffler on the suction piston compressors. Finally, we have covered the return conduits of the fans in furnace 3 with an acoustic double panel,"* explains Giuseppe Scifo, General Works and Environment Department Engineer at NLMK Clabecq.

"NLMK Verona has undertaken several key measures to reduce noise: we have installed sandwich panels in the new thermal treatment area, insulated the compressor hall, cooling towers, and oxy cutting facility, installed a sound-absorbing muffler in the electric arc furnace stack, and constructed a bank along the perimeter of the site," explains Federico Musoni, Environmental Coordinator at NLMK Verona.

“ Everyone can take action to improve the quality of the environment, protect flora and fauna, and safeguard biodiversity. NLMK Europe has carried out awareness-raising activities to help minimize our impact on the environment. ”

Thanks to these measures, the level of noise has been reduced by 5 to 10 decibels at each of the production sites. That can only help to improve the quality of life of residents living close to the three sites.

Everyone can take action to improve the quality of the environment, protect flora and fauna, and safeguard biodiversity. NLMK Europe has carried out awareness-raising activities to help minimize our impact on the environment. ■



At NLMK Verona



INTELLIGENT USE

YULIA TARANOVA

Alexander Luchnikov, Chief of NLMK's Energy Efficiency Center, discusses best international practice, the Japanese, and ambitious energy efficiency projects

— Mr. Luchnikov, let's talk about the international certificate that the company received in December of last year. Do you believe that this certificate will influence how the plant operates?

— I'd say the certificate is just the tip of the iceberg, the result of our many years of work. We probably won't see any immediate impact, but regardless, it's an important step toward further development. We began to set up our system in

1999. In 2001, we established what was then known as the Resource Efficiency Center as a self-contained entity, and started work on creating the system as a whole. In this, we were generally guided by the Japanese, since it was they who applied – and continue to apply – the most cutting-edge technologies to energy conservation. We also made contact with Nippon Steel to see how they had organized everything, which key indicators they used, and so on.

“ The certificate is just the tip of the iceberg

— Do they do things better than we do?

— On the whole, yes, which is why we look to Japan for guidance in this respect. There are specific points at which plants with the same technological cycle that we have use only coke or coal, and all of their remaining energy is produced using secondary energy resources. Since all steel processes are high temperature in nature, with the removal of a large quantity of heat and secondary fuel gases, the recycling of these emissions allows the Japanese to almost completely avoid having to purchase energy from outside the plant. However, we have a different climate, and in order to heat our buildings, we have to use a good deal more energy. Nevertheless, today we reclaim up to 90% of the secondary fuel (coke and blast-furnace) gases created at our facilities. Going forward, we have a plan to reclaim converter gas for use as fuel.

Capex program achievements, 1999–2012

+19%

Higher energy efficiency

+220%

In-house energy generation using process off-gases

–18%

Lower specific energy intensity per tonne of steel

+90%

Use of process off-gases

— What is this project about?

— It is a promising project from both an ecological and a cost-reduction point of view. Its implementation will allow us to reduce our natural gas purchases by more than 200 million cubic meters per year, which is about 10% of current consumption levels.

In view of the constantly rising prices of energy resources, this project is becoming increasingly attractive from an investment standpoint.

— It's not necessarily true that in-house production will be less expensive; we would need to buy and service the equipment.

