Study on the market of steel plates industry in Egypt

This study has been endorsed by the Market Research Committee at Federation of Egyptian Banks and approved by its Board of Directors.

Prepared by Planning, Research and Internal Development Department
Industrial Development and Workers Bank of Egypt
And Approved by Market Research Committee
And Accredited by the Board of Directors of
Federation of Egyptian Banks
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The iron and steel business is an important and strategic industry for any given community as it plays a key role in developing the industry and the economy as a whole. Since the mid of the last century, Egypt has been paying more attention to this industry, commencing with the establishment of the state-owned iron and steel complex in Helwan in southern Cairo. Generally, there are two different processes to produce steel worldwide:

The first process relies on the use of furnaces and utilizes local raw materials available in Egypt. These materials are being used in the iron and steel factories in Helwan. Furnaces are the most commonly-used process worldwide. They are used to generate about 63% of the global production of steel and iron. In developed countries like Germany, the furnaces process contributes around 70% of the total iron production, while in China and USA, it represents 80% and 50% respectively.

The second process relies on DRI (Direct Reduced Iron), which is applied in the Dekhila factory. This process relies on extracting oxygen from the essential raw material, Oxide Pilates, and requires materials of high specifications, which are only available in certain areas in the world. Hence, these materials are subject to crises resulting from the changes in their global prices.

The key iron producers worldwide are: the Brazilian company CVRD, the Australian companies RIO TINTO and BHP BITITITION, the Indian company Orcillo Mittal, which recently received an authorization to produce DRI and billets in Egypt.

The iron production process in Egypt starts with the production of raw steel, which is produced from primary iron materials or recycled and smelted steel scrap. The smelted scrap is then processed and formed into two major semi-finished products, which are billets and slabs.
1. Billets are first heated and rebarred to produce reinforced iron and other long bars.
2. Slabs are heated and rebarred to produce plates in form of rolls whether out of heated or cold rebars.
   a. Heated plates like:
      i. Hot rolled strip coil
      ii. Plates and sheets
   b. Cold rebar plates: hot rolled strip coil undergoes refining chemical treatment using analysis processes to produce cold rebar plates, which are called “treated hot rolled strip coil”. This is rebarred to produce the following:
      i. Cold rolled coil
      ii. Sheets
      iii. Tin plates

The production of steel plates undergoes the following stages:

**Cutting Stage:** Steel slaps and molds are put into ovens that operate with natural gas. They are also treated with the help of adjuvant and then cut into sheets with different sizes that range between 10m and 48m.

**Purification Stage:** The cut slaps go through water to remove impurities and sediment resulting form the cutting stage.

**Rebar Stage:** After the purification stage, the slaps enter the rebar stage.

**Cooling Stage:** In this stage, water is poured on hot iron prior to acid treatment.

**Allbeckli Unit:** In this stage, outer impurities are removed with the help of acid treatment.

**Final Cutting Unit:** This is the final production stage of steel plates, where steel is being cut into plates with different sizes.

Steel plates are used in various engineering industries such as automotive chassis and home appliances (refrigerators, washing machines, etc.). They are also used in metal industries that
cater to the oil sector such as manufacturing ships and containers, in addition to their use in the electronics industry.

This study tackles the industry of steel plates in Egypt through the following angles:

1. Local production of steel plates, which includes:
   a. Existing local production of steel plates
   b. Expected local production of steel plates
2. Foreign trade of steel plates (imports and exports)
3. Local demand on steel plates, which includes:
   a. Existing local demand on steel plates
   b. Expected local demand on steel plates until 2012
4. Expected condition of the steel plates industry market

1. Local production of steel plates, which includes:
   a. Existing local production of steel plates: the General Authority for Industrial Development stated that registered local production of steel plates reached 2,400,000 tons in 2007. The operation rate of existing projects during the same years was 94.4%. This high rate was due to soaring local demand, in addition to the fact that the furnaces have to operate constantly with full capacity with the exception of maintenance periods. Companies that produce steel plates include Al Ezz Group: Al Ezz El-Dekheila Steel and Al Ezz Steel Rebars, which fall under the investment sector. They are followed by the Egyptian Iron and Steel Co., a public sector company, and Delta Steel for reinforced iron.
   b. Expected local production of steel plates:
      i. At the beginning of 2008, Al Ezz Steel received an approval to increase its production capacity of steel plates by 800,000 tons.
      ii. The expectations for local production is based on the following two assumptions:
          1. Existing projects will resume their production with the same pace achieved in 2007 which reached 2,400,000 tons.
2. Al Ezz Steel received a new approval to start producing steel plates in 2010 with 50% operation rate to reach 95% in 2011 and to continue at this pace.

