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# NLMK Group

NLMK Group Corporate Magazine

№5–6 November – December 2014



## A Strategy for Endurance

*Interview with Oleg Bagrin*

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## NLMK Group and WorldSkills Russia to cooperate in training steelmaking personnel

NLMK Group and WorldSkills Russia (WSR), an initiative backed by the Ministries of Education and Labour of the Russian Federation; and the Agency for Strategic Initiatives, have signed a cooperation agreement aimed at developing the talent pool available to the company and the industry as a whole.

The parties have combined their efforts in order to implement advanced solutions for company staff development and personnel retraining programs to bring them in line with modern international standards. The joint work will promote the development of innovative education technologies in colleges supported by NLMK such as the Lipetsk Metallurgical College. Cooperation will also cover issues of career guidance for youth and creating the necessary conditions for ensuring the mobility of young personnel.

Stanislav Tsyrlin, NLMK Vice President for HR & Management System, said:

*"This agreement will promote the development of NLMK Group's professional development programs, taking them to a new level of quality. From the beginning of 2014, almost 37,000 people (approximately 65% of the employees) went through professional training and development at the Group's Russian assets alone. Over the last five years, we have invested in excess of RUB 670 million into professional education programs. The fact that we are joining efforts with WorldSkills Russia shows that the state is interested in supporting business' educational initiatives."*

Developing conditions for efficient work is a strategic goal of NLMK Group. Alongside implementing the principle of continuing education, NLMK is managing a number of employee training programs together with educational establishments. NLMK is funding a comprehensive career guidance initiative; activities to improve the skills of academic staff at

## Slabs follow new route

*NLMK USA consumes a large amount of slabs produced in Lipetsk. This year, deliveries are expected to exceed 1.5 million tons.*

Up until recently, the bulk of slabs would go to NLMK Pennsylvania that does not have its own steelmaking capacities. NLMK Indiana possesses a melt shop and did not require imported slabs until recently. However, the efforts of NLMK USA's commercial service resulted in a significant increase in the sale of HRC in Indiana, exceeding the capacities of its steelmaking operations, creating the need for an additional supply of slabs from Lipetsk to NLMK Indiana.

Initially, slabs for Pennsylvania and Indiana travelled together on an ocean vessel to a port in the

higher education institutions and the quality of education; new programs and scholarships for students; as well as bonuses for teaching staff.

NLMK's cooperation with colleges and universities is highly regarded by the state and the expert community. For example, a joint project of NLMK Group's Novolipetsk and the affiliated Lipetsk State Technical University won an open contest organized by the Russian Ministry of Education and Science for a state grant to implement projects aimed at training highly-qualified personnel for companies of the Lipetsk region.

In 2014, a team of young workers from Novolipetsk, NLMK Group's main company, were awarded the silver medal in the "mechatronics" category at WorldSkills Hi-Tech, the first national championship of cross-industry hi-tech professions held in Yekaterinburg.



Philadelphia area from where they continued on two railway routes.

During analysis of the efficiency of delivery routes, it was decided to take advantage of NLMK Indiana's unique geographical location. The plant is located on the shore of Lake Michigan; one of the Great Lakes. The Great Lakes are connected with the Atlantic Ocean through a system of locks called the Seaway. This route begins in the mouth of the Saint Lawrence River in the North of Canada and connects all the Great Lakes.

This water system, which accepts sea vessels with a displacement of up to 25,000 tons, is open from March to November.

Given the fact that NLMK Indiana is located on the territory of a port called Burns Harbor, receiving vessels with slabs from Lipetsk was a convenient solution in terms of transit times and cost of delivery.

Taking into account peculiarities of the waterway such as the requirement for vessels of a limited width to pass through the locks successfully, our group's logistic and export services were able to identify and charter 9 vessels on favorable terms for the delivery of slabs to NLMK Indiana until the close of navigation for 2014 in November.

On Monday, 8 September, the first vessel, Red Herring, moored at the pier close to the plant and began unloading.

## NLMK La Louvière: a very instructive safety exercise

*For a company the size of NLMK La Louvière, which employs just over 500 people, it is important to ensure that safety rules are properly understood by workers. It was for this reason that the cold mill teams participated in a safety exercise on 30 September. The exercise, which was a closely-guarded secret, proved very instructive!*

At La Louvière, on Tuesday 30 September at 10 am, the guards at the company's entrance were notified that a fire had started on pickling line No. 1. Immediately, two guards went to the spot to check the information received and a few minutes later the emergency services were notified. The safety exercise began. Staff received the order to evacuate and the emergency shutdown procedure was launched. One of the guards returned to the entrance to guide the firefighters to the location of the incident, as every minute counts. Upon reaching the location, the fire chief took control of the operation. He asked to talk to a manager to obtain all the information on the risks of the area affected by the fire. Once the risks were known and the analysis of the premises complete, the intervention

could begin. The artificial fire was controlled, the warning lifted and the workers were able to return to their workstations.

### AIMS OF THE EXERCISE

This exercise was an opportunity to test our internal emergency plan (PIU) at the La Louvière site, and more particularly, the procedures for securing the facilities, passing on the alert, receiving and guiding the emergency services and evacuating workers to internal assembly points.

Many lessons are to be drawn from this experience. Indeed, this exercise threw up many strong points (staff evacuation, the speed of the operation, etc.) as well as a few areas for improvement (overhaul of the documentation to be passed on to the emergency services and emergency shutdown procedures).







## NLMK Europe takes part in EuroBLECH for the second time

*NLMK Europe's stand attracted a lot of visitors at EuroBLECH, the international sheet metal working technology exhibition, which took place in Hanover (Germany) from 21 to 25 October.*

The visitors were personally welcomed by our sales representatives from all NLMK Europe factories, from the whole German branch and from the Group's sales network. Most of our customers accepted our invitation to meet our teams on our stand. Moreover, many companies not currently in contact with NLMK Europe were approached and discovered the advantages of the steel that we produce.

There is no doubt about how useful this exhibition is: it is an ideal place to exhibit the quality of the products and services of all our factories. It allows us to strengthen the links with our current customers and make promising contacts with companies looking for innovative materials. The international fame of the EuroBLECH exhibition allows NLMK Europe to project a strong image to a well-informed German public and to

professionals from all over Europe. "The aims of the sales teams were to present NLMK Europe, build loyalty among our current customers and persuade potential customers to buy from us – and we achieved this!" B. De Vos, CEO of NLMK Europe Strip – Products.

The stand was designed to best welcome visitors and to allow salespeople to take care of them effectively. Meeting rooms were made available to our salespeople so that they could discuss future orders specifically with our customers. "EuroBLECH was a great success both in terms of the number of customer visits and in terms of the enthusiastic customer feedback. Thanks to its size, openness and location, our stand was a great showcase for NLMK Europe," adds I. Sarkits, CEO NLMK Europe – Plate.

### A FEW DETAILS ABOUT THE EXHIBITION...

EuroBLECH is renowned as an industry barometer and is the main trade exhibition for technological advances in sheet metal working. The wide range of materials, machines, systems and tools exhibited reflects the whole chain of sheet metal working technology, from the sheet metal itself and related products to the handling, cutting, forming, sawing, assembly, flexible sheet metal working, machining of tubes, process control and surface processing technology.

## OVERVIEW OF EUROBLECH

## OVERVIEW FOR NLMK EUROPE

- Exhibition surface area: **86,500 m<sup>2</sup>**
- 1,573** exhibitors from **38** countries
- 59,600** professionals from all over the world
- Audience: **30%** new contacts and **70%** already known customers
- Many meetings, several of which with large accounts (including Faurecia, Magna, Luk, Inmet, BSH, etc.)

## NLMK European Safety Seminar

*On 14-15 October, Victor Togobetskiy, NLMK Group Director of Occupational Health and Safety, was in Belgium to lead a seminar on safety for the directors and safety managers of NLMK Europe. The training ended with a practical exercise at NLMK in La Louvière.*

During the two days, Mr Togobetskiy brought together the directors and safety managers from Clabecq, DanSteel, Verona, La Louvière, Manage and Jemappes to exchange views and reflect on safety issues. The goal of NLMK shareholders is to ensure that this steel group has the most effective safety performance possible.

The NLMK Director of Occupational Health and Safety wants the seminar to change how the participants think, engage, and take action regarding safety in the workplace.

He set three goals to achieve this:

- improve understanding of safety principles and the importance of safety
- explain the close relationship between culture, leadership and performance regarding safety
- analyse NLMK expectations regarding safety.

"The staff of the NLMK group are one of its most precious assets and we must do everything to protect them," Mr Togobetskiy explained.

### ESTABLISH A SAFETY CULTURE

The first day of the seminar was devoted to establishing a safety culture in the European factories.

The CEOs of the two business units introduced the first day and explained why safety must be a high priority.

"I cannot allow a worker to arrive in good health and leave in an ambulance with sometimes irreversible consequences for his professional life, his family and his private life," explained Ben De Vos, CEO of NLMK Europe – Strip Products.

"Our sector is dangerous. It is our responsibility to be engaged and take action to ensure safety. The better our safety, the more we improve our efficiency and productivity," added Igor Sarkits, CEO of NLMK Europe – Plate.



The executives and safety staff then met in small groups. Throughout the day they were invited to think about different topics such as: How to respond to a dangerous situation? What to do when a colleague is not safe? What was the worst accident they experienced at work or at home? How can we keep such situations from happening again?

### PRESENTATION OF THE SAFETY RESEARCH PROGRAMME

The second day of the seminar was divided into two parts: The first part took place in the conference room and focused on the Safety Research programme that NLMK Group has decided to implement at all sites. The second part consisted of practical exercises at the NLMK Group site in La Louvière.

Mr Togobetskiy explained the Safety Research programme and outlined the main elements of NLMK Group safety policy.

Afterwards, he reviewed how to conduct safety audits and to maintain safety. Several small group exercises were organised on these topics.

The afternoon was devoted to a safety audit of the La Louvière site; 27 groups

were established with at least one director or person responsible for safety from NLMK Europe and an operator from the area being audited. The audits were carried out in the hot-rolling mill as well as in the cold-rolling mill.

The exercise turned out to be very enlightening; quite a number of risks of accidents were identified: auditing an area that was not known to the group made it easier to identify potential risks.

The afternoon session concluded in the conference room with the 27 audit teams.

Reports on the audits were prepared and given to the operations director of the site.

Mr Togobetskiy concluded by thanking the participants for their involvement, and said: "This afternoon we have launched an process that will improve your safety. We need everyone to get involved because together we will be able to improve safety conditions in the factories. The process we launched today will be continued on a smaller scale so that we can keep on reducing risks and responding to high priority risks of mortal injury."

The safety managers from the different European sites appreciated this experience and the discussions with their colleagues.



# A STRATEGY FOR ENDURANCE

NLMK Group President Oleg Bagrin talks about market conditions, the outcomes of Strategy 2017 so far, and why 2015 is such an important year for the company.