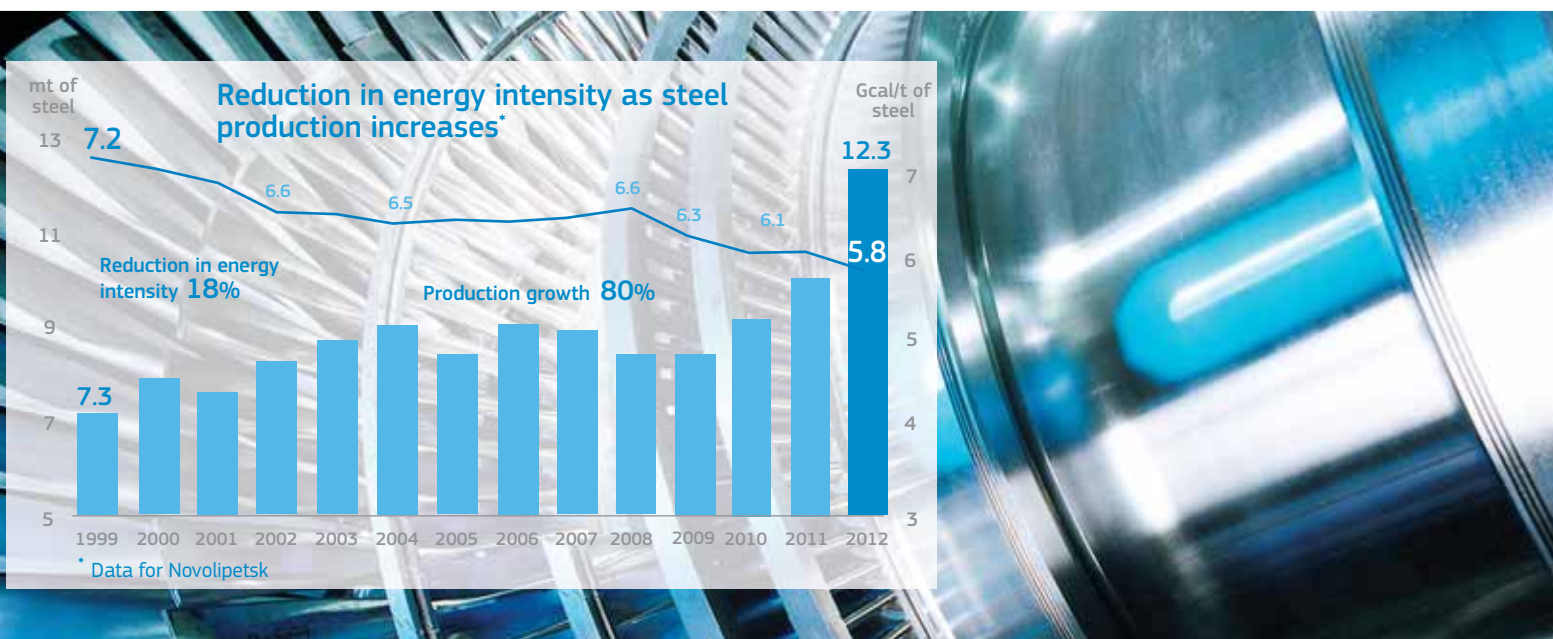
— Yes, we would have to buy the equipment, but buying natural gas and energy from outside sources is becoming quite expensive. Generating our own electricity cuts costs by almost half compared with the energy we buy from outside sources.

— Overall, what proportion of our production costs goes toward energy resources?

— Currently, it's around 30%. After the new recovery facility was launched as part of the Blast Furnace #7 complex, the proportion of our electricity which we generated ourselves increased to 53%; 72% of that electricity was produced using process off-gases. Our goal is to use the secondary energy resources we have on hand as much as possible and to minimize outside purchases.

— That is, to substantially reduce the amount of electricity we buy?

— Yes, to a large extent, of course, natural gas and electricity are the energy resources which we buy. We are aiming to achieve an increase in the generation of our own electricity and a reduction in external purchases, and to include as many off-gases as possible in our fuel balance in order to also cut our natural gas purchases. Again, when we reduce the amount of steam and heat used, we are indirectly influencing natural gas purchases because our Cogeneration Plant and Recovery Cogeneration Plant use natural gas as fuel.



— Are there any specific goals for this reduction?

— We did a great deal of work with our European colleagues. We wanted to know what level could be achieved if we used the best available technologies and the best practices for increasing energy efficiency based on existing equipment. We determined the viable reduction in energy consumption for each process stage and across the enterprise as a whole. We plan to reach 5.6 gigacalories per tonne of steel by 2020.

— What is our current figure?

— Right now, we're working at the level of 5.86 gigacalories per tonne of steel.

— Where has the 5.6 mark already been reached?

In Japan, Western Europe, and a number of US plants.

— What was our level five years ago?

— In 2008, steel energy intensity was 6.62 gigacalories per tonne. The smaller that number is, the higher the efficiency of our energy usage – or, to amplify that, we could say that the smaller the number, the less energy is expended on product manufacturing.

— Let's return to the certificate for a moment. We've received it. What's next?

