Stainless steel—a bright future in a changing world?

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Secretary General ISSF
Agenda

- Stainless steel: short term perspectives
- An industry facing many challenges
- … but a bright long term future
- Conclusions
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Since 1980 stainless steel has grown faster than most metallic materials.

Historically, stainless steel growth was much stronger than carbon steel growth, a fact that led to the perception that stainless steel was « different » and immune to the woes of « ordinary » steel.

Source: ISSF, Laplace Conseil
However, since 2006, stainless steel has under-performed its competition.

Recession started two years earlier for stainless steel and was much deeper; 2010 recovery is much stronger.

Source, ISSF, Laplace Conseil
World stainless Crude Steel Production: again 6% pa 2001-11!!

…but revival

Source, ISSF
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China accounts for all the growth since 2000

World Stainless Steel production (Million tonnes of crude steel)

Source, ISSF, Laplace Conseil
Since 2000 most of the stainless growth is attributable to S200 & S400

S300 has declined in all region of the world outside China

Source, ISSF, Laplace Conseil
Raw materials prices and volatility have increased…. 

In addition, very significant increase in volatility after 2004

Source: ISSF, Laplace Conseil
... combined with margins squeeze ...

**Price cost squeeze for 304 SS (€/t)**

- Factor cost increase: 190
- Transformation margin decrease (net of scrap): -310, -340
- 50 €/yr, 2.1%/yr of average price

**Price cost squeeze for 430 SS (€/t)**

- Factor cost increase: 230
- Transformation margin decrease (net of scrap): -140, -170
- 37 €/yr, 2.8%/yr of average price

Source: Laplace Conseil
... and overcapacity

Significant over-capacity expected going forward, impacting utilisation rates

Global CR stainless steel over-capacity (2003A – 2013E)

- Net production capacity surplus (lhs) (a)
- Utilisation ratio (rhs)

(a) Defined as global production capacity less global demand
Source: CRU, February 2009
Top 20 stainless steel companies

13 of the Top 20 are Asian!

Source: SMR, 2010
Profit

Stainless steel has underperformed other Metals & Mining sub-sectors

Share price based index development (since 1999, indexed to 100)

Note: Diversified miners consists of Anglo American, BHP Billiton, Rio Tinto, Vale, Xstrata; Base Metals consists of Alcoa, Freeport McMoRan, Vedanta; Bulks consists of China Shenhua, Cliffs Natural Resources, ENRC, Exxaro, Iluka, Peabody Energy; Stainless Steel consists of Acerinox, Allegheny Tech, Carpenter Tech, Nisshin Steel, Outokumpu; Carbon Steel consists of ArcelorMittal, Baoshan, CSN, Evraz, JFE, Nippon Steel, POSCO, ThyssenKrupp.

Source: Capital IQ

Deutsche Bank
What have been the reactions of the producers?

- Cut costs, improve productivity by using latest technologies
- Close inefficient mills (Europe-Americas)
- Look for cheaper raw materials:
  - Nickel Pig Iron (China)
  - Backward integration (Asia)
- Integrate into distribution to better control downwards supply chain (Europe, Asia, Americas)
- Move to higher, value added products or margins: 400 series, duplex, 316 etc…
- For integrated mills, split the stainless business: Aperam, Inoxum
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India: the next after China?

Source: SMR 2010
Price of competing materials 2000-2010: stainless doing well!!

Source, ISSF
An industry constantly growing in size and efficiency

Considering the 4 largest world companies in stainless steel melting production

2000: Over 1 Mt 34% of the market
2005: Over 1.5 Mt 32% of the market
2012 (e): Over 3 Mt 38% of the market

with fully integrated stainless steel shops, hot rolling mills and a clear shift to Asia
The raw material challenge

- **Nickel Pig Iron**: more an opportunity than a threat?
  - a ceiling to the price of nickel
  - a regulation to the S/D balance

- **Chrome**
  - an available resource with high productivity and low cost producers coming up

- **LME**: a tool to be positively used!!
  - an opportunity to better pilot the raw material volatility
    … but a market still to be better regulated and more transparent
A sustainable material

CO2 emission from cradle to grave without the recycling credit which is around 1 ton CO2/ton

The stainless steel industry itself contributes directly for less than 10% of total emissions

Most of the emissions are coming from upstream: raw materials and electricity generation

Stainless steels compare favorably to competing materials Al, Cu, Mg

Total 3.81 ton CO2/ton SS

0.65 ton CO2/ton SS

0.36 ton CO2/ton SS

Raw materials total 2.80 ton CO2/ton SS

Source: ISSF, SCM
Stainless Steel Recycling

<table>
<thead>
<tr>
<th>Main application sectors</th>
<th>Use of finished SS in manufacturing</th>
<th>Average life (in years)</th>
<th>To landfill</th>
<th>Collected for recycling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>16%</td>
<td>50</td>
<td>8%</td>
<td>92%</td>
</tr>
<tr>
<td>Transportation</td>
<td>21%</td>
<td>14</td>
<td>13%</td>
<td>87%</td>
</tr>
<tr>
<td>Industrial machinery</td>
<td>31%</td>
<td>25</td>
<td>8%</td>
<td>92%</td>
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<tr>
<td>Household appliances</td>
<td>6%</td>
<td>15</td>
<td>18%</td>
<td>82%</td>
</tr>
<tr>
<td>Electronics</td>
<td>6%</td>
<td>-</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Metal goods</td>
<td>20%</td>
<td>15</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
<td><strong>22</strong></td>
<td><strong>18%</strong></td>
<td><strong>82%</strong></td>
</tr>
</tbody>
</table>

Source: Yale University Study 2009
ISSF - Team stainless
Stainless Steel Recycling: over 80%!

Source: Yale University Study 2009
ISSF - Team stainless
Chrysler Building, 1930

- Stainless steel has been used as an architectural material since about 1930.
Sustainable applications: Bio-Gas

- Bio Gas plant
- Severe corrosion conditions
- Low maintenance

Source: Kosa/ISSF Book of New Applications
316Ti grade
Stainless Steel

Bridge

High strength, corrosion resistance – Long life

Source: Outokumpu Oyj/ ISSF Book of New Applications (grade SAF2205(Duplex)

Stockholm
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A bright future

- Despite current difficulties shared by many heavy industries, the stainless steel industry has a bright future:
  - Potential growth in emerging countries is enormous
  - In sustainability, stainless steels are unmatched compared to other materials
  - The industry is now catching up with overcapacity and restructuring measures

- Public authorities should recognise these intrinsic properties and help the industry:
  - to restructure itself
  - to adopt free and fair trade practices
  - to improve the raw materials markets transparency and avoid excess volatility which damages its long term growth and profitability
Thank you for your attention!