The below grid shows the expected local production of steel plates:

Grid 1: The expected local production of steel plates (in 1000 tons):

<table>
<thead>
<tr>
<th>Year</th>
<th>Production of existing projects</th>
<th>Production of approved projects</th>
<th>Expected total local production</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2400</td>
<td>-</td>
<td>2400</td>
</tr>
<tr>
<td>2009</td>
<td>2400</td>
<td>-</td>
<td>2400</td>
</tr>
<tr>
<td>2010</td>
<td>2400</td>
<td>400</td>
<td>2800</td>
</tr>
<tr>
<td>2011</td>
<td>2400</td>
<td>760</td>
<td>3160</td>
</tr>
<tr>
<td>2012</td>
<td>2400</td>
<td>760</td>
<td>3160</td>
</tr>
</tbody>
</table>

The above grid shows that the local production of steel plates is expected to increase from 2.4 million tons in 2008 to almost 3.2 million tons in 2010.


Grid 2: (the below volumes are in 1000 tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Exports</th>
<th>Imports Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exports volume</td>
<td>Annual % rate</td>
</tr>
<tr>
<td>2004</td>
<td>123.4</td>
<td>-</td>
</tr>
<tr>
<td>2005</td>
<td>385.9</td>
<td>212.8%</td>
</tr>
<tr>
<td>2006</td>
<td>149.3</td>
<td>-61.3%</td>
</tr>
<tr>
<td>2007</td>
<td>244.9</td>
<td>64%</td>
</tr>
</tbody>
</table>

Source: CAPMAS
The above grid shows the following:

- The volume of steel plates’ export fluctuates. It hiked by 212.8% from 2004 to 2005, dropped by 61.3% from 2005 to 2006 then continued its upward trend in 2007 with a positive rate of 65% compared to the previous year.
- Steel plates’ exports represented 10.2% of the Gross Domestic Product (GDP) in 2007.
- Imports of steel plates increased from 17.4 thousand tons in 2004 to 60.2 thousand tons in 2007.
- Imports of steel plates accounted for 2.5% of the Gross Domestic Product (GDP) in 2007.

3. Local demand on steel plates, which includes:
   a. Existing local demand on steel plates: the local demand on steel plates is estimated by using the apparent consumption equation.

\[
\text{Local apparent consumption} = \text{local production} + (\text{exports} - \text{imports})
\]

Local apparent consumption of steel plates in 2007 = 2400 + (244.9 – 60.2) = 2215.3 thousand tons

The self-sufficiency ratio of steel plates reached 108.3% in 2007.

b. Expected local demand on steel plates until 2012:

Steel plates are used in various engineering industries such as automotive chassis and home appliances (refrigerators, washing machines, etc.). They are also used in metal industries that cater to the oil sector such as manufacturing ships and containers, etc. Therefore, it is expected that the demand on steel plates will increase in the coming period at the same growth rate targeted for the year 2008/2009 for manufacturing industries, which reached 8.1% and is based on the consumption rate of 2007, which reached 2215.3 thousand tons. The following grid shows the expected local demand on steel plates.

Grid 3: The expected local demand on steel plates:
<table>
<thead>
<tr>
<th>Year</th>
<th>Volume in 1000 tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2395</td>
</tr>
<tr>
<td>2009</td>
<td>2589</td>
</tr>
<tr>
<td>2010</td>
<td>2798</td>
</tr>
<tr>
<td>2011</td>
<td>3025</td>
</tr>
<tr>
<td>2012</td>
<td>3270</td>
</tr>
</tbody>
</table>

The above grid shows the increase in local demand on steel plates from nearly 2.4 million tons in 2008 to almost 3.3 million tons in 2012.

