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People as Key to Efficiency

Elements of Operating Culture



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News



>>> SHAREHOLDER RESOLUTIONS

The annual general meeting of TMK shareholders took place on June 8 in Ekaterinburg. The shareholders elected an inspection committee, approved new versions of the Company Charter, Rules and Regulations for the General Shareholders' Meeting, the Board of Directors, and the Internal Audit Commission. Ernst and Young was approved as the company's auditor. The meeting decided to pay out dividends for 2016; total dividends amount to RUB 4.03 billion. Seats on the newly elected Board of Directors were filled by: Mikhail Alexeev, Sergey Kravchenko, Andrey Kaplunov, Peter O'Brien,

Sergey Papin, Dmitry Pumpyanskiy, Robert Foresman, Alexander Shiryaev, Alexander Shokhin, Anatoly Chubais, and Alexander Pumpyanskiy.

The Board met, and elected Dmitry Pumpyanskiy as Chairman of the Board of Directors. The meeting also voted to reelect Alexander Shiryaev as TMK CEO. The Board of Directors re-elected the following members of the TMK Management Board: Alexander Shiryaev (Chairman of the Management Board), Senior Vice Presidents Vladimir Oborsky, Viacheslav Popkov, and Andrey Kaplunov; and Vice Presidents Andrey Zimin, Alexander Klachkov, Tigran Petrosyan, and Vladimir Shmatovich. ■

>>> TMK: 1Q 2017

Improved performance by the American Division has had a favorable effect on the company's overall metrics. Against the backdrop of a recovering US petroleum market and a rising number of drilling rigs, the division has more than doubled its sales compared to 10 2016. Shipments of seamless OCTG, a key product with high profit margin, have almost tripled. Overall for the company, shipments of Premium threaded connections rose 7.5% from 40 2016. or 80% from 10 2016. The situation has improved in the rebounding European market, but it still remains highly competitive.



Financial performance (USD million)					
	Q1 2017	Q4 2016	Change	2016	Change
Revenue	944	902	5	761	24
Net profit	42	84	(50)	14	196
Adjusted EBITDA	142	140	1	123	15
Adjusted EBITDA margin (%)	15%	16%		16%	

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>>> NEW SALES SOLUTIONS

A variety of hot industry topics were discussed in late May at the 7th All-Russia Conference, Steel Pipes: Production and Regional Sales. A TMK delegation participated in the conference.

TMK Regional Sales Director Oleg Malarshchikov presented a report in which he discussed the company's 1Q 2017 performance and unveiled a new TMK sales channel – an electronic marketplace scheduled for full rollout in September.



» SIZING IT UP

TMK INOX has expanded the product range of arc-welded austenitic stainless steel pipe to diameter 114 mm. The new products are intended for use under pressure where corrosion resistance is required. "Seeing how the orders are coming in, the plant will continue setting up production of new types and sizes of pipe. This expansion will enable TMK INOX to increase output of products that are in high demand," says TMK INOX CEO and SinTZ Managing Director Viacheslav Gagarinov.





»» PIPE DATA SHEETS

SinTZ has deployed a new induction unit in the insulated lift pipe production area. This mechanized unit is designed to thermally treat welded joints to improve weld structure and properties. The induction unit comes complete with a modern control system that can generate a data sheet for each pipe, listing the key treatment and machining parameters.



» HIGH-CAPACITY MACHINES

OMZ has put into operation several new computer numerical control (CNC) threading machines in its tool-joint machining area. The new CAT 700 threading machines can process 150 tool-joint parts in 24 hours.

With tool joints accounting for over 40% of OMZ output in 2016, this upgrade will not only expand the product mix and volume but also enable the plant to offer its partners a more technically sophisticated product.

>>> FOR A CLEAN WORLD

TMK employees have participated in activities staged as part of the Year of Ecology program.

On March 25, TMK joined the world's most popular environmental drive – the Earth Hour of the World Wide Fund for Nature (WWF), as an expression of its concern for the planet's future. All major TMK divisions and plants in Russia, the U.S., Europe, and the Middle East turned off the exterior lights at their office buildings and other non-core electricity consuming facilities.

On May 19, many TMK employees switched to two wheels as part of the All-Russia "Biking to Work" campaign sponsored by the Russian Ministry of Transportation. This all-Russia effort is held twice each year, in May and September. It aims to promote bicycle culture as a way to improve the environment and relieve gridlock in major cities.





>>> INDUSTRIAL WATER RECYCLING

VTZ has launched a pilot project to test wastewater treatment and water recycling equipment.

The project calls for developing the wastewater treatment and water recycling systems for the large-diameter pipe production line. The shop completed installation of a unit for

utility water treatment after hydraulic testing of pipe and a unit for treatment of wash water after pipe expansion.

Based on the results for 2017, the industrial wastewater treatment units will make it possible to reuse up to 100 m3 of treated water.

APPOINTMENTS



VIACHESLAV POPKOV

Appointed TMK Senior Vice President for Production and Engineering. Viacheslav worked at SinTZ as Managing Director for the past four years before joining the management company.



IGOR KHMELEVSKY

Appointed TMK Vice President for Asset Management.



Ilya Zyryanov

Appointed Managing Director of Orsk Mechanical Engineering Plant, part of TMK NGS. Ilya headed the production division of TMK NGS in 2011-2017.

>>> SHOW AND TELL

A delegation of dignitaries from Singapore visited the TMK GIPI plant in Sohar (Oman). This visit was initiated by the Ministry of Trade and Industry of the Sultanate of Oman. "During our meeting with the delegation from Singapore, we were able to demonstrate the advantages of our top-quality products. Our efforts are consistently aimed at bringing the highest standard of service to our partners — local petroleum project operators as well as regional and international customers," TMK GIPI CEO Vladimir Shcherbatykh commented on the results of the visit.



