The Environmental Challenges and Sustainability of Industry
Foulath’s Case

Prepared by: Dr. Ali J. Al-Hesabi

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Foulath: Major Shareholding by GCC Government owned companies

Gulf Cooperation Council - Member States

Govt. of Kuwait (16.6%)
Govt. of UAE (16.6%)
Govt. of Saudi Arabia (16.6%)
Govt. of Oman (16.6%)
Govt. of Bahrain (16.6%)
Govt. of Qatar (16.6%)

Gulf Investment Corporation (50%)

Qatar Steel (25%)

Listed via Industries Qatar (IQ), Qatar (100%)

Listed on Kuwaiti Exchange

Gulf Cable & Electrical Industries Company K.S.C (10%)
National Industries Group Holding K.S.C (10%)
Kuwait Foundry Company K.S.C (5%)

Foulath Holding B.S.C. (c) (100%)

BAHRAIN STEEL B.S.C.C. E.C. (51%)

SULB Company B.S.C. (c) (51%)

SULB Bahrain Venture Company W.L.L (51%)

SHAREHOLDER GROUP
Bahrain Steel - Company Overview

- **Bahrain Steel B.S.C.C. E.C.**, formerly known as Gulf Industrial Investment Company E.C. ("GIIC"), was established in 1984 in the Kingdom of Bahrain.

- Producer of high quality Direct Reduction ("DR") grade iron oxide pellets, importing iron ore as a raw material and exporting pellets as a finished products.

- Owns and operates 2 pelletizing plants with a combined design capacity of 11 million tons per annum.

- Strong client base primarily in Bahrain, Saudi Arabia, Qatar, Oman, India, and South East Asia.

- The only “non-affiliated” entity in the world, as it is not part of an iron ore mining company.

Pelletizing Plant 1
Operating since 1984, with a design capacity of 4 million tons per annum, upgraded in-house to 5 million tons per annum in 2007.

Pelletizing Plant 2
Design capacity of 6 million tons per annum (capable of producing 7 million tons per annum), being the largest rotary kiln of its kind in the world.

Stockyard
Stock Yard Capacity - Iron Ore 1.2 million ton and Pellet 0.6 million ton.

Bahrain Steel is strategically located at the center of a sizeable and rapidly growing GCC Steel Industry ( ) that requires pellets as its primary feedstock.
Port Facilities

a. 1&2  - Iron ore unloading berth
b. 3&4  - Pellet Loading berth
c. 5    - Dolphin Jetty for TV
Stockyard
Stock Yard Capacity - Iron Ore 1.2MT Pellet 600KT
2.5 KM x 22 MTR Wind Barrier to prevent atmosphere dust.
(51% Shareholding)

(49% Shareholding)
SULB

SULB was established as an integrated steel complex in the Kingdom of Bahrain, as joint venture between Foulath (51%) and Yamato Kogyo, Japan (49%), with $1.4 billion investment (including the acquisition of Saudi Sulb, KSA, and excluding working capital) for production of steel beams & sections (finished products).

FACILITIES

Sulb consists of the following 3 main facilities:

   a) Direct Reduced Iron ("DRI") Plant
       Design capacity: 1.5 million tons/ year ("Mt/y") and capable to produce 1.8 Mt/y

   b) Melt Shop
       Design capacity of 0.85 Mt/y and capable to produce 1.0 Mt/y

   c) Heavy & Medium Section Rolling Mill ("HSM")
       HSM has a design capacity of 0.60 Mt/y and capable to produce 0.8 Mt/y

   d) Light & Medium Section Rolling Mill ("LSM")
       LSM has a design capacity of 0.40 Mt/y located in Jubail, KSA.
DR Plant

Shaft Furnace

Reformer Area
Melt Shop

Electric Arc Furnace
Melt Shop

Continuous Caster
Heavy Section Mill

Discharge from Re-Heating Furnace

28 10 2012
Heavy Section Mill

Tandem Mill in operation
Saudi Sulb

Re Heating Furnace discharging side  Finished products collecting table
Foulath's Efforts Toward Environment & Safety

- Quality and Environment is the main pillar of Foulath’s Integrated Management System;

- 1) the management and staff committed to provide customers with quality products; and services; 2) ensuring to minimize the environmental impacts and prevent pollution; and 3) comply with the national and International environmental laws and regulations;

- These commitments achieved through:

- Establishing and Maintaining an Integrated Management System that meets the requirements of ISO 9001:2008 and ISO 14001:2004 standards

- Setting Quality & Environmental Objectives;

- Providing resources for achieving these goals & investing in technology & training;

- Communicating organization’s policy & objectives to all employees
# The Clean Technology Invested in Protecting The Environment in Bahrain Steel

