Marco Matteini
Industrial Development Officer
UNIDO Energy Branch

78th Session of the OECD Steel Committee
11-12 May
Paris
UNIDO is a specialised agency in the United Nations System, which has the following mandate:

- Promote & support Inclusive & Sustainable Industrial Development (ISID) in developing countries and transition economies;

In the past years, UNIDO has taken an active role in the global development agenda focusing its activities on three thematic priorities:

- Poverty reduction through productive activities
- Trade Capacity Building
- Energy and Environment

UNIDO Industrial Energy Efficiency Portfolio

29 Countries
- Armenia
- Belarus
- Burkina Faso
- Chad
- Chile
- China
- Colombia
- Ecuador
- Egypt
- Georgia
- Kazakhstan
- India
- Indonesia
- Iran
- Macedonia
- Malaysia
- Maldives
- Mexico
- Moldova
- Pakistan
- Philippines
- Russia
- South Africa
- Thailand
- Tunisia
- Turkey
- UAE
- Ukraine
- Viet Nam

As of April 2015
UNIDO IEE Technical Cooperation Projects

**Policy Support**
- National energy and GHG emission performance MRV system for the industrial sector
- Frameworks for promoting Industrial Energy Efficiency and Climate Change mitigation technologies

**IEE Market Development**
- National campaign to promote IEE & GHG reduction
- 60 national experts trained in EnMS and ESO BAT
- 100 enterprises receive training on EnMS and ESO

**Implementation in Industry**
- 20 large companies implement EnMS (ISO 50001)
- 40 low cost EnMS-ESO projects are implemented
- Emission of 200,000 tons of CO2eq is avoided

**Investments in IEE & GHG reductions**
- Mechanism to enhance mobilization of available financing for EE & low-carbon technology investments
- Training of bank lending officers on IEE investments

UNIDO IEE Programme – Thematic Areas

**Policies**
- Co-operative measures
- Financial/fiscal/TA incentives
- New Market-based Instruments
- Information/Education/Training
- Legislative
- Recognition

**Standards**
- ISO 50001 - EnMS
- Minimum Energy Performance
- Conformity Assessment
- EN/ISO - Energy Audits
- EN - Benchmarking

**Human Capital**
- Cross-cutting
- Process technologies
- Energy Efficient Design
- Energy Systems Optimization
- Energy Management Systems

**Delivery Mechanisms**
- Supply Chain
- EE business models
- Financing mechanisms
- EE Knowledge Networks
- Equipment vendors/suppliers
- National Energy Eff. Agencies
Current Technology Focus

Energy Management Systems (EnMS)

- Auxiliary energy systems account for over 50% of final manufacturing energy consumption
- System optimization average efficiency gains range between 15-30% against 4-5% of individual components

Energy System Optimization (ESO)

UNIDO EnMS-ESO Project Portfolio

Operational in 17 countries
Planned activities in 10 countries

Operational
- South Africa
- Moldova
- Russia
- Turkey
- Ecuador
- Malaysia
- Thailand
- Viet Nam
- India
- Philippines
- Egypt
- Indonesia
- Iran
- Ukraine
- Colombia
- Macedonia
- Myanmar

Other donors
- Swiss State Secretariat for Economic Affairs
- UK Department for International Development
- Government of South Africa
- Government of Italy
**UNIDO IEE activities in the Steel Industry**

### Steel Industry in UNIDO IEE Portfolio

<table>
<thead>
<tr>
<th>Country</th>
<th>Company Name</th>
<th>Products</th>
<th>Capacity/Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Egypt</td>
<td>Al Ezz Dekheila (EZDK)</td>
<td>Long and flat steel products</td>
<td>5.8 mio tons/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 mio tons/year</td>
</tr>
<tr>
<td>South Africa</td>
<td>ArcelorMittal Saldanha Works</td>
<td>Hot Rolled Coil</td>
<td>1.2 mio tons/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1.2 mio tons/year</td>
</tr>
<tr>
<td></td>
<td>ArcelorMittal Vanderbijlpark</td>
<td>HRC &amp; cold rolled &amp; coated products</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Employees: 4,500</td>
</tr>
<tr>
<td>Ecuador</td>
<td>NOVACERO</td>
<td>Bars, rods and solid sections of iron and steel</td>
<td>100,000 tons/year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>Steel Asia</td>
<td>Steel reinforcing bars</td>
<td>&gt; 1 mio tons/year</td>
</tr>
<tr>
<td></td>
<td>Pag-asa Steel Works</td>
<td>Steel reinforcing bars</td>
<td>&gt; 200</td>
</tr>
<tr>
<td>Russia</td>
<td>UMMC – Steel</td>
<td>Rolled steel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- 1 mio tons/year</td>
</tr>
<tr>
<td>Malaysia</td>
<td>CSC Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sabah Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Amsteel Mills, Antara Steel Mills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iran</td>
<td>Oxin Steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Esfahan Steel</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
EnMS-ESO Capacity Building & Implementation Programmes