>>> IN HARMONY WITH NATURE

In the Year of Ecology, TMK won an award as part of the international competition, Environmental Culture, Peace and Reconciliation. Launched in 2016, a project to create and cultivate an environmental culture at the plant earned an award in the Environmental Culture in Manufacturing Industry and Power Engineering category.

This competition has been held since 2012. It is organized by the Vernadsky Nongovernmental Foundation for the Environment and the international environmental public service institutions GREENLIGHT and GREENLIFE. In 2017, the competition received 328 applications from 70 Russian regions, with 21 projects winning awards.

SAFETY IN METALLURGY

For the second time, TMK plants held activities commemorating Steel Safety Day, a global initiative of the World Steel Association (*worldsteel*) aimed at completely preventing injuries throughout the steel industry.

According to International Labor Organization (ILO) estimates, each year more than 2.3 million men and women die globally as a result of workplace accidents or occupational diseases, and 4% of global GDP is lost due to poor working conditions and accidents. "The challenge of ensuring workplace safety is a pressing one for all countries. It is not just for government to take the lead in improving labor safety, but also employers and the workers themselves," commented Sandra Polaski, ILO Deputy Director-General, appearing in spring 2015 in Sochi at the first All-Russia Occupational Safety Week. Stakeholders can join forces to create a culture of accident prevention. The ultimate goal is to achieve a zero workplace injury level. It may sound ambitious, but experts maintain that, with today's technological advancements, this is completely achievable.

2017





FROM ALL OVER THE WORLD TOOK PART IN SSD



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ALMOST **900,000** WORKERS AND CONTRACTOR ORGANIZATIONS TOOK PART IN AN AUDIT

A DROP OF **72%** SINCE 2004 IN THE FREQUENCY OF INJURIES RESULTING IN TEMPORARY WORKER DISABILITY

Source: World Steel Association



Vision Zero

Traditionally, steelmaking has been considered an industry with high risk of injury. But the operating experience of the leading international metallurgical companies is close to refuting this assertion. What's more, the leading industry association *worldsteel* has now established reduction of workplace injuries to zero as one of its top priorities. This is precisely the main mission of Steel Safety Day (SSD), which began in 2014.

Data obtained from *worldsteel* members shows that there has been a significant and consistent decline in the rate of accidents resulting in worker disability in the metallurgical industry (from 4.15 to 1.17 over the time period from 2005 to 2015). This is largely the result of targeted and systemic action by the industry's leading companies.

Leading up to SSD, observed each year on April 28, all the metallurgical companies that have joined in this global initiative conduct detailed safety audits at their production facilities, using methodological materials provided by *worldsteel*. Based on their results, a summary report is prepared of all identified risks. The association forms groups of experts to develop recommendations TMK CEO Alexander Shiryaev (at center) conducts an audit at Sinarsky Pipe Plant for SSD-2017 for the primary causes of serious accidents. *worldsteel* participants may use these materials in their future work.

Result-focused

TMK traditionally pays great attention to occupational health and safety issues. In 2015 a corporate policy in this area was adopted that is binding on all employees. A reporting system adapted for all divisions of the company has been created, and a workplace safety public awareness campaign has been implemented.

TMK joined the SSD initiative in 2016 to increase the effectiveness of its work in the area of occupational safety. Based on 2016 results, the number of accidents at the company's plants dropped by 40%, and their frequency rate by 34%. "In matters of workplace safety, great importance is attached to development of work practices. We will have achieved our goal once safe working practices have become a common ideology, once attention is being paid each day, continuously, to matters of occupational and industrial safety," commented Alexander Shiryaev, the company's CEO.

This year approximately 35,000 employees at all TMK manufacturing sites, including the foreign divisions, took part in events timed to coincide with Safety Day. Special attention was given to having the company's senior management participate in this international initiative, which is common practice for all companies participating in SSD.

IN THE LEAD-UP TO SSD, COMPANIES CONDUCT DETAILED SAFETY AUDITS SAFETY

CULTURE OF CHANGE



VIACHESLAV POPKOV.

Senior Vice President for Production and Engineering

Why is company operating culture a meaningful concept? How can we evaluate it, and what tools can we use to develop the things that motivate personnel? Here is what TMK Senior Vice President Viacheslav Popkov had to say:

Mr. Popkov, why is so much attention being paid to a company's operating culture these days?

Operating culture is an integral part of any growth-oriented modern business. In the manufacturing sector, competitiveness depends not only on how good your engineering is, but on a range of other factors. These include: health, safety and environmental protection; sound manufacturing practices; the discipline required to get the job done; personnel skills; work ethics; and workplace relationships.

TMK channels its efforts into all these areas. TMK attaches great importance to providing its employees with proper workplace conditions, ensuring they have personal protective gear and protective clothing, and that they work in a healthy environment. This is also an integral part of our operating culture.

What are the core values of an operating culture? As far as priorities are concerned, unquestionably the most valuable asset we have is people. People are the most important component in our operating culture and are the key to efficiency. Perceiving people as company capital, as something in which to invest – not just financially, but otherwise – fundamentally alters your approach to management. The manager starts to take a different view of his own methods of operation, how they affect personnel, and how they shape the operating culture.

How can the development level of an operating culture be evaluated? What are the criteria?

The quality level of output produced by the TMK companies, their production volumes, process utilization rates, and the extent that new capacities are brought on stream – these are the basic metrics for operating culture.