Maria Simonova

## MARKET CONDITIONS

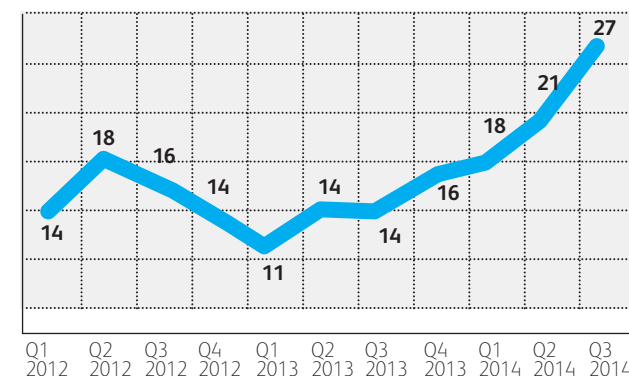
**In 2013, global demand was weak and steel prices stalled. What factors have influenced NLMK's business in 2014? What has changed?**

In actual fact, the external factors have remained more or less the same. There is still a significant amount of excess capacity in the sector, on top of which global demand for steel is declining. In China, the biggest consumer market for steel products, demand has fallen this year for the first time in 14 years, while the amount of steel coming in from China is growing. Net exports have risen by 40%. This has meant tougher competition on the international market. Chinese steel can now be found everywhere, from Europe to Latin America. Even in Lipetsk Region, you'll come across corrugated plate made from Chinese steel.

Along with increased supply, the 'China factor' has resulted in a drop in iron ore prices, which have fallen 40% since the beginning of the year, to what is now



NLMK GROUP EBITDA MARGIN, %



SOURCE: NLMK GROUP FINANCIAL RESULTS

a five-year low. Needless to say, this has an impact on the profitability of our iron ore assets.

There have been positive changes, of course, but the majority of these have been internal rather than external.

**We'll move on to what's been happening within the company later. First, let's discuss the Russian market. Are there problems there, too?**

The Russian market is experiencing slower growth in demand for steel products. Some sectors have actually seen a drop in demand – the machine-building and automotive industries, for example.

This is worrying, of course, because Russia is a key market for us. We are currently investing in import substitution and expanding our domestic presence.

**What about the sanctions imposed by the US and EU in 2014? Are they making life difficult?**

The sanctions aren't hitting our company directly, but we are still feeling the effects. The main impact is on the financial sector. Over the past two years, NLMK Group has become much more robust financially, so the banks' problems are not really an issue for us. But they are an issue for our clients.

**Which clients?**

The construction sector, for example. Steel trading companies can't operate without a continuous flow of financing. Construction companies take out project loans, and people buying apartments take out mortgages. When loans become less accessible or more expensive, the construction sector slows down, which of course leads

to less demand for our product in what is one of our key markets.

**And are the sanctions affecting NLMK's overseas assets?**

The sanctions are not having any impact whatsoever on our overseas divisions. Here, we are facing a different issue. Some national governments, with an eye to the current geopolitical situation, are limiting Russian companies' access to overseas markets. Europe and the US have initiated anti-dumping reviews of the electrical steel market, and the US has introduced prohibitive duties on imports of hot rolled steel from Russia. And the list goes on. This creates certain difficulties: at a time when the domestic market is weak, our access to other markets is also being curtailed.

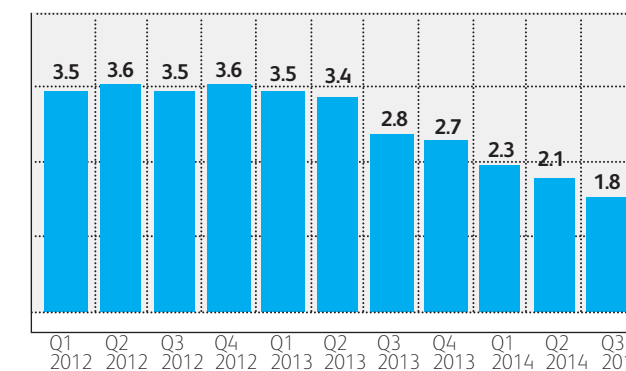
**How is NLMK responding to these challenges?**

We drew up our response a long time ago. We are developing our competitive edge by making production more efficient, guaranteeing low costs, and diversifying our business so that we are not dependent on any particular market or specific type of product.

**And does this also mean we are not dependent on the situation unfolding as predicted?**

To some extent, yes. In recent years, economic forecasts have repeatedly been issued and then withdrawn. Steel

NLMK GROUP NET DEBT, \$ BN



SOURCE: NLMK GROUP FINANCIAL RESULTS

and mining companies have been completely reversing their strategies. We can't possibly know what the world will be like in ten years' time. There's a good chance it will be very different from what we predict today. Still, as we make plans for the Group's future, we can reduce the impact of negative factors, create several growth areas, and help the company remain balanced and resilient.

## THE IMPLEMENTATION OF STRATEGY 2017

**You say the Group's response to market challenges was drawn up a long time ago. You became President of NLMK Group in 2012. Was the company's strategy already in place at that point?**

Efficiency has always been one of NLMK's primary goals. But in 2012, we declared it our number one priority. At the end of 2012, the Group's main production site in Novolipetsk was just about breaking even. In the first quarter of 2013 it made a loss, on top of which the Group was hugely in debt following the large-scale investment program undertaken between 2007 and 2012. So at the end of 2012, as dramatic as this might sound, we were faced with the task of resuscitating the company. It was a crucial moment, the first step towards getting back into the black. Fundamental changes were needed in the way the Group was managed.

The following year, 2013, was all about transforming our business processes. Changes were made to the organizational structure, and many internal barriers were broken down. The Group began to function as a single organism. At the same time, we started to see the potential for future growth, and especially for increased efficiency. That's how we came up with our new strategy, Strategy 2017, which was announced in February 2014.

**Strategy 2017 has four declared goals: to be efficiency leaders, to develop the resource base, to be market leaders and to lead the**

We must constantly reassess our perception of what is possible



Opening remarks at a training for managers

**way on health and safety and developing human capital. Let's start from the end and talk a little about the fourth goal, given that it directly affects all staff. What has been achieved in this area over the past year?**

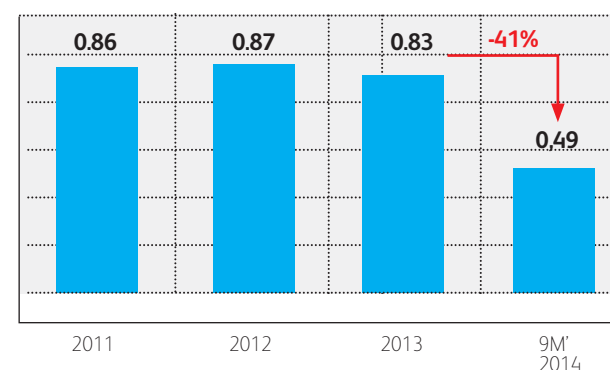
Our main aim here is to create good, safe working environments for our employees, and huge progress has been made. We have restructured the safety management system: we've added new people, and improved the quality of assessment and analysis. Attitudes towards safety are changing. New rules have been brought in – our *Cardinal Safety Rules*, for example. Important programs like *In Search of Safety* have been introduced, helping to involve every employee in improving working conditions and reducing risks.

As a result, NLMK has seen a significant drop in the number of injuries. At our Russian sites, the number of injuries sustained since the beginning of 2014 has fallen by 35%. At Lipetsk, injuries are down by 40% compared to 2013.

**The first goal of Strategy 2017 is to make NLMK a leader in operational efficiency. In 2013, efficiency improvements were so successful that they offset the fall in steel prices. What can you say about progress in 2014?**

We've made fairly good progress in moving towards this extremely important goal: 2014 was a year for

### LOST TIME INJURY FREQUENCY RATE (LTIFR)



SOURCE: COMPANY DATA

expanding and developing the NLMK Production System. From this year onwards, operational efficiency programs will apply to all Group companies, both in Russia and overseas. When we launched these programs a year ago, there were several hundred of them. Today there are more than 1,500. And these are not just ideas or proposals. These are projects with a measurable economic impact.

Getting a critical mass of projects underway has been one very important outcome. Over nine months, these efficiency programs have saved us 7.5 billion rubles. It is largely due to these gains that NLMK reclaimed its leading position as the world's most profitable steelmaker in the first half of this year.

**Could you give us some examples of successful efficiency programs in the Group?**

One of the leaders this year has been the Russian Long Products Division, which has produced its best financial result in several years. The electrical steel division and the European plants producing thick plate have also done well. These divisions have actually exceeded the targets originally set out in the efficiency programs for 2014. We were counting on a bigger impact from the Lipetsk site, last year's leader. Although Lipetsk hasn't done badly in 2014, it hasn't done as well as we'd hoped – particularly in blast furnace production. Having said that, Stoilensky found its rhythm, with production volume for the year up by one million tonnes. Our American division performed well, and we are expecting an improvement in the figures from our new team at NLMK Indiana.

**The next goal of Strategy 2017 was to develop NLMK's resource base. How is that going?**

The Stoilensky pelletizing plant moved into the active construction phase this year. Construction is now forging

ahead, with 900 people working on the site. We will soon be signing contracts to develop a plan for expanding the mine and building a new crushing and beneficiation complex. These projects are all landmark developments for the Stoilensky site.

**Will the fall in iron ore prices affect the projects at Stoilensky?**

The market environment is almost irrelevant as far as the construction of the pelletizing plant is concerned. This particular project aims to replace the expensive raw materials that we buy with those that we produce ourselves, which would make sense whatever the environment. The plans to increase ore production, by contrast, are very sensitive to the market price for iron ore. But we are still at the design stage, so we will of course take the opportunity to optimize design decisions and timeframes. At this point, despite the dramatic changes in the market, the project is expected to return a decent profit.

**Apart from Stoilensky, what other work is being done as part of Strategy 2017's resource-related goals?**

We have installed a pulverized coal injection unit at Blast Furnace No. 4 in Lipetsk. A similar unit is already operational at Blast Furnace No. 5. This means that about one third of our blast furnace capacity has been switched over to this technology, which is a completely new development in the domestic steel sector. Pulverized coal injection reduces coke consumption by 20–30% and natural gas consumption by 60%. That is significant, and so we will be replicating this technology elsewhere. We've already started planning to install pulverized coal units at Blast Furnaces No. 6 and No. 7.

**Another objective of Strategy 2017 is to be a leader in strategic markets. You've already mentioned the decline in demand in one of our key markets: Russia. Does this mean that it's time to change strategy?**

Absolutely not. We are prepared to fight for the Russian market, and we've already had some success here. In 2014, NLMK set a historic sales record on the domestic market. Over the first half of the year, sales rose by 20% compared with the previous year, totaling 3.3 million tonnes. For the most part, this was made possible by the launch of a new site, NLMK



NLMK GROUP SALES TO THE RUSSIAN MARKET, M T



Kaluga, which reached its planned capacity this year. The plant became operational in July 2013, and by August 2014 it had already produced a million tonnes of steel.

And how are things going for the Group’s overseas sites?

We are increasing their capacity, particularly in the American division. At NLMK Pennsylvania, production was up almost 20% from last year, and all reheating furnaces were in use at the hot mill for the first time since 2007.

Can you give us a brief summary of what Strategy 2017 has achieved this year? What do you think are the three most significant outcomes?

The reduction in injuries, down by 35% at our Russian sites. The 7.5 billion rubles saved in just nine months as a result of efficiency programs. And regaining our position as the world’s most profitable steel company.

