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Technology Motion Knowledge

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Economic Efficiency

12 Green is the Color of
the Year

20 Successful Testing
and Launch of TMK
UP ULTRA™ GX

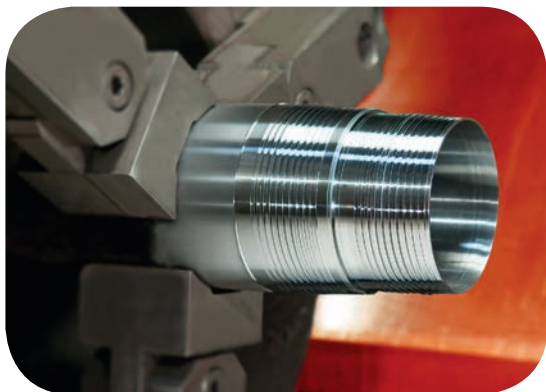


Alexander
Klachkov:
“The year of
ecology at TMK”

Green Investments



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Technology Motion Knowledge

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»» RECOGNIZED LEADER

SinTZ won the All-Russia Competition *Russian Business Leaders: Trends and Accountability* - 2016 in the category *Achievements in Health and Safety at Work*. The winners of the competition, staged by the Russian Union of Industrialists and Entrepreneurs, received awards on March 14 in Moscow as part of the social forum titled "Responsible Government-to-Business Cooperation in the Interests of Social Development," held as part of the Russian Business Week. ■



VTZ has won an award presented by the Russian Government for quality of steel pipe and billets. VTZ VTZ Director of Quality Alexander Zhukov and Managing Director Sergey Chetverikov accepted the award from Russian Prime Minister Dmitry Medvedev. Awarded since 1996, this most prestigious quality recognition is a nationwide quality management project in Russia. ■



»» ASK THE UNIVERSITY

In February, the STZ Professional Training Center hosted the first phase of a pilot project launched by TMK Global University. The project topic is: "Developing a program to teach employees the principles of the unified remuneration system based on the ADKAR model." This project will help develop a range of effective HR solutions pertaining to system implementation. The four-phase project will continue until the end of 2017.

Employees of the labor economics and organizational development units, as well as TMK in-house business coaches, participated in a session devoted to project implementation. The team developed a format for raising awareness among employees and holding presentation meetings geared towards the most effective implementation of the new remuneration system. ■

»» BEST AVAILABLE TECHNOLOGY AND OCCUPATIONAL SAFETY DISCUSSED AT VTZ

VTZ hosted a regional conference titled "Modern Trends in Adoption of Best Available Technology (BAT) by the Russian Manufacturing Industry," devoted to the Year of Ecology in Russia. Event participants discussed current issues related to transitioning the Russian manufacturing industry to new government environmental regulation and implementation of the BAT project. This was preceded by a meeting that discussed occupational safety performance in Volgograd Oblast in 2016. It was attended by representatives of regional oversight agencies and occupational safety departments of leading industrial enterprises. The participants discussed the latest issues of occupational health and safety, and shared their experience in minimizing industrial risks and workplace injuries. ■





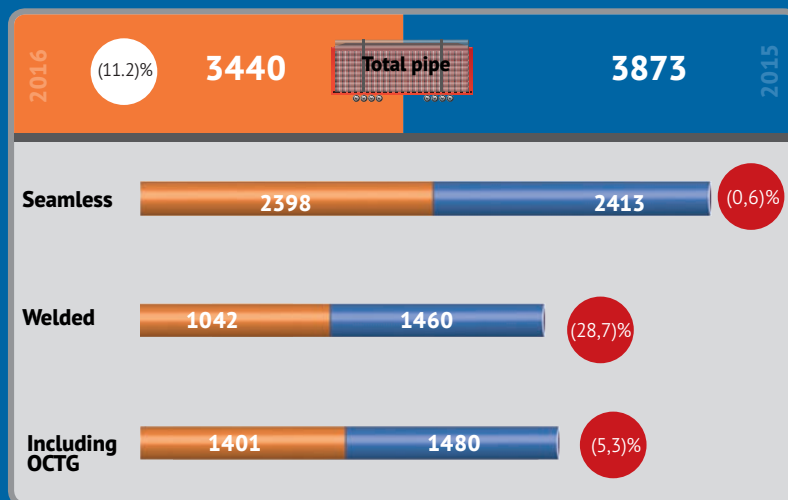
»»RUSSIAN BUSINESS WEEK

Dmitry Pumpyanskiy, Chairman of the TMK Board of Directors, and Vice President and Member of the Management Board of the Russian Union of Industrialists and Entrepreneurs (RSPP), attended the RSPP Congress as part of the 10th Russian Business Week in mid-March in Moscow. This annual business forum brings together opinion leaders to discuss and shape proposals on current G2B trends. The Congress was attended by Russian President Vladimir Putin, Russian government members, executives of flagship Russian companies, leaders of Russian regions, heads of major think tanks and representatives of the international business community. A key Russian Business Week Event – the Conference of the RSPP Committee on Technical Regulation, Standardization, and Compliance Assessment – was moderated by Dmitry Pumpyanskiy, who also chairs the Committee. ■

»»TMK: FOURTH QUARTER AND 2016

Last year's downturn in the pipe market in Russia – and even more so America – prompted an overall decline in TMK shipments. Hardest hit was the welded pipes segment due to a drop in demand for large-diameter pipes. The volume of seamless pipe shipments remained virtually unchanged. Positive shifts became discernible in the latter half of the year. Product shipments and financial KPIs of TMK have improved against the backdrop of continuing growth in drilling volumes in Russia, a growing number in drilling rigs in the US, and a surge in consumer activity in the European market. The company expects most of its core product segments to see an increase in shipment volumes in 2017 over 2016, as the North American market grows and the sales volumes in Russia remain level. ■

Shipments of tubular products (Kt)



Financial performance (million US dollars)

	Q4 2016	Q3 2016	Change	2016	2015	Change
REVENUE	902	822	79	3 338	4 127	(789)
NET PROFIT	84	11	73	166	(368)	534
ADJUSTED EBITDA	140	126	14	530	651	(121)
Adjusted EBITDA margin (%)	16%	15%		16%	16%	



» TAGMET ENCYCLOPEDIA

TAGMET has released an electronic encyclopedia of the plant. It is available on the TMK web portal at tagmet-history.tmk-group.ru. The TAGMET Encyclopedia offers a detailed account of the plant's history since day one. The encyclopedia directory features over 600 illustrated articles arranged alphabetically, which tell the story of plant managers in different periods, noteworthy workers, party and trade union activists, and decorated steelworkers. A photo album offers a selection of some 3,000 photos of the plant, shops, equipment, managers and workers. The web publication is optimized for mobile devices and offers convenient navigation tools. ■



» RESPONDING TO COMPETITION

SinTZ hosted the traditional meeting of leaders of engineering offices and quality departments of TMK Group plants. It was attended by over 60 of the company's managers and specialists. The participants discussed the tubular goods market situation in 2016 and their forecasts for 2017, issues related to reducing production costs in the Russian Division, meeting the requirements of environmental laws, and analyzing consumer satisfaction, the performance indicators of the corporate quality management system, and implementation of the program to improve energy efficiency at Russian plants in 2016. Particular attention was devoted to the objectives of making occupational safety practices more effective. ■



» REPRESENTING THE BRAND

In early March, Houston hosted the AMM & MBR 10th Steel Tube & Pipe Conference sponsored by the American Metal Market and Metal Bulletin Research publications. Just as in previous years, TMK IPSCO representatives made a notable impression. Head of the TMK American Division, Piotr Galitzine, discussed the 2016 initiatives aimed at finding new customers and cutting costs, which enabled TMK IPSCO to secure its market position and begin confidently growing output volumes. "The conference atmosphere could be described as cautious optimism in the wake of the challenging year 2016," said TMK market analyst Thomas Vialva. ■

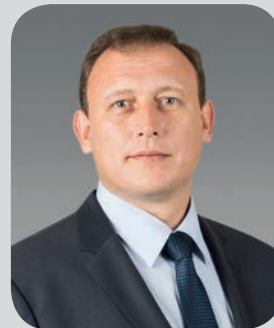


»»NEW PRODUCTS

In late 2016, VTZ hosted an off-site meeting of the Gazprom Neft Competency Center for Pipeline System Reliability, which consolidates innovative experience in pipeline transport maintenance. The meeting was attended by professionals of the corporate and R&D centers, Gazprom Neft subsidiaries, and representatives of TMK and RosNITI plants and divisions.

