Steel Plate Market by Grade, Dimension and Application: Global Strategic Outlook to 2024
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### World Forecast by Sector

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### Table 76: Russia by sector by % by thickness range (continued)

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<tr>
<td>Shipbuilding 25 - 50 mm</td>
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<tr>
<td>Shipbuilding 50 - 100 mm</td>
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<tr>
<td>Shipbuilding &gt; 100 mm</td>
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<tr>
<td>Boiler &amp; pressure vessels &lt; 10 mm</td>
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<tr>
<td>Boiler &amp; pressure vessels 10 - 25 mm</td>
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<td>Boiler &amp; pressure vessels 25 - 50 mm</td>
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<td>Boiler &amp; pressure vessels 50 - 100 mm</td>
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<tr>
<td>Boiler &amp; pressure vessels &gt; 100 mm</td>
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<tr>
<td>Yellow goods &lt; 10 mm</td>
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<td>Yellow goods 10 - 25 mm</td>
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<td>Yellow goods 50 - 100 mm</td>
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<td>Yellow goods &gt; 100 mm</td>
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<tr>
<td>Construction &lt; 10 mm</td>
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<td>Construction 10 - 25 mm</td>
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<td>Construction 25 - 50 mm</td>
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<td>Construction 50 - 100 mm</td>
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<tr>
<td>Construction &gt; 100 mm</td>
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<tr>
<td>Total all sectors</td>
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</table>

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Hot Rolled Plate Supply, Analysis of Specific Competitor Mills, SWOT Analysis and Transformation Capabilities

Transformation capabilities
investments in the mill at DanSteel have increased rolling force and the maximum slab weight, CVC+ technology to improve flatness control and mechanical properties, together with a new hot leveller and X-PACT system. These new investments have improved the overall quality capabilities of the mill, and especially the ability to produce high quality thick plates, but these do not appear to have been focused on any particular market sector or end-use. The transformational facilities that are in place are bevelling and edge preparation, especially for windfarms.

Sales and marketing
The sales and marketing appears to be run principally from the mill, with good knowledge of the European end-use segments, particularly in the selected end-use segments. Year-to-date 2014, these included onshore wind (28%), offshore wind (2%), stockholders (26%), offshore oil and gas (4%), shipyards (19%), and other end-user’s (21%).

Strengths:
The strengths of the mill are clearly very high product quality, the ability to access access consistent high quality slabs from the parent company NLMK in Russia, which in turn has access to some of the very best slab casting technology in the world. Those we interviewed confirmed that slab quality received at the mill is extremely high. Not all plate mills worldwide are able to source slabs from such a consistent high quality supplier. The upstream vertical integration does seem to be a definite benefit.

Weaknesses:
There are a number of perceived weaknesses in the presence operations at DanSteel. The first is that the mill is running at much lower levels of capacity than would be desirable. This appears to be partly a function of market, and partly a function of the fact that DanSteel has no captive downstream output, as do a number of its competitors. Some of the markets supplied, for example shipbuilding, are stagnant or at best growing very slowly in Europe. This means that DanSteel must seek markets further afield, where there are many opportunities, especially in China and Asia, but where there are also many other competitors, some of which also have very high quality plate mills as a result of recent investments. It also seems very likely that most markets in Europe are not going to return quickly to the levels seen pre-financial crisis. This is not just a function of DanSteel, all European steel mills are facing the same issue. Almost half of all sales are presently made to stockholders or other end users, which is not in itself a major weakness, but is likely to mean that the costs of serving a more fragmented customer base with a potentially wide product range may not be ideal. More focus would be preferable, in an ideal world.

Opportunities:
There are opportunities, but increasingly these will be in new export markets. It will also be important to secure existing market share in Europe, and work closely with clients to provide precisely the products and services that they require. This appears to be done at present in key European markets, and there are likely to be further opportunities to enhance and expand this approach with dedicated customer service, sales and technical support.

