Case Summary

The Egyptian Starch & Glucose Manufacturing Company(ESGC)

Company Information:

Contact Person:	Eng/ Khaled Badr
Position:	Factory manager
Telephone:	448588701 – 448588705
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Sector:	Private Sector Company.
Number of labors:	480
Project Title:	Installation of new glucose production line
Type of Project:	Water Pollution Reduction and Improvement of work environment.

1 Basic Information

1.1 Main Products:

Products	Actual Average Production, t/y
Starch	23800
Glucose	34000
Corn Oil	1700
Animal Fodder	25500

1.2 Raw Materials:

Raw materials	Current Consumption, t/y
Corn	85000
Hydrochloric acid	600
Sulfur	300
Sodium carbonate	90
Sodium meta bisulfate	135
Activated carbon	150
Kieslgur (filter aid)	180

Utilities	Usage	Consumption, m3/y	Source
Water	Domestic	40800	General Municipal line
	Cooling	408000	Ismailia Canal after treatment
	Process	938400	
	Boiler house	306000	
	Type	**Consumption /y (m^3/y)**	
Fuel	Natural gas, m^3/y	2.5×10^6	
	Source	**Consumption (Kw/y)**	
Electricity	National Grid	21×10^6	
	Self generated		

1.3 Project Location:

8, 6 October street, Mostorod, Kaliobia Governorate**.**

1.4 Project Objectives:

- Reduce Dust and HCl emissions in the work environment to comply with the environmental law No. 4/1994.

- Reduce Waste water pollutants (TSS, COD) to comply with environmental law 48/82.
- Improve the working environment and surrounding area.
- Improve process efficiency.

1.5 Project Description

The existing glucose line is old (established since more than 60 years ago) and deteriorated. The process is a source of pollution due to continuous leak and emission of dust (carbon powder). Manual handling of concentrated HCl is dangerous and affects the workers safety.

Existing WWTP is affected by heavy loads of BOD, COD and TSS coming from the present glucose line. Sometimes treated water discharged to sewer is not complying with environmental law.

The company decided to replace the old glucose unit with new one using new cleaner technology (enzyme- based- technology). Emissions will comply with environmental laws after implementing the project.

1.6 Project Components:

The new line consists of the following items:

Sr.	Equipment	Sr.	Equipment
1	Mill Starch receiver	9	Evaporator
2	Ph adjustor	10	Mixing and pH adjustor
3	Enzymatic liquefaction	11	Heat exchanger
4	Saccharification	12	Filtration unit
5	Separation	13	Isomerization plant
6	Filtration	14	Deminerization unit
7	Refining unit	15	Evaporization plant
8	Ion exchanger	16	Stainless steel Sheets

1.7 Estimated Project Cost:

- The total estimated cost is US$ 18 million with a finance from EPAP II co-financers about US$ 11.041 million for the equipment.
- What has been Financed through EPAP Until now:
    - Component 1: Total cost for Glucose line US$ 8.778 with US$ 7.98 M Financed from EPAPII
    - Component 2 :Total cost for Stainless steel Sheets for Glucose line US$ 1,446 ,914 with US$ 1,315,714 M Financed from EPAPII

Auxiliaries:

- Total cost for Auxiliaries For Glucose line US$ 2.035 with US$ 1.85 M financed from EPAPII

New Quotations		
Component	**Price**	**Statues**
Comp 3 : Tanks	**246,946.90**	**Signed contract**
Comp 4: S.S Pipes	**450,331.45**	**Signed contract**
Comp 5: Cables	**394,243.37**	**Signed contract**
Comp 6 : Lab Equipment	**498,500**	**Signed contract**
Comp 7: S.S Fitting	**257,466.53**	**Signed contract**

1.8 EPAP Technical Support:

- The company hired a consultant (Self Finance) to prepare the environmental audit and Compliance Action Plan. EPAP TA Updated the Audit and CAP,

- EPAP PMU, TA assist the company in the preparation of technical specification For two stage bidding.

2. Eligibility Criteria

2.1 Environmental

- Reduce raw materials and product losses and the corresponding reduction in wastewater pollution load resulting from washing out of the spilled materials during floor washing. More than 50% reduction in pollution load will be achieved which is equivalent to 9 tons/ d COD (equivalent to 60% reduction) and 2 tons/ d T.S.S (equivalent to 82% reduction).
- Almost 100% reduction in carbon dust and HCl emissions in air at work place.
- The percentage pollution reduction in the total pollution from the enterprise are calculated in terms of COD & T.S.S and found to be 28% and 13% respectively which is significant.

2.2 Financial:

- The sub project cost is less than MUS$ 15.
- The payback period is 3.81 years.

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	Sep 2009
Compliance Action Plan (CAP)	Y	Y	Sep 2009
Environmental Impact Assessment (EIA)	Y	Y	10/5/2009
Technical Agreement	Y	Y	5/2/2010

3.4 Implementation Procedures:

3.4.1 Procurement Procedures:

The company followed its commercial practice to issue tender for Supply and Installation of the project equipment. The Company used EPAPII proposed two stage bidding document.

3.4.2 Status of Implementation:

Technical Document	submitted	Date	
		Achieved	Planned
Credit worthiness certificate	Y	24/9/2007	
Sub-loan Agreement	Y		
Bidding document(B.D)	Y	Comp 1: 4/4/2009 Comp2: 2/3/2010 Comp 3: 26/10/2010 Comp4: 31/10/2010 Comp 5:27/10/2010 Comp 6:27/10/2010 Comp 7:31/10/2010	

Revised Technical		Comp1:14/8/2009 Comp2: NA Comp3:NA Comp4:NA Comp 5:NA Comp 6: NA Comp 7: NA	
Technical and financial Evaluation	Y	Comp 1:26/10/2009 Comp 2: 20/3/2010 Comp3: 20/12/2010 Comp4: 20/12/2010 Comp 5: 29/12/2010 Comp 6:20/12/2010 Comp 7:20/12/2010	
Awarding and Contracting	Y	Comp 1 :4/1/2010 Comp 2:30/3/2010 Comp3: 20/12/2010 Comp4: 22/12/2010 Comp 5:5/1/2011 Comp 6:5/1/2011 Comp 7:9/1/2011	
Installation and Commissioning	N	Dec 2012	Mar 2012
Monitoring: Q1:	N	March 2013	Jun 2012
Q2:	N	June 2013	Sep 2012
Q3:	N	Sep 2013	Dec 2012
Q4:	N	Dec 2013	Mar 2013