Coke Oven Process Flow Diagram

Simplified Process Flow Diagram

TIPLER AREA
1. Tippler
   Coal → Coal Crusher

BATTERY AREA
2. Coke Oven Battery 5
   Coal → Primary Coolers

SCREENING PLANT
3. Screening Plant
   Coke
   Coke Grades:
   - 0-6mm: 7%
   - 6-30mm: 28%
   - 30-80mm: 65%

GAS PLANT
Boiler
   Soft water plant
   Steam
   Clean Gas back to Coke Ovens (Battery 5)
   10. Benzol Scrubbers
   11. Crude Benzol Plant

CLEAN COKE OVEN GAS DISTRIBUTION
- Battery heating: 55%
- Boilers: 30%
- Mills: 10%
- Flare: 5%
# Plant Detail and Throughput

## Battery Characteristics

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year built</td>
<td>1960 - 1963</td>
</tr>
<tr>
<td>Type</td>
<td>WOODALL-DUCKAM</td>
</tr>
<tr>
<td>Total number of ovens</td>
<td>51</td>
</tr>
<tr>
<td>Coal volume m$^3$</td>
<td>18.4 cubic meter</td>
</tr>
<tr>
<td>Coal mass dry</td>
<td>13.8 tons</td>
</tr>
<tr>
<td>Heating time (h)</td>
<td>19.5</td>
</tr>
</tbody>
</table>

## Plant Throughput

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal throughput per annum</td>
<td>332,000 tons</td>
</tr>
<tr>
<td>Coke production per annum</td>
<td>226,000 tons</td>
</tr>
<tr>
<td>Total Gas production per hour</td>
<td>15,600 Nm$^3$</td>
</tr>
<tr>
<td>Tar Production per annum</td>
<td>12,600 ton</td>
</tr>
</tbody>
</table>
The Coal/Coke/Tar/Pitch Process

Coal → Coke Ovens → Coal Tar

Coal Tar → Oils
  - Naphthalene
  - Creosote
  - Carbon Black

Coal Tar → Pitch
  - Aluminum Smelters
  - Graphite Electrodes
  - Specialty Carbon Products
  - Pavement Coatings
  - Refractories

Steel/Ferro-Alloy Production
Tar Plant Process Flow

Tar Distillation Plant
- 1 ton Coal Tar
- 53.4% NC
- 37.7% VDB
- 8.9% PTA

- 1.3% Losses (Vapors)
- 1.5% LO

Solvent Distillation Plant
- 17.9% RCO
- 19.7% HLCO
- 7.8% HO
- 51.8% Pitch

- 21.6% CTN

Naphthalene Distillation Plant
- 77.7% 60/70 Oil
- 0.3% Losses (Vapors)
- 40.6% Naphthalene
- 59.1% NSR
HCl Process Flow
Plants Background and Throughput

**Tar Plant**

- Capacity: 240 000 tonnes/year.
- Current Crude Tar being processed: 118 000 tonnes/year
- Complement excluding contractors: 80

**HCl Plant**

- Facility commissioned in 1972
- Capacity: 81 000 tonnes/year
- Current throughput: 49 000 tonnes
- Complement excluding contractors: 11