Threats:
The main threat is that of the competition, especially in markets which are further afield, especially but not limited to those in China and Asia, where there are many competitors which have good and well invested plate mills often as a result of recent investments.
Hot Rolled Plate Supply, Analysis of Specific Competitor Mills, SWOT Analysis and Transformation Capabilities

**Finished plate**
Thickness: 8 - 250mm
Width: Up to 3,000mm
Length max 21m

**Mill specification:**
The mill has thermomechanical rolling.

**NLMK Verona 2.90m**
Location: Verona
Country: Italy

**Overview:**
This is a specialist mill for the production of very thick plate.

**Technical data:**

**Commissioned:**
Annual capacity: 250,000 tonnes, 1 stand 4 high mill
Steel grades: Specialist grades.

**Finished plate**
Thickness: 18 - 350mm
Width: Up to 2,900mm
Length max 12.1m

**Macedonia**
Makstil 3.05m
Location: Skopje
Country: Macedonia

**Overview:**
This mill was restarted in 1996. The mill was previously part of Rudnici, then became part of Duferco in 1997.
Prices and Margins

they are characterised as large alloy square bar exports to avoid punitive export duties. This led to many SE Asian mills (and in other markets) switching to use Chinese billet rather than melt scrap. The abolition of only boron-added VAT rebates in January 2015 means that Chinese billet will continue to be sold via the addition of chrome and will therefore continue to negatively affect scrap markets, although the cost differential has now been reduced.

Volumes have picked up in 2015 as this has become more widely accepted. Chinese billet has entered the Middle Eastern and North African markets as well as becoming dominant in Asian markets.

Pig Iron/DRI
Weak domestic steel demand and currency devaluation means that we expect CIS pig iron prices to fall further than the price of iron ore in 2015 resulting in more competitive prices for European and Mediterranean consumers.

The market for merchant DRI/HBI in 2015 may be a little tighter. Reduced sales by Qatar Steel and Jindal Steel will be one factor, while Venezuelan supply remains vulnerable to disruption. On the other hand, this should be eased by 2016 with the arrival of an additional 1.8m tpy from Metalloinvest in Russia – much of which will be targeted for export.

Lower coal costs in the last two years meant that the premium for pig iron over DRI fell – a fact supported by the shortness in supply in 2014. We expect this to remain in place in 2015, but may begin to widen again in 2016 on the back of slightly higher coal costs and rising HBI supply.

HR Coil Market Outlook
While the global market is currently in a situation of excess capacity, most is located in China, SE Asia and Europe. Recent pricing weakness (2011-13) has curtailed investment in new capacity in those markets and as such we expected only limited capacity additions out to 2020. Modest gains in demand over 2015-18 will result in a progressive tightening of the global market as spare capacity is utilised while some capacity exits due to low profitability, but initial gains will be slow due to raw material price weakness and existing over-capacity. As such, we see the potential for an improvement in margins and global prices over 2016-17 before a slowing global economy has an impact. There was no change in Chinese alloy rebates for flat products in 2015 and these will continue to depress prices in the short term, along with lower raw material prices.

Regional Outlook
We have also provided more regional commentary on a regional basis:

North America - the premium pricing seen in North America will decline in 2015 with US pricing falling to a greater extent. Apparent consumption growth in North America exceeded underlying demand growth in 2014 and inventories built. Imports are now falling in Q2, but inventories will remain elevated. Pricing has bottomed in Q2 with modest gains expected through Q3 and HR coil remaining below $500/s.ton for example. Confirmation of anti-dumping duties and erosion of inventory could see prices accelerate again in Q4. Auto-build rates will peak in 2016 and rising interest rates could forestall weaker demand in 2017/18.

Europe – pricing in Europe will remain weak through most of the forecast period. There remains excess capacity in both long and flat products, although we expect further closures and rationalisation over 2015/16 – particularly in long products. In 2015, CIS material will aggressively target this market and Chinese and CIS CR coil is now being investigated for anti-dumping. A weak euro will provide some
Steel Plate Market by Grade, Dimension and Application: Global Strategic Outlook to 2024

Prices and Margins

- The USA had significant anti-dumping measures in place against most major suppliers of HR plate. This tended to support the US market price. However, a number of these have been reviewed recently - e.g. Italy, Japan, Brazil - and consequently imports have risen, with a negative impact on US domestic plate prices.

MBR’s forecasts of plate prices by key grade, 2014 - 2030, are shown in the following table:

It should be noted that the prices used for this forecast are base prices, without the usual extras being applied for width, thickness and the many other options that are possible with plate.