Elements, Participants and Modalities

- **Awareness Seminars**
- **USER Trainings**
- **EXPERT Trainings**

UNIDO International EnMS/ESO Trainers

National EE-EnMS/ESO Consultants

Partner Enterprise

EnMS-ESO Capacity Building & Implementation Programme

Resources and Tools
EnMS-ESO CB&I Programme Structure

Training Overview of EnMS/ISO 50001
Training ESO1
Training ESO2
Training EnMS Planning and EnPIs
Energy Assess. ESO1
Energy Assess. ESO2
Training EnMS Implem. & Operat.
Training EnMS Checking & Review
EnMS Internal Audits

INCLUSIVE AND SUSTAINABLE INDUSTRIAL DEVELOPMENT

International and National Experts support to Partner Enterprises

Periodic webinars
Plant visits by Experts

South Africa IEE Project

Arcelormittal
Saldanha Works

- Electricity demand: 160 MW
- Manpower: 548 permanent employees
- Sales output: 1,2 million ton HRC/annum

Adjustments/optimization of production operation, energy systems optimization, fuels switching, etc... driven by EnMS!

Energy Savings 2011-2014
460 GWh

Energy Efficiency Achievements 2011

<table>
<thead>
<tr>
<th>Energy Management System Implemented</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Projects/Measures</td>
<td>11</td>
</tr>
<tr>
<td>Total Capital Investment (USD)</td>
<td>0</td>
</tr>
<tr>
<td>2011 Gross Financial Savings (USD)</td>
<td>9,076,000</td>
</tr>
<tr>
<td>Overall Payback Period (in years)</td>
<td>0</td>
</tr>
<tr>
<td>2011 Energy Savings (GWh)</td>
<td>79.95</td>
</tr>
</tbody>
</table>
South Africa IEE Project

ArcelorMittal Saldanha Works

Energy performance improvement measures

<table>
<thead>
<tr>
<th>Post-Combustion Cooling Radial Fans System Optimization</th>
<th>LPG Consumption Optimization</th>
<th>Water Cooling System Optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of Project 0</td>
<td>Cost of Project 0</td>
<td>Cost of Project 0</td>
</tr>
<tr>
<td>Kg CO₂ Savings 596 tons</td>
<td>Kg CO₂ Savings 14,881 tons</td>
<td>Kg CO₂ Savings 2,719 tons</td>
</tr>
</tbody>
</table>

- Ladle Heating Station system optimization
- Compressed-air Systems optimization
- Increased EE awareness
- Etc.

Egypt IEE Project

AI Ezz Dekheila Steel Company

ID | Energy Performance Improvement Opportunity                                                                 |
---|-----------------------------------------------------------------------------------------------------------|
1  | Installation of new Dry Rollers                                                                         |
2  | Enhancing thermal insulation through:                                                                   |
    | - Using first class refractories (ceramic fibers & cast)                                                |
    | - Renewable of all hoppers along the tunnel furnace                                                    |
    | - Exchange all damaged expansion joints of combustion air ducts                                        |
3  | Calibration of Gas & Air valves and flowmeters                                                          |
4  | Gases Leak Detector                                                                                     |
5  | Maintain standard Air/Fuel ratio during natural gas burning the reheating furnace to ensure complete combustion of the natural gas. |
6  | Keeping good insolation of the reheating furnace body in order to eliminate any heat dissipation from the furnace body. |

Energy Efficiency Achievements 2014

<table>
<thead>
<tr>
<th>Annual Energy Savings (GWh)</th>
<th>-167</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Savings (USD)</td>
<td>7,860,400</td>
</tr>
<tr>
<td>Total Implement. Cost (USD)</td>
<td>5,633,300</td>
</tr>
<tr>
<td>Overall Payback Period (month)</td>
<td>&lt; 9</td>
</tr>
</tbody>
</table>
Egypt - Benchmarking of Iron and Steel Sector

- Benchmarking study based on data collected from participating companies

- Companies that participated in the benchmarking exercise account for 76% of Egyptian production

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Catalyzing Action to Transform the World’s Energy System

Three objectives by 2030

1. Ensuring universal access to modern energy services.
2. Doubling the global rate of improvement in energy efficiency.
3. Doubling the share of renewable energy in the global energy mix.

SE4All - Industrial Energy Efficiency Accelerator

The IEE Accelerator is a global collaborative platform and network of businesses, international organizations and NGOs that will provide tools, expertise, technical capabilities and financial capacity to partners to contribute and make commitments for accelerating the improvement rate of energy efficiency in Industry.

Goal:
To facilitate the implementation of Energy Management Systems, technologies and practices in global industrial energy use.

- Targeted implementation by 2020: 25%
- Targeted implementation by 2030: 50%
Thank you for your attention

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