It is harder to measure employee values and how motivated they are with respect to obtaining results. The Steel Safety Day, when we also looked at general matters of safety and risk assessment, focused on this specific issue. The state of the workplace, the outward appearance of personnel, how they communicate – with each other and with their supervisors – and how they respond to questions turn out to be very important for understanding the atmosphere within work teams and gauging how high the operating culture is in any particular company component.

Do national characteristics show up in operating culture? Are our overseas facilities different in this respect?

Our colleagues in the Americas, Europe, and the Middle East have their own cultural traditions and their own particular ways of thinking. The differences lie in the form in which action is taken, in the way the process is nourished and organized, in interpersonal communication, and things like that. However, those same basic requirements that we spoke of must be the same everywhere. There can be no deviations from process discipline.

All TMK IPSCO plants participated in SSD-2017



From Analysis to Action

In the course of preparing for SSD, TMK employees received questionnaires to help them identify workplace safety risks. The focus was on the five most common causes of safety incidents: moving machinery, working at heights, falling objects, on-site traffic, and potential safety hazards that are capable of causing workplace fires or explosions. In the course of the audits, use of any of the "lean manufacturing" practices was noted as good professional practice.

As part of SSD, meetings with participation from the company's top management were held at all TMK plants, in which the outcomes of audits were thoroughly reviewed and next steps were determined. As a result, the company's plants will each create their own Plan to Eliminate or Mitigate Identified Safety Risks and Share Successful Practices.

It must be said that Steel Safety Day also involves hands-on activities aimed at addressing issues relevant to the employees at each of the plants.

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IN 2016 THE NUMBER OF ACCIDENTS AT TMK PLANTS DROPPED BY 40%

For example, at plants in the American division of TMK, training sessions and briefings were conducted – at the Baytown site, a lecture was held on the rules for handling poisonous and dangerous animals discovered on plant grounds; in Wilder, a workshop was held on the use of fireextinguishing agents; and in Koppel, TMK IPSCO CEO Piotr Galitzine gave a presentation to factory workers on the occupational safety operating results of the American division.

"TMK supports the highest standards in industrial safety management. Because of this, in 2016 there were no group safety incidents or accidents at any of our plants. The company is continuing to take part in the Steel Safety Day initiative so that in the future the words 'metallurgy' and 'safety' might become synonymous. Our mission is to make our work environment as comfortable and wellprotected as possible," commented Dmitry Pumpyanskiy, Chairman of the TMK Board of Directors, in his video message to company employees on Safety Day.



CHANGE AS A HABIT

The development of a corporate improvement system is becoming increasingly important for TMK. While at one time it was a tool for quality management, now the mission is to extend lean manufacturing technologies to all critical processes. The training of specialists who will become leaders of improvement projects has already been initiated at the corporate level, and a system for sharing experiences with other companies in the industry has been established.

Business strives toward continuous improvement of efficiency, which is essential to development. There are several means of achieving the stated goal, one of which is lean manufacturing. Lean manufacturing is based on systematization of operations, loss control, and strict quality control. It is an important workable tool in the hands of a manager. According to estimates from the Russian Federation Ministry of Industry and Trade, use of a lean manufacturing system when modernizing, for example, may reduce the required investment by 10-30%.

NATIONAL STANDARD

Lean manufacturing is a business practice based on continuous improvement. Ideally, it affects all levels: from entry-level employees to top management. Thanks to this approach, many Japanese companies most notably the automotive giant Toyota – were able not only to recover after World War II, but even to break into foreign markets.
Today, virtually all major corporations around the world are implementing lean manufacturing concepts.

Russian business leaders are also working to implement such practices, though, according to Lean Forum data, their prevalence (5-6%) is

VIRTUALLY ALL THE WORLD'S MAJOR CORPORATIONS ARE IMPLEMENTING LEAN MANUFACTURING CONCEPTS



Authors of the best Lean Six Sigma projects of 2016 in the Russian division currently at a lower level than in countries that are outperforming in terms of labor productivity. And this is despite the fact that lean technologies have certain forerunners in Russia, sharing much in common with the approaches developed in the 1920s by specialists at the Central Labor Institute headed by scholar and poet Aleksey Gastev. Therefore, the government is paying considerable attention to promoting lean manufacturing practices. At the initiative of the Ministry of Industry and Trade, basic national standards in this area have been developed and the LeanCert certification system has been launched.

Implementing lean technologies is not yet a must; failure to use lean technologies does not imply any sort of restriction (for example, on access to purchasing). But, in the words of Denis Manturov, the Russian Federation Minister of Industry and Trade, future plans do call for such standardization and certification to be used in management structures for large (primarily government) procurements. Furthermore, he notes, standardization of production opens up new opportunities for increasing the efficiency of complex integrated structures. "These integrated structures manage large groups of subsidiaries and long supply chains. This gives rise to a variety of problems related to resource losses, supply disruptions, and contract price overruns. Using management mechanisms that are based on lean manufacturing standards and guidelines will help us leave behind many of these problems," believes the Minister. This means that for companies that are structurally a part of holding companies with some

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degree of State ownership, the use of lean manufacturing standards may also become required, something their suppliers will have to consider.

A COMPREHENSIVE SOLUTION

TMK continues to implement a corporate improvement system (CIS) based on the Lean Six Sigma model that has proven itself to be so effective. This is a combination of the two most popular approaches globally. In this lean manufacturing model that Toyota pioneered, all activities are classified as operations and processes that add value, do not add value, or that do not add value but are necessary for business. Six Sigma was born in the U.S. It is an optimization methodology based on mathematical models, was created by Motorola, and enhanced by General Electric. Both conceptual frameworks are focused on continuous improvement. The integrated solution helps achieve cost savings through both waste reduction and implementation of stable and manageable processes.