### Table 93: EU domestic steel plate prices by major grade groups US$/tonne

<table>
<thead>
<tr>
<th></th>
<th>S235</th>
<th>S355</th>
<th>10035 (420)</th>
<th>10028X</th>
<th>Off shore (355)</th>
<th>Shipbuilding Grade A</th>
<th>API X 52</th>
<th>High YS 500</th>
<th>High YS890</th>
<th>PV235</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>673</td>
<td>683</td>
<td>743</td>
<td>846</td>
<td>820</td>
<td>839</td>
<td>699</td>
<td>788</td>
<td>1,057</td>
<td>1,244</td>
</tr>
<tr>
<td>2015</td>
<td>535</td>
<td>545</td>
<td>605</td>
<td>708</td>
<td>710</td>
<td>665</td>
<td>535</td>
<td>650</td>
<td>919</td>
<td>1,106</td>
</tr>
<tr>
<td>2016</td>
<td>526</td>
<td>535</td>
<td>595</td>
<td>700</td>
<td>660</td>
<td>555</td>
<td>625</td>
<td>896</td>
<td>942</td>
<td>1,032</td>
</tr>
<tr>
<td>2017</td>
<td>553</td>
<td>562</td>
<td>625</td>
<td>736</td>
<td>694</td>
<td>683</td>
<td>583</td>
<td>739</td>
<td>942</td>
<td>1,084</td>
</tr>
<tr>
<td>2018</td>
<td>598</td>
<td>608</td>
<td>676</td>
<td>796</td>
<td>750</td>
<td>739</td>
<td>631</td>
<td>710</td>
<td>1,057</td>
<td>1,173</td>
</tr>
<tr>
<td>2019</td>
<td>646</td>
<td>657</td>
<td>730</td>
<td>859</td>
<td>810</td>
<td>798</td>
<td>681</td>
<td>767</td>
<td>1,100</td>
<td>1,267</td>
</tr>
<tr>
<td>2020</td>
<td>704</td>
<td>716</td>
<td>796</td>
<td>936</td>
<td>883</td>
<td>870</td>
<td>742</td>
<td>836</td>
<td>1,199</td>
<td>1,381</td>
</tr>
<tr>
<td>2021</td>
<td>683</td>
<td>694</td>
<td>772</td>
<td>908</td>
<td>856</td>
<td>843</td>
<td>720</td>
<td>811</td>
<td>1,163</td>
<td>1,339</td>
</tr>
<tr>
<td>2022</td>
<td>669</td>
<td>680</td>
<td>757</td>
<td>890</td>
<td>839</td>
<td>827</td>
<td>706</td>
<td>795</td>
<td>1,139</td>
<td>1,312</td>
</tr>
<tr>
<td>2023</td>
<td>736</td>
<td>748</td>
<td>832</td>
<td>979</td>
<td>923</td>
<td>909</td>
<td>776</td>
<td>874</td>
<td>1,253</td>
<td>1,444</td>
</tr>
<tr>
<td>2024</td>
<td>809</td>
<td>823</td>
<td>916</td>
<td>1,077</td>
<td>1,016</td>
<td>1,000</td>
<td>854</td>
<td>962</td>
<td>1,379</td>
<td>1,588</td>
</tr>
</tbody>
</table>

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Appendix 1: Key EU Mill Profiles

Figure 95: HR wind tower plate market broken down by gauge and width

<table>
<thead>
<tr>
<th>Plate thickness (mm)</th>
<th>Width (mm)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 - 1500</td>
<td>&gt;1500-2600</td>
<td>&gt;2600-3600</td>
</tr>
<tr>
<td>3-4.75</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>&gt; 4.75 - 10</td>
<td>2%</td>
<td>5%</td>
</tr>
<tr>
<td>&gt; 10 - 20</td>
<td>3%</td>
<td>9%</td>
</tr>
<tr>
<td>&gt; 20 - 40</td>
<td>5%</td>
<td>9%</td>
</tr>
<tr>
<td>&gt; 40</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Total (%)</td>
<td>9%</td>
<td>25%</td>
</tr>
</tbody>
</table>

Source: MBR

While specialist industrial consumers e.g. crane manufacturers with high-strength requirements or very large equipment manufacturers – Caterpillar, John Deere, Volvo Mining Trucks – smaller ones with lesser specialty needs e.g. door manufacturers will secure from distributors. Construction applications are also likely to be sourced via distributors.

The standard plate grade is S235 structural (Europe and Asia) or A36 (N. America). This is the base price in the forecasts. Premiums for common grades are shown below. As we note elsewhere in the report, these can vary over time and are typically strictly enforced during good times, but can be discounted in weaker markets.

The following chart summarises plate types, from commodities through to the highest quality grades (horizontal axis), and shows the associated mill service levels (vertical axis):

Figure 96: Plate types, from commodities through to the highest quality grades
Appendix 1: Key EU Mill Profiles

Outside mills’ sales team – functional Analysis

Front office is completely deployed based on usage sectors and is mainly accountable for business in EU region. More than 90% of total team deployed in EU.