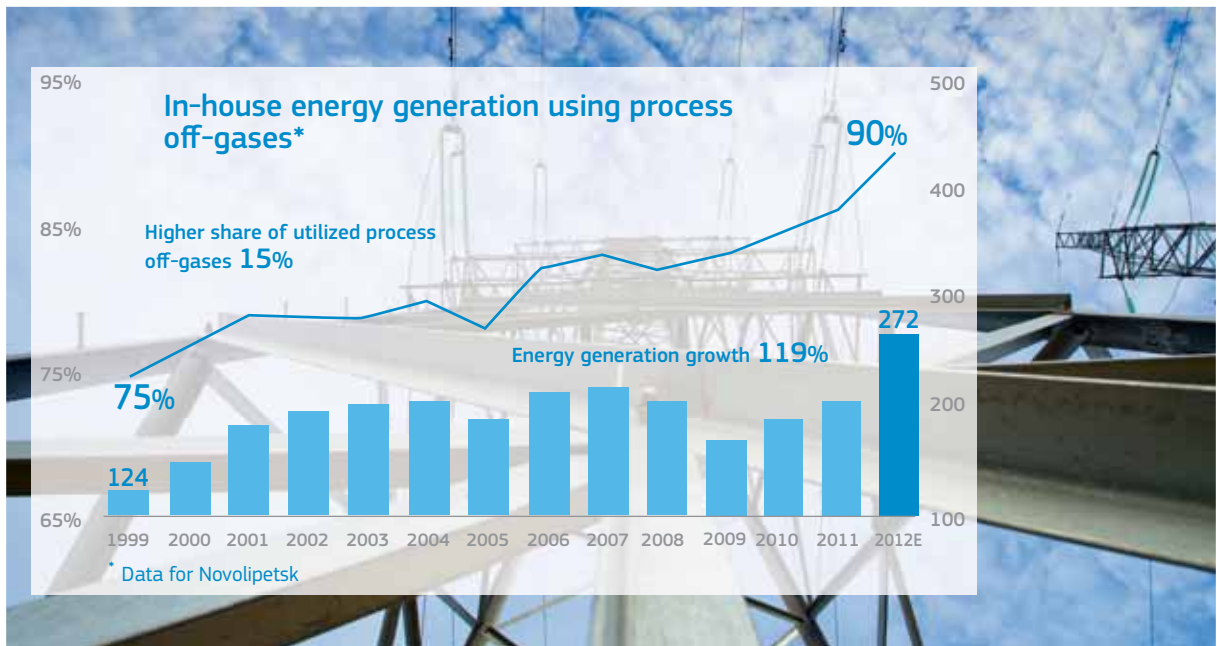
— Now we're going to improve the system we've built by working with plant employees, involving staff in a

process of continuous enhancement, and developing additional measures to increase energy efficiency. We are currently working hard on searching for new technologies, and we're placing an emphasis on recycling production resources, among other things, in order to use as much of them as possible and thereby reduce our energy dependence. We also can't forget the human factor because efficient energy use depends on how efficiently our process staff work, their attitude towards their work, and their understanding of it.

— What specific steps had to be taken to obtain the certificate?

— There are certain rules, or a procedure, for undergoing a certification audit, with three major stages involved. First, we conducted a pre-audit in conjunction with TÜV SÜD: their experts came to us and looked at what we had and how the current system operated at the plant, and they gave us recommendations. The main thing we had to do was to prepare standards documentation, since we had already previously met the key energy efficiency requirements. Additional standards relating to energy management were added to those already in place.

That was the second part of the preparation process, and it was the most crucial and labor-intensive. Then came the audit itself, which consisted of an informational visit, following which the departments to be audited were selected; then the direct work between the auditors and plant began. At first glance, there was nothing difficult about it: we drew up the documents, and they conducted the audit. No big deal! But actually, we put in a lot of effort.



Thanks to the professional skills of the employees in the departments involved, this work was done extremely well, which was noted by the German auditors from TÜV SÜD.

— How is a shop's energy efficiency measured?

— Every week, we conduct what we call an operative analysis. The shop works for a week with set indicators: it produces the prescribed product volume and uses a certain amount of energy. We compare the amount of energy we had planned for it to use with the amount it actually used. Then we start to look at whether there are any positive or negative deviations. If there is a negative deviation, we see how big it is. If the deviation is significant – that is, more than 2–3% – we might need to make corrections to the standard: the shop uses less energy than we had stated. If there's a positive deviation, we figure out the reasons for it. For example, there might have been equipment downtime, additional metal processing, and so on. These reasons are examined in detail, and measures are taken to eliminate excess expenditure. Afterwards, we monitor the effects of these corrective measures, to see whether they were the right ones to take. In addition to this global cross-section, shop management analyzes information on how much energy was expended daily.

— If equipment is idle, does it really still use energy?

— Yes, there's still a certain amount of energy used. Often, large machines have auxiliary equipment that uses some energy in one way or another. And there are

individual standards for that segment, specifically for equipment that is idle or warming up.

