Case Summary

National Cement Company

Company Information:

Contact Person:	*Dr / Mohamed Abd Elhakim*
Position:	*Head of Environmental Department*
Direct Telephone:	*02 - 25014222*
Telephone:	*02 – 25010116 / 02 – 25010797 / 010 – 1107624*
Fax:	*02 – 25011464*
Sector:	*Business Public Sector Company*
Project Title:	*Replacement of Kiln Bypass electrostatic Precipitator and Gravel de-dusting at cooler vent with bag filters for upgrading of de-dusting system in plants 3 & 4 (dry lines 5 &6).*
Type of Project:	*Air pollution control*

1. Basic Information:

1.1 Main Product:

Plant 3: *3 dry-process kilns*		**Plant 4:** *3 dry-process kilns*	
Products	**Actual Average Production, t/y**	**Products**	**Actual Average Production, t/y**
Clinker	1,125,045	Clinker	1,160,836
Cement	1,482,533	Cement	573,284

1.2 Raw Material:

Plant 3: *3 dry-process kilns*				**Plant 4:** *3 dry-process kilns*			
Raw materials		**Current Consumption, t/y**		**Raw materials**		**Current Consumption, t/y**	
Limestone		2,739,868		Limestone		1,457,700	
Clay		372,938		Clay		197,667	
Pyrite cinder		24,713		Pyrite cinder		12,910	
Gypsum		74,150		Gypsum		28,640	
Utilities	**Usage**	**Consumption, m^3/y**	**Source**	**Utilities**	**Usage**	**Consumption, m^3/y**	**Source**
Water	Process	720,000	Nile	**Water**	Process	720,000	Nile
	Cooling	1,200,000 recycled	Water tanks		Cooling	1,200,000 recycled	Water Tanks
	Type	**Consumption /y**			**Type**	**Consumption /y**	
Fuel	Natural gas, m^3/y	154,303,000		**Fuel**	Natural gas, m3/y	147,636,260	
	Source	**Consumption**			**Source**	**Consumption**	
Electricity	National Grid, kWh	193,816,400		**Electricity**	National Grid, kWh	127,828,182	

1.3 **Project Location**:

Tabbin - South Helwan - PO Box 18 Cairo - Egypt.

1.4 **Project Objectives:**

- *Reduction of dust emission to comply with the Environmental Law 4/1994.*

Aspects		Current Situation	After implementing initial sub-project	After implementing new sub-project
Dust load from stacks, t/y*	*Lines 1&2*	*742*	*223*	*0*
	Lines 3&4	*4,728*	*4,728*	*1,282*
	Total	*5,470*	*4,951*	*1,282*
Max 24 h average concentration, µg/m3		*21.4*	*17.96*	*3.75*

1.5 **Project Description:**

Cement production involves heating the raw materials to approximately 1480oC to form clinker. Clinker is then cooled, and ground with a small amount of gypsum to make cement. The heating process is performed in a rotary cement kiln, which is a brick-lined cylinder, inclined slightly from the horizontal that rotates on its longitudinal axis at a slow and constant speed. Raw materials are introduced at the higher end, while a fixed combustion source is operated at the lower end.

Thus, the raw materials and the heated air feed travel countercurrent to one another. There are two types of kiln design: wet process kilns that accept feed materials in slurry form, and dry process kilns that accept feeds in dry, ground form.

In the wet method, water is added to the raw materials after milling to promote thorough mixing, and the mixture fed to the kiln contains 30-40% water. In the dry method, the powders are blended in a silo using compressed air.

Rehabilitation of the dry lines consists of the following components:

- Installation of bag filters after each electrostatic precipitator in lines 3 and 4: 3 for each line.
- Rehabilitation of conditioning towers to increase cooling efficiency.
- Rehabilitation of gravel filter used for de-dusting hot air from clinker cooler before use in combustion.
- Installation of new raw mill for line 4 with its feeding equipment.
- Replacement of pyroclone with modern pre-calciner using NG as fuel.
- Increase production by 30%.

***Estimated Project Cost*:** The total estimated cost is US$ 240 million

Total TSP load reduction. Expected load reduction is 4188 t/y

Productivity Increase: Design capacity of each line will increase from 4500 t/d to 5700 t/d (30% increase in production).

Decrease in Energy: 20% reduction in fuel is expected and 8.6% reduction in electricity.