Meeting participants received a tour of VTZ's electric arc furnace, and seamless and welded pipe mills, discussed issues concerning the manufacture and use of seamless pipe and application of anti-corrosion coatings, and analyzed current performance of Gazprom Neft subsidiaries in the pipeline maintenance segment. ■

»» APPOINTMENTS



»» VYACHESLAV GAGARINOV

Appointed Managing Director of Sinarsky Pipe Plant (SinTZ). Previously served as SinTZ Chief Engineer. ■



»» VYACHESLAV POPKOV

Appointed TMK Senior Vice President of Manufacturing. Previously managed SinTZ over a four-year period. ■



»»BEST FOR OFFSHORE PROJECTS

Based on its 2016 performance, TMK topped the ranking of effective suppliers and contractors (including potential ones) for offshore oil and gas development in the Tubular Goods category. Companies were evaluated in an international survey of major offshore oil and gas developers. The awards ceremony took place as part of the 11th annual conference "Offshore Petroleum Contractors (Neftegazshelf-2016)." TMK ranked first in the Tubular Goods category, outstripping all of its major Russian competitors. ■

»»TMK SUPPORTS STUDENTS

The 2017 Alexander Deyneko Scholarship went to MISIS National University of Science and Technology students Alexey Vildanov, Marat Galimov, and Svetlana Odnokozova, who are majors in the metal processing department. Igor Pyshmintsev, Deputy Chief Engineer for Research and Doctor of Technical Sciences, represented TMK at the awards ceremony. TMK established the Deyneko scholarship in 2013 to support and reward the most gifted full-time students in their senior years at MISIS National University of Science and Technology. ■





YEAR OF ECONOMIC EFFICIENCY

2017 is positioned to become a year of economic efficiency for all TMK plants. TMK Board of Directors Chairman **Dmitry Pumpyanskiy** made a statement to this effect at the annual management meeting held in late January at TMK's Moscow headquarters.

The annual management meeting is one of the chief corporate calendar events that kick off the year. Detailed analysis and assessment of the company's performance in the previous year, and goals outlined in the report by the Chairman, shape the current agenda for all offices and divisions.

Managers of all business units were present at this year's meeting: top executives from the management company were present in person at the

Moscow office, while plant directors and division executives participated in the meeting via video conference.

"It was a stressful and challenging year: shipping and financial/economic targets were not met. For the American Division, 2016 was the least successful year since it joined TMK," Dmitry Pumpyanskiy stated at the beginning of his report. TMK's operations, much like those of other companies in this sector, were adversely affected

by external factors: a volatile macroeconomic situation and a slump in demand and business activity in the petroleum market, especially in North America.

Yet, specific divisions and business streams achieved exceptional results even under such challenging conditions. The company's chief executive commented on the effective performance by Russian Division plants. TMK-NGS and SinTZ exceeded all targets. Despite falling short of financial and economic targets, VTZ as usual made the biggest contribution to the company's overall performance. TAGMET showed a trend towards an appreciable improvement in performance by the end of the year. STZ's financial and economic performance got on a steady growth track.

The company's overall performance when compared to other market players also looks optimistic. Having shipped 3.4 million mt of tubular

The annual summit of TMK IPSCO management took place in mid-February. Attendees summed up the results of 2016 and discussed plans. The event drew 23 key IPSCO leaders.

TMK IPSCO Chairman and CEO Piotr Galitzine opened the meeting by discussing the key growth trends in the global energy sector and the situation in TMK Group's most vital markets: Russia and the US. Meeting participants were addressed via video conference by TMK Board of Directors Chairman Dmitry Pumpyanskiy, who highlighted the key objectives for the division: meet targets and make high-quality high-margin products while complying with occupational health and safety.

The division's top managers touched on various points in their reports: sales projections and pricing policy, current utilization of TMK IPSCO plants, and staffing policy of the division as the market gradually recovers.

Event participants then proceeded to analyze case studies on major issues, and mapped out solutions. With all business taken care of, participants proceeded to a festive dinner and an awards ceremony for winners of the two corporate programs in 2016: Living Our Values and TMK IPSCO Way!.

goods, TMK has retained its global market share and reconfirmed its leadership position, which it has held since 2009.

UNTAPPED RESERVES

The 2017 corporate budget approved by the TMK Board of Directors sets mostly higher targets. The objective impetus for this is the gradual economic recovery that shaped up in the second half of 2016, along with growing investor activity in hydrocarbon exploration and production. "The following binding rule is in effect in 2017 for production and sales divisions: Targets are the law, meeting them is a duty, and exceeding them is an honor!" said Dmitry Pumpyanskiy.

Meanwhile, the lofty targets in the 2017 budget call for the tapping of internal reserves. This includes making maximum use of all available TMK capacities built as a result of large-scale investments. Plants are continuing to implement targeted investment projects focused on finishing operations, with the objective of meeting the product requirements of the largest customers and ensuring that time-sensitive orders are filled quickly. The 2016 investment program exceeded 10 billion rubles.

Optimization of production costs remains a priority for all plants. "I consider it vital to look for and find opportunities for further reductions in metal consumption in the production of both welded and seamless pipes," Dmitry Pumpyanskiy said.

EVEN MORE PIPE

Stepping up the output of seamless pipe, including in the key OCTG segment, remains the key objective for TMK's Russian Division plants in

Dmitry Pumpyanskiy



TMK has retained its global market share and reconfirmed its leadership position

2017. As before, the focus is still on pipe with Ultra Premium connections. The company's chief executive believes that the stage is set for steady growth of the other TMK divisions in 2017. "Considering the rapidly growing volumes of drilling in North America, we expect the American Division to relaunch and effectively utilize production facilities that were temporarily idled due to the downturn," says Dmitry Pumpyanskiy.

The key objective for the European Division is to increase return on investment, particularly by stepping up the output of industrial pipe. The Middle East Division has an ambitious plan for this year: to increase output volume by almost twofold. The common goal for all TMK divisions is to work persistently on improving product quality and perfecting their quality control systems.

BULLET POINTS

Dmitry Pumpyanskiy's report focused particular attention on the occupational safety and health situation. He said that despite the constant attention devoted to this issue by company's management and the fact that the number of accidents across TMK Group declined in 2016 compared to 2015, the company has not managed to fundamentally turn the situation around. "Once again, I urge managers to make every effort to prevent violations of safety standards," the TMK chief executive said.

"This year has been declared the Year of Ecology by Russian presidential decree, and will see the implementation of ambitious nature conservation projects, including TMK-specific projects," Chairman Pumpyanskiy said.