— Could we say that in light of the climatic conditions, your goal is an ambitious one: to reach Europe's level in Russia's harsh winters?

— Of course. But over recent years, the plant has implemented a lot of interesting and energy-efficient measures: hot-rolled mill product reheating furnaces are in operation, thanks to which we have cut the rate of fuel consumption for slab reheating in half. We have installed charge heaters on lime production kilns in the Refractory Shop, lowering natural gas consumption by 12%. We have built a new hydrogen station – No. 3 – in which classic electrolysis has been replaced with natural gas steam reforming, and power consumption for hydrogen production has been reduced to one fifth of its former size. In the Oxygen Shop, we have replaced a part of the old air separation installations with new ones that have 20% lower consumption rates. At the Cogeneration Plant, we are installing blast furnace air turbo blowers that expend 40% less energy than the old blowers. We have implemented a project to modernize the lighting in the production shops, which has halved energy consumption in those shops. In nearly every production department, we have put projects in place that are aimed at increasing production efficiency with minimal energy resource expenditure. There are many energy efficiency projects in the long-term program for the development of the plant, and we will reach the goal we have set. ■



SEVEN STEPS TO SUCCESS

YULIA TARANOVA

NLMK is anticipating a revolution in its supply chain: the company has launched a new project to change not only the core business processes of procurement, but the Group's entire supply chain philosophy.

Assisting NLMK in this initiative, is A.T. Kearney, a consultancy that has experience in restructuring supply chains for metal and mining companies, in Russia and internationally.

This project will see NLMK changing the way it manages procurement, interacts with its suppliers, builds lasting relationships, and align the overall

performance of procurement to the best in class. Vice President, Procurement Brijesh Garg *"We expect changes in two main areas: establishing lean and efficient cross-functional business processes to achieve bottom-line savings and upskilling our team to maintain this on an ongoing basis. Having led similar projects in other large steel companies I believe we will*

reap all the benefits expected from this project, with the support of our internal customers.”

GREAT EXPECTATIONS

“This project will have a significant impact on cost reductions, which will be far more than the implementation costs,” says Deputy Vice President for Procurement Anatoly Khebnev. *“It is expected that saving will be in the range of 5–7% of the cost of the selected procurement categories. In real terms, this equates to several million dollars.”*

How will this 5–7% saving be achieved, when the price of goods normally only goes up? The impact will primarily be achieved through actively managing demand and reviewing models of negotiations with suppliers and those who use the purchased materials. Experts from A. T. Kearney will analyze procurement business processes and, for each category, will propose ways in which Group purchases can be made more effectively.

“In general, it should be understood that purchases are a key factor in the overall cost structure of any business,” says Principal at A.T. Kearney Maria Arefieva. *“We have high expectations that this project will bring savings in both the short term and the long term, not least since we will train the team and work together with NLMK to ensure that they have the right skills for the future. As a result, we expect to see an increase in efficiency and a greater contribution from the procurement service to strengthening the company’s overall position.”*

VALUE DELIVERY IN SEVEN STEPS

Work is taking place in two areas simultaneously: category management and re-organizing the procurement and the business processes associated with it.

During the first phase, ten categories where the potential for savings was greatest were identified:

these included refractories, fuel, paint, ferrous & non-ferrous metals, and packaging. Why were these particular ten categories selected?

The logic behind the choice of categories is simple.

1. Cost – how expensive it is for the company to procure supplies in a particular category. Expenditure on ferroalloys, non-ferrous metals, paints, rollers, and refractory materials is huge.

2. Market – the market situation in each of these categories is considered, alongside the balance of supply and demand. Can we bring significant benefit to the enterprise in terms of achieving savings?

3. Opportunity – the category selected should offer plenty of opportunities for the company’s own staff to be exposed to as wide a range of approaches as possible, so that they will be able to deploy them independently in the future.

Each of the ten selected categories must go through seven iterative steps – a special methodology developed by A.T. Kearney. According to Maria Arefieva, this enables a comprehensive assessment of the procurement practices and market conditions within the categories chosen. Based on this assessment, an optimal sourcing strategy can be developed, suppliers selected, and a plan for future cooperation with these suppliers drawn up.

Some may wonder why we need a new approach if the previous supply system was working. According to Vice President, Procurement, Brijesh Garg, the use of methodologies like the seven-step strategic sourcing process is useful because it provides a clear understanding of the procurement process from internal needs assessment to selection of and negotiation with suppliers. To put it more figuratively, we should not carry on cutting wood with a blunt axe, just because we have not yet had time to stop and sharpen it.

