REVEALING DEMANDS OF DOMESTIC MARKET OF PROMISING FERROUS METALLURGY PRODUCTS

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Abstract

The state of the MMS is analysed in the article. On the whole the mining and metallurgy complex of Kazakhstan is an export oriented segment of the country's economy. Practically all the produced metals and metal products of Kazakhstan are exported, and higher stage enterprises for processing Kazakhstan products are abroad.

The reasons of consuming great volumes of hot rolled products and plates in Kazakhstan in 2005 - 2008 were found out. They were caused by the construction of a number of big industrial projects in the mining, metallurgical and oil-gas sectors and also by the construction of big trading centres, warehouses and hangars.

Kazakhstan steelmaking enterprises have overcome the first wave of the world financial crisis and support the production level at 80 – 90 % of their capacity. According to the calculations of experts the annual need of steelmaking enterprises will comprise more than 6 mln. Tones in the near future.

The essence of production and consumption is also considered. Despite of construction new steelmaking enterprises the disbalance between the kinds of manufactured products and the products consumed by the main metal consuming branches has not been overcome yet.

The main consumers of steel products in Kazakhstan are analysed. They are: construction sector, transport, machine building which need other kinds of steel products, namely, more diversified and of higher quality.

The key trends of the domestic market needs in the perspective ferrous metallurgy products aiming at meeting domestic needs along with the development of metal consuming branches in Kazakhstan are found out and grounded.

Keywords: MMS, steelmaking enterprises, domestic market needs

1. INTRODUCTION

The development of electric steel melting production sharply increased the need of native steelmaking enterprises in steel scrap and the shortage of scrap iron has become especially sharp lately because of its export to other countries. According to the calculations of Chemical - Metallurgical Institute the annual demands of steelmaking enterprises in the near future will comprise 6 mln tonnes.

Steelmaking enterprises of RK have overcome the first wave of the financial crisis and retain production at 80-90% of the capacity. The analysis of the depression and growth of Kazakhstan metallurgy in the last years allow to make the following conclusions:

1. In spite of the construction of new steelmaking enterprises the disbalance between the kinds of the manufactured products and the products consumed by the main metal consuming branches has not been solved yet, more than 3 mln. tonnes of structural and special steels (including rails, pipes, stainless sheet, etc) are imported;
2. Kazakhstan steelmaking industry needs diversification by launching mini – plants of 0.3 – 2 mln tonnes capacity specializing in the production of cast and rolled special steel billets for the demands of machine building, construction, oil and gas sector, transport and metalware, wire, wire rod, space parts for automobile and agriculture transport;

3. It is necessary to preserve the state metal stock by complete ban of metal scrap export.

The main consumers of steel products in Kazakhstan are construction sector, oil and gas sector; transport; machine building.

Metal consumption in the construction segment of the domestic market is characterized by a big part of import which is an attractive factor for the establishment of new steel enterprises – PB “Casting” JSC (KSP - steel), “Kazferrosteel” JSC, “SBS – steel” JSC, “ERNS Management”. The main demand nomenclature of Kazakhstan construction enterprises is as follows:

High strength reinforcement of At-IV, At-V, At-VI class; binding wire; low carbon wire; channel; T-beam; flange beam; alloyed steel section pipes; construction steel beam; water-supply pipes; sewage iron pipes; stainless sheet of AISI-304 class and higher; alloyed construction steel sheet.

However the metal products manufactured by native producers do not meet builders’ demands:

PB “Casting” JSC: reinforcement of A3 strength class, of the quality lower than At-4; seamless drawn pipes for oil and gas sector (the declared range of products is not developed). “Arselor Mittal Temirtau” JSC: reinforcement of 8-32 mm dia of the lower quality than At-IV; round of 14-55 mm dia in bars; hot rolled steel angle of 35x35 x5 mm, 36x36 x5 mm, 40x40x4-5 mm, 45 x45 x45mm, 50x50 x4-6 mm, 56 x56 x4-5. 63 x63 x4-6 dimensions; spiral seamed water – supply and straight seam pipes (oil and gas pipes are not developed); plain and low alloyed steel sheet.

During last years more than 160 Kazakhstan enterprises have become permanent importers of construction steel products of only Russian make, and by 2007 they had increased construction steel import to 2 mln t/y. Thus the import of construction steels is rather large and the metal market in the construction sector is to be filled with native products.

Oil and gas industry and communal economy are the main consumers of oil and gas pipes and water-supply pipes of big and average diameter in the period of pipe-lines construction, and then for repair and replacement of the corroded pipes. Besides pipes the oil and gas complex and communal economy are in need of various choking valves (gate valves, vents, etc.) but not manufactured in Kazakhstan.

Total demand in pipes in some periods can exceed 500 thousand tonnes a year. Tubes are supplied mainly from RF, Ukraine and even China. Pipes of various purpose were imported by 110 enterprises, the import volume reached 250 thousand tonnes a year. The high cost of the imported pipes prevent from the solution of the ripe problem of replacement of the main and in – block water – supply and heating pipes in most towns of RK.