4. Expected condition of steel plates industry market

By using the expected local production and expected local demand grids, we can estimate the expected gap in the steel plates market in Egypt as shown in the following grid.

Grid 4: (in 1000 tons)

<table>
<thead>
<tr>
<th>Year</th>
<th>Expected local production</th>
<th>Expected local demand</th>
<th>Surplus / Deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>2400</td>
<td>2395</td>
<td>5</td>
</tr>
<tr>
<td>2009</td>
<td>2400</td>
<td>2589</td>
<td>(189)</td>
</tr>
<tr>
<td>2010</td>
<td>2800</td>
<td>2798</td>
<td>2</td>
</tr>
<tr>
<td>2011</td>
<td>31600</td>
<td>3025</td>
<td>135</td>
</tr>
<tr>
<td>2012</td>
<td>3160</td>
<td>3270</td>
<td>(110)</td>
</tr>
</tbody>
</table>

- It is expected to have a deficit of 189 thousand tons in the steel plates market in 2009. The market will then balance out with the introduction of the Ezz Steel production line in 2010. The market is expected to achieve a mild surplus of 2,000 tons. This surplus is expected to reach 135 tons in 2011. With the increasing local consumption and projects reaching their ultimate production capacity, this surplus is expected to turn into a deficit of 110 thousand tons in 2012.
• The expected local production for 2008-2012 will cover the local demand only with a mild deficit in 2009 and 2012. However, this production does not cover the expected export orders.

Summary:

• The iron and steel industry is one of the strategic industries worldwide. Since the mid of the last century, Egypt has been paying more attention to this industry. There are two different processes to produce steel worldwide. The first process relies on the use of furnaces and utilizes local raw materials available in Egypt. These materials are being used in the iron and steel factories in Helwan. The use of furnaces is the most commonly-used process worldwide. The second process relies on DRI (Direct Reduced Iron), which is applied in Dekhila factory. This process relies on extracting the oxygen from the essential raw material, Oxide Pilates, and requires materials of high specifications, which are only available in certain areas in the world. Hence, these materials are subject to crises resulting from the changes in their global prices.

• The iron production process in Egypt starts with the production of raw steel, which is produced from primary iron materials or recycled and smelted steel scrap. The smelted scrap is then processed and formed into two major semi-finished products: billets and slaps. Billets are first heated and rebarred to produce reinforced iron and other long bars. Slabs are heated and rebarred to produce plates in form of rolls whether out of heated or cold rebars.

• The production of steel plates undergoes several stages, including the Cutting Stage, the Purification Stage, the Rebar Stage, the Cooling Stage, the Albeckli Unit and the Final Cutting Unit.

• Steel plates are used in various engineering industries such as automotive chassis and home appliances (refrigerators, washing machines, etc.). They are also used in metal industries that cater to the oil sector such as manufacturing ships and containers, in addition to their use in the electronics industry.

• The local production of steel plates reached 2,400,000 tons in 2007. The operation rate of existing projects during the same year was 94.4%. Companies that produce steel plates include Al Ezz Group: Al Ezz El-Dekheila Steel and Al Ezz Steel Rebars, which fall
under the investment sector. They are followed by the Egyptian Iron and Steel Co., a public sector company, and Delta Steel for reinforced iron. At the beginning of 2008, Al Ezz Steel received an approval to increase its production capacity of steel plates by 800,000 tons.

- Foreign trade data indicates that imports of steel plates reached 60.2 thousand tons in 2007 representing 2.5% of the Gross Domestic Product, while exports reported 244.9 thousand tons in 2007 representing 10.2% of the Gross Domestic Product in the same year.

- Expectations related to local production and consumption of steel plates show that a deficit of 189 thousand tons in the steel plates market in 2009 is expected. With the introduction of the Ezz Steel production line in 2010, the market is expected to balance out. The market is then expected to achieve a mild surplus in 2010 and 2011, but with the increasing local consumption, this surplus is expected to turn into a deficit of 110 thousand tons in 2012. Moreover, there is an increasing external demand on steel plates, which is expected to intensify the deficit.