The American IPSCO plants were the first at TMK to implement this approach. In 2003, before becoming a part of TMK, the plants set about implementing Lean Six Sigma to improve their operations in terms of quality, costs, productivity, and safety. Thanks largely to the Lean Six Sigma methods, these plants have been able to make quality, defect-free products despite using equipment that is far from new. In 2008, after IPSCO became a part of TMK, its accumulated experience was studied carefully and then built upon significantly going forward. TMK started building a corporate improvement system based on the Lean Six Sigma methodology in 2010. It began with the successful implementation of a project to improve billet quality at Seversky Tube Works.

Today the Lean Six Sigma methodology is being used in three divisions of the company (American, Russian, and European). A wide range of improvement tools are used at TMK, including the Six Sigma mathematical models. However, the most popular is the 5S+1 lean methodology. 5S is a set of simple rules that help optimally organize the workspace, create comfortable working conditions, increase productivity, and reduce the percentage of defective goods, while "+1" signifies "safety at every turn". Specialists at TAGMET were the first at TMK to try using 5S+1 tools. Now, not just manufacturing facilities but also offices are included in the program.

IN A NEW FORMAT

No system is ever in a steady state – it is either evolving or devolving. Originally, the CIS Department was Elena Avdeeva, Head of the Corporate Improvement System Department



a part of the TMK Quality Control Division. In fall 2016 the company underwent a reorganization. Management

of the corporate improvement system was spun off as a separate function, the work of which was supervised by the Chief Engineer. "We have the tools. We can participate not only in the quality management system, but also in improving many other focus areas, such as occupational safety and the environment," said Elena Avdeeva, Head of the Corporate Improvement System Department.

TMK's Corporate Improvement System has proven its effectiveness





One of the key tasks is personnel development, training, and involving an ever larger number of employees in these projects. "CIS is based on involving all personnel in innovation. This is very important, since in a system of continuous improvement it is specifically the line personnel who have enormous potential," said Ms. Avdeeva. "However, a special role is still given to leaders who have the requisite knowledge for implementing the projects and who perform the role of being a conduit for ideas."

There is a certain hierarchy of specialists based on level of knowledge of lean manufacturing techniques. "Champions" are the project "clients" and the main driving force for transformation. At TMK the process "owners" (the shop foremen and area directors) perform this role. "Black Belts" have the highest level of knowledge of Lean Six Sigma. These specialists can conduct projects independently with a significant (10-20 million rubles or more) cost savings. A "Green Belt" is a basic level of knowledge, generally middle managers. Finally, there are the employees who have mastered the 5S+1 methodology and applied it to their process.

A personnel training system has been

created at TMK. Business trainers are prepared within the company: outside consultants are hired only for the Black Belts course. This is a complex and costly program. The previous graduating class was in 2013. Now 17 managers are being trained in the program. "These are people who have excellent leadership qualities, including our business coaches. Training lasts five weeks and is oriented around sharing best practices," says Ms. Avdeeva. TMK has its own corporate education course for Green Belts – one group at each plant takes this course each year. The training consists of 12 days of theory and 12 days of practice and includes implementing at least one or two improvement projects, depending on the complexity of the tasks. There is also a basic 5S+1 program. It is shorter – 2 days of theory and 4 days of practice, but a larger number of employees are enrolled in it, culminating with execution of an improvement project right in each enrollee's workplace.

The improvement methodology will be expanded in the near future. Two new programs based on the Lean Six Sigma methodology have already been launched. TPM (Total Productive Maintenance) and SMED (Single-Minute Exchange of Dies). Business trainers have been trained ♠ A group being trained in the "Black Belt" program in 2017

TMK has a system to train corporate business coaches to begin these educational courses. TPM is a method aimed at continuous improvement of equipment maintenance. It is based on a scheduled preventive maintenance system that uses the principle of "zero defects" and eliminates sources of waste. SMED is a set of methods to help radically reduce equipment changeover time. Operations are analyzed and standardized, and parallel actions are eliminated.

A system has been implemented for sharing best practices with the metallurgical holding company EVRAZ and the company Gazpromneft-Snabzhenie. Much work is also being done to implement new mathematical process control techniques, notably an equipment utilization efficiency factor to help improve manufacturing efficiency. "On a daily basis all the plants in the Russian division already compile such information on all the basic types of rolling-mill equipment, and plans are in place to implement this factor in the finishing section. The plants have proposed their own projects to use this factor at so-called "bottlenecks" for equipment that requires monitoring and improvement," says Ms. Avdeeva.



Since the CIS has been in effect (not including 2017), 676 improvement projects have been launched within the company, of which 433 have been fully implemented. The primary focus areas are increasing productivity, reducing costs, improving product quality, and enhancing work practices. The total economic benefit to TMK from the improvement projects already implemented has surpassed 2 billion rubles. The company will now take its efforts to the next level and, in addition to introducing new tools, will analyze the system in use to see how well it conforms to the lean manufacturing standards introduced in Russia. "It is essential that we be prepared for certification at any moment, should management decide to do that," says Ms. Avdeeva.

TMK RESULTS

In the Russian division, Lean Six Sigma tools were first introduced at Seversky Tube Works. Since then, dozens of projects based on the Lean Six Sigma methodology and hundreds based solely on the 5S+1 system have been implemented. The total economic benefit comes to about 400 million rubles. "Over the past ten years, Seversky Tube Works has transformed itself into a modern enterprise featuring the best available technologies," says Managing Director Mikhail Zuev. "Work practices at such an enterprise must be at a high level. Implementing projects under the 5S+1 system helps us improve process in a given area and involve plant personnel in the improvement system, which is responsible for increasing discipline in the workplace, lowering the risk of injury, reducing lost work days, and increasing work productivity."