Of course, it’s not just about the numbers. Achieving our strategic goals is the key to NLMK’s endurance and stability at a time when other steelmakers are struggling with debt. The more efficient the company, the more resistant it is to market changes and the more opportunities it has available.

THE IMPORTANCE OF 2015

In 2014, the Group launched many efficiency programs. We are halfway to reaching Strategy 2017’s cost reduction

goals. What does 2015 hold for the company?

Next year is a very important year for us. After any transformation, there is a risk of slipping backwards. In 2013, we underwent a phase of rapid improvement. The 2014–2015 period represents a new stage, focusing on complex, long-term solutions. The problem is that quick fixes – opportunities to grab the low-hanging fruit and achieve results easily – soon run out. Then comes the time for ongoing, systematic hard work. There are plenty of examples across the world of where ground is lost at this stage. Our challenge is to prevent backsliding, to consolidate what we have achieved, to make the practices that we have adopted permanent. Next year will be about fixing in place the things which must become part of NLMK Group’s corporate culture.

How can we achieve this?

The only way I know is to make the transition from one-off improvements to continuous development. We need to turn our efficiency programs into part of normal practice, rather than something appearing once every five years as a top-down initiative.

As I said, we currently have more than 1,500 efficiency improvement projects underway. We can increase this to 5,000 – or even better, to 10,000. These figures may seem excessive, but if you divide the number of projects by the total number of workshops at all NLMK production sites, they start to look entirely realistic. I have no doubt that each workshop can manage more than a hundred improvement projects simultaneously.

You mentioned that the efficiency programs apply to all parts of the Group. Does this include functional departments?

Yes. Previously, the programs were focused on major production areas and technology. Now we have expanded them to include the functional departments and auxiliary production sites. For example, this year we launched projects to reengineer the sales system and improve efficiency in logistics, repairs and energy production. These will be in full swing during 2015.

What other Group projects will we see in 2015?

For one, we are planning to launch several important environmental facilities. We are not only responsible for



At Vyksa Steel Works (VMZ)

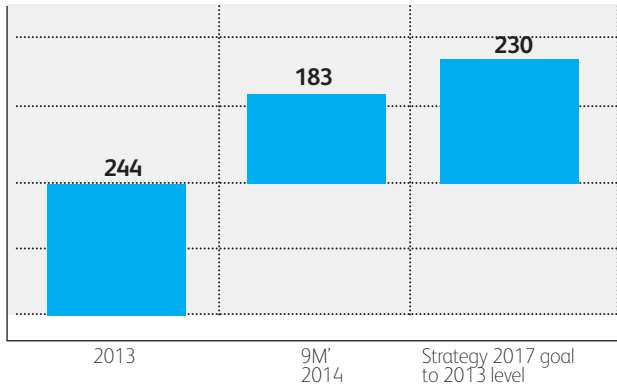
the safety of our workshops. For many years now, we have been trying to reduce our negative impact on the environment in the regions where we operate. Lipetsk has become the cleanest steelmaking city in Russia.

This year, we announced a new environmental program, covering the period up to 2020. In 2015, a new biochemical waste water treatment facility for the coke plant at the Lipetsk site will be commissioned. Construction work on the dedusting system for Blast Furnace No. 4 and a new facility for processing blast furnace slag is nearing completion. At the Revda steelmaking facility, the main stage of work to revamp the gas cleaning systems is now winding down.

Are we continuing to upgrade production?

Definitely. An overhaul of Blast Furnace No. 5 and reconstruction of continuous hot-dip galvanizing unit

GAINS FROM OPERATIONAL EFFICIENCY PROGRAMS, \$ MLN



No. 1 at the Lipetsk site are scheduled for 2015. We’ve decided to design a new, fifth unit to produce galvanized plate for construction grades. And that’s not all. More than a hundred investment projects are at various stages of development, and each year we launch dozens of new projects.

How long do you think it will be before NLMK Group no longer has any potential for improvement? As you said, the easy targets have already been reached.

Technological progress is never going to stop. Whenever and wherever we seem to have achieved the maximum possible, new solutions will crop up, and it will turn out that we are only at the beginning. In our understanding of the boundaries of what is possible, we are limited only by our own imaginations. Remember that, in 2012, the Lipetsk production site seemed to be one of our most efficient sites, though at the time it was only just making a profit. Two years have passed, and now we are seeing production figures here that before seemed unattainable. Our potential is not even close to being exhausted. We must constantly reassess our perception of what is possible.

It is also important to be aware of the effects of scale. NLMK Group is the largest steel manufacturer in Russia. Yes, those big effects that we wanted and needed to see first have already been achieved. But this is the result of just a few dozen projects. If the Group’s efficiency programs stretched to hundreds or thousands of projects each year, even if each had a smaller impact, the combined result would be the same. So, having initiated a critical mass of projects, our objective is to take things to the next level. Here are the challenges for 2015: to prevent backsliding; to consolidate what we have achieved, the knowledge and the approaches that have emerged in the last two years; to make the transition from hundreds to thousands of initiatives; and to involve all of our thousands of employees in this effort.

What will Strategy 2017 do for employees?

Only by constantly moving towards our strategic goals can we offer our staff a guarantee of confidence in the future, decent wages, and safe working conditions. This is also the only way that we can continue to invest hundreds of millions of dollars in equipment upgrades, environmental projects, the creation of new technologies, and new production chains – in other words, in our future. ☺

# There is a question

NLMK Group President answers questions submitted by company employees to "NLMK Group Magazine"

## SOCIAL AND HR PROGRAMS

**All the programs on offer at the plant are aimed at young people. Why do NLMK's HR policies for employees who have reached retirement age differ from those of other Russian companies and organizations, where working beyond the retirement age is welcomed?** Galina, Inna, Lipetsk

NLMK Group offers a whole range of career development programs, and it's true that many of them are designed for the younger generation – for those who will go on to take our places. It's a question of the company's future: we must ensure continuity. If NLMK differs from other Russian companies in this respect, then so much the better.

However, it is also important to retain experienced employees and to maintain the tradition of mentoring. The Group currently employs more than 7,000 people who have reached retirement age and who are experts in their field.

With regard to specific staffing decisions, we must take into account factors such as the age limit for working in hazardous occupations. The health and safety of our employees is our top priority, and we will not do anything that would jeopardize this.

**Could the company set up a program offering affordable housing for those over a certain age – for example, involving a 50% down payment**

**and installments over 10 years?** Konstantin, Lipetsk; Dmitry, Vorsino village, Kaluga Region

The company is considering the possibility of setting up discount mortgage programs. We may be able to start offering this to employees in 2015. Having said that, much depends on how the situation in the banking sector develops.

**Would it be possible to change how employees receive their quarterly bonus and, instead of paying them once per quarter, add the bonus to monthly pay as used to be done for the miners?** Alexander, Lipetsk

Quarterly bonuses were introduced by popular demand from employees. So getting rid of those and transitioning to monthly payments would require careful consideration and discussion with staff.

**The canteens at Novolipetsk are currently a long way apart. It takes a long time to get to lunch. Are there plans for more canteens in the pipeline?** Alexander, Lipetsk

We'll check it out. If we find that there is demand for additional canteens, we'll open some. By all means, pass your suggestion on to your immediate supervisors.

I'd also like to note that most major steel companies have outsourced their catering to professional companies. We introduced a similar practice at Altai-Koks in 2014, and the results have been positive so far. We will



We are constantly looking at ways to improve the company's incentive system in conjunction with the NLMK Production System

consider rolling it out to other Group companies.

**In the nineties, NLMK abandoned the construction of a resort complex near Sudak, Crimea. Are there any plans to finish it?** Alexander, Lipetsk

It's difficult to see the rationale for completing this project, not least because it was called off 20 years ago.

We offer our employees the chance to earn a good salary, which should enable them to choose for themselves where to vacation with their families.

I think most employees prefer this to going to the same resort year after year.

## PRODUCTION AND IMPROVING EFFICIENCY

**Does the management team have any ideas about how to encourage inventors and innovators and coordinate their work?** Yevgeny, Lipetsk

NLMK Group currently encourages innovators in two ways. Firstly,

encouraging invention and innovation is enshrined in the law. Secondly, we have our initiatives system that provides incentives. For each idea put forward which is then adopted, a reward of up to two thousand rubles is paid out; for an initiative which proves to be successful you may receive up to ten thousand rubles. Anyone can present an idea in the form of an initiative. All you need to do is pick up an initiative form from a meeting room, fill it out, and hand it to your site manager or the secretary of the Technical Committee. You can also submit your ideas and initiatives to the

efficiency improvement department at your workshop or the Directorate for Operational Efficiency.

Encouraging ideas to improve production efficiency is a key challenge for us. We are constantly looking at ways to improve the company's incentive system in conjunction with the NLMK Production System, including through our initiatives system.

**In 2013, restructuring was carried out with the aim of improving NLMK's organizational structure. In what areas (procurement, finance, investment projects, etc.) has this**



### program paid off – or not, as the case may be? Marina, Lipetsk

These changes came together with the large-scale adjustment of business processes in these and other functional areas within the Group. Of course, the implementation of these programs is still ongoing, so we won't be able to assess final results until later. But it is already clear that the organizational changes in question were timely, and their success is already reflected in our financial results. For example, in 2014, restructuring the Group's procurement processes for goods and materials saved about RUB 1.7 billion. This is excluding raw materials and fuel.

### Has the transfer of technical maintenance and equipment repair operations from the workshops to the maintenance and repair center had a positive impact in terms of efficient management? What about the psychological effect of taking a worker away from their "home" workshop? Marina, Lipetsk

In most cases, our maintenance and repair staff have remained at their workshops and work in the same units as they did previously. On the other hand, being separated from your "home" workshop is an opportunity to expand your horizons in a way which is often beneficial.

Of course, when we set up the maintenance and repair center, the goal was not to uproot people and move them somewhere else. Centralizing repair services helps us to implement best practices for managing reliability, improve how repairs are organized, and better manage contractors and procurement. Our main aim is to create a state-of-the-art, vertically-organized repair system,

The most important outcome was the increase in the number of individual initiatives and projects to improve operating efficiency

able to deliver world-beating standards in terms of equipment reliability and availability, while saving time and reducing costs. With its current figures, NLMK Group is on a par with other Russian companies, but we still fall short of the best results achieved by our foreign competitors.

## PERSONAL MATTERS

### What magazines or online resources do you read regularly to keep abreast of the latest trends in business, the steel industry, and new technologies? Natalya, Lipetsk

I read analytical reports on the situation in our sector, in related industries and in the global economy every day. Among our company news resources, I rate *NLMK Group Magazine*

particularly highly, as well as our local site publications and, of course, the corporate intranet portal. Over time, we plan to make it a major source of information and a communications resource for NLMK Group.

### Is it possible to arrange face-to-face meetings between the President of NLMK Group and employees to discuss proposals for innovation and suggestions for improvement? Gennady, Lipetsk

I am often at our various sites and never leave without visiting the production areas and chatting with staff. The company employs 60,000 people, and it would be impossible to meet each and every one. We are developing various feedback mechanisms: direct channels, telephone lines and message boxes, as well as your letters to the Group's corporate publications. We pay attention to all of them.

