

Case Summary**Installation of new boiler using natural gas in
Misr for Chemical Industries****1. Basic Information:****1.1 Main Products:**

Main Products	Average Annual production
Caustic Soda	42 000 Tons
Liquid Chlorine	18 000 Tons
Hydrochloric acid	10 000 Tons
Sodium hypochlorite/ Calcium hypochlorite	152 000 Tons

1.2 Raw Materials:

Raw Materials	Average Annual (T/y)
Salt	94500
Sulfuric acid	743
Calcium Oxide	25152
Electricity	91770 KW
Steam	60000 tons
Municipal	1283800 m ³

1.3 Project Location:

El Max – Alexandria.

1.4 Project Objectives:

- Reduction of the gas emissions of (SO_x, CO₂, CO) to comply with the environmental law no. 4/1994.

The measurements for stack emissions

Location	Parameter	Concentration mg/m ³		law Limits 4/1994 mg/m ³	Load, tons/yr		Reduction
		before	after		before	after	
The boiler	CO	900	0	500	36	0	100%
	CO ₂	7500	1500	--	300	60	80%
	SO ₂	4000	15	3600	160	0.6	99%

1.5 Project Description:

- The plant has three boilers that use heavy fuel oil (Mazot) to operate. The three boilers have a total capacity of 20 tons/h. These boilers were installed 45 years ago and are currently in poor condition. The company consumes around 20 tons of Mazot per day with high sulfur content (~3%) which on burning will produce high levels of SO₂ emission.
- Due to the harmful emissions from these boilers mainly SO₂, CO and smoke and to generate savings in fuel cost, the company decided to stop completely the operation of these boilers in August 2005. Since that time, the company depends on Alexandria Carbonate Company to supply the required steam to the factory till the installation a new boiler operating with natural gas and having the following specifications:-
 - Type: Fire tube.
 - Capacity: 12 tons/h
 - Pressure: 16 bars.
 - Gas flow: 800 m³/h
 - Equipped with necessary water softening units.
- Installation of the new boiler will reduce the air emissions by more than 80% and achieve full compliance with the Egyptian Environmental Law 4, 1994.

1.6 Project Components:

Steam Boiler and its auxiliary units :-

1. Softener water unit.
2. De-aerator and feed water system
3. Forced draft system
4. Economizer
5. Ladder platforms
6. Gas regulation module (low pressure).
7. Control Panel
 - a. Indication lamps
 - b. Analog or digital indicators for output and input parameters.
 - c. PLC controller with EPROM program.
 - d. Power supply for low voltage 60 V - DC

1.7 Actual Project Cost:

- The total cost is 0.52 million US\$ with a finance from EPAP II co-financers about 0.44 million US\$.

1.8 EPAP Technical Support:

- EPAP II - TA had hired local consultant to prepare the following:
 1. Environmental audit.
 2. Compliance action plan (CAP).

2. Eligibility Criteria

2.1 Environmental:

- *Installation of new boiler using natural gas resulting in compliant with Law 4 for the Environment with an estimated reduction in pollution loads as follows:*
 - 100% reduction of CO
 - 80% reduction of CO₂
 - 99% reduction of SO₂

2.2 Financial:

- The sub project costs are less than US\$ 15 million.
- The payback period is 14 months

3 Current status of project procedures

3.1 Steering committee approval: **Approved**

3.2 Co-financers approval: **N/A**

3.3 Technical Procedures:

Technical Document	submitted	Approved	Date
Environmental Assessment	Y	Y	February,2008
Compliance Action Plan (CAP)	Y	Y	February,2008
Environmental Impact Assessment (EIA)	Y	Y	April,2009
Technical Agreement	Y	Y	July,2008

3.4 Implementation Procedures:

3.4.1 Procurement Procedures:

- The company used its own commercial practice to issue limited tender No. 1/2007/2008 on 17th August, 2007.

3.4.2 Status of Implementation:

Technical Document	submitted	Date	
		Achieved	Planned
Credit worthiness certificate	Y	January,2008	
Financial Agreement	Y	June 2009	
Bidding document(letter invitation)	Y	August , 2007	
Technical and financial Evaluation	Y	Novamember,2007	
Awarding and Contracting	Y	April,2008	
Installation and Commissioning	Y	February, 2009	
Monitoring: Q:	Y	February, 2009	
Q1:	Y	May,2009	
Q2:	Y	September,2009	
Q3:	NO	NA	December,2009
Q4:	NO	NA	February ,2010