1.6 Project Components:

The upgrading of lines 3&4t will be awarded as a turn-key job including all the following items:

- *New limestone &clay buffer silos as well as modification of raw material handling area to enable of stacking of two raw mix piles simultaneously.*
- *New vertical raw mill (Loeshe & Pfiffer) of capacity 400 t/h, feeding line 4.*
- *Upgrading of existing kiln feed air lift system by additional blower and new flow meters.*
- *New pre-heater cyclones and pyroclone.*
- *New kiln ID fans & main filter fans.*
- *New TAD and down comer.*
- *New kiln main drive (Girthgear + pinipns + VFD drive), New inlet and outlet seals.*
- *New KHD cooler type pyrofloor.*
- *New firing system for kiln & calciners.*
- *Upgrading of by-pass system including new quenching air fan as well as upgrading of existing ESP.*
- *Upgrading / Extension of existing ESP's with new chamber to guarantee dust emission of 50 mg/Nm^3.*
- *New clinker conveyors to clinker silos.*
- *New vertical cement mill (Loesche) of capacity 200 t/h with high efficiency dynamic separator (closed circuit).*
- *New clinker transport feeding cement mills hoppers (CM1 & 2 & 3 4 and new mill).*
- *New gypsum crusher of capacity 180 t/h including new gypsum transport system to existing and new cement mills.*
- *New cement transport system (air slides and bucket elevators) to existing cement silos (replacement of IBAU system).*
- *New weight feeders for the existing raw mills (1 & 2 & 3) and cement mills (1 & 2 & 3 & 4).*
- *New electrical power package (medium & low voltage) complying with new requirement.*
- *Complete new automation and control system for the whole line 3 & 4 (replacement of existing obsolete procontic & sematic systems).*
- *Upgrading of existing industrial cooling water system as well as compressed air system according to new requirement.*

1.7 Estimated Project Cost:

- *The total estimated cost is US$ 20 million of which US$ 15 million financed from EPAP II.*

1.8 EPAP Technical Support:

EPAPII TA (Long term consultant) prepares:

- *The environmental audit.*
- *Compliance Action plan (CAP).*

2. Eligibility Criteria

2.1 Environmental:

- *By Rehabitation of Line 3 & 4 & converting all the ESP's to bag house filter, & closing line 1 & Line, it is expected that TSP will become compliant with Law 4 for the Environment with an estimated reduction in pollution loads as follows:*
  - 76.5 % reduction of TSP

2.2 Financial aspects:

- *EPAP finance is US$ 20 million*
- *The payback period is 3.4 years.*

3. Project Procedures

3.1 **Steering committee approval:** *Approved*

3.2 **Co-financers approval:** *AFD, JBIC & EIB Approved*

3.3 **Technical Procedures:**

Technical Document	submitted	Approved	Date
Environmental Assessment	N		Oct. 2009
Compliance Action Plan (CAP)	Y	Y	Oct. 2008
Environmental Impact Assessment (EIA)	N		Nov. 2009
Technical Agreement	N		Nov. 2009

3.4 **Implementation Procedures:**

3.4.1 **Procurement Procedures:**

- *The company will follow ICB (IBRD Tender Doc.) under supervision from the Project management Unit & the holding company for chemical industries (2 stage bidding) to a International tender (Turn-key project) for Replacement of Kiln Bypass electrostatic Precipitator and Gravel de-dusting at cooler vent with bag filters for upgrading of de-dusting system in plants 3 & 4 (dry lines 5 &6).*
- *The company contracted an Indian company "Colleges for consultant" to prepare the technical Specification".*
- *National Cement Company (NCC) has advertised the Call for Tender in Al Ahram on 20th June 2011. Bid notices were also placed in the Official Journal of the European Union, United Nations Development Business and World Bank Procurement Notices.*
- *A pre-bid meeting was held in the Training Room of the National Cement Company on 18th July at 10.00am under the supervision of Dr Mohamed abd Al Hakim and in the presence of Bidders.*
- *In the biding document, the deadline for submission of the technical offers was 5 September 2011. Some bidders ask NCC for postponing the closing date. So NCC decided to postpone the deadline to 29 September 2011, and all the suppliers had informed with the new deadline.*
- *Before the new deadline, NCC decided to postpone the deadline again to 20 October 2011, and all the suppliers had informed with the new deadline.*
- *On the due date for opening the tender on 20th October 2011 at 11 O'clock a session was held at NCC, where seven bidders submitted their sealed bid (Technical offers) in the presence of the bidder's representatives.*
- *Currently NCC is reviewing the technical offers to prepare technical report.*

3.4.2 **Status of Implementation:**

Technical Document	submitted	Date	
		Achieved	Planned
Credit worthiness certificate	Y	July 2006	
Financial Agreement	Y	23/12/2008	
Bidding document	Y	20/06/2011	
Opening (Envelops A – Technical)	Y	20/10/2011	
Opening (Envelops B – Financial)	N		Oct.2011
Technical and financial Evaluation	N		Nov.2011
Awarding and Contracting	N		Dec.2011
Installation and Commissioning	N		Jun.2013
Monitoring: Q1:	N		Sep.2013
Q2:	N		
Q3:	N		
Q4:	N		