TRAJECTORY OF SUCCESS

Improving the manufacture of OCTG pipes for challenging production environments remains a key priority for Sinarsky Pipe Plant (SinTZ). The plant is upgrading its pipe finishing lines, implementing state-of-the-art nondestructive non-destructive testing solutions, and improving management processes. **Vyacheslav Popkov**, who managed the plant for the past four years, talks about this and more in the following interview. The interview was recorded ahead of his appointment as TMK Senior Vice President of Manufacturing in mid-March.



Mr. Popkov, SinTZ exceeded all of its planned targets in 2016. Would you tell us about the operational highlights of the plant?

Our current performance is the result of a goal-oriented long-term strategy aimed at developing and improving all of the plant's business processes. One of the key points at the annual meeting of TMK managers was that for two years running SinTZ has been exceeding all targets without exception – both operational and financial/economic targets. We shipped off 606,000 mt of products, or 1 percent more than planned. And, the plant is virtually at the peak of its production capacity. The expression “for the first time ever” has been used at SinTZ more often

in recent years. In 2015, the T-3 shop set an all-time record in rolled pipe output for the first time in the plant's history – the TPA-80 pipe mill rolled 400,000 mt of pipe. In another first, the plant manufactured and shipped 381,000 mt of threaded pipe (tubing and casing pipes) in 2016. The OCTG pipe shop (T-4) set a record in the output of tubing (221,300 mt) and collars (over 3 million units). The T-2 shop shipped off nearly 129,000 mt of casing pipe and 31,000 mt of tubing. In 2016, the plant's revenue amounted to almost 107% of the 2015 level. Net profit more than doubled in relation to 2015. The annual net profit plan was fulfilled by more than 114%, and the EBITDA plan by almost 109%. The 2016

EBITDA margin is 15.9% vs. the target of 14.6%.

How would you assess the plant's technical capabilities? What are the priority measures in your development strategy?

As I have already mentioned, SinTZ is at the peak of its capacity in terms of output volume. Under these circumstances, we need to step up the output of high-margin products across all streams. In terms of its structure, the plant can and does make high-tech products across the entire range of the product mix – not only threads of various classes in the Ultra Premium product mix, but also various strength grades. Our heat treatment equipment allows us to make pipe with mechanical properties of grades J55 to Q125 or, if requested by the customer, with even higher strength properties. In other words, the plant has all the appropriate equipment and is prepared to fill orders from the most demanding of customers. This year's investment program is aimed at upgrading the threading lines of shops T-2 and T-4. We will also deploy new equipment for coating, stenciling and packaging pipe.

How would you evaluate the plant's performance in terms of launching new types of products and technologies aimed at better meeting the needs and expectations of customers?

In 2016, the plant launched 21 new varieties of products and shipped off close to 15,000 mt of new products over the course of the year. We launched new types of products in virtually all segments of pipe that we make – casing and tubing pipe, drill pipe, oil and gas line pipe,



SINTZ IS AT THE PEAK OF ITS CAPACITY IN TERMS OF OUTPUT VOLUME

cold-worked pipe and thermally insulated tubing. When it comes to setting up production of new types of products, our priority is expanding the existing product mix with premium threaded connections. This includes new standard dimensions, higher strength grades, new types of threaded connections, and various pipe materials: corrosion-resistant, cold-resistant, etc. We are setting

up production in collaboration with other plants within our company, particularly VTZ. A case in point is Type 13CrS corrosion-resistant casing and tubing with strength grade P110. Also note that we have completed acceptance testing at Gazprom's VNIIGAZ Institute as part of production setup for TMK-C chromium-nickel alloy tubing, which is designed for gas production at the

Stenciling of pipe

Astrakhan Field in an environment with elevated levels of hydrogen sulfide and carbon dioxide. The first shipment of commercial couplings made of the TMK-C alloy for these pipes was delivered in 2016. The geography of shipments of thermally insulated tubing made by the plant has expanded considerably. Last year, we shipped pipes to Tyumenneftegaz, Messoykhaneftegaz and RN-Vancor totaling 14,500 mt, or more than 40% of the pipe output by the thermally-insulated tubing station since it was launched in early 2011. We have set up production of thermally insulated tubing in a vacuum-free configuration with an operating temperature of up to 180°C. We have a three-year contract for delivery of thermally insulated tubing with Tyumenneftegaz, a Rosneft subsidiary. We have ambitious goals for this year: to set up production of threaded connections for casing and tubing pipe – TMK UP Centum and TMK UP CWB, which are new for our plant – and drill pipe with the TMK UP EXD tool joint. Two orders for such pipe were already shipped by the plant in February of this year. We also plan to complete the production setup for the TMK-C chromium-nickel alloy tubing and deliver pilot shipments of pipes to the customer.





WE HAVE AMBITIOUS GOALS FOR 2017 - TO SET UP PRODUCTION OF NEW PREMIUM CONNECTIONS

SinTZ is implementing a corporate system of improvements based on the Lean Six Sigma methodology. How much progress have you made to date?

These projects are underway at all TMK plants with a view to improving product quality, reducing the cost of production, increasing labor productivity, reducing equipment downtime, saving time by streamlining these processes, and reducing labor intensity. These systemic improvement plans are delivering tangible cost savings. Cost savings from projects implemented in 2015-2016 amounted to 25 million rubles. In 2017, we plan to launch 140 improvement projects, including 76 "5S+1" projects, 39 Lean Six Sigma projects, 19 TPM projects, and 6 SMED projects. Professionals will be able to use the key tools of this

methodology as part of continuous improvement processes at their job sites. This will favorably influence the performance of the entire plant.

The system of improvements also incorporates a concept called modern safe production. Preparations for the World Steel Safety Day-2017 are in full swing at SinTZ. Would you tell us more about that?

Indeed, one of the key objectives of all Lean Six Sigma activities is creating a safe and efficient work environment for our employees. We are developing measures to eliminate risks of potential hazardous or harmful factors on an ongoing basis. The plant bought new protective clothing and personal protective equipment for personnel in shops T-2 and T-4. For example, we have just updated the policy on

providing workers with personal protective equipment and PPE quality monitoring, upkeep and maintenance. We have devoted particular attention to improving slinging and handling of containers to prevent loads from being dropped during transportation. We have revised the approaches to the occupational safety training program for managers and professionals. Results include SinTZ winning the All-Russia Competition Russian Business Leaders: Trends and Accountability - 2016 in the category For Achievements in Health and Safety at Work. The competition is sponsored by the Russian Union of Industrialists and Entrepreneurs (RSPP).

How are your requirements for continuing education and professional development of plant



employees developing? Would you tell us more about that?

Last year our plant's HR Department won the 11th All-Russia Competition Best Russian HR Department 2016. The plant uses a system for training and incremental development of personnel. Three training programs are active: Foremen Courses, School of Production Supervisors, and Middle Managers Training Institute. It is no coincidence that professionals and managers trained at SinTZ fill many key positions within TMK. We have had courses for shop-floor workers for over 10 years. We devote a great deal of attention to developing training resources. We are currently setting up a field training center and have developed virtual exercise machines that are already used in the training process: mill roller of cold-rolled pipe, hot-rolled pipe, pipe and billet

cutter, and hydraulics classroom. We also have a distance-learning classroom. The plant employs close to 1,500 young workers who are 30 and under. We recruit the most promising students as part of our cooperation with major educational institutions and sign targeted training agreements with them. In 2016, a total of 146 students completed on-the-job training at the plant. The plant is helping implement the Urals School of Engineering project, which includes giving students tours of the plant and letting them train on virtual exercise machines, receive on-the-job training, and sign up for elective professional courses supervised by college instructors. This project involves 400 college and high school students. We have a successful program called Point of Support aimed at supporting professional institutions of education and magnet classes at high schools by improving the level of training of applicants for manual worker positions and getting young people interested in careers in the manufacturing industry. This is a joint project with the plant funded by the Sinara charitable foundation.