At Sinarsky Pipe Plant, strategy and performance targets are currently being implemented for the improvement system, which is aimed at reducing competitive products and services that meet consumers' requirements and expectations and deriving an economic benefit from such products and services. Some of the significant projects that have been performed at the plant in the past two years include

The Overall Equipment Effectiveness indicator has been used at TMK IPSCO since 2016 improvement obtained by applying TPM methodology to the SMS Meer upsetting press on Pipe Mill 2 (economic benefit = 3.6 million rubles annually); reducing the changeover time of the Bronx Tube-Straightening Machine in the OCTG pipe mill by four hours (1.3 million rubles annually): reduction of metal consumption in the manufacture of 73.05 × 5.51 mm tubing (2.3 million rubles for the second half of 2016); and increased productivity in the galvanizing of Dnom 89 mm couplings in the thermodiffusion zinc coating area of the OCTG pipe mill (931 thousand rubles annually).

At Volzhsky Pipe Plant, one of the most important projects was "Reducing the Duration of Ladle Treatment," the economic benefit of which is estimated at more than 15 million rubles annually. The queue of ladles in the arc-furnace melt shop (AFMS) continuous caster area transfer bay was long considered a phenomenon that could not be eliminated. An analysis of the steel smelting and casting processes using Six Sigma tools helped reduce this queue. The project





developers determined that the casting methods could be optimized in the sections representing the shop's main schedule of tubulars, thereby reducing the duration of ladle treatment. "The philosophy of an improvement system implies possibilities for change in any process, even a perfectly tuned process. All you have to do is see these hidden growth areas," says Sergey Struchkov, Head of the Improvement System Department at Volzhsky Pipe Plant.

The Quality Directorate at TMK-Kaztrubprom is focusing on implementing the 5S+1 system. Personnel are being trained by corporate business coaches, with 47 individuals having been trained since 2016 (mainly top executives, middle managers and production line workers). In addition, using Lean Six Sigma tools, several improvement projects aimed at combating idle time have been carried out. Car loading was accelerated, product inspection between steps was made more efficient, and the time needed for threader equipment changeover was reduced.

>>> TMK has implemented a program to share CIS best practices with other companies in the industry



IN THE TIME THAT THE CIS HAS BEEN AROUND, THE COMPANY HAS LAUNCHED 676 IMPROVEMENT PROJECTS >>> Preparing the workplace

TMK Neftegazservis (NGS) plants have implemented 64 projects aimed largely at increasing productivity and product quality, reducing equipment idle time, increasing the efficiency of equipment operation and logistical operations, and reducing costs. For example, last year CIS projects enabled specialists to increase production of oil pipeline products with diameter 114 mm or greater at NGS-Nizhnevartovsk by 10%, while the durability of the threading tool on the casing-pipe threading machine at the Orsk Machinery Plant was increased by more than 20%.

In 2016, six improvement projects were implemented by the Romanian divisions, with a total economic benefit of approximately 300,000 euros. These projects were accomplished by teams made up of manufacturing, servicing, and quality specialists. Sixteen individuals were trained in use of the Lean Six Sigma methodology.



IN 2016 THERE WERE 16 PROJECTS IMPLEMENTED AT TMK IPSCO BASED ON THE LEAN SIX SIGMA METHODOLOGY

The TMK IPSCO team following a walk-through of the production line And last year, the Overall Equipment Effectiveness (OEE) indicator began to be used to measure and increase operational efficiency at all TMK IPSCO manufacturing plants. In particular, analysis of OEE scores helps identify key opportunities for improving the operational efficiency of the main production units. The next phase involves the use of Lean Six Sigma tools such as SMED, TPM and DMAIC. In 2016 a total of 16 projects were performed at TMK IPSCO using Lean Six Sigma techniques, producing a total cost savings of more than 2 million dollars annually.

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TRAINING OF CORPORATE BUSINESS COACHES IN THE LEAN SIX SIGMA METHODOLOGY

2017

• START OF TRAINING

TMK SPECIALISTS

SMED PROGRAMS.

WITHOUT USING

• 10 AND 8 BUSINESS

RESPECTIVELY,

WERE TRAINED

COACHES,

IN THE TPM AND

2018

- THE DEVELOPMENT OF TWO PROGRAMS: "PROCESS MAPPING" AND "BASIC TOOLS FOR DETERMINING THE CAUSES OF NONCONFORMITIES"
- RE-CERTIFICATION OF BUSINESS COACHES IN THE 5S+1 AND GREEN BELT PROGRAMS
- PREPARING NEW GROUPS OF BUSINESS COACHES UNDER THE NEW PROGRAMS

2014

2011-2014

IDEA

THE USE OF
CONSULTING
SERVICES FOR ALL
LEAN SIX SIGMA
PROGRAMS

• TRAINING OF NINE BLACK BELT MASTERS

 HOLDERS OF A BLACK BELT HAD TO PASS TRAINING IN THE "METHODOLOGICAL TRAINING OF CORPORATE BUSINESS COACHES" PROGRAM

2015

- TWO CORPORATE TRAINING PROGRAMS WERE DEVELOPED: 55+1 AND GREEN BELT
- START OF TRAINING TMK SPECIALISTS IN THE 5S+1 PROGRAM



21 BUSINESS
COACHES WERE
TRAINED

• START OF TRAINING COMPANY SPECIALISTS IN THE GREEN BELT PROGRAM, WITHOUT THE USE OF CONSULTING

2016

L

• 13 BUSINESS COACHES WERE TRAINED

• TWO NEW PROGRAMS WERE DEVELOPED: TPM AND SMED

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UNIVERSITY FOR PIPE INDUSTRY PROFESSIONALS

The "TMK Corporate University" (TMK CU) has been launched, and the first program under the TMK CU moniker was a program to introduce changes related to the transition of the pipe plants in the company's Russian division to a unified wage system (UWS).