<table>
<thead>
<tr>
<th>Item</th>
<th>Purpose</th>
<th>Cost</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind barrier</td>
<td>To prevent iron ore spillage and dust emissions from the stockyard</td>
<td>U$ 14 million</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Fog Spray System</td>
<td>To prevent Iron Ore spillage and dust emissions</td>
<td>U$ 1 million</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Electrostatic Precipitator</td>
<td>Capture the fine dust from the process</td>
<td>U$ 4 million</td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Online Monitoring for the emitted gases stacks</td>
<td>To have online monitoring connected to the control room, and SCE Monitoring Network</td>
<td>U$ 2 million</td>
<td><img src="image4.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
## The Clean Technology Invested/continued

<table>
<thead>
<tr>
<th>Item</th>
<th>Purpose</th>
<th>Cost</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suppressing Dust at the iron ore stockyard.</td>
<td>To prevent iron ore spillage and dust emissions from the stockyard</td>
<td>U$ 0.1 million</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Belt Covers for Belts Conveyers</td>
<td>Stop dust spillage/emissions from the belts</td>
<td>U$ 0.5 million</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Recycling sewage water</td>
<td>To prevent pollution</td>
<td>U$ 1.6 million</td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Co-generation/CHP</td>
<td>To save resources and protecting environment.</td>
<td></td>
<td><img src="image4.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
Outcomes of Foulath’s Quality and Environment Policy

Environmental Compliance

Emissions from various Stacks at SULB - 2016

- Max. 500 mg/m³
- Max. 250 mg/m³
- Max. 50 mg/m³
- Max. 100 mg/m³

Emission (mg/m³)

<table>
<thead>
<tr>
<th></th>
<th>CO</th>
<th>HSM Stack</th>
<th>SOx</th>
<th>NOx</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>DR Stack</td>
<td>13.00</td>
<td>153.50</td>
<td>18.00</td>
<td>56.00</td>
<td>1.15</td>
</tr>
<tr>
<td>HSM Stack</td>
<td>0.00</td>
<td>0.00</td>
<td>7.50</td>
<td>7.50</td>
<td>1.60</td>
</tr>
<tr>
<td>MS BAGHOUSE Stack</td>
<td>0.00</td>
<td>20.00</td>
<td>7.50</td>
<td>7.50</td>
<td>0.21</td>
</tr>
<tr>
<td>MS MH Stack</td>
<td>50.00</td>
<td>100.00</td>
<td>200.00</td>
<td>300.00</td>
<td>0.19</td>
</tr>
</tbody>
</table>
Environment Compliance

Emissions from various stacks at Bahrain Steel-2016

- CO - Max. 100 mg/m³
- SO₂ - Max. 500 mg/m³
- NOₓ - Max. 250 mg/m³
- PM₁₀ - Max. 50 mg/m³
## Resources Consumption (Annual)

<table>
<thead>
<tr>
<th>Plant</th>
<th>Capacity MT</th>
<th>Gas (in MMBTU)</th>
<th>Electricity (MWH)</th>
<th>Water (M3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain steel</td>
<td>11,000,000</td>
<td>12,315,000</td>
<td>737,000</td>
<td>928,000</td>
</tr>
<tr>
<td>DRI</td>
<td>1,500,000</td>
<td>134,270,000</td>
<td>1,764,400</td>
<td>3,430,000</td>
</tr>
<tr>
<td>Steel melt shop</td>
<td>850,000</td>
<td>4,020,000</td>
<td>7,449,000</td>
<td>13,220,000</td>
</tr>
<tr>
<td>Rolling mill</td>
<td>1,000,000</td>
<td>1,730,000</td>
<td>126,300</td>
<td>360,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>152,335,000</strong></td>
<td><strong>10,076,700</strong></td>
<td><strong>17,938,000</strong></td>
<td></td>
</tr>
</tbody>
</table>
Challenges that Facing Industry

1. The challenges on the Macro-level

- There is a need to re-study the industrial strategies based on the availability of resources (opportunity cost, down streaming; encouraging SMI).

- The energy pricing structure should ensure a sustainable energy future (subsidy, externalities; national green economy etc..).

- Pollution control regulatory actions need to be strengthen(the ecosystems are a major aspect of quality of life leading to sustainable development).

- Localization of Industry in its comprehensive sense (Oil and Petrochemical industry; water desalination etc..)

- The industry infrastructure needs to be improved (lack of services, overlapping with other land usage etc..)
Challenges that Facing Industry/Continue

1. The challenges on the Micro-level

- Lack of waste treatment and recycling facilities.
- Shortage of industrial lands; supply of NG; Electricity etc.
- High financing cost of green technology; resources conservation programs; and EMS.
- Localization of local knowledge and competencies.
- High transport cost of the products.