### What, for you, were the standout events for NLMK Group this year? Alexander, Lipetsk

The 80<sup>th</sup> anniversary of the Novolipetsk plant was a fabulous occasion. Our aim was to make it a celebration for our staff and for the whole city, and I hope we succeeded. Of course, the visit from Prime Minister Dmitry Medvedev and the presentation of state awards to the plant's employees was also a highlight.

As far as the company's internal processes are concerned, the most important outcome was the increase in the number of individual initiatives and projects to improve operating efficiency. This means that the changes we are making have the support of our employees, which is essential if we are to achieve our strategic goals, and vital to the future success of the company. ☺

The changes we are making have the support of our employees, which is essential if we are to achieve our strategic goals

# 2014 Roundup

The heads of the Group's main operational divisions discuss outcomes and plans exclusively for *NLMK Group magazine*.



## Grigory Fedorishin

Vice President, Finance

This year, the Group has focused on improving efficiency. Optimization programs have multiplied across all divisions and sites, and projects now number in the hundreds. The Group's workload has increased as a result, and that goes for both our economics and finance operations. Monitoring and analyzing such a large number of projects would not be possible without a systematic approach. To this end, we have set up a self-contained, comprehensive process involving a clear allocation of responsibilities between the Group and its sites; the same methodology, procedures and reporting approach applied throughout the Group; ongoing dialogue with divisions; and links with incentive systems. We have built a system which will be able to support the company on an ongoing basis as it increases efficiency. I think this is one of our major professional successes of the year.

In a project which began in 2013, we have continued to optimize business

processes within finance operations this year. You could say that we are reinventing ourselves to meet the demands of the extensive changes taking place within the company. By centralizing certain operations and optimizing processes, we have reduced the size of our financial department by 20% over two years. Conversely, the quantity and quality of the solutions we offer has only grown.

As an example, we have completed a project to create what you might call a pay factory – a single payment center for the entire Group. As a result, we have improved payment discipline while increasing productivity.

We have begun an extensive overhaul of the IT systems which support our financial operations. This entails a whole program aimed at reducing the complexity of preparing and improving the quality of financial information. Next year, implementing this program will be one of our main objectives.

Another major project in 2015 will be the transition to IFRS reporting standards. This will require us to draw up a more detailed analysis for external disclosure than we currently provide, and a number of business processes in this and other divisions will need to be restructured.

All in all, we expect 2015 to be a year of significant changes internally which, although not immediately visible to external users, will eventually have a considerable impact on our efficiency

and, ultimately, the efficiency of the company as a whole.



## Sergey Filatov

Novolipetsk Managing Director

NLMK's anniversary year was a turning point not only for the Lipetsk site, but also for NLMK Group as a whole. The adoption of Strategy 2017 by the Board of Directors in February has set a universal goal: To strengthen the company's position as a leader in the steel industry. To achieve this goal, we must make full use of available reserves to reduce production costs and improve product quality and marketability.

Two types of project were implemented at the plant in 2014 to address these issues. Firstly, we are investing in refitting and upgrading facilities with the aim of improving the operational and environmental efficiency of existing production capacity at the initial stages of production. We have already achieved some success in this area. In 2013, we put a lot of work into improving the quality of our coke and

iron ore, which in turn enabled us to improve blast furnace performance and reduce fuel consumption costs.

In 2014, a project concerning the preparation and injection of pulverized coal in blast furnaces No. 4 and No. 5 was completed, reducing the cost of pig iron production.

As part of Environmental Program 2020, construction has begun at blast furnace No. 4 of a state-of-the-art modular dedusting system which will virtually eliminate dust and gas emissions in the foundry yard during pig iron production. The reconstructed dust suppression system in the refractory workshop has also improved working conditions. Construction of a biological treatment unit for coke plant waste water is now complete, and the construction of a new cooling complex for blast furnace slag has begun.

Ongoing work to upgrade the blast furnace blower equipment is having a positive impact in both economic and environmental terms. The replacement of the power plant's outdated turbogenerator with a modern version will increase the energy self-sufficiency of the site from 52% to 58%.

These projects will enable us to save resources and minimize environmental impact.

The second large group of projects does not require significant investment and revolves around the optimization of business processes and the adoption of new approaches and methods for managing technology and quality at all stages. Implementing these investment projects and management practices has already enabled us to improve product quality, reduce production costs, and partially neutralize the influence of negative market factors.

Let's not forget that following our achievements in 2013, analysts at World Steel Dynamics put NLMK among the top five most efficient steel companies in the world. And based on the figures for Q2 2014, Bloomberg has already named NLMK Group the most efficient steel producer in the world.

Our plans for the plant in 2015 include further implementation of projects under Strategy 2017. We will continue our efforts to reduce process losses, optimize intrashop logistics, develop operating systems in related plants and enterprises within a single manufacturing network, improve technology and process discipline, and develop new end products with high added value.



### Konstantin Lagutin

Vice President, Investment Projects

This has been an important year for project management operations within NLMK Group. In 2014, the company adopted the concept for change developed by our department, aimed at creating a state-of-the-art corporate project management system. We presented this concept as a set of interrelated organizational and technical projects, brought together in a multifaceted program known as the "Corporate Project to Create a Project Management System for NLMK." The program was given a charter and a management team. It was officially launched across all divisions, and is now being successfully implemented.

In addition, this year saw the completion of a considerable number of projects associated with Development Program II, which NLMK Group has been implementing over the last five years, primarily at the Lipetsk site. This includes projects such as the construction of air separation units No. 16 and No. 17, the construction of a biochemical wastewater treatment complex, the

construction of gas turbine station for blast furnace No. 7, the overhaul of the bell furnace section, the replacement of turbogenerator No. 4, the replacement of high pressure turbine No. 5, and several others. Previously built pulverized coal systems for blast furnaces No. 3, No. 4, and No. 5 were successfully tested.

The year also saw the introduction of Development Program III as part of Strategy 2017. That meant major pre-project preparatory work and the launching of many new, large-scale projects.

With Program III, investment will be centered on raw materials and on Stoilensky, the Group's main commodities asset. In 2014, we made a breakthrough in restarting the project to build a pelletizing plant, which had run into difficulties during implementation. A new and robust general contractor was brought on board, and is today overseeing the active construction of the plant.

Another key moment came in June this year, when the NLMK Strategic Planning Committee approved the development concepts for other processes at Stoilensky. One concerns the modernization of the crushing and beneficiation plant, and the other addresses the development of Stoilensky's mining and transport systems. We intend both projects to feature the most advanced technical solutions developed for the mining industry anywhere in the world. The successful implementation of these projects will eventually take Stoilensky to a whole new level, especially in terms of production efficiency, and also with regard to the volume and range of its output.

We have major plans for 2015: Several dozen development projects, environmental projects, and hard-hitting maintenance program projects which must all now be put into action. For example, the overhaul of blast furnace No. 6, construction of a pulverized coal injection unit for blast furnaces No. 6 and No. 7, a project

to reconstruct continuous galvanizing unit No. 1, the initiation of a long and expensive project to reconstruct the gas exhaust ducts in BOF Shop No. 2, and the practical implementation of the project to overhaul the crushing and beneficiation plant at Stoilensky.

All in all, this will be the year in which we make a strong start to Development Program III as part of Strategy 2017.



### Alexander Saprykin

Vice President, Strategic Raw Materials Division

In my opinion, one of the most significant results of 2014 is the fact that we have managed to improve the quality of coke produced by the Group, keeping it on par with the best international standards. And we managed to achieve this without significant cost appreciation. According to our blast furnace experts, the high quality of our coke is evident in the fact that after repairs and unscheduled shutdowns, the blast furnaces are up and running as they should be in a matter of hours, or days at most.

There have also been some structural changes this year. The Strategic Raw Materials Division is now also responsible for the sale of iron ore. Our cooperation in this area with the specialists at Stoilensky saw good results. For example, Stoilensky posted record production and sales figures this year: 16,174,000 tonnes in October 2014.

One of our key objectives in 2015 will be to keep coke quality at approved standards at a minimum cost. Given

the downturn in coke consumption in Russia and worldwide, this is particularly important in order to maintain production capacity and coke sales at Altai-Koks, both to Novolipetsk and on the free market, at the highest possible level. With regard to supplying Novolipetsckoke requirements, we will meet the demands of the Group as fully as possible in terms of both volume and quality. We will operate in accordance with Novolipetsk approved quality standards, while maintaining and trying to improve our budget figures.

Within the single manufacturing network that was adopted at the end of 2012, we are completely open to all undertakings, objective assessment and, if required, making any necessary adjustments to the way we work. We are accountable, offering complete transparency to all internal company departments. We illustrate what we have achieved within a certain period, and gratefully accept any statistical information or correction from colleagues, especially if it is objective, well put together and clearly articulated. We support the transparent exchange of information and constructive interaction on all levels.

For me personally, a particularly significant result for the year has been the way in which people have changed. Some now have a greater understanding of the facts and the way they are explained, while others have become more tolerant and receptive to criticism and the demands being made of them. A balance of relationships has developed, both between the divisions of the company and among its people, that did not exist previously. This gives us confidence that we are on the right path towards our long-term strategic goals. That being said, the results of our efforts can only be assessed in the long term, not based on one-off changes for the better or worse. My confidence that we are on the right track is only getting stronger and I hope that this has been reflected in the management of the company.



### Alexander Burayev

Director, Long Products and Metalware

Our Long Products Division is located in the Urals and in Kaluga, and Vtorchermet NLMK production sites can be found in 33 regions across Russia. Each of our businesses has seen important events, successes, and changes this year.

That is especially true for NLMK Kaluga, whose launch last year was recognized as the steel industry event of the year. The challenge this year was to live up to those high expectations. The first year of work is all about developing production capacity, consolidating the team, and getting the product out onto the market. I would say that the main event here was reaching our millionth tonne of steel: the first important milestone. Next year, we plan to develop and produce sections.

Speaking of this year's events, we must not neglect to mention the celebration of the 280<sup>th</sup> anniversary of NSMMZ. The Urals has a rich history of metallurgy, and our factories in Revda and Nizhnie Sergi were among the very first. Many families have worked here for generations. To reach an anniversary like this as a strong, stable business, full of potential, is a cause for great pride. Having production sites such as NSMMZ and NLMK Kaluga enables us to respond flexibly to market needs. The figures so far suggest that NLMK Long will supply a total of about 1.82 million tonnes of rebar steel to the Russian market. In 2015, we intend to increase this to 1.86 million tonnes of rebar and up to 100,000 tonnes of angles. All told, NLMK Long accounts for 20% of the market for long products in Russia.



Our company NLMK Metalware is one of the five largest manufacturers of metal products in Russia. This year, the company has increased its production volume by 7% compared to the same period last year.

An important component of our competitive edge is the extent to which we supply our own raw materials. The Vtorchermet NLMK scrap metal chain is currently the largest in Russia. Vtorchermet NLMK provides NLMK Long – and Novolipetsk itself – with quality scrap steel. This year, a second shredder was put into action in Podolsk, adding to Vtorchermet NLMK's fleet of reprocessing equipment.

Regarding the division as a whole, the company is working to improve its efficiency, and much has been done in terms of blanket programs to improve health and safety and the development of human resources. These are the areas on which we will continue to focus in the coming year.