Strategic and operating processes in procurement

7-step process





NLMK and
A.T. Kearney team

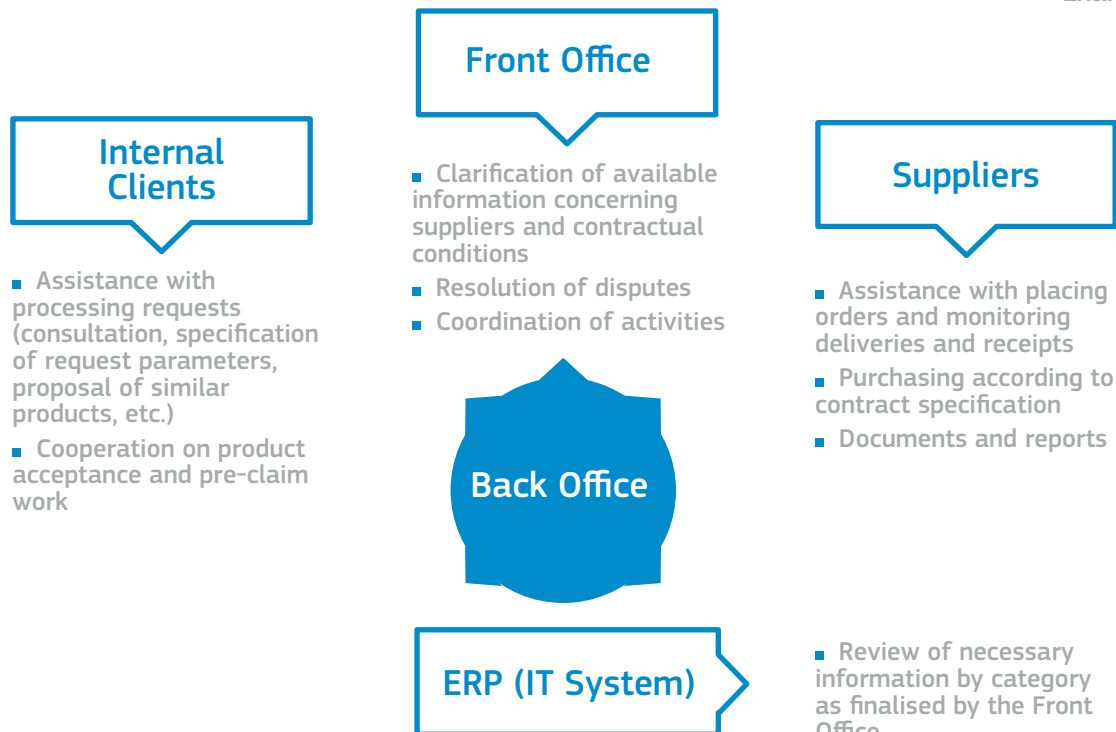
FLEXIBLE ORGANIZATION AND EFFICIENT BUSINESS PROCESSES

The second part of the project focuses on restructuring the organization and supporting processes. The primary objective here is to reorganize supply services: the basic building blocks will be restructured to enable more cross-functional team work. While previously each procurement

division did all of its own work, from negotiations with suppliers to monitoring the execution of contracts, this work will now be divided into front office and back office functions. The front office will develop category strategies and carry out supplier selection and negotiations, while the back office will focus on contract execution and related paperwork – so called transactional work.

Organizational Transformation: How Back Office integrates our Internal Client with Front Office, Suppliers through ERP (IT) system

Example



Source: working group analysis



"The professional skills profile required for each employee will depend on their role and responsibilities," explains A.T. Kearney consultant Maria Shvindt. "For front-office employees, communication skills and knowledge of the market and category profile are the most important, as they will need to negotiate with suppliers. Those in the back office need to demonstrate analytical thinking skills, accuracy, and attention to detail when dealing with large volumes of data."

For each organizational unit, a matrix of responsibilities will be developed. This will avoid

duplication of functions, and will also determine the levels of authority required and how each unit will interact with other departments.

As part of the organizational transformation project, we will break business processes down into their smallest components, and remove any unnecessary or unproductive elements before putting them back together. A.T. Kearney's methodology divides operational processes into eight stages, from request to payment.

'From Order to Payment' Operational Process





A GOOD BUYER IS A COMPETENT BUYER

As part of the project, a 'competency matrix' will be developed describing the set of skills required to perform each role.