2017 has been declared the Year of Ecology by a Russian presidential decree. What has the plant already implemented in this regard, and what are your plans?

This year we have developed 35 environmental measures. The main focus is on reducing water consumption and treatment of wastewater. Our plans include cleaning the water source facility on the River Iset. We have already cleaned 40% of the receiving tanks at the industrial wastewater pump station. These activities are estimated to cost some 50 million rubles.

SinTZ is a longstanding contributor to numerous social projects. What is your vision of involvement in the city's social life?

The plant has always been and will remain an active participant in the city's business and social life. We have successfully addressed a whole range of local problems, such as repairing street lights, cleaning up and landscaping backyards, improving the city's infrastructure, and providing all sorts of assistance to underprivileged residents. We sponsor many educational institutions in the city. The company provides regular assistance to orphanages in the city and the Kamensky District. Locals respond well to our public events and bring their whole families. It is a tradition for the plant to hold Steelworker's Day in the city's main square. Timed to coincide with City Day, it draws tens of thousands of local people.

GREEN IS THE COLOR OF THE YEAR

TMK will mark the Year of Ecology by implementing an ambitious program of nature conservation activities. TMK Chief Engineer **Alexander Klachkov** discusses environmental risks in the metals industry, amendments to environmental laws of the Russian Federation, TMK growth prospects, and plans to mitigate the environmental footprint, all of which are part of the Year of Ecology Corporate Program.



Mr. Klachkov, would you summarize the efforts undertaken by TMK to mitigate the environmental footprint in recent years?

Environmental protection is a must for TMK, and a key priority of our strategic growth. Since 2004, the environmental component is an invariable component of all projects implemented as part of the TMK Strategic Investment Program. Over the years, we have fundamentally upgraded all steel smelting lines at the company's plants. By replacing obsolete equipment, implementing new technology, and building state-of-the-art gas scrubbing systems, we have reduced emissions per tonne of steel at our modernized plants. The air on plant grounds and in cities is now cleaner. Despite our growing output, we have been able to reduce energy consumption. Over the past 10 years, green investments by TMK have amounted to 6.5 billion rubles, of which 5.9 billion has been invested in Russian plants, with over 200 nature conservation activities implemented (including 140 at Russian plants).

2017 has been declared the Year of Ecology in Russia. What activities does TMK plan in this regard? What are you focusing on?

TMK has joined this ambitious federal initiative with great enthusiasm. We have signed three quadrilateral agreements with the Ministry of Natural Resources and the Environment, Rosprirodnadzor, and the regions. We have begun implementing some of these activities already this year. The focus is on sustainable water consumption and mitigation of impacts on bodies of water. Three out of the five TMK projects approved by the Russian government involve using recycled water supply. VTZ and TAGMET will implement environmental projects to further develop water treatment systems and reuse water in the closed-loop production cycle. STZ will build a heat treatment bay with water treatment and recycled water supply as well as final post-treatment of wastewater. We have already completed one of the projects under the agreement. We installed noise suppressors in the STZ shop-floor shop in January. This has reduced noise impact in the city's residential districts. All of these projects are covered by the government-approved Plan of Priority Activities of the Year of Ecology. Nature conservation investments by TMK under agreements with the Ministry of Natural Resources at STZ

alone will amount to 800 million rubles under projects implemented between 2014 and 2019.

Other than nature conservation projects under the federal program, does the company plan any other Year of Ecology initiatives?

Absolutely. We have a whole range of environmental initiatives and activities planned under the Year of Ecology Corporate Program. They are aimed at creating a favorable ambient environment in the regions where TMK has operations. National initiatives supported by TMK include a project to clean bodies of water and their shores, the Green Russia litter pickup campaign, and the Aquatic Treasures of Russia competition for photographs of aquatic scenery. International initiatives include Earth Day, World Car Free Day, World Tobacco Free Day, among others.

The program focuses a great deal of attention on activities aimed at employee engagement and public relations. A case in point is the ECOLAB environmental awareness project launched by VTZ in the fall of 2016. We have also signed an environmental protection cooperation agreement that includes the regional authorities, the public and the plant.

VTZ conducts environmental training for grade school and college students as part of this project. This is all part of long-term intellectual investments that shape our future. TMK has also planned activities for plant offices and administrations: office workers will save water, electricity and paper, and will learn interesting facts about waste recycling.

The Year of Ecology has been declared in Russia. Will plants of the American, European, and other divisions of TMK be involved in environmental projects?

Yes. Our international colleagues will not be left on the sidelines. They will take part in activities of World Environment Day, which is traditionally observed on June 5. But still, plants of the Russian division will account for the largest number of both industrial and social projects as part of the Year of Ecology.

requires implementing best available technology (BAT) with high levels of economic and environmental efficiency, building recycled water supply systems and high-efficiency state-of-the-art gas scrubbing equipment, and reducing the volumes of waste generated and disposed of. TMK is progressing successfully in this regard. The company has fully replaced the harmful open-hearth furnaces with electric arc furnaces, and has shut down three pilger mills, casting form production, and other harmful processes. Prior to the launch of the electric arc furnace facility, our open-hearth furnaces had inferior dust cleaning systems. Now the efficiency of flue gas scrubbing at our plants is over 90%, in line with European standards. We have made tremendous progress in mitigating the environmental impact on the water basin – all of our new facilities are built with recycled water supply.

REFERENCE

Federal Law No. 219-FZ has been in effect in Russia since January 1, 2015. It establishes requirements with respect to environmental limits on the basis of process specifications. The relevant limits are established on the basis of process indicators that do not exceed the process indicators of best available technology (BAT) listed in BAT directories.

BAT directories are compiled as documents of the national standardization system. They reflect a consensus among regulators, industrial enterprises, research centers and expert organizations, and enable the Russian manufacturing industry to switch from the often unrealistic limits established by regulators to realistic ones.

Best available technology is defined as a technology of manufacturing products (goods), performing work, or providing services that incorporates the latest achievements of science and engineering and offers the best combination of criteria for achieving the objectives of environmental protection, within the limits of technical feasibility.

OVER THE PAST 10 YEARS,
GREEN INVESTMENTS BY
TMK HAVE AMOUNTED TO
6.5 BILLION RUBLES

How significant are environmental risks in the metals industry?

Is it possible to minimize its environmental impacts, and has TMK been successful in this regard?

While environmental risks cannot be eliminated altogether in both the metals industry and other sectors, they can be minimized. Environmental friendliness in the metals industry depends on the type of equipment used by the plant and the way its production process is organized. Reducing the environmental footprint



Are you saying that TMK has been implementing best available technology (BAT) for a long time?

Yes. It is one of our priority areas. As you know, both the amount paid in the environmental pollution charges and the amount of government support received through economic incentive mechanisms depend on how quickly best available technology is adopted and how efficiently obsolete resource-intensive facilities and processes are replaced with state-of-the-art solutions.

What are your further plans regarding BAT implementation?

