JSC "Evraz NTMK" (Russia)
*Nizhniy Tagil Integrated Iron-and-Steel Works*
Company’s business profile

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ANNOTATION

This report (company business profile) is a description of one of the largest Russian steel - JSC “Evraz NTMK” (Nizhniy Tagil Iron-and-Steel Works).

The report consists of 13 sections, contains 78 pages and includes 3 applications 5 Figures and 13 tables.

The business is based on a portrait of a desk study. As information sources, data of Federal Service of State Statistics, the Federal Customs Service of Russia, official statistics of rail transport, annual and quarterly reports of companies, as well as internet-sites of company-producers.

The first section is an overview of the company.

In the second section presents data on the composition and powers of the company, its products range.

The third section gives an idea of the volume of production of products for various value added products and their dynamics, which are determined on the basis of trends.

The fourth section is devoted to sources of raw materials and suppliers, both domestic and foreign.

Marketing of products dedicated to the fifth section, with a separate delivery address for the domestic market and for export.

In the sixth section we consider the foreign activities of the company, data on exports.

In the seventh section we consider the competence of the company, which determine its competitiveness.

Data on productivity, staffing, compensation can be found in the eighth section.

The ninth section is devoted to one of the most important areas of functioning of the production companies at this stage - environmental performance.

The privatization of the company, its progress, the formation of the shareholders and its impact on the company's activities in the tenth section. Data on the financial condition of the company during 1999-2013 are given in the eleventh section.

In the twelfth section we consider the implementation of planned projects for each of metallurgical conversion.

The thirteenth and final section is devoted to the program for the company.

The Appendices present information about the enlarged range of products, the geographical structure of exports of rolled steel by its kinds in 2004-2013 as well as address-phone book of the company.
1. General information

JSC Evraz-NTMK (Nizhny Tagil Integrated Iron-and-Steel Works), is located in Nizhny Tagil (Sverdlovsk region), around 1100 km to the east from Moscow.

Nizhny Tagil is the second largest city of Sverdlovsk region in terms of industrial output and population. Trunk railroad Yekaterinburg-Perm links the city with all parts of Russia and the CIS. Southern and northern sea ports are accessible through the city of Perm (Kama and Volga rivers)

JSC Evraz-NTMK is the main Russian supplier of rails, wheels, tires, fittings and other products for railways sector, including for works in extremely conditions of high load, low temperatures, etc. NTMK is also great producer of heavy sections, brood flange beams, sections for engineering, power sector, ship building, machine building, as well as structural steel for bridges, ports, tunnels; large supplier of semis for metallurgical sector, including pipe production (bloom, slab, square billet, beam, other semis for re-rolling), as well as steel milling balls.

NTMK was built in 1932-1949. In the post-war plant's history one can accentuate two main features - improving the overall production performance and implementing new technologies, which were developing at NTMK itself.

NTMK has pioneered the blast oxygen process, the duplex technology of V iron manufacturing, unique rail body quenching technology, continuous casting process and the World's largest H-beam shop.

By the late 1980s the NTMK showed the highest annual performance. And yet it lagged behind the other Russian and World's manufacturers in terms of technologies due to prevailing open-hearth method of steelmaking and quite limited application of continuous casting technology.

In 1992, NTMK was privatized into a joint-stock company economically independent from state. There had been developed the technological renewal program of which the first stage was completed in 2000, the year of the NTMK's 60th anniversary. Within this period the following facilities were commissioned: three concasters (CCM), a secondary refining complex (ladle furnace stations, RH-degassers), a lime kiln shop, a new walking beam reheating furnace in the rail shop, several Wagner billet cutting machines (Wagner saws), new pressing lines in refractory shop, relining of the cast yards in the blast furnace shop with the long life castables and etc. Investments totaled over 700 mln. USD.

Restructuring allowed decommissioning of a number of facilities, improving performance; significantly decreasing the environmental impacts and winning the competition in hosting a large pipe plant project.

Increase in production of steel by Evraz NTMK led to an increase in the share of the Works in total Russian production. For instance, in 2013 the share of the Works in total Russian production of steel was 6.5% (6.2 % in 2011-2012). In terms of production of rolled products and sales of commodity products the Works is on the 5th place among the enterprises of the metallurgical complex of the Russian Federation.
NTMK is fully controlled by Evraz Group S.A. Evraz Group is a vertically integrated steel and mining company with assets in Russia, Ukraine, USA, Canada, Czech Republic, Italy and South Africa. The company is included in the list of 20 largest steel producers in the world. In 2013, Evraz produced 16.1 million tons of steel.
2. The enterprise structure, capacities, range of products

The enterprise structure includes:

**Coal-tar chemical plant (Coking plant)** (total capacity of above XXm tpy coke of 6% moisture).

Coal-tar chemical plant consists of eight main and six auxiliary shops. The plant main activity is to produce iron-making coke for blast-furnace shop.