**Yuri Larin**

Vice President, Technology Development & Operational Efficiency

The most significant event of 2014 was the audit conducted to assess how the NLMK Production System was working within the Group. By carrying out the audit, we were able to estimate the extent to which the Production System tools had been developed across the Group as a whole, and to identify problem areas and areas for improvement.

Thanks to the NLMK Production System, the company made a significant profit last year. I think that this year the impact will be comparable.

The second important event of the year saw NLMK Long become actively involved in the development of the NLMK Production System. In addition, this year we have started to implement the NLMK Production System at NLMK's overseas assets. Our specialists have held working meetings and consultations with their American counterparts at NLMK Pennsylvania on how to implement the Production System tools and will carry out similar work at other sites.

As for our goals and objectives for 2015, they derive from Strategy 2017. Our main focus is the development of the Production System across the entire Group. Next year will be dedicated to the same purpose. We will work on improving the tools already in use, and expanding the scale on which they are applied. Everyone across the entire Group will need to work hard to bring the maximum possible benefit to the company.



**Alexander Starchenko**

Vice President, Energy

This year, we have seen the external environment in which the company operates change dramatically. I am referring to the economic slowdown, especially on the Russian market, the complex geopolitical situation, and the end to the energy rate "freeze" at the end of the year.

Not everyone on the market would be able to survive in such conditions. We are already seeing how the burden of debt is forcing some companies to take unpopular measures to preserve

the viability of the business as a whole. In our case, in order for the company to maintain previous levels of social responsibility, it is more important than ever for us to ensure that all departments are as efficient as possible.

This is especially true when it comes to energy efficiency. Energy prices continue to rise every year. That means we need to make savings so that we do not lose our competitive edge. In 2013, energy expenditure accounted for 13% of total costs, and in 2014 this will remain more or less unchanged.

With regard to increasing efficiency, the key challenge facing us in 2014 and 2015 is how to reduce specific energy consumption.

This year, Strategy 2017 was approved. For us, the main areas of work within the Strategy are, firstly, improving the efficiency of our own power supply, and secondly, reducing the cost of purchased energy – in other words, working to protect the interests of the consumer. For example, last year we were able to freeze electricity and gas prices, and we took real steps to reduce cross-subsidization in electricity.

We are constantly challenged to reduce the volume of energy we purchase on the market and make the most of our own reserves, subject to economic efficiency. For example, this year we have optimized operations at our cogeneration plants to increase the consumption of blast furnace gas. Furthermore, in order to minimize expenditure on external power supply, we have decided to enter all our companies onto the wholesale electricity market.

And finally, the third area – the reduction of specific energy consumption in our process technologies. In terms of the specific energy consumption of production, we have made significant progress. In 13 years, this figure has fallen by 20% (from 7.1 Gcal per tonne in 2000 to 5.67 in 2013) and has come close to the level of international best practice (5.4 Gcal per tonne of steel).

In 2015, we will continue our work in these three main areas to reduce the

burden of energy costs and improve energy efficiency, and will also work on a number of optimization programs aimed at reducing the consumption of domestic energy resources.



**Victor Togobetskiy**

Director, Occupational Health and Safety

This was a successful year in that we began the first phase of establishing an NLMK culture of health and safety. Our main aim for 2014 was to communicate to all employees the importance of complying with occupational safety regulations for their own safety. I think we have achieved this by working hard to run training seminars and implement new programs.

We see that people's mindsets are changing. Increasingly, employees are more conscious of safety issues and follow the rules not because they would be punished for breaking them, but because those rules are intended primarily to protect them.

We were able to launch two programs that constitute the initial phase of introducing any safety system. The first program identifies unsafe working conditions and develops measures to address them. The second covers staff training and development, which includes involving staff in all kinds of processes. These two programs were launched at all sites, including our foreign assets. Most importantly, they were positively received.

In addition, this year we are wrapping up a project to improve the quality of personal protective equipment. We reviewed all our

methods and practices to ensure that staff are provided with high-quality and comfortable means of protection.

We will continue to develop these programs in the new year. Our goal is to identify and bring under control all risks by the end of 2015. We must have a clear action plan and risk management techniques to ensure that no dangerous operation goes ahead without suitable measures in place.

We also plan to introduce new employee training and development programs, and run various pilot projects aimed at avoiding hazardous situations. These include safety management programs for midlevel employees and one-day programs for production workers to promote the principles of safe behavior. We need to maximize the opportunity to minimize human error and injury due to unsafe actions.



**Sergey Likharev**

Vice President, Logistics

This year we have successfully achieved four main objectives.

First, we maintained continuity and stability in departmental operations during a change in management.

Second, our transport plan was fully implemented despite conditions being very difficult from a logistics point of view. The movement of trains on the Novorossiysk and Tuapse lines, the main route for our export shipments, was severely restricted during the winter because of the Olympics, and then in summer due to the movement of passenger trains from Ukraine to Russia.

Third, we have begun to adopt the lean manufacturing system, and we have put together a package of optimization projects with a total economic impact approaching RUB 1 billion.

Finally, we were able to implement a large, cross-functional project to reduce stocks of finished goods at ports, the results of which have already contributed to the company's EBITDA to the tune of more than RUB 73 million.

The key challenge for the logistics division in 2015 will be achieving a significant increase in productivity and a decrease in logistics operating costs, assuming, of course, the uninterrupted provision of full transport services to our core operations. And of course, as always, providing a safe and environmentally friendly workplace for our employees will remain our priority.



**Ilya Guschin**

Vice President, Sales

This year has been difficult for us. There have been several multi-directional shifts in the market: factors that have helped us (especially positive macroeconomic growth and investment in the economy), and those that have worked against us (falling prices on the global market in the second half of the year and the devaluation of the ruble – which we have tried to neutralize as far as possible in domestic market prices). Nevertheless, overall, the year can be judged as a success.

We were able to procure orders for our entire production capacity and sell our products. Moreover, our colleagues in production managed to surpass a

number of budget figures, especially in hot-rolled steel, and we have worked together to exceed our targets.

Turning to plans for 2015, I would like to remind readers about Strategy 2017, which has been approved by the NLMK Board of Directors. As you may remember, one of the key goals of the strategy is to become the leader in strategic markets.

In 2015, we are going to focus much more heavily on the problems and challenges of our domestic market. We plan to significantly improve the quality of service we offer our buyers, increasing the number of salespeople and sales support staff and engaging better with our customers. We will become a unified service with a well-defined geographical network based on proximity to the customer. Our sellers will be able to offer customers products from all Group production sites, regardless of their affiliation to a particular division. In parallel, we plan to address a number of internal problems; improve the efficiency of our back office, which will be centralized in Lipetsk; and structure business processes to support our sales departments. We plan to develop a call center and an electronic trading platform. Our goals for 2015 are ambitious, not only in terms of volume but also in terms of the level of organization which we need to instill in our ranks.

In the 2015 sales budget, we are laying out a few scenarios based on various predictions as to how macroeconomic indicators and exchange rates will change. It is extremely difficult to predict which of these scenarios will come to pass. The current year has shown us how important it is to have not only a well-calculated plan of action, but also to be able to improvise, and take your competitors by surprise with your market actions. It is important to be mobile, rapidly redistributing the flow of goods to the most marginal markets, and to make decisions quickly. We will make use of those qualities, along with better customer service and a larger sales staff, on the market in the coming year.



### Brijesh Garg

Vice President, Procurement

The principal changes in procurement in 2014 have focused on three areas. The first is our intent to build lean and efficient processes. The second is the active involvement of our stakeholders, whether these are suppliers, internal customers for products or services, or end consumers. We are creating a cross-functional culture and trying to maximize the outcomes of cross-functional team interaction. The third area is sustaining a robust operation through continuous learning programs. I believe that the main prerequisite for expanding the potential of our department is having people with the right skills and a clear understanding of their roles and responsibilities.

In 2015, we will continue to work towards creating strategies for procurement of materials in every category, taking into account the objectives of NLMK Group and the requirements of our internal customers. We will also focus on how to reduce risks for the company. To this end, we will pay more attention not so much to prices, as to the total cost of ownership and the total costs in the procurement process.

Additional sources of ideas for improving our processes, increasing process efficiency, and reducing costs will together form the essence of our joint initiatives and partnership programs with suppliers. It is important that suppliers share our values. Integrity, transparency, efficiency and flexibility are key to the success of procurement operations. We instill this approach in our supply team, and this is what we

expect from our suppliers. We will strive to ensure that this culture of fair and transparent relationships is practiced within our department, in the NLMK Group, and in the companies with whom we cooperate.



### Vadim Urias

Vice President, Information Technology

For IT operations, this year will go down in history as the year that we introduced cloud technologies. We have virtualized our entire infrastructure, making it both more reliable and more economical. Our private cloud saves us about 25% on physical servers. We are able to place twice as much data on existing servers as we could previously. In addition, we can now manage the entire infrastructure centrally, from Lipetsk. In other words, our private cloud has allowed us to make significant savings on hardware and to simplify maintenance through centralization.

The second important project for us this year has been the transition from SAP ERP to the new HANA database. NLMK Group is the first company in Russia to take this step. The new database will allow us to work with SAP online, an option which is currently unavailable to other Russian companies. We have compressed SAP and placed it on the server RAM. As a result, processing time for requests to the server is several times quicker. When information is stored on disks, a request from the storage base requires the disc to physically turn, whereas storing information on RAM avoids this and saves space.

This year NLMK IT successfully tested a service level agreement (SLA) system, which proved that NLMK IT is able to guarantee a certain quality of service. We have created a fully operational maintenance department, including setting up an IT request portal and control room, updating all infrastructure, and introducing various software packages. And whereas this year NLMK IT has operated primarily internally, next year it will operate as an external contractor.

We are planning a large number of projects for next year. One of the largest is a project management system. Another, no less important project is a system for planned and actual consolidation of budget management for financial operations. Also in the new year, we are scheduled to complete the move to parallel accounting according to both Russian and IFRS standards. Our challenge will be to facilitate this task using the latest SAP developments. You could say that this year we have been setting up our own infrastructure and internal processes, and next year, we will have a new basis from which to engage in the "external" projects of the business.



### Alexander Sokolov

Vice President, Social Issues

Staff at NLMK Group today benefit from a high level of social welfare, as evidenced by the company's position in a ranking of the leading Russian companies for corporate social responsibility. We confidently occupy 11<sup>th</sup> place out of 100 companies in the list, and are part of the group with a "very high level of corporate social responsibility."

This includes creating a comfortable and safe working environment, providing training opportunities, improving the quality of medical and health care for employees and their families, and organizing recreational, sports and cultural events.

This year we have increased funding for social programs to RUB 2.7 billion, up 15% from last year.

Next year, we will continue to focus on these areas within the company, but our key task will be to involve the employees themselves in this process. We want to motivate people to take care of their health, to participate in all the company's initiatives, and to take a responsible approach to health and safety.

In 2015, we will carry out work to upgrade catering at the Lipetsk and Stoilensky sites, providing hot meals and quality food to even more employees. All in all, motivating staff to lead a healthy lifestyle will be a key element of NLMK Group's new social strategy, which we are currently developing, and that will enable us to reduce the number of days lost due to sick leave.