The level of TMK business development, the scope of knowledge available within TMK. and the need for the company to adapt to constantly changing external and internal environmental factors today demand that approaches to managing employee competence be changed. Many tasks related to personnel staffing and training, and development of a managerial talent pool, can no longer be accomplished individually by each enterprise. All plants must combine their experience and efforts and use their resources for corporatewide objectives, and a system must be established for personnel training and development across the entire company, which is the purpose of

Competent personnel is a core value of the company. "If the personnel in a company meet the requirements of the business community, are capable of tackling ambitious assignments, respond flexibly to changes that may arise, and improve their skills as needed, then ultimately this will help to raise the business's overall value. And the more quickly the potential competence of personnel rises, the more effective the company will be at competing for customers. We are becoming faster, more convenient, and more useful to our customer," comments Elena Pozolotina, Director of the Directorate for Personnel Development Projects and the Corporate University project manager. » A UWS

Implementation Support Program has been developed by the company's personnel department



According to Ms. Pozolotina, employee competence management is a cyclical process, of which education is only one component. Other components include: Development of internal corporate standards that strengthen the requirements for employee skills and qualifications; personnel recruitment, onboarding, and certification; and career management. The process cycle from acceptance to certification is focused on continuous education and training in order to bridge the gap between one's qualifications and the qualification requirements.

The CU will be designed to incorporate the latest technologies. Educational programs will be implemented using state-of-theart digital technologies that have proved to be effective for learning. "The primary goal is to make these programs more accessible to the student, optimum in terms of resource expenditure, and most important - replicable between plants and divisions of the company. This is how access to professional development programs becomes relevant for the European division," says Ms. Pozolotina. "It is also important that the CU prepare employees who are ready to perform cross-disciplinary tasks."

Another important focus area of CU activities will have to do with establishing an entire chain





for identifying, supporting, and onboarding talented young people at TMK . This involves actively interfacing with sponsored schools and with secondary vocational and higher educational institutions, and developing a partnership with Ural Federal University, other specialized colleges, and the Sirius educational center in Sochi.

The company's management potential is another focal area for CU activities. Here one of the main tasks is to create an effective mechanism for advanced training of managers in core professional and managerial competencies.

Though the grand opening of the university is scheduled for fall 2017, the CU is already addressing various important corporate tasks. One of the functions of the CU is in-house consulting, the first project of which was a program related to transitioning Russian division plants to a unified wage system (UWS). A UWS involves introducing general wage-setting principles and a unified remuneration system, which should result in qualitative changes in the bonus system, help promote staff involvement, and make the payroll accounting system more transparent and comprehensible.

"For the plants, this is a fairly complex and comprehensive change to their Student field
trips to the school
laboratories at
the TMK Center
for Vocational
Education in
Polevskoy



processes, and it is the university's task to make sure the process of introducing it goes as smoothly as possible," explains Ms. Pozolotina.

Construction of a TMK research and development center that will become the company's primary research site is currently under way in Skolkovo. It will house not only a testing laboratory but also the university. Putting these two things side by side is by design. The CU will help ensure that new technologies are disseminated throughout the company as quickly as possible, and will also aid the "science" of identifying talent within the company.

The Corporate University must be a conduit of an ideology of continuous development and improvement, impart "corporate citizenship" values, and be a channel for new knowledge. The involvement of all company employees will help insure the project's success.

THE PRIMARY GOAL IS TO MAKE THESE PROGRAMS MORE ACCESSIBLE TO THE STUDENT, OPTIMUM IN TERMS OF RESOURCE EXPENDITURE, AND MOST IMPORTANT – REPLICABLE BETWEEN PLANTS AND DIVISIONS OF THE COMPANY

STEEL: GLOBAL TRENDS

The semi-annual meeting of the Board of Directors of *worldsteel* – the World Steel Association – was held in Beijing in April. *Worldsteel* is one of the largest and most dynamically evolving industrial associations in the world. It includes more than 150 steel companies, national and regional associations of steel manufacturers, and research institutes. The Association's member companies provide about 85% of global steel production.

TMK joined the Association in 2005. Company Chairperson Dmitry Pumpyanskiy serves on the *worldsteel* Board of Directors along with the heads of other companies that are participants in the organization. All members of the *worldsteel* Board of Directors enjoy the right to vote and to have their own representatives at the general meeting. In Beijing, TMK was represented by Sergey Alekseev, Head of the Marketing Directorate.

One of the main topics of the meeting was a discussion of current conditions in the steel market and prospects for growth. According to data published by *worldsteel* in April, global demand grew by 1% in 2016 (compared to 2015 levels). But despite the overall positive trend, the demand for steel products declined in most regions of the world.

BACKGROUND INFORMATION

The World Steel Association was founded as the International Iron and Steel Institute (IISI) in Brussels (Belgium) on October 19, 1967. In April 2006 the IISI opened its second office in Beijing (China).

In October 2008, the organization changed its name to the World Steel Association (*worldsteel*). Today *worldsteel* is one of the largest and most dynamically evolving industrial associations in the world. It includes more than 150 steel companies, national and regional associations of steel manufacturers, and research institutes. The Association's member companies provide about 85% of global steel production.

Over the short term, worldsteel experts expect global demand to slightly increase (by 1.3% in 2017 and 0.9% in 2018). The key market players will remain the same as today – Southeast Asia, the European Union and North America. However, the focal points will gradually shift. For Western markets, there will be persistent risks due to macroeconomic uncertainty associated with the formulation of trade and foreign policy by the new American administration, the exit of the United Kingdom from the EU, and the volatility of the dollar and euro. As for Southeast Asia, much depends on the world's largest steel consumer -China. Worldsteel experts believe that a slowing economy may result in a decline in steel consumption as early as 2018.

