Case Summary
Delta steel company

Company information:

Contact Person:	Eng/ Asad Ramses
Position:	The head of the industrial sector.
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Sector:	Public Company.
Number of labors:	1448
Project Title:	Fuel Switching for tundish and ladles from light oil to Natural gas and installing de dusting system in melting area
Type of Project:	Work environment and air pollution control

1. **Basic Information:**

1.1 **Main Products:**

Main Products	Average Annual production ton/year
Hot rolled steel 37, 40/60 and 52 rods ofØ12-38 mm	72,000
Wire mesh	600
Cold drawn products	400
Steel and gray cast iron products	2,100

1.2 **Raw Materials:**

Raw Material	Average Annual Quantity ton/year
Scrap	28,025
Steel ingots	46,098
Welding wires	697
Catalysts	788
Acids (concentration 35-95%)	60
Alkaline (concentration 33%)	60
Salts (concentration 100%)	40
Detectors (concentration 100%)	One
Acids (concentration 35-95%)	60
Alkaline (concentration 33%)	60

1.3 **Project Location:**

El-Kilo 4.5 – Elasmaalia Cannel – Mostord – Quliobya.

1.4 **Project Objectives:**

- Reduction of the gas emissions of SOx, NOx, CO in work environment & surrounding area.
- Reduction of the particulate emissions in the work environment and surrounding area.
- Protection of the workers health.
- Complying the stack emission(CO&SO_X of primary emission control system with the environmental law 9/2009

1.5 Project Description:

Emission sources

Tundish and ladles are heated using light oil fired burners to keep liquid steel at the required temperature. Switching from Solar to Natural gas will decrease emissions. On the other hand the following emission is released from the arc furnace(no5&6) where the emissions of EAF (Electric Arc furnace) causing air pollution are of two types, namely (i) primary emissions during melting and oxygen lancing, and (ii) secondary emissions during charging, tapping and other sources within the EAF shop. The primary emissions collected through fourth hole of furnace roof are highly contaminated with dusts and carbon monoxide. Sulphur di-oxide (SO2), oxides of nitrogen (NOx) and trace amount of ozone are also contaminants of the primary emission, EAFs thus always equipped with Primary Emission Control (PEC) system complete with combustion of CO in the PCC(post combustion chamber), separation of dusts in bag filter and finally discharge of dust-free gas through an extraction fan to the stack. The secondary emissions due to floating dusts within the shop are also captured through a canopy, extracted by a fan, cleaned in bag filter to keep work zone to maintain the work zone air nearly dust-free. Now-a-days, the new units of EAFs install PEC and SEC both in a common cleaning train.

Non-compliance issues

The company in recent times is facing non compliance in respect of air pollution control measures of their EAF shop. The air environment within the shop is not clean as it should be for safeguarding the health of the shop floor personnel from the dust exposure. This is caused by profuse leakage of primary emissions from the furnace roof and fugitive dust emissions during charging and tapping from the furnace., The recent primary emission control system is not working well due to blockage of the bags, also the suction fans is not working well so the hot fumes profusely leak into the shop inside causing extremely dust borne air environment within the work zone also there is no a secondary emission control system to control the secondary emissions

Proposed project

So the company intends to minimize fugitive emissions by converting the tundish to work with the natural gas instead of light as first component, rehabilitation of the existing primary emission control system to work on furnace number 6 and install a canopy over this furnace in addition to replace furnace number 5with it control systems

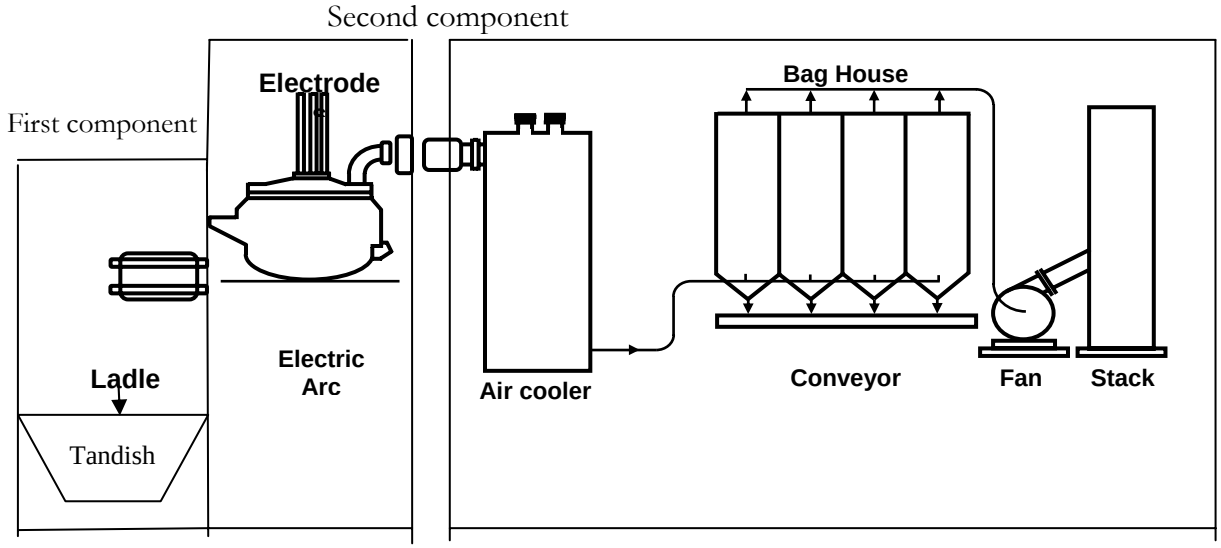

Figure (1) Project components

1.6 **Project Components:**

1- First component : Fuel switching of tan dishs and ladles including the following:

- Combustion air fan.
- Automatic Closing valve
- Pressure gauges.
- Pressure regulator.
- Safety valve.
- Two solenoid valve.
- (Gas / air) ratio regulator
- Burners pilot with control device.
- (on/off) operation control panel including sound siren
- Gas piping.
- Temperature Controllers

2-Second component: Rehabilitation primary emission control system & installing of one canopy for furnace no 6/25:

- One combustion Chamber
- Canopy
- Change the bags of the recent filtersTwo Canopies
- Adjusting

a. Estimated Project Cost:

- The total cost of the first component(Fuel switching of tandishs and ladles) is M. 0.324 US$ and EPAPII will finance 0.136 US$ million as the following:

Component	Cost in US$ million
Burners	0.136
Taxes	0.0136
Internal piping	0.035
External piping	0.14

- The total cost of the second component is 3.85US$ million

1.8 **EPAP Technical Support:**

- EPAPII TA prepares the Environmental Audit.
- EPAPII hired a local and international consultant to do the technical specification of the two canopies and the two bag filters.
- EPAP II PMU assisted the company in preparing IFQ (invitation for quotation) for the first component.
- EPAPII hired a local consultant to prepare technical specification of second component Rehabilitation of Primary emission control system and installation of the two canopies.

2. **Eligibility Criteria**

2.1 Environmental:

- The project will result in reduction of pollutants concentrations to the limits set by law regarding work environment as the company's industrial processes are a source of potential health problems.

- Reduction of workplace emission (SO_X, NOX and dust) by about 75% will be achieved when fuel switching as well as fugitive emission reduction measure is implemented.

Location	Parameter	Unit	Outlet	Limits of law 9/2009 ppm
Besides the tundish	CO	ppm	28.5	25
	CO_2	ppm	998	5000
	SO_2	ppm	7.5	2
	NO_2	ppm	9.8	3
	PM10	mg/m^3	4.86	3 (mg/m^3)
	TSP	mg/m^3	8.19	10(mg/m^3)

Location	Parameter	Unit	Outlet	Limits of law 9/2009 ppm
Besides the ladles	CO	ppm	11.2	25
	CO_2	ppm	676	5000
	SO_2	ppm	3.5	2
	NO_2	ppm	4.2	3
	PM10	mg/m^3	2.65	3 (mg/m^3)
	TSP	mg/m^3	15.9	10(mg/m^3)

Location	Parameter	Unit	measured	Law limits 9/2009 mg/m^3
The electric arc furnace (no5)area	PM_{10}	mg/m^3	4,5	3
	TSP	mg/m^3	11.87	10
	CO	mg/m^3	47	29
	SO_2	mg/m^3	13	5.2

Location	Parameter	Unit	measured	Law limits 9/2009 mg/m^3
The electric arc furnace (no6)area	PM_{10}	mg/m^3	8.90	3
	TSP	mg/m^3	16.85	10
	CO	mg/m^3	52	29
	SO_2	mg/m^3	15	5.2

2.2 Financial:

- The payback period of the first component is 2 year
- The total cost of the first component is less than 8 US$ million
- The second component does not have any economic benefits

3 Current status of project procedures

3.1 Steering committee approval: approved

3.2 Co-financers approval: N/A

3.3 Technical Procedures:

- For the two components

Technical Document	Components	submitted	Approved	Date
Environmental Assessment	Component 1	YES	YES	Submitted on March 2008
	Component 2	YES	YES	Submitted on March2008 --------
Compliance Action Plan (CAP)		YES	YES	Submitted on 31/8/2008
Environmental Impact Assessment (EIA)	Component 1	YES	NO	Submitted on April 2009
	Component 2	NO	NO	----------
Technical Agreement	Component 1	NO	NO	-
	Component 2			

3.4 Implementation Procedures:

3.4.1 Procurement Procedures:

Component one: Fuel switching of the tundish and ladle heaters from solar to natural gas.

The procurement procedure is shopping (IFQ), since the project cost is under 500,000 dollar.
The company has sent the invitation for quotation on 13th of April 2009 to seven companies where the dead line of receiving the quotations was on 4th of may 2009 , The company have received three quotations only , The company has awarded the ABD Company , The company have signed the contract on 21/6/2009.
The project has been implemented on 29/6/2010.

Second component: Rehabilitation of the primary emission control system and installation of canopy for furnace & replace the current furnace number 5 with a new one having its control system.

The company followed its commercial practice to issue a tender to replace the current furnace number 5 with a new one having its control system-(self finance by the company)

the company prepared tender document with the support of PMU to rehabilitate the primary control system and install canopy for furnace no 6 with a finance for EPAPII
the contracted with the supplier on December 2013

3.4.2 Status of Implementation:

Technical Document	Component	Submitted	Date	
			Achieved	Planned
Credit worthiness	Component1	Y	7/6/2007	------

certificate	Component2	Y	May 2009	------
Sub loan agreement	Component1	Yes	26/5/2010	---------
	Component2	NO	NO	April 2012
Bidding document /RFQ	Component1	Y	14/10/2008	---------
Bidding document	Component2	NO	NO	November 2012
Technical and financial Evaluation	Component1	Y	7/6/2009	--------
	Component2	NO	NO	Feb. 2013
Awarding and Contracting	Component1	Y	21/6/2009	---------
	Component2	NO	NO	March 2013
Installation and Commissioning	Component1	NO	June 2010	--------
	Component2	NO	NO	December 2013
Monitoring: Q1:	N			
Q2:	N			
Q3:	N			
Q4:	N			