There is an ambitious project in the pipeline to implement a closed-loop water cycle in STZ's new heat treatment bay. We will also continue implementing smaller projects such as the closed-loop mini-cycle for water treatment in VTZ's welded shop. We plan to improve the quality of wastewater at SinTZ after implementing closed-loop water cycles, and eventually replace the pipe mill. The new mill will feature reduced energy consumption and, of course, closed-loop recycled water supply. We will have to replace some of the pipe heat treatment stations at TAGMET because they have a higher gas consumption rate compared to the latest models. This year we are launching a new heat treatment bay at TMK-ARTROM. It will bring a twofold reduction in gas consumption

per tonne of product, while also reducing carbon dioxide emissions. There are still some unresolved issues concerning excessive noise levels, but we are working on that. In January, STZ installed noise suppressors on the roof fans and in the smoke exhauster room, which helped reduce the noise pressure level by 2 dB, staying within the prescribed limits. Prior to that, the plant implemented two other noise mitigation measures that involved installing noise suppressors on the smokestack of the electric arc furnace and on the smokestack of the ladle furnace. TMK-RESITA has installed noise protection screens because a church, an 18th century monument of architecture, is located next to the plant grounds. Next on the agenda are noise mitigation solutions for TAGMET – the plant is located within city limits, so more stringent nighttime and daytime noise limits apply.

When will the requirements of Russian laws on BAT take effect?

Before plants can adopt BAT, lists of BAT have to be compiled and the procedure for adopting BAT approved. According to a government directive, 51 technical information directories of best available technology will be developed at the federal level between 2015 and 2017 as components of the national standardization system. Twenty-eight BAT directories have to be developed and approved this year, two of which

reflect TMK operations: (TWG26) production of cast iron, steel, and ferroalloys, and (TWG27) manufacture of added-value products from ferrous metals. Our representatives are participating in technical work groups (TWG) tasked with compiling the directories. TMK is also a member of Technical Committee No. 113 on BAT. In other words, we are helping prepare information for industry-specific directories and performing expert reviews on them. The idea is that when a plant uses technology listed in the BAT directory, that plant is eligible for substantial environmental pollution charge discounts.

What is the nature of amendments made to Russian nature conservation laws concerned with waste management? How are these tasks addressed at TMK plants?

The Law On Waste prohibits the burial of waste that contains useful components: scrap metal, ferrous and non-ferrous metal waste, paperboard and paper waste, used equipment and products that contain mercury. TMK plants face the task of continued implementation of waste segregation solutions to prevent mixing waste of different types, to send segregated waste for processing and thereby qualify for environmental pollution charge discounts. This involves a lot of work and must be approached with due diligence. Environmental programs implemented at TMK plants





have helped achieve impressive waste management performance: only 7% of waste generated by the production process is disposed in landfills. Other waste is incinerated, processed, or sold. This year, we will continue increasing the volume of recycled waste while reducing the amount of waste disposed in landfills. Legislative amendments

also affect the licensing of Hazard Class I-IV waste management operations. In 2016, all of our plants obtained the appropriate licenses, and plant laboratories were accredited according to the new requirements. Zero-waste production does not exist at the current stage of sci-tech progress. Green technologies are aimed at waste reuse. For example, other industries have a demand for certain waste generated by the metals industry, while some other types of waste have found no applications elsewhere. The new landfill for waste disposal at VTZ has been designed so that waste disposed in it is encapsulated. Over time, as technology is invented for reusing the waste buried there, the capsules can be opened and waste reused as a feedstock. But that is a plan for the future.

Please comment on the introduction of public environmental monitoring under the Law On the Status of Public Environmental Inspectors. Has TMK gone through such inspections?

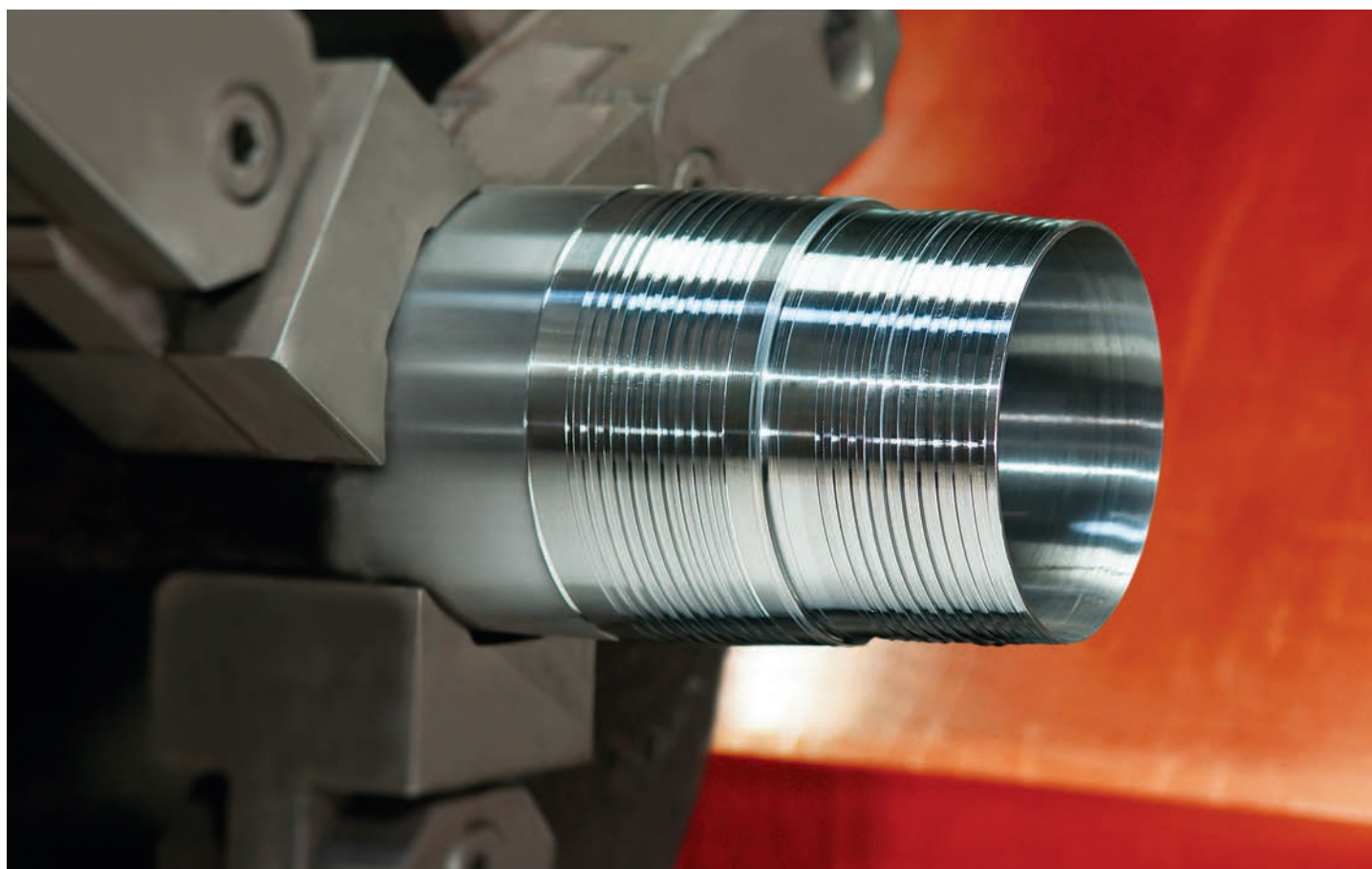
We have not had any inspections of that kind yet, but we are prepared for them. Public inspectors may request environmental information from plants or visit operational sites. I don't think there is anything wrong with that. We simply need to work actively on public relations. One of the principles of our environmental policy is openness and willingness for dialog with stakeholders. A case in point is VTZ and its ECOLAB environmental project, which I already mentioned.