Other developing markets, particularly India, are expected to gradually increase in importance. *Worldsteel* experts also note that the recovery in oil prices will have a favorable impact on the economies of countries that are hydrocarbon producers. Russia, too, was a subject of discussion: Steel demand on the Russian domestic market will continue to recover this year.

However, over the longer term the situation for the global market generally remains challenging. According to a report prepared for the meeting of the *worldsteel* Board of Directors, global steel consumption will grow by no more than 1.1% annually until the year 2035, which is significantly below the 2000–2016 trend and an earlier forecast of 1.4%.

New factors restraining the growth in demand will emerge, including deeper application of the digital tools of the fourth industrial revolution and a

THE STEEL INDUSTRY MUST CONTINUE TO DEVELOP AN ENVIRONMENTALLY SENSITIVE APPROACH TO THE PRODUCTION PROCESS

transition to a closed-cycle economy dictated by both economic and environmental considerations.

All of these trends will be most pronounced in the market of the developed nations, where growth in demand up is forecast to be zero or even negative out to 2035.

Under these conditions, meeting participants stated that surplus capacity will remain the industry's key challenge. For the plants of the 65 *worldsteel* participants, the utilization rate in October 2016 was only about 70%, which suggests a surplus capacity of nearly one-third. According to *worldsteel* Director-General Edwin Basson, the volume of the world's existing steelmaking capacities, which total 2.39 billion tonnes, is sufficient to meet demand up until 2035.





initiative Steel Safety Day, which has a goal of achieving a zero workplace injury level. "It was stated that the steel industry must continue to develop an environmentally sensitive approach to the production process and undergo transformation. All the members of the Association will continue to work to highlight the relationship of the steel industry to the environment, and all steelmaking plants must improve their CO2 emissions by sharing best practices," said Mr. Alekseev.

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Meanwhile, despite the difficult

development issues will remain on

included detailed discussion of the

occupational and industrial safety

worldsteel's agenda as well. According

to TMK's Sergey Alekseev, the meeting

market conditions, sustainable

DEMONSTRATION OF CAPABILITIES

TMK took part in the international Offshore Technology Conference, which was held in Houston in early May. Those participating in this annual event showcased their technological solutions for offshore field development and discussed the future of the global offshore industry.

Initiated in the 1960s in response to the rapidly growing interest in developing offshore fields around the world, today the Offshore Technology Conference (OTC) is a key oil and gas industry event where prospects for offshore hydrocarbon exploration and development are discussed alongside major innovations from market players and equipment and technology suppliers. This year, one of the conference's major themes focused on the prospects for U.S. offshore energy production. U.S. Secretary of the Interior Ryan Zinke spoke at the technical session "Offshore Energy

Policies: Harnessing the Full Potential of America's Offshore," after which he signed an order tasking the Bureau of Ocean Energy Management with developing a new five-year plan for outer

OTC-2017 IN FIGURES

65,000 visitors









continental shelf development. This document represents a continuation of implementing the new U.S. president's order to expand the nation's offshore oil and gas production, which was signed on the eve of the OTC. Meanwhile other nations also have plans for increasing production. In particular, there were active discussions at the OTC on the future of Brazil's and Mexico's energy sector reforms aimed at attracting investment for deepwater projects.



New opportunities are opening up for international companies to participate in projects that were previously only accessible to stateowned companies.

Emphasis on Innovation Technological development was another central conference theme. More than 350 technical reports were presented and 44 technical sessions were held. Experts discussed how deepwater projects can compete with shale development, considered the role of automation in enhancing safety at production facilities, and looked at opportunities for using state-ofthe-art, underwater exploration and production technologies.

This year's TMK exhibit booth highlighted the company's latest technological solutions

DIRECT QUOTE



FAISAL NASEEM, Chief Executive Officer Sooner Pipe

Our experience working with TMK has been excellent. In the three years we have worked together, TMK has become one of our major suppliers of OCTG tubulars, and we are very proud of this. This is attributable to TMK management and the sales department, who have done a great job for us. TMK products have a good track record with our customers, and the quality and reliability of TMK products are the key characteristics that have helped us promote these products on the market.



HENRY EWERT, President Hallmark Tubulars

First I would like to congratulate TMK IPSCO on bringing its new TMK UP ULTRA TM GX Premium threaded connection to market. I have been impressed with the company's organizational management since TMK acquired the North American assets of TMK IPSCO. Since the very beginning, TMK has had a good track record as an honest and reliable partner, and when TMK IPSCO opened its research center in Houston, it was a kind of proof that the company has committed to being in this market for the long haul. TMK is developing new threaded connections and opened a service center in Canada. We and other TMK customers in Canada value this highly.



BOB DVORAK, Board Chairman and Chief Executive Officer B&L Pipeco Services

The history of our partnership with TMK is fairly rich. You could say that working with TMK is a lot like working with a member of your family. What's most important is that our companies work as a unit, regardless of the market challenges that sometimes come our way. We've established a great rapport with the TMK IPSCO team. Our partnership continues to grow, which is something we are very proud of.

"The energy industry is continuing to be transformed by the technological revolution taking place, and downturns tend to be the ultimate driver of the type of innovation that is often launched or showcased at OTC. Today, OTC is more important than ever as a venue for the type of learning and idea sharing necessary to propel greater efficiencies and safety," said Joe Fowler, OTC Chairman.