The most important procurement competencies are skills, in particular, knowledge of the purchase categories, the ability to negotiate and manage suppliers, knowledge of the procurement process and total cost of ownership methodology (TCO), as well as critical thinking, communication skills, and initiative.

"We will also develop a system of key performance indicators and a motivation plan, which will not be based solely on financial reward, but will also include a clear path toward career growth, learning opportunities, and professional development," says Brijesh Garg.

As part of the project, we will train a team of internal trainers, who will be able to replicate their knowledge and share their experience with colleagues.

WHAT'S NEXT?

This ambitious project will run until middle of this year, but the improvement process will never stop, and it is just the beginning.

"Working in the supply chain no longer means working individually or in silos," says Brijesh Garg. *"It will be about working as part of cross-functional team, whose goal is to constantly look for opportunities to add value and increase process efficiency. This project is just one step in this direction."* ■

Profile

A. T. Kearney is one of the global leaders in strategic and operating consulting, uniting over **3300 professional consultants** in **39 countries** around the world

The company has been working in Russia and the CIS for over **20 years**



FORGED FROM STEEL

The Grand Duchy of Luxembourg is one of the world's smallest countries. Its history and economy are closely tied to the iron and steel industry. This is our digest on the tiny giant of world steel, prepared using materials from Luxembourg's Flydoscope magazine

The first factories appeared in Luxembourg at the beginning of the nineteenth century: in 1828, the Godchaux brothers built a textile plant on the

edge of the capital city, and in the valley of the Commune of Esch, a spinning factory sprang up. Its electricity was supplied by one of the first hydraulic

turbines in Europe, which was built at the same time.

Other companies were created in addition to those belonging to the Godchaux, for example, Villeroy & Boch, which is today a world-famous producer of tableware. However, it was only with the blossoming of the iron and steel industry that the country's economy and culture changed fundamentally.

STEEL AS THE DRIVING FORCE OF A NATION

The steel industry brought Luxembourg riches and fame and was the driving force behind the development of the entire nation.

The most significant innovations in iron ore processing were introduced beginning in 1859. The country's southern regions – the so-called 'Red Lands' around the areas of Esch-sur-Alzette, Differdange, Dudelange, and Redange – were rich in iron ore, which was mined for the blast furnaces. This powerful industry, which saw its heyday at the end of the nineteenth century, drew in people from all corners of Europe. Due to its rapid industrial

“**The steel industry brought Luxembourg riches and fame and was the driving force behind the development of the entire nation**”

development, Luxembourg became a multicultural country: in 1910, 15.3% of the Grand Duchy's population was made up of immigrants.

At the end of the nineteenth century, Luxembourg entered a customs union with Germany. New markets opened, and railways were developed. The government of Luxembourg took special measures to support the development of the country's economy.

“The government adopted a law on licenses for the development of deposits, which mandated the requirement to process a part of the ore at the mining site,” notes Denis Scuto, a historian and professor at the University of Luxembourg. *“These measures facilitated the development of an important economic sector and ignited the spirit of entrepreneurship among Luxembourgers.”*

The high speed of industrialization also stimulated social movements. Workers began to create unions, which exist to this day. That is another important part of Luxembourg's inheritance from its great steel industry past: a unique social model that continues to define social relations to this day.

“This model, which was founded on an alloy of conflict, negotiation, and agreement between unions and businessmen, dedicated to defining the economic path of the country and its businesses, is still functioning and has not grown obsolete. However, it frequently contradicts modern corporate culture, which is becoming increasingly global and

Eight Facts about Luxembourg:

1. The country's official name is the Grand Duchy of Luxembourg. It is the only duchy in the world today.
2. The country has three official languages: French, German, and Luxembourgish.
3. The head of government is the Grand Duke, and the country's form of government remains a constitutional monarchy to this day.
4. Due to its concentration of historic sites, the entirety of Luxembourg City is on UNESCO's World Heritage List.
5. Luxembourg is one of the smallest countries not only in Europe, but in the world. The total area of the Grand Duchy is 2,586 square kilometers. That means that Lipetsk Region (24,100 square kilometers) could hold almost ten countries the size of Luxembourg.
6. Luxembourg has the highest per capita GDP in the world; it is approximately triple the average European GDP.
7. The motto of Luxembourg's national cuisine is “French quality in German portions.”
8. The steelmaker is one of the symbols of this tiny country. During the twentieth century, his image could even be seen on its coins.