If a city resident knows and understands what the plant is doing, what kind of environmental protection policy it has, and what environmental activities are undertaken at the plant, he or she will not interfere with the plant's operations. We often hear about public rallies calling for plants to be shut down in some cities. Fortunately, this does not apply to TMK, although certain risks still persist. So the greater our progress in the environmental domain, the less trouble we will run into as we work to accomplish our tasks.



SERVICE GEOGRAPHY

TMK stays committed to expanding its premium product shipments to the Russian and international markets. The company launched three licensing centers in 2015: in Taganrog (Russia), Houston (USA), and Sohar (Oman). The centers are tasked with providing integrated turnkey services to licensees and expanding the network of manufacturers of oil and gas production equipment that are licensed to use TMK premium technologies.



Premium products are intended for the most challenging and critical hydrocarbon projects, enabling users to minimize considerably any potential process and environmental risks, achieve a longer well service life, and reduce well construction costs by using less metal.

TMK's premium business is handled by a dedicated company, TMK Premium

Service, which designs and promotes innovative TMK products and hires third parties to do the same under license.

EFFICIENT FORMAT

Switching to this new format of cooperation with licensees via dedicated licensing centers helps us make customer relations more efficient and optimize costs.

"We no longer need to dispatch Russian engineers with tools to our licensees in remote locations such as Colombia or Bolivia. This job is now handled entirely by our colleagues at the US licensing center. In this way, we have improved the service conditions for our partners while saving on travel and shipping costs," says TMK Premium Service CEO Sergey Rekin.



LARRY BUSH

Director of the Licensing Center in Houston (USA):

Now that the licensing center has been opened in Houston, we have more opportunities for promoting TMK premium products. We are now able to focus

on the competitive market conditions in specific regions such as South America, and issue licenses to customers for the entire range of TMK products, not just products developed by the TMK R&D Center in Houston.

All representatives of the licensing centers stay in close communication. We have a common goal: to find potential partners while focusing on the strategic interests of TMK in a particular region. This significantly facilitates the process of obtaining a license, and our global network of licensees is growing – so much so that we are now able to meet the needs of our customers in the most efficient way. This system offers more opportunities to expand TMK's presence to regions where we did not have a foothold before. Standardizing licensing processes and work procedures enables each licensing center to work independently while maintaining contact with the other licensing centers on an ongoing basis, thereby ensuring the transparency of workflows across all levels of the company.

»» Dmitry Tselovalnikov, Director of the TMK-Premium Service licensing center



The licensing network of three centers currently caters to exactly 100 licensees. In addition to TMK operational sites that make premium tubular goods, plus service facilities of TMK Neftegazservis, the licensees include flagship producers of oil and gas field equipment in Russia, Europe, North and South America, the Middle East, Africa, Southeast and Central Asia, and Australia, as well as operations companies.

"The Russian office used to handle and distribute all orders for TMK Premium Service premium technologies regardless of the end client's location, but now each center is authorized to handle these workflows on its own within the specific territories assigned to it," says TMK Premium Service Licensing Center Director Dmitry Tselovalnikov.

Licensing centers operate according to unified standards and rules. "For example, when initial audits are done, each center is guided by unified requirements for potential licensees and uses the same audit forms and guidelines. Audit findings are also presented in a report with a standardized format. This enables us to process data quickly without having to switch between formats as we receive reports from international colleagues. We also stay in touch with our colleagues on an ongoing basis. We hold weekly video conferences with representatives of all licensing centers to discuss and address current issues in relation with our licensees," Sergey Rekin says.

GAINING AND RETAINING

Licensing centers regularly receive license requests from

potential licensees and requests for an expansion of the premium connections product mix from existing licensees. "Gaining and retaining a license is no simple task. There is motivation on both sides to expand the network of licensees. But we do not sign up licensees indiscriminately. Premium threaded connections are high-tech products that require an appropriate level of technology and personnel expertise. We have stringent requirements for potential licensees, and they do not always measure up. In turn, companies willing to collaborate with us realize this and invest in new equipment and technologies in order to meet the requirements of our company," Rekin says.

Potential licensees need to complete a three-phase process to win the right to use TMK premium technologies. TMK Premium Service engineers check them for compliance with all requirements. Phase one involves filling out a license application and passing a preliminary remote audit via a questionnaire. As part of phase two, TMK management decides whether it is expedient to work with that potential licensee. "The decision depends on not only the technical capabilities of the plant but also its market position, product offering, location, and demand for our connections in the region. In deciding whether or not to issue a new license, we keep our existing licensees in mind and evaluate competition in the premium segment within limited territories," Sergey Rekin stresses. The final phase involves a technical screening audit. The licensing agreement is signed with applicants that successfully pass the audit.



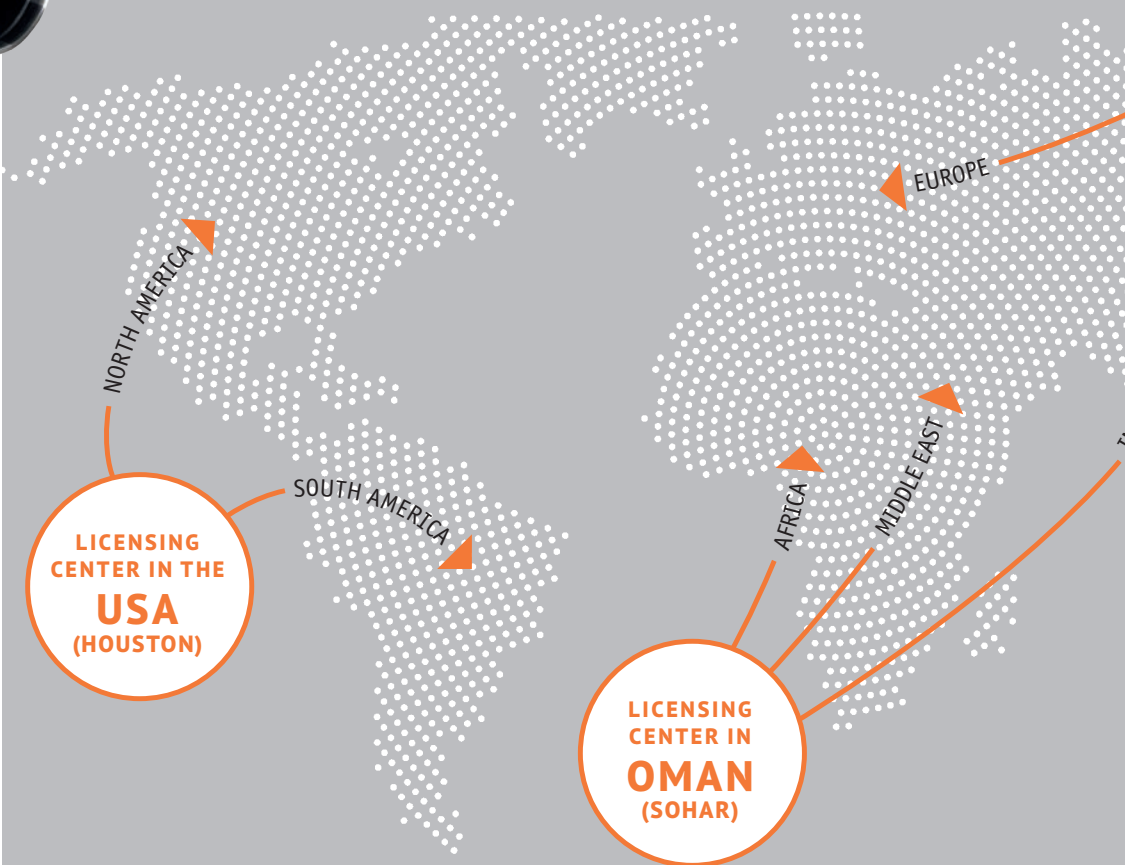


AREAS OF RESPONSIBILITY

Guaranteeing the interests of TMK and the quality of premium products is the primary objective for TMK Premium Service professionals working with licensees from day one. Passing the screening audit means that the company is compliant with all requirements of TMK Premium Service, and that its professionals have the expertise sufficient to make products with premium connections.