### Konstantin Arshakuni

Director, Strategy and Business Development

Without a doubt, one of the main events of 2014 has been the public announcement of NLMK Group's development strategy, which took place in February this year. This is obviously a significant event both in terms of positioning the future development of the company and setting out the

future goals and objectives that the company intends to achieve, and also from the point of view of improving our relationship with investors. After all, disclosing information on prospects and specific goals, as defined by the company's clear key performance indicators, is a primary concern for investors intending to purchase shares in any company.

Also in 2014, we have updated and delivered to the Strategic Planning Committee our evaluation of a number of key development projects within the Group. These primarily include the two major development projects at Stoilensky: the construction of the pelletizing plant and the project to increase extraction and processing of ore at the plant. These projects focus on developing production of our own iron ore concentrate, as well as supplying it to Novolipetsk for use in the form of pellets. Also among our key projects is a plan to introduce pulverized coal technology at blast furnaces No. 6 and No. 7 in the near future. This is a highly efficient technology, which can significantly reduce the consumption of scarce coking coal and natural gas in favor of cheaper thermal coal. The implementation of these projects at Stoilensky, together with the introduction of a pulverized coal injection system, will significantly strengthen NLMK's leading position as one of the lowest-cost steel producers in the world.

As part of the development and formalization of functions and processes within the Strategy and Business Development Division, we will be agreeing several sets of regulations this year. We will release provisions governing the evaluation of the economic efficiency of investment projects at NLMK Group, and we will approve strategic planning regulations that will cover the strategic planning process and the annual updating of the investment plan.

In 2015, we will continue to review and update existing development projects, and we will work to meet all the inherent challenges involved.





International Process Excellence Core Teams

# Journey to Excellence

Over the course of a week, from August 26<sup>th</sup> through the 29<sup>th</sup>, the US Process Excellence Group hosted two of our Russian counterparts from the Optimization Team headquartered at the Lipetsk facility.

Yulia Taranova

The goal of the visit was two-fold – to look at the progress we have made and provide some feedback on our journey and to train our group on the various elements of the NLMK Production System (NPS), which centers on improving the efficiency of the operation along with all aspects of the business.

Our visitors were; Julia Venza, Director of Operational Efficiency, Sergey Nazaryan, Head of Production Efficiency System.

In order to drive and sustain improvements in the US operations and in all production facilities within the NLMK Group, we are being asked to align our Process Excellence Programs with the structure and formats used in Russia. We will need to scale the design of the NPS system for our operation so that it fits with our size and resource availability, but adopting the continuous, sustainable improvement philosophy and use of the tools and systems will be required of all of us to align with NLMK's corporate vision.

## MANAGING PROCESS VARIATION

We manage process variation with control charts. When we say a parameter in the mill is critical to control for quality, productivity or yield, we have to ensure we maintain that parameter within limits that guarantee it will produce good results in the product. If we go outside those limits, that means our process parameter is 'out of control'. In the SEI system we will be implementing, improvements to the process are made when operators and other resources on the shift can define the source (root cause) of the problem and correct the issue on the spot. Process variation is a bad thing. If not addressed on the shop floor, it will

The SEI System – General Discussion. The US Process Excellence Team and ITS have been working over recent months to define and begin implementing a version of the SEI (or 'System for Efficiency Improvement'). It is a very detailed information system that begins with shop floor inputs and builds a measure of discipline in collecting accurate root cause information that guides problem solving. The information is used to drive improvement on three primary fronts (below).

lead to low throughput, quality defects and ultimately higher manufacturing costs. Control charts will be used on the shop floor and up through all levels of management in the organization to help us drive variation out of our processes. A process with less variation can then be dialed in to a more exact set point that produces optimum quality, efficiency and cost.

## EQUIPMENT RELIABILITY IMPROVEMENT

Another module within the SEI where our Russian colleagues provided training targets equipment reliability, breakdowns and delays. Like the

control chart module, delays at each operating unit are tracked not only for their duration, but in a very detailed drill down that helps us evaluate trends in what causes down time. In the past, we may have recorded a 30 minute mechanical delay due to a hydraulic cylinder failure. In the SEI, we track that delay as associated with the Hot Strip Mill, Coil Box Area, Delivery Table Roll Section, Transfer Bar Hold Down, 3 in. Hydraulic Cylinder, Mill Drive Side, etc. This 'tree' will allow for a high degree of data analysis to identify trends in areas of failure. Once the delay is defined, then as before, a root cause must be found and an immediate corrective action must be documented. What we do in the short term to get the mill running, however, is not usually the 'fix' that prevents

NLMK Group works to keep the format for communicating KPI information the same across all departments and plants



Our goal is to align American Process Excellence Programs with the structure and formats used in Russia

the problem from coming back again. The longer term fix, the preventative measure, is also a required entry in the system. The system also has ways to track the effectiveness of our preventative measures and tell us when something we changed is not working to correct the original problem.

#### PRODUCT NON-CONFORMANCE IMPROVEMENT

Lastly, there was training on a module in the SEI that tracks internal product non-conformances. This is what we would call a reclass (downgrade). The criteria for a non-conformance in the SEI is a product that requires rework or is for sale at a lower than prime price. As with the first two modules, root causes, detailed root causes, temporary corrective actions and preventative measures will all be required inputs in the system. All told, the information input requirements are high, and we will need to figure out how to make this fit with an organization our size, but the system is a powerful tool that drives a disciplined approach toward problem solving and continuous improvement beginning with the shop floor and working up through the organization, touching all levels.

#### 6S IMPLEMENTATION

By now, you have probably read about or physically observed some of the progress toward 6S implementation especially at our 35 Temper Mill Pilot Project. Areas may look 'cleaner' and more organized, but 6S is often confused with 'housekeeping'. It, in fact, couldn't be more different! 6S is a set of workplace orderliness principles – a culture – that serve as a foundation for sustainable improvement in all aspects of the operation where it is applied. It leads to improved safety, consistency in production, efficiency (elimination of waste) and a number of other stabilizing elements in the process. Our Russian colleagues appreciated

the improved 'look' of 35 Mill compared to the last time they were here, but they also noted the main aspects of a 6S culture are not where they need to be just yet. We do, however, know where we need to go and we are on the path to get there!

#### SHOP FLOOR INFORMATION / COMMUNICATION

After touring the mills in Lipetsk and Kaluga in November last year, the team saw a number of different types of information posted across the plant. NLMK works to keep the format for communicating KPI (Key Performance Indicators) information the same across all departments and plants. They have actually already begun to adopt one of our communication formats – the KPI green and red dial indicators we have posted in all shops and on our Shop Floor Displays!

#### THE 'A3' TEAM CONCEPT

Lastly, we discussed the ever-popular A3 Team concept that is widely used and accepted throughout the Russian manufacturing system. A3 Teams use a standardized format for problem solving. The team format got its name because the idea is centered on eliminating waste from a problem solving process – the entire activity of the team from problem statement to resolution should be able to fit on one sheet of 11 X 17 in. paper! This type of paper is called 'A3'. But like 6S, A3 is not about what it looks like on the surface. So it's not just about paper size. It is about a disciplined way of attacking a problem using a tried and true methodology developed by Toyota. The Russian Team outlined how the tool is used. They use it for mass scale improvement projects, not unlike our existing Optimization Program targeting \$11.2 MM in savings this year. They also use it for issues that arise out of the SEI systems. A3 teams are formed to address

process variation issues, maintenance reliability issues and product non-conforming issues when the SEI data suggests a problem is more than an isolated incident. It is powerful, it is disciplined, and it is organized – characteristics we can all use to enhance our own problem solving techniques in the US. And by the way, everyone is involved! A3 teams are used primarily by Operations and Maintenance to address shop floor issues that arise out of the SEI modules, but Quality, Engineering, Supply Chain Management, Accounting and all other parts of the organization are using this disciplined approach to solve problems and improve efficiency within their respective organizations.☺

The system is a powerful tool that drives a disciplined approach toward problem solving and continuous improvement



## WHAT CAN YOU DO TO BE PART OF THIS NEW WAY OF THINKING?

### 1. Stay Tuned.

The US Process Excellence Team is always working to roll out new methods that align with the international corporate vision for efficiency improvement. One of our top goals is getting more people involved in this movement across our Farrell and Portage organizations.

**2. Sign Up.** When you see advertisements for 'Think Tank' sessions at either location, sign up for one. These are small groups that get together to learn about these principles and discuss how to work more efficiently. The Think Tank teams break out and also do small A3 projects within their departments to tackle an efficiency issue.

### 3. Have an Open Mind.

Some of these new concepts are just that – they are new. They are not complicated. They are not hard to learn. They are simple. As long as you are willing to work in a more disciplined way and have a passion for improving our company's competitive edge, we will welcome your participation in this expanding movement. This will touch everyone in some way at some point and will be our new way of conducting ourselves and our business.

### 4. Embrace the Change.

The SEI system and the philosophies and tools adopted by our parent company are coming to the US operations. They will make us better

as a company and as an organization of people who must work together to meet our goals. Change is not easy. But it is important to recognize that change has to happen – especially in an industry like ours with an ever-changing landscape and fierce competition. Let's be honest. Implementing these tools and changing the way we work is not going to be easy. We are going to experience set backs. We are going to have disagreements. As long as we keep in the forefront of our minds that we are a team – Portage and Farrell together – and we must all work together in unity to implement this new methodology, we will be able to harness the power of a new way.



# 10

## QUESTIONS

### about NLMK Production System

NLMK Group has been recognized as the most efficient steel producer in the world. The key to its global success has been the implementation of the NLMK Production System, involving a series of programs to improve operational efficiency. Ekaterina Eletina, who is responsible for developing the NLMK Production System, talks about what has already been achieved and what remains to be done.

Interview: Natalia Sviridenko, Yana Larina

#### 1. When and how was the Production System first introduced at the Lipetsk site?

We began our work at Lipetsk in 2009. Production, the area where the most added value is created and also the area with the most room for improvement, was where we first introduced the new concept. We began by improving quality, stabilizing technology and making the equipment more reliable. As the

#### 3 facts about the NLMK Production System:

- Implementation of the Production System is one of the factors that have helped NLMK Group to become the most efficient steel company in the world.
- In Q2 2014 the cost savings resulting from optimization programs across all Group sites amounted to USD 63 million compared to 2013.
- More than 10,000 NLMK Group employees have been trained as internal coaches in Production System principles.

system has evolved, the scope of the project has expanded. The mindset of staff at the company has been transformed, and what were once new approaches are now thought of as "the way we work." The NLMK Production System now covers some of the Group's key businesses: NLMK, VIZ-Steel, Stoilensky, Altai-Koks, NSMMZ, and NLMK Kaluga. And NLMK Pennsylvania is actively taking steps to adopt these new approaches.