Coking plant №2 comprising two coke oven batteries of type PK-2K with 21.6 m³ chamber capacity (commissioned in 1954-57, №№5, 6, 7, 8) produces wet quenched coke. The plant is equipped with 7-block dry-quenching coke facility (capacity of each block is XXtpd quenched coke). The shop capacity is XXmln tpy coke.

Coking plant №3 comprising two coke oven batteries of type PVR with 41.3 m³ chamber capacity (commissioned in 1986, 1989, №№ 9 and 10, with capacity of XXmln tpy and XXmln tpy, respectively) produces dry-quenched coke; total capacity of 1.57 mln tpy coke.

Coal for the operation is prepared in coal-preparation shop.

Coking gas capture (recovery) shops Nos. 2 and 3 (coking gas purification of ammonia to produce ammonia sulfate).

Coal tar processing shop – 2 distillation facilities with capacity of XX tpy each.

Rectification shop – bays of obtaining light and heavy pyridine bases and indene-coumarones.

Pitch coke shop - XXtpy pitch coke.

Concentrated coking coal is supplied to NTMK from Kuznetsky coal basin (80-90% of the total supplies), as well as, in smaller amounts, from Karaganda coal basin.

**Blast furnace plant** with capacity of XXmln tpy iron, including (as of the end of 2013) 2 operating blast furnaces (BF) with volumes: No. 5 of 2500m³ (capacity of XXmln tpy iron) and No. 6 of 2200m³ (XXmln tpy).

No. 2 BF (1242 m³) in late September 2005 has been stopped for liquidation; BF-3 (of 1513m³) in October 2006 was stopped for conservation.

In 2009, the Works decommissioned two blast furnaces (№ 1 and № 4).

The operating now blast furnace have been commissioned in 2004 and 2006 and are specifically designed for the production of vanadium iron that allows to obtain high-strength metal. The blast furnaces have a fully enclosed casting yards, outer cooling systems, and radically new technologies of raw material loading. High ecological safety of the furnaces is provided by advanced high-power aspiration systems. Each cubic meter of the NTMK furnaces at present time yields XXt daily of vanadium iron.

The plant produces steelmaking iron, including vanadium-containing iron (for production of steel and V-containing slag, respectively), as well as cast iron. In the plant, an unique technology has been developed for smelting iron with low contents
of silicon (0.15%) and titanium (up to 0.2%), and high vanadium content (up to 0.55%) in large-volume furnaces.

Blast furnace No. 3 is equipped with a coal dust injection facility.

The BF plant comprises ore yard with loading cranes, belt-conveyor trestle, loose materials defrosting bay, iron casting area consisting of three iron casters.

**Steelmaking production**

Oxygen-converter plant (capacity of XX tpy steel), yielding carbon and structural alloyed steel, and commodity V-containing slag, delivered to ferro-alloy plants; a ladle-furnace shop, a continuous steel casting division, an iron desulfurization facility.

The open-hearth plant (with capacity of 2m tpy steel) was completely removed from service in January 2009.

**The open-hearth plant,** until recently, included 5 furnaces XXt each. The furnaces were equipped with gas cleaners. In mid-1990s, other 7 furnaces with total capacity of XX tpy steel were already removed from service. In the end of 2008, owing to sharp drop of demand for iron caused by the economic crisis, the residual 5 furnaces were removed from service (in October 2008-January 2009). In 2009, NTMK totally produced around 12 kt of open hearth steel, and then the production was completely stopped.

**The oxygen-converter plant (the BOF Plant)** pioneered in Russia in use of high-capacity converters (100-130t), designated for processing iron, obtained from Kachkanar ores, with recovery of vanadium and steelmaking by duplex process (converter-converter). The shop design capacity increased from initial XXtpy steel up to 3.5m tpy since 1979, when one more (the fourth), XX-t converter was commissioned, then up to XXmln tpy steel and finally in November 2010 to XXmln tpy steel (after completing the reconstruction of converter №4 (BOC-4) in framework of large-scale project on upgrading steelmaking production of the Works).

The plant includes:

- Converter bay: 4 converters 160t each, commissioned in 1963 (2), 1967 (1) and 1979 (1). In early 90s, gas conduits at the converters were reconstructed.
- Ladle-furnace bay: 4 ladle-furnaces, 2 circulation vacuum degassing units RH and an iron-desulfurization facility.
- A bay of continuous steel casting with capacity of 4.5 mln tpy steel (its construction was internally funded) includes 4 concasters: a 4-strand curvilinear continuous-billet caster (No. 1, since 1995, for production of round billet for wheels and rectangular billet, capacity of XXtpy), a combined 2-4-strand continuous-slab caster (No. 2, since 1996, XXmln tpy), a combined 2-strand continuous caster (No. 3, since 2000, for shaped feed, XXtpy after modernization with expanding capacity by XXtpy in 2010), and complex of continuous-slabbing caster No. 4 since September 2004, including the 3rd ladle-furnace and the second vacuum-degassing facility, with capacity of XXmln tpy.

Notice that NTMK pioneered in Russia in production of continuously-cast billet 530x395x165 mm for rolling to obtain large-section beams.