“Our licensees undergo a verification audit annually. Those who pass the audit successfully receive a licensee’s certificate. Our experts monitor their manufacturing conditions for compliance with TMK standards on an ongoing basis. We work out an individual approach with every licensee. A license is issued for a specific connection from the TMK UP product line. The licensing agreement stipulates the terms of use of this connection – the types and standard dimensions of products to which the thread can be applied. It may impose restrictions on the territory where products can be sold, or set a limit on the quantity of output,” says Dmitry Tselovalnikov.

Licensees receive support across all phases and with respect to all issues that may arise. This approach is instrumental to the success of TMK licensing centers all over the world.



FUTURE PROSPECTS

According to Sergey Rekin, the licensing network will expand through new partnerships in South America, the Middle East, and Southeast and Central Asia (Oman, Qatar, Indonesia, Malaysia, Vietnam, India, and China).

“In considering new regions for the expansion of our licensing network, we evaluate how much support specific orders for tubular goods may require and look at TMK’s overall strategic interests in a particular

region. We handle these tasks quite well. In many countries, pipe deliveries are possible only when the supplier has a local service center in the region. An authorized licensee can act in this capacity. In choosing a service company, we consider all regional companies that show an interest in our technologies, then we choose the best one. TMK would have a hard time selling tubular goods to the end buyer without the assistance of oil and gas field equipment manufacturers. This gives both parties an interest in long-

KEY TO THE SUCCESS OF OUR LICENSING CENTERS IS THE SUPPORT OF LICENSEES ACROSS ALL STAGES OF WORK

LICENSING CENTER IN RUSSIA (TAGANROG)



term win-win cooperation,” Sergey Rekin says.

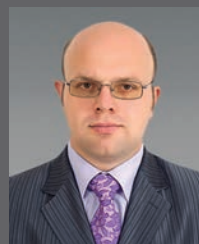
TMK Premium Service management is working on new ways to improve cooperation with licensees and, ultimately, the entire license support process. “We launched one-stop service two years ago. This licensing agreement support format enables a single employee to process all incoming requests, licensing agreements, requests for engineering documentation, inspection gauges

and threading inserts. As a result, the process has been streamlined appreciably, according to feedback from licensees. Last year we launched our own metrological laboratory. This allowed us to stop using third-party services, which reduced the time it takes to pick and pack inspection gauges and send them to the licensee from seven to two days. This year, we plan to launch a members-only portal for licensees through our dedicated websites for premium threaded connections of the TMK Ultra Premium family: www.tmkup.ru and www.tmkup.com. Licensees will be able to use it as a single access point for all of their business needs. For example, they will be able to download up-to-date manuals, order inspection gauges and threading inserts. We also plan to use this platform for managing licensee feedback and answering questions from licensees promptly,” says Dmitry Tselovalnikov, Director of the Russian Licensing Center.



Verification of thread gauges in the metrological laboratory

COMMENTARY



PAVEL STEPANOV

Director of the Licensing Center in Sohar (Oman):

The TMK GIPI Licensing Center's operations in Oman cover the entire African continent, the Middle East, and India, offering great potential for expansion in the target regions. We have already made a lot of progress: We formed a team of professionals, completed training in technical audit rules, bought inspection gauges and threading inserts of the dimensions popular in the region, established communication with the other TMK licensing centers, performed the first audits of potential licensees in Oman and Qatar, and signed the first sublicensing agreements. Collaboration between the licensing center in Oman and the TMK Middle East FZCO sales office in Dubai will potentially enable a more efficient approach to planning and expanding the geography of TMK premium product sales, thereby boosting the output and sales of high-margin products by TMK plants.

SUCCESSFUL TESTING AND LAUNCH OF TMK UP ULTRA™ GX

TMK is pleased to announce the launch of a premium threaded and coupled connection targeted for thermal wells. The new connection, TMK UP ULTRA™ GX, successfully completed the testing and evaluation requirements of TWCCEP / ISO PAS 12835 for 290 deg. C application. The pipes used for qualification testing (9-5/8" OD X 40 ppf X L80) were supplied by Volzhsky Pipe Plant (VPP).

Thermal Well Casing Connection Evaluation Protocol (TWCCEP) requires extensive material testing, rigorous finite element analysis, galling resistance test, thermal cycle test followed by limit strain and bending test. The FEA, galling resistance test and thermal cycle tests were completed in-house at our Houston R&D center. The limit strain and bending tests were completed at C-FER Technologies, Edmonton, Canada.

The new connection is already being promoted and offered to customers in Canada for thermal applications.

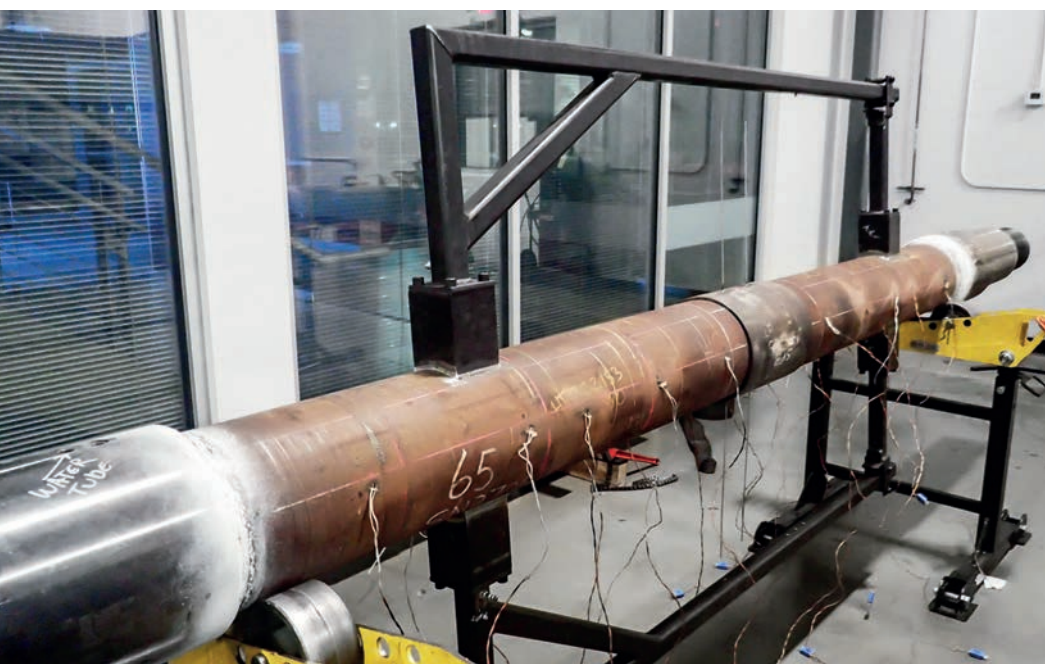
Research and Development of the TMK UP ULTRA™ GX connection began in 2011, though discussion within TMK IPSCO of designing a connection suitable for thermal wells goes all the way back to 2008. The initial target market was Canada, the heaviest user of the Steam Assisted Gravity