#### 2. What challenges are you facing this year?

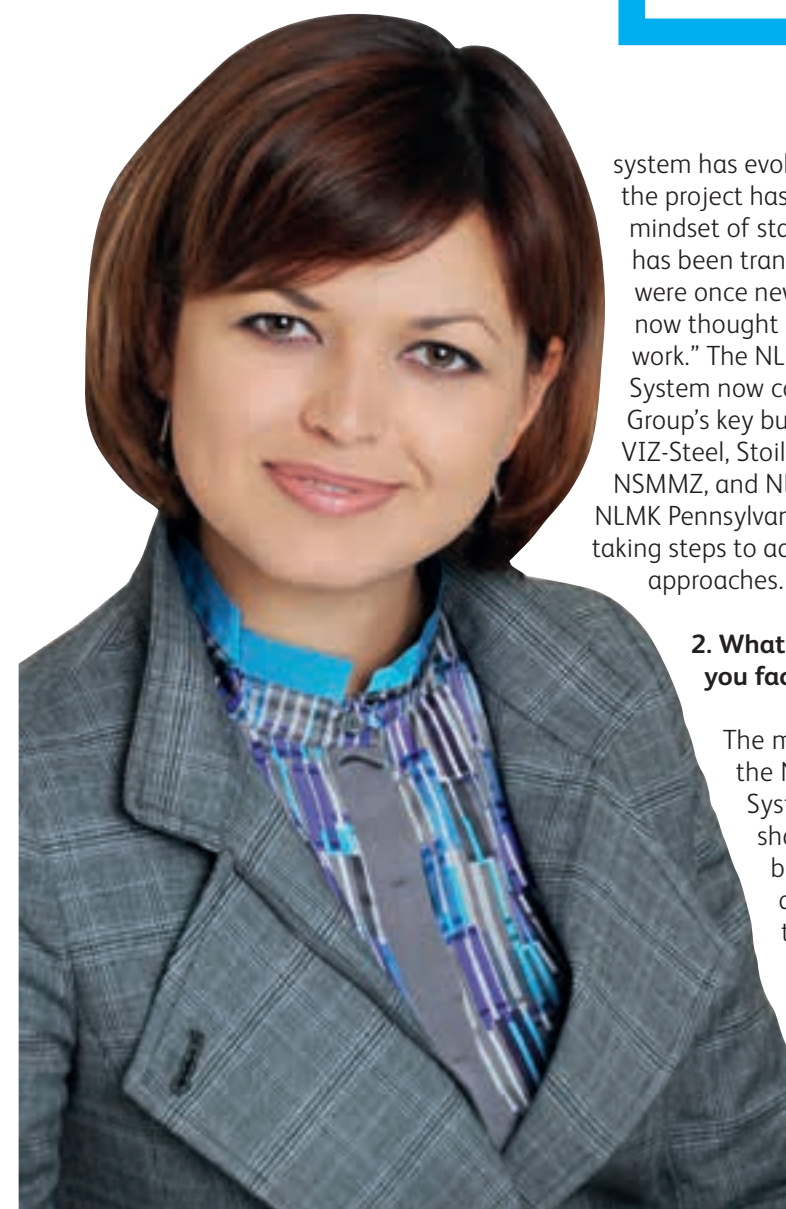
The main tasks ahead for the NLMK Production System this year are sharing knowledge both horizontally and vertically within the organization (training for staff at various levels of authority) and consolidating that knowledge. We also need to ensure that Production

System tools can operate autonomously.

Training on new principles and tools, using both external consultants and trained internal coaches, is ongoing. The way things currently stand, more than 10,000 NLMK Group employees are now fully trained internal coaches.

As for consolidating new approaches, we strive to ensure that the system is self-regulating, and does not require "manual control." This will ensure it remains resilient going forward. It was to this end that efficiency improvement departments were created last year in each division, subordinate to the relevant directors. The most enterprising employees were selected from workshops and plants to join these departments, and they have now become advocates for the new approaches, and the driving force behind the changes.

This year, we have been performing a complete diagnostic assessment of how well the Production System is working through audits of sintering, steelmaking, and rolling production. The audits have identified some key problem areas and ways to further develop the system.





### 3. How effective are the Production System tools?

If we look at the results so far, there are currently more than 130 A3 projects being implemented to achieve targets relating to equipment downtime, unsatisfactory products, material consumption, and energy. More than 60% of the projects had achieved their targets by July 2014. Projects in the steelmaking and repair sectors have had the best results, with an efficiency rate of more than 75%. In 2013, cost reductions resulting from the implementation of programs to increase operating efficiency, based on the introduction of the NLMK Production System at all Group sites, amounted to a USD 235 million improvement on 2012, and results at the end of Q2 this year show a USD 63 million improvement on 2013 levels.

### 4. Which tools are developing particularly quickly?

The mapping of repair and manufacturing operations is proceeding rapidly. In July, our work on mapping led to a number of measures



**WHAT WERE  
ONCE NEW  
APPROACHES ARE  
NOW THOUGHT  
OF AS “THE WAY  
WE WORK”**

being developed to enable the length of manufacturing operations and planned repairs to be cut by 10–20% without compromising quality. This will free up more time for steel production.

The tools for enlisting production staff are also developing. For example, this July, at the cold



## The PS is being introduced at:

**from  
2009**

• Novolipetsk

**from  
2013**

• VIZ-Steel  
• Stoilensky  
• Altai-Koks  
• NSMMZ

**from  
2014**

• NLMK USA  
• NLMK Kaluga

rolled steel plant in the polymer coatings section, ten initiatives were developed by employees on site – proposals aimed at improving product quality, ensuring the stable operation of equipment, and reducing the consumption of raw materials. This was only possible thanks to the division management team making increased efforts to inform staff about existing problems, and methodological support from the rolling production efficiency improvement departments.

It is important to note that the NLMK Production System is gaining

ground not only in production, but also in the company's functional divisions, such as logistics, energy efficiency, and health and safety. For example, the Directorate for Operational Efficiency and the Logistics Services are jointly implementing a project to cut the length of time rolling stock remains on NLMK territory. The purpose of the project is to reduce the volume of work-in-process. According to preliminary estimates, transport times for finished products within NLMK could in some cases be reduced by up to 30%.

### 5. Which ideas and principles of lean manufacturing are of particular interest to NLMK?

First of all I would just like to clarify that the NLMK Production System is not a copy of any existing production system, whether LEAN, 6 Sigma, or anything else. From the principles and tools of the world's leading companies, we pick out the most suitable for solving specific tasks in a given situation, and adapt them to the needs of the Group. Our Production System certainly has principles in common with the



LEAN philosophy: transparency and objectivity of information, continuous improvement, constant identification and elimination of all forms of waste and, most importantly, the involvement of staff at all levels and in all areas of activity in solving our problems together.

**6. Is it difficult to promote a Japanese system in a Russian company? You must see occasional misunderstandings.**

We are not introducing a Japanese system; we are borrowing its principles and adapting them to work for our company. Through the regular feedback we receive from the workshops, we know that misunderstandings do occur. After all, any group will have its optimists who believe in the success of change, and pessimists who are ready to blame failures on some supposed “Russian mentality.” But as they experience successful projects, people’s attitudes gradually change. Our employees are beginning to have faith in the effectiveness of our methods and the pursuit of perfection.

**7. One of the main principles of the Japanese system is continuous improvement planned in small steps. In what way, in your opinion, is this better than sudden, universal change? In which NLMK division would this be most noticeable in terms of efficiency?**

It is impossible to say definitively which is better: revolutionary changes which have an immediate effect or evolutionary changes with a stable effect in the long run. It all depends on your particular purpose. However, in my view, abrupt changes tend to result in misunderstanding and rejection.

Our Production System is slowly but surely changing the psychology of the people involved and turning the process of continuous improvement into a “formula for life.”

**8. Some experts believe that the initiative submission form recalls the good old innovation system**

**used by industrial enterprises in the Soviet era. Is this true?**

Yes, this procedure does resemble the Soviet system of innovation. However, our version is simpler in terms of design and faster in terms of response. Any employee who has an idea for improvement can

Any group will have its optimists who believe in the success of change



## WE ARE NOT INTRODUCING A JAPANESE SYSTEM; WE ARE BORROWING ITS PRINCIPLES

fill out a one-page form in the shift meeting room and submit it to the division’s Technical Committee. If the initiative is approved, the employee can receive a reward of up to RUB 2,000 immediately – just for having submitted the proposal. If, subsequently, the initiative has a positive impact, the employee will receive an additional reward of about RUB 10,000.

**9. It is said that it will take five or six years for the system to spread across all sectors. Is this justifiable in the present circumstances, when market conditions change every quarter?**

Radical restructuring can be fast, too, if we give priority to Production System tools like A3, mapping, and the introduction of new materials. But in order to achieve a stable outcome, each new change must become a way of working and a way of thinking. Five

to six years or even more is normal for new habits to be developed and a new philosophy to be embedded in production.

**10. Some impact has been achieved, but this now needs not only to be maintained but to be developed further. What else must be done for the system to be fully functional?**

In 2015, we plan to further apply Production System principles and tools across all the main processes of the Group’s companies, to determine within each main area of activity the functionality of increasing efficiency, and to adapt efficiency tools to the specific needs of each area. We will continue to coordinate the Production System with the budgeting process.

In the long term, our main goal, of course, is to make the company truly efficient. That means satisfied customers, shareholders and employees. ☺



# Industrial Archeologists

Year by year, numerous monuments of industrial architecture disappear, and with them the legacy of a whole era is lost forever: an era of hard work and bold discoveries without which the technologies of today would not exist. German photographers Bernd and Hilla Becher worked to preserve these priceless historical moments for future generations. Their photographs have become a chronicle of industry, and they themselves have gained fame as industrial architects and sculptors.

Maria Khlopotina

## SOURCE OF INSPIRATION

Industrial landscapes are the muse and an inexhaustible source of inspiration for the Bechers, who were drawn to them at first sight and from the first shots they took. Düsseldorf, where the couple learned the basics of photography in the mid-1950s at the local academy of arts,

is surrounded with unusual structures: steel mills, blast furnaces and mines are around every corner. At that time, the entire region subsisted on the coal industry and machine-building, and life centered around the mills and factories. What did 24-year-old Hilla Wobeser, a native of Potsdam, the city of gardens

and palaces, make of such a place? The local constructions created for purely practical purposes seemed unusually simple and concise, but the gaze of a novice photographer picked out a peculiar aesthetic in the directness of their lines and the interlocking of their pipes. As for Bernd Becher, a native of



We were convinced that what we were looking at were unique witnesses to their era

Wherever the Bechers photographed, the quality of the shots always came first

that pencil and brush were not the way to document these structures, and so he switched to photography.

But progress does not stand still. In thermal power plants and the domestic goods sector, coal was increasingly replaced by oil and gas. The sector was in crisis. Mines were closed one after the other, and the industry started to fall apart. *"Allowing total destruction would mean forever losing the opportunity to learn about how people thought in those distant times. We were convinced that what we were looking at were unique witnesses to their era, as important an aspect of architecture as a medieval cathedral. Industrial architecture has its roots entirely in economics. It was important for us to capture these structures. And as carrying away the originals was not possible, we used a camera to shrink them and convert them into images,"* Bernd Becher said later.