The ARBED building, constructed in 1922, is today one of the main tourist attractions in the capital of the Grand Duchy

distancing itself from that kind of worldview,” the historian comments.

THE AGE OF PROGRESS

By the beginning of the twentieth century, in addition to iron ore deposits, the iron and steel sector had more than a dozen plants and about 40 operating blast furnaces. In 1930, out of the 80,000 people capable of working in the country, 40,000

worked in the mining and smelting sector. Steel continued to move Luxembourg’s economy forward and enrich the country until the beginning of the 1970s.

The steel industry had developed so successfully and offered prospects of such large earnings that people began to call the main type of ore mined in the south of the country ‘red gold.’

The result of the work of that era is the ARBED (Aciéries Réunies de Burbach-Eich-Dudelange) company, which was created as the result of a merger of steel smelting associations in the cantons of Dudelange, Eich, and Saarbrücken. The company grew steadily and soon turned into one of the most influential iron and steel companies in the world. In 2002, the company was purchased by steel giant Arcelor and became part of the newly created ArcelorMittal, which still has its headquarters in Luxembourg.

Record high figures were reached in 1971, when 6.4 million tonnes of steel were produced in Luxembourg. But it was at that time that Luxembourg’s steel industry began to lose its position due to the economic crisis that was gripping all of Europe.

Luxembourg’s Steel Museums:



1. The Cockerill Mine

Location: city of Esch-sur-Alzette, Ellergonn center

For more details: www.centresnatureetforet.lu

2. The Fond-de-Gras Industrial Park

Location: city of Lasauvage, 1, place du Marché

For more details: www.fond-de-gras.lu

3. National Mining Museum of Luxembourg

Location: city of Rumelange, Carreau de la mine Walert

For more details: www.mnm.lu

A STEEL EMPIRE IN A PRETTY PACKAGE

“Beginning in the 1970s, the steel industry of the Grand Duchy, and of Europe as a whole, suffered several setbacks,” Scuto says. “Over the past forty years, the number of workers in the steel industry has fallen from 30,000 to 6,000. The former driver of Luxembourg’s economy gradually stalled, and was eventually crowded out by the financial sector.”

The last of Luxembourg’s blast furnaces was decommissioned in 1997. To this day, the furnaces have been preserved in the southern part of the country, Belval, and now serve as tourist attractions.



The coat of arms of Luxembourg



Palace of the Grand Dukes (Palais Grand-Ducal)



However, several steel factories continue to operate in Luxembourg. They produce just over two

“ *The steel industry had developed so successfully and offered prospects of such large earnings that people began to call the main type of ore mined in the south of the country ‘red gold’* ”

million tonnes of steel per year. But Luxembourg has been able to make even this industry, which may seem unattractive to tourists at first glance, into something compelling.

The ARBED building, constructed in 1922, is today one of the main tourist attractions in the capital of the Grand Duchy: postcards bearing its image are even sold in souvenir shops. Art shows

are now held in the buildings of the old plants.

In the town of Esch-sur-Alzette, located 15 kilometers from the capital, and the state's main industrial center, a so-called City of Sciences is being built on the site of the former workshops of an old steel plant. Around two blast furnaces, which were stopped at the end of the 1990s, a complex is being built that will simultaneously function as a museum of industry, part of the University of Luxembourg, and a cultural and entertainment center.

The local authorities, which have controlled this area for several years, are erecting concert and exhibition halls, university buildings, and a library. At the same time, the blast furnaces, which will be the complex's main showpieces, are being preserved and reconstructed. Meanwhile, a few hundred meters from the City of Sciences, ArcelorMittal's steel plant is in operation.

“*Today in the south, just as before, you can find a good deal of evidence of the country's great iron and steel past in the regions where the deposits used to be located,*” explains Scuto. “*I believe other sites should be retained as well. These are the last artifacts of Luxembourg's great industrial past, which enable us to preserve the memory of our steel nation.*” ■