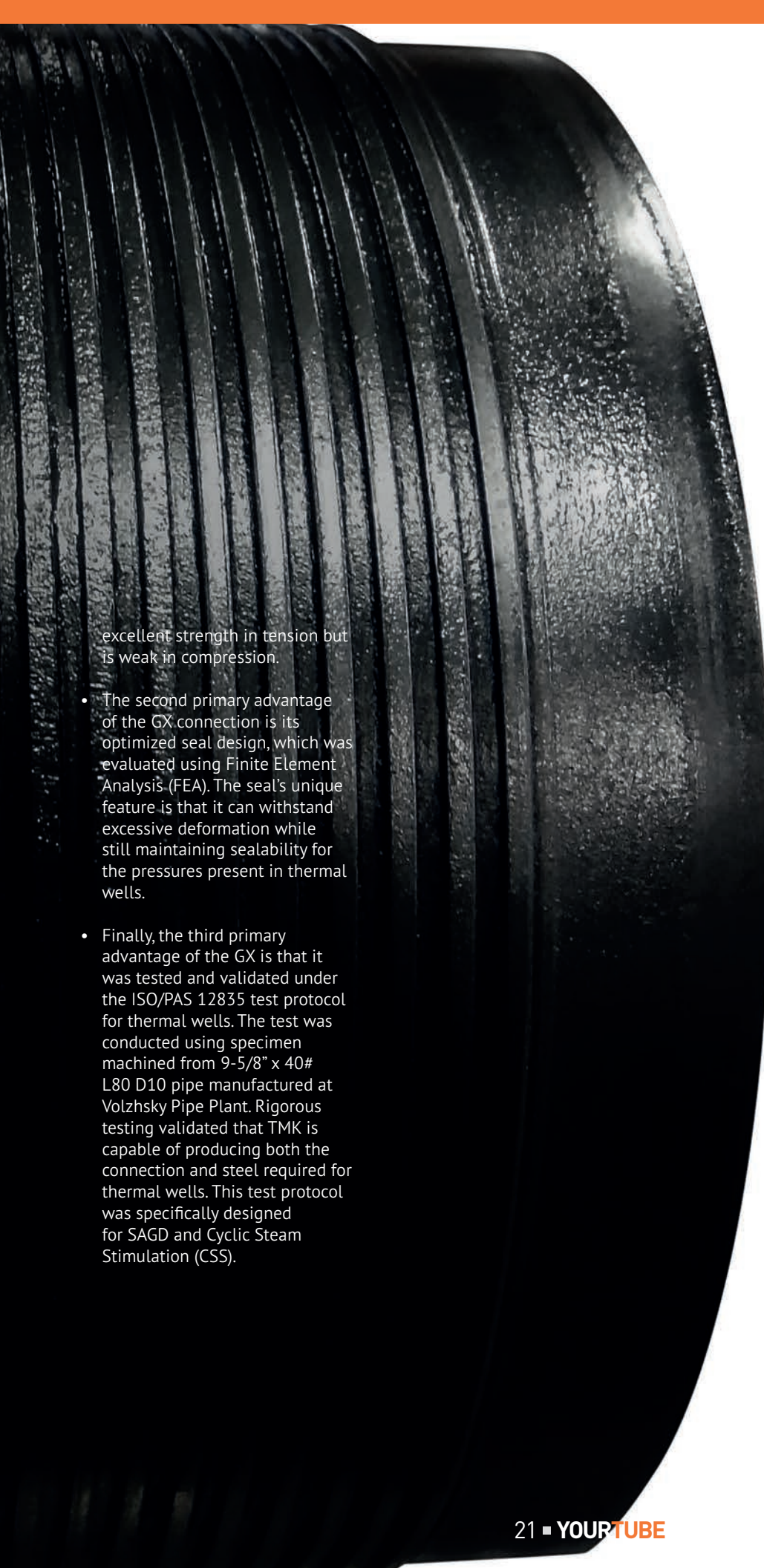
Test sample
preparation
- TMK UP
ULTRA™ GX
connection

Drainage (SAGD) process. However there are other sizeable markets globally including Russia. In the SAGD process, two horizontal wells are drilled, one over the other. Steam is pumped into the top well, which causes heavy oil to become less viscous and to flow into the bottom well. This is the most common type of thermal well. The Evraz QBII connection and Tenaris Blue Thermal connections have traditionally been the most frequently used connections in thermal wells. However in Russia, TATNEFT used the TMK UP ULTRA™ QX connection for many SAGD wells.

The unique technical characteristics of the GX connection are threefold:

- The first primary advantage of the connection design is the use of the patented ULTRA™ thread form, which has equal strength in tension and compression. In thermal wells, the pipe is cemented in place. Heating of the well causes the pipe and the connection to expand. However, since it is cemented in place, the expanded pipe cannot move. This results in a high compressive load on the connection. The ULTRA™ thread form is a major differentiating factor from competitor connections, which use a traditional hooked thread form. This thread form has

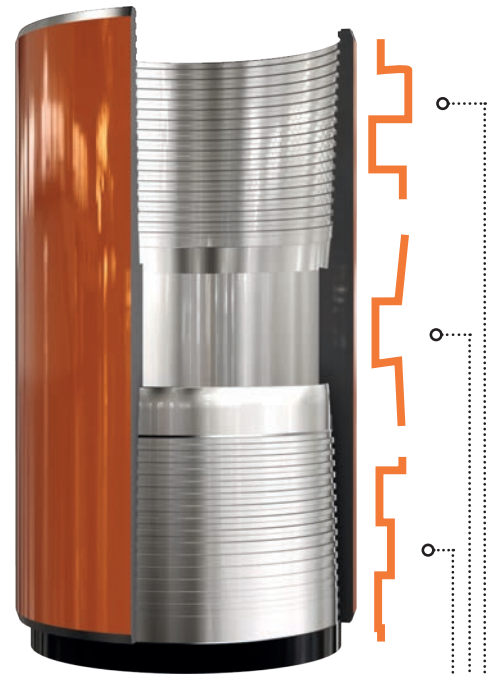




excellent strength in tension but is weak in compression.

- The second primary advantage of the GX connection is its optimized seal design, which was evaluated using Finite Element Analysis (FEA). The seal's unique feature is that it can withstand excessive deformation while still maintaining sealability for the pressures present in thermal wells.
- Finally, the third primary advantage of the GX is that it was tested and validated under the ISO/PAS 12835 test protocol for thermal wells. The test was conducted using specimen machined from 9-5/8" x 40# L80 D10 pipe manufactured at Volzhsky Pipe Plant. Rigorous testing validated that TMK is capable of producing both the connection and steel required for thermal wells. This test protocol was specifically designed for SAGD and Cyclic Steam Stimulation (CSS).

TMK UP ULTRA™ GX



ULTRA™ THREADS

- 100% tension efficient connection
- Validated under the rigorous ISO 12835 protocol
- Maximizes performance in tension and compression
- Mechanical integrity under constrained thermal expansion

SPHERE AND CONE METAL-TO-METAL SEAL

- Positive torque stop
- Maintains pressure integrity when subjected to extreme temperature and constrained thermal expansion
- Designed to withstand thermal cycling

RUN-OUT THREADS

- Maximizes critical cross sectional area
- Low interference run-out threads enhance fatigue life



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