## A NEW VISUAL LANGUAGE

Even the very first pictures the couple took together, in 1958 in Bernd's hometown of Siegen, stand out for their unusual composition. Instead of odd angles and compositional frills, we see directness and brevity. Where others have emphasized – and even tried to enhance – beauty, the Bechers preferred the truth of life. They were, however, unusually selective in the way in which they approached their choice of subject. The way Hilla Becher tells it, they looked for structures with expressive forms: coal tipples, blast furnaces, cooling towers, and water towers. From these they chose objects with a long and rich history of evolution. *"The water tower is essentially a very simple structure, just a tank raised above the ground. But it is surprising the variety of forms this can take – from simple wooden barrels to exquisite, ornamentally decorated designs. And yet they are all just containers to hold water that is stored in case of emergency. However, if you*

these parts, coal and industry were in his blood. Most of his relatives had worked in the mines and hot workshops, and he had been familiar with the sight of mills and factories since childhood. It was to these structures that he devoted his first landscape studies, and he continued to draw them, mastering his craft in Stuttgart and Düsseldorf. Perhaps Bernd Becher would have remained an industrial artist – if not for his dream of preserving the appearance of factory buildings intact. He became convinced







In the late sixties and early seventies, their signature “dry” style first gained critical acclaim

place them side by side, it becomes apparent that they embody the spirit of an era and a way of thinking,” explained Hilla Becher.

Nevertheless, the apparent simplicity of these images was only achieved after long hours of waiting and painstaking measurement of angles and perspectives. Some of their subjects, as the Bechers recall, were very simple to capture: you centered the subject and ensured that there was a little space on all sides, and that the horizon was no higher than three-quarters of the way up the image. Others took a great deal more hard work. The slightest misalignment or unwanted feature could ruin the entire shot. And so that light and shadow – so beloved by other artists for adding mood to a photograph – could not create a distraction, the couple took their photographs in the middle of the day, in cloudy weather. “For me, the sense in photography is in its objective view. Why should I bring my mood or emotions to something that is able to speak for itself? Of course, objectivity is just a word. Being objective does not mean uncovering the truth. Objectivity implies that you are ready to give the subject you are depicting its own

In post-war Germany, these mysterious trips to abandoned mills and factories were regarded with suspicion, and the photographers themselves were often taken for spies

voice,” Hilla Becher said, explaining their signature style.

Sometimes, for the sake of one good shot, the couple had to wait days, or even years. That was how it was for the shooting of the dual water tower series. The background of the photograph is a monotone, whitish sky on which the cylindrical structure with a small garden around it stands out clearly. As always, all the lines are perfectly straight. The picture contains nothing superfluous that might obstruct the viewer’s gaze. It seems a typically Becherite shot. “It is indeed typical, but we must remember that they did not have special effects back then. The only way for them to flatten the color of the sky and hide the background was to wait for nature to take care of that itself,” emphasizes Irina Kulikova, an art critic and university lecturer on modern art.

The couple traveled several times to the location in question, but in the summer the trees obscured the lower

part of the tower, and on clear days the background distracted too much from the subject. Finally, one winter day, they managed to catch the right weather: enough fog to hide the background, but yet still clear enough to see the smallest details of the design. And then the familiar work began. Find the camera angle, set up the tripod and camera, freeze for 20 seconds, click – and the “chronicle” grows by one new shot.

In post-war Germany, these mysterious trips to abandoned mills and factories were regarded with suspicion, and the photographers themselves were often taken for spies and “enemies of the people.” Sometimes, the sight of two people with a camera would prompt an immediate call to the police. The idea that someone might just want to photograph water towers seemed insane and was perceived as cover for selecting targets for attack, recalled Becher. They tried to visit the Soviet Union several times, but at the border

they were always met with the same mistrust and suspicion. In the end, the couple went overseas in the early sixties, in search of artistic freedom.

#### ARTISTIC FREEDOM

In the United States, the hippie movement was gaining popularity. Above all, the “flower children” valued freedom and were loyal even to those they did not understand. There was no shortage of interesting examples of industrial architecture in the country, especially in the industrial state of Pennsylvania. Even when they left to photograph in France and the UK, including England and South Wales, the couple always returned to Pennsylvania. It was there, in the late sixties and early seventies, that their signature “dry” style first gained critical acclaim as a trend in modern conceptual art. After their first solo exhibition in 1968, the Bechers became welcome guests even at international exhibitions. For example, in 1972 the couple took

part in the famous modern art exhibition Documenta 5 in Kassel, Germany, a five-yearly gathering of the artists and photographers who have made the greatest contribution to modern art.

Together with fame came artistic freedom. Their photographs began to be accepted and appreciated, not only in the US, but also in Europe. It was then that they decided to risk trying their luck in Russia. Siberia and the Urals, like the Bechers’ native Germany, proved to be the perfect industrial landscape for the industrial photographers. Overcoming numerous bureaucratic obstacles, Hilla even got permission to photograph objects near Nizhny Tagil, which had been preserved since the Second World War. But the difficulties, in the end, prevailed. Besides having to carry equipment across half a continent, the search for lodging, food and other hardships of travel were a distraction from their work.

And wherever the Bechers photographed, the quality of the shots always came first. The more shots the couple accumulated of factories, the more they

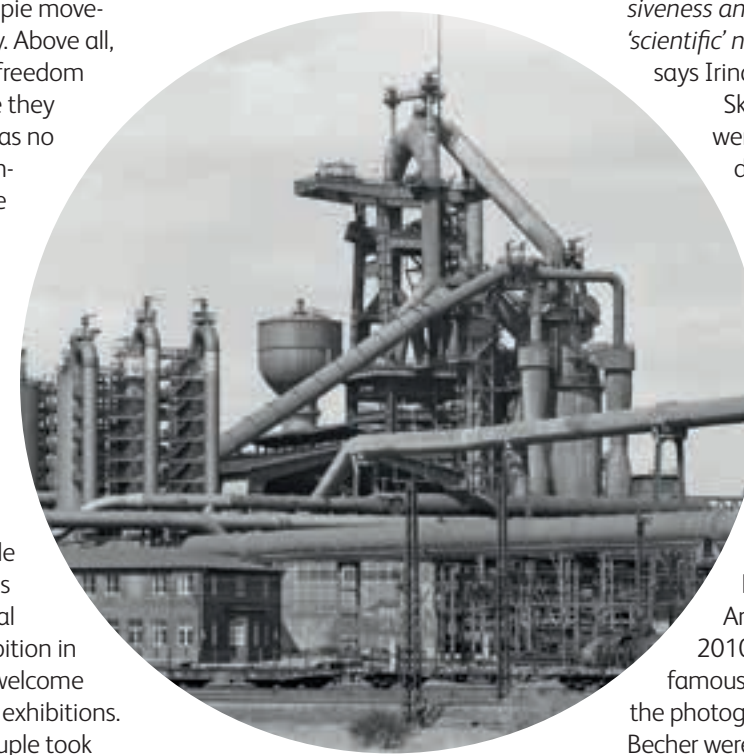
“For me, the sense in photography is in its objective view”

realized that seeing all the differences as well as the individuality of each object was only possible through comparison. It was then that their “chronicle” of industrial facilities started to come together. Photos were put together in groups of 9–15 shots, and were chosen in such a way that they could be compared horizontally, vertically and diagonally, and comparisons could be drawn between the first and last. The results were tables of species and subspecies, somewhat reminiscent of inventory lists. “Even their faithful disciples thought this a boring approach, only later coming to appreciate their particular expressiveness and concise manner, and the ‘scientific’ nature of this photography,” says Irina Kulikova.

Skeptics and conservatives were even more critically disposed and refused to recognize this as art at all, merely predicting its rapid fall into oblivion. Time has proven them wrong.

#### CONTEMPORARY RECOGNITION

Every two years, the international photography exhibition Biennale gathers together experts, critics and photography lovers at the Multimedia Art Museum in Moscow. In 2010, among the works of other famous German photographers, the photographs of Bernd and Hilla Becher were presented in the Russian







capital. Their exhibition, under the unusual title “Industrial Archeologists” filled galleries over several months. According to feedback from visitors, the discreet black-and-white images of the industrial architecture of Germany, the Netherlands, Belgium, France, the United Kingdom and the United States were attractive because of their realism, clarity and apparent simplicity. The Multimedia Art Museum said of the exhibition: “The composition of these works is primarily intended to draw attention to the architectural and design features of the structure placed in the center of the image. Objects are depicted from a frontal perspective. As a rule, they are photographed in neutral daylight conditions. There is no room for people here.”

For their objectivity and scrupulous recording of their subjects, the couple has been repeatedly rewarded by critics. In 2002, they won the Erasmus Prize, and in 2004, the Hasselblad Award. But perhaps the most unexpected and valuable prize of all was the Golden Lion at the Vienna Biennale in 1991. Before the Bechers, no photographer had ever won that prize, or even been considered in the competition. But their creativity very much impressed the organizers, who presented them with an award in the art category, adding that while the photographers had never been sculptors, their work had achieved a sculptural quality.

“Their visual language is always unmistakable: cloudy weather, with

*the light falling just so, deep clarity, capturing all the details, removing all distractions – anything that might point to a specific place or time,” says Irina Kulikova. “Most of all, their work resembles scientific images, with its rows of comparable types: molecules, cells, the stars. Similar subjects are combined in a series, and from each series they create a table of comparisons. No subject is as important in isolation as it is in the way it differs from the next.”*

The slightest misalignment or unwanted feature could ruin the entire shot

#### PRESERVE FOR POSTERITY

But while, in their art, a single subject was important only in comparison with another, in life the Bechers were ready to fight for each and every monument of industrial architecture. What is made of stone will remain forever, but that which is made of iron will fade into the past and disappear along with the

era, and they believed the duty of a whole generation was to prevent this from happening and preserve such structures for posterity. Returning to Germany as famous photographers, they made a complete list of object-exhibits in the Ruhr area that were in need of protection. It was only thanks to their intervention that the Zollern II mine – now known around the world as a rare ensemble of the modern industrial style – was saved from destruction and oblivion.

Russia also has its fair share of such monuments, but today they are in extremely poor condition. “In Russian industrial architecture, there are two groups of monuments: monuments of the pre-revolutionary past and monuments of the industrial era and constructivism. These, and others, are often not being used for their intended purpose and have been abandoned,” says the President of the Union of Architects of Russia, Andrey Bokov. Well-located industrial enterprises, he says, can and should be given new life. Due to their versatility and huge spaces, former mills and factories are easily transformed, for example, into exhibition or conference halls, or shopping malls. In New York, the once-industrial Soho has become one of the most prestigious areas in the city, and Moscow can also go down this path, Bokov believes. Since the end of the twentieth century, large cities have tried various ways to adapt industrial structures, some more successfully than others. “But there is no doubt: Disused industrial spaces can be capitalized on and turned into attractive places,” says Andrey Bokov. “In Europe and the United States, former large factories are often put back to work. Technoparks are created there for small and medium-sized businesses. In Russia, similar success stories are few and far between, and the cultural value of these structures still goes unrecognized. But I think that gradually we will come to understand.”



388 051 744  
tonnes of pig iron produced  
since 7 November 1934

375 788 652  
tonnes of steel produced

233 821 552  
tonnes of hot-rolled steel  
produced since the launch  
of Mill-2000 in 1969

#### including:

BOF Shop No.2:  
197 098 546 tonnes (since 1975)

BOF Shop No.1:  
163 303 106 tonnes (since 1966)

Electrical Steel Shop:  
13 921 000 tonnes (from 1959 to 01.04.2003)

Foundry Shop:  
1 466 000 tonnes (since 1958)





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