<table>
<thead>
<tr>
<th>Mode of order book</th>
<th>Large accounts (&gt; 10 kton per account)</th>
<th>Role of Front office</th>
<th>Role of Back office</th>
<th>Support of Technical team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales location / Service Center / Trading route</td>
<td>More than 10</td>
<td>• Deal new accounts and maintain existing accounts</td>
<td>• Create new accounts and collect feedback from existing accounts</td>
<td>• Technical team deployed with specific sector. In current scenario, more focus is in wind energy, oil and gas offshore, yellow good, and boiler and pressure vessel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Team Size</th>
<th>Front Office</th>
<th>Back Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Others in EU</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Rest of World</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Σ</td>
<td>40</td>
<td>47</td>
</tr>
</tbody>
</table>

Customers’ view – analysis

In UK market customers consider Tata steel plates in categories of plates from German mills, due to sustained brand values, whereas in other part of EU, German mills plates are considered far ahead with that of Tata Steel.

<table>
<thead>
<tr>
<th></th>
<th>UK</th>
<th>Other in EU</th>
<th>Outside EU¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive Quality Perception?</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Price Issue?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Delivery time?</td>
<td>As per schedule</td>
<td>As per schedule</td>
<td>As per schedule</td>
</tr>
<tr>
<td>Pre-sales Technical Support- satisfaction?</td>
<td>High</td>
<td>High</td>
<td>Medium/ Low</td>
</tr>
<tr>
<td>Post-sales Technical Support- satisfaction?</td>
<td>High</td>
<td>Medium</td>
<td>Medium/ Low</td>
</tr>
</tbody>
</table>

¹. In market outside EU, Tata plate is mainly shipped to USA market, South East Asia, India and Middle East. Based on interviews, except USA market (very low tonnes shipping) the customers’ view are very much common, so views of majority have been considered for analysis here.
Appendix 1: Key EU Mill Profiles

Salzgitter has a lean team size both at mills and outside mills

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Tata Steel Europe</th>
<th>Salzgitter AG</th>
<th>Dillinger Hutte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of sales team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales volume yield(^1) per team member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales revenue yield(^2) per team member</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of sales team at mills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ratio of front office to back office team at mills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average size of sales team per sales location outside mill</td>
<td></td>
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</tbody>
</table>

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1. Meaning sales volume per person
2. Meaning sales revenue per person

Salzgitter and Dillinger are having very high positive perceptions from customers of Europe, but in Asia – Salzgitter has more leverage due to its own direct networking through trading business unit

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Tata Steel Europe</th>
<th>Salzgitter AG</th>
<th>Dillinger Hutte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customers' perception(^1) in domestic market</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers' perception(^1) in North EU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers' perception(^1) in West EU</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customers' perception(^1) in Central EU</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Customers' perception(^1) in remaining Europe</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Customers' perception(^1) in Asia and Middle East</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Customers' perception(^1) in America</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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1. Very positive means above 8 in scale of 10, normal means 5-8 in scale of 10, not too positive means less than 5 in scale of 10


Appendix 9: Shipyards - Customer Segmentation Analysis

Table 106: Key customer sector grouping: Shipyards

<table>
<thead>
<tr>
<th>End use sector</th>
<th>Shipyards 2014</th>
<th>Shipyards 2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual plate consumption of nominated firms</td>
<td>275,000</td>
<td>318,322</td>
</tr>
<tr>
<td>Average plate price Euros/tonne</td>
<td>537</td>
<td>618</td>
</tr>
</tbody>
</table>

- **Fincantieri**
- **CMP**
- **Fr Luerssen Werft**
- **STX Finland now part of Meyer, also Turku**
- **Nordic Yards Rostock**
- **Meyer (Neptun)**
- **Northern Shipyards**
- **Crist**
- **Meyer**

**Wind Energy - Customer Segmentation Analysis**

- Our interviews suggested that offshore wind energy is much more attractive than onshore because grades are more complex and thicknesses greater.

- We have been able to test this assertion through detailed analysis of all key wind energy customers, which are as follows:
  - Siemens Wind
  - Enercon (Germany)
  - Bladt Industrie
  - PBN Streel
  - Tissot Industrie
  - PBN Steel (Vestas)
  - Mabey Bridge
  - Ambau GmbH

This data is only available upon purchase of the report. To arrange a live online demonstration of this data, please contact info@metalbulletinresearch.com or research@amm.com.