TMK has participated in the OTC for nine consecutive years. This year's TMK exhibit booth highlighted the company's latest technological solutions. On display was the full range of TMK UP Premium threaded connections used for oil and gas wells operating in adverse conditions, including offshore fields. The exhibition also included well completion solutions from the oilfield services company TMK Completions. Using an interactive panel, visitors could familiarize themselves with TMK pipe manufacturing technologies and the full range of TMK products.

As in previous years, TMK organized a welcome reception for customers, partners, distributors, and representatives of service



companies and suppliers as part of the OTC. When welcoming reception guests, TMK IPSCO CEO Piotr Galitzine noted that market conditions have stabilized as a result of an agreement reached between OPEC members and 11 non-OPEC member countries (including Russia) to reduce oil production levels. One outcome is the rapid increase in demand for tubular products in the U.S. However, the increasing technological complexity of drilling







➢ Piotr Galitzine: "Our customer base is growing."



operations will require increased adoption of innovations. TMK, said Mr. Galitzine, has the technologies that are needed.

"We are growing our customer base through new products. In particular, the new threaded connection specifically designed for heavy-oil steam-assisted-gravity-drainage (SAGD) applications we introduced to the market has immediately gained traction," he said. "TMK intends to be a long-term player in this business and in this market. We are continuing to invest in our own development. Our market success over the past eight years has been determined by a whole range of factors, the most important of these were and remain the work and support provided by our partners – people who have come today to this reception," said Mr. Galitzine.

TRADITIONALLY TMK HAS ALWAYS TRIED TO OFFER THE GUESTS AN UNUSUAL PROGRAM AT ITS GALA RECEPTION

LIGHT INSULATED LIFT PIPE FOR WELL COMPLETION UNDER Permafrost Conditions

SINARSKY PIPE PLANT (SINTZ) HAS SET UP PRODUCTION OF A NEW PREMIUM PRODUCT – LIGHT INSULATED LIFT PIPE.

Intended to be used as the upper section of the tubing string when producing gas from areas in the Extreme North, Light insulated lift pipe have a two-component design, with a smallerdiameter pipe inside a larger-diameter pipe. The space between the two pipes is filled with inorganic fiber to reduce thermal losses. This special design prevents the permafrost soils around the wellbores from thawing. First used at Tyumenneftegaz fields in the second half of 2016, the product as delivered complied with the customer's technical specifications. As a result, TMK qualified for a competitive tender process and was awarded a contract for the supply of some 80,000 m of pipes in 2017-2019. ■





DRILL PIPE WITH TMK UP EXD PREMIUM TOOL JOINTS FOR Well Drilling

Orsk Mechanical Engineering Plant (OMZ) has set up production of tool joints with a new premium threaded connection — TMK UP EXD. The second-generation TMK UP EXD double-shoulder threaded connection was designed by TMK Premium Service as part of an import substitution program. Its service specifications are on a par with those of similar products by international vendors.

Tool joints with this connection can be used not only in vertical wells but also during construction and workovers of wells in challenging geological settings with a high angle build rate (in directional and horizontal wells). This upgraded tool-joint design has improved the hydraulic parameters of drilling, and these tool joints can withstand higher torque compared to previous-generation tool joints.

Several batches of TMK UP EXD double-shoulder tool joints were shipped to Samotlorneftepromkhim this year. ■

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ELENA AVDEEVA, Head of the Corporate Improvement System Department

- 1. Looking at my work e-mail and planning my work day.
- 2. I am not superstitious and don't believe in superstitions.
- 3. My family, and at work my team.
- To look for the positive in everything. Don't put off until tomorrow what you can get done today.
- 5. Close friends. In good company there's never a shortage of things to talk about.
- 6. To Find an Idea/Introduction to the Theory of Inventive Problem Solving by Genrich Altshuller.
- 7. Japanese cuisine.
- 8. My daughter's wedding.
- 9. The National Aeronautics and Space Administration (NASA) in the U.S.
- 10. Moscow. It is the most beautiful city in Russia, with limitless possibilities.
- 11. If I could change the course of history, I wouldn't have allowed World War II to start, which took millions of lives.
- 12. Creative, multifaceted team.



- How does your workday typically begin?
- 2. Do you have any professional superstitions or superstitious beliefs?
- 3. Who in the past or present particularly inspires you?
- 4. What are your favorite habits or rituals?
- 5. Who would you invite to a dinner party? What would you like to talk about?
- 6. What is the last book that excited you?
- 7. What is your favorite ethnic dish or cuisine?
- 8. What is your most memorable recent experience?
- 9. What is the most interesting place in the world that you've visited?
- 10. What is your favorite city, and why?
- 11. If you were given the chance to change just one thing in this world, what would it be?
- 12. What does TMK mean to you? Describe it in just three words.



ELENA POZOLOTINA, Director of the Directorate for Development Projects

- 1. With a smile. A good mood and positive outlook are the keys to a successful work day.
- 2. If you're not ready for a meeting, there's no doubt it will be fruitless.
- 3. Anyone with a shimmer in their eyes, who is not indifferent to the work he or she does.
- 4. I love to play volleyball. This sport brings me joy and energizes me.
- 5. A.V. Suvorov. It would be interesting to attend a master class given by this great Russian policy maker and excellent teacher.
- 6. *The Pedagogical Poem* by the Soviet educator and writer A.S. Makarenko.
- 7. I adore seafood.
- 8. Bungee jumping at Skypark AJ Hackett Sochi.
- 9. I still haven't visited such a place. Perhaps it will be the submerged ancient city of Akra.
- 10. I love cities with a distinct atmosphere, like New York, Paris or Yekaterinburg.
- 11. I would conduct an experiment called "A World in Which People Speak Only the Truth".
- 12. Strength, growth, success.