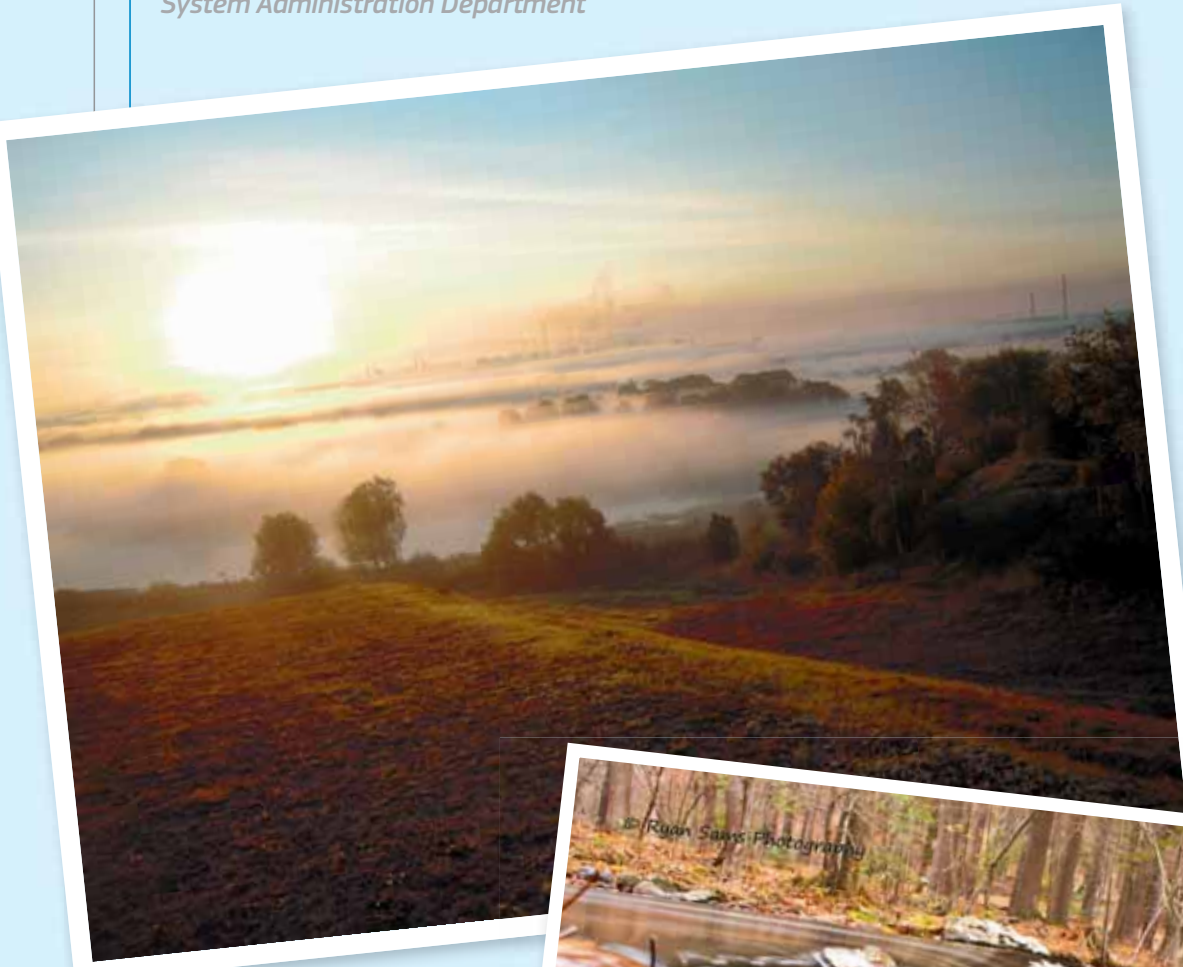
THE AUDIENCE CHOICE AWARD
IN THE "NATURE" CATEGORY
WENT TO A PHOTO
BY ROMAN ESIPOV

24 

*Winner –
Roman Esipov –
Software Engineer for NLMK IT
System Administration Department*

The photo of the Software Engineer for NLMK IT System Administration Department won 24 votes. Our congratulations to the winner!

We encourage you to submit your photos for the contest in the following categories: "The Living World", "People", "The City" and "Imagination" (free choice of subject). ■



*Photo by
Ryan Sams, NLMK Indiana*



**Editor's
choice**



9 

Photo by
Natalia Korolkova –
Lab Engineer, Cast Steel Macrostructure Control,
Technical Control Department, Novolipetsk



9 

Photo by
Alexander Sobolev –
Railway Station Duty Operator,
Novolipetsk

If you would like
to participate in the
contest, please send your
photos to:

magazine@nlmk.com

21 

Photo by
Evgenia Prokofieva –
Chemical Analysis Lab Technician,
Technical Control Department, Novolipetsk





Next issue:

Exclusive interview with Grigory
Fedorishin, New Vice President for Finance

Interview with Paul Fiore, President &
COO of NLMK USA

NLMK Indiana: Protecting the Great Lakes