“Arselor Mittal Temirtau” JSC when developing the technologies of desulphurization of pig iron can make niobium and vanadium containing steel grades of big diameter of oil and gas purpose with ultra low sulphur content (important against sulphur hydrogen corrosion) but “AMT”JSC rolling mills are not intended for rolling pipe steel with sufficient deformation forces at the temperature lower than 800°C.
2. SOLUTION

The solution of this problem is only in carrying out large-scale SPECW alongside the investigation of structural – sensitive properties of the required steel grades and the development of technological thermo strengthening processing of pipe stock in the conditions of “AMT” JSC. Besides the problems of obtaining chemical and mechanical properties on “AMT” JSC equipment there are problems of receiving geometrical and structural skelp parameters corresponding to making big diameter pipes – planeness, weldability, etc.

The range of products for seamless drawn pipes at PB “Casting” JSC (KSP “Steel”) by their standard sizes are intended for using them as technological equipment of gas – and oil extracting wells, including boring rods and water – supply in-block lines. But in order to develop the technology of melting and rolling pipes and boring rods for reliable operation in sulphur hydrogen medium at PB “Casting” JSC(KSP “Steel”) it is necessary to carry out complex SRECW.

The main consumer of steel stock may become RK railways. It is planned to build new railways and to repair main railways of total length more than 12 thousand km which will require 1.8 mln tonnes of P75 grade rails. The cost of 1 tonne of Russian rails is about $1200, the purchase cost of the above rails volume is 2 bln 160 mln dollars.

Kazakhstan buys up to 100 thousand tonnes of rails for 120 mln dollars every year for continuous repair and replacement of rails on the operating main roads.

Pavlodar enterprise “KSP Steel” at PB “Casting” JSC in 2009 declared the construction of a rail-and-structural steel mill of 100 thousand tonnes capacity of rails a year, “KSP-Steel” having the reserve of melting and casting equipment. Besides it is necessary to organize production of wheel pairs for rolling stock, carriage trucks and frames. In order to realize these plans the producers must prepare productive capacities, buy necessary equipment, get corresponding quality certificates and produce rails according to the conventional world technical characteristics.

“Arselor Mittal Temirtau” JSC can also organize rail production and it is necessary to build a section CCM (in the plans of the enterprise) and a rail-and-structural steel mill with thermostrengthening bay. On the melting stage it is necessary to develop the technology of making rail steels of X70, X80 strength class and to develop the rail rolling technology corresponding to EU standards. It is necessary to carry out large – scale SRECW attracting experts in melting, material science, plastic metal forming, besides it is necessary to solve the problem of unfavourable raw materials base of “AMT” JSC.

Organization of the native production of wheel pairs, casting of trucks and frames for carriages will allow carriage repairing enterprises (“Carriage works” JE, Astana, at al) to organize production of carriages, oil tanks from native furnishing parts and to provide metal capacious production of carriages, carriage mass on the average being 22 tonnes.

Machine building, the main steel consumer in the developed countries, is not a major consumer of steel in Kazakhstan at present and it is seen from the share of imported billets for machine building which comprises only 1,5 % of the whole steel import (fig.1).
Not every machine builder can permit himself to have expensive import of cast, forged and drawn billets from special steels for further working. High purchase cost, transport and customhouse costs, pre-payment, time costs – all these become a part of the product price after machining and make the product quite incompatible.

In Kazakhstan there is no steelmaking enterprise capable of meeting the demands of machine builders in the billets from multialloyed special steel grades. This was one of the reasons of mass bankruptcy of machine building works in RK in the post – reconstruction period, and of 1600 enterprises operating in 1990 there remained about 200 and most of which operated for 15-20 % of their capacity. Automotive industry and instrument engineering will not be able to become major steel consumers in Kazakhstan.

Railway transport can become major rolled steel consumer in RK. Construction of new main railways of total 3 thousand km length, continuous repair and replacement of rails on the operating main railways is the most metal capacious domestic market after the construction one.

Reconstruction of steelmaking production connected with the increase of product quality requires manufacturing of more efficient new generation ferroalloys good for metal treatment in the ladle. Their production and use is a sufficient reserve for improving steel and iron quality.

The planned capacity increase of steel production from 6.4 mln tonnes to 9.7 mln tonnes in 2014 will be provided due to the increase of the production volume of “Arselor Mittal Temirtau” JSC after putting into operation CCM of 0,4 mln tonnes of billets capacity for a section mill and realization of the projects of construction of electric steelmaking works in Aktobe region with the 0,5 mln tonnes capacity and in Kostanai region with the 2,5 mln tonnes capacity. The increase of steel production will demand the increase of domestic steel consumption to 4,5 mln tonnes.

The increase of steel production volume and up-dating of the enterprises for making products with high added value will be the least expensive provided the availability of modern equipment.