Case Summary

Altea Porta Egypt

Company Information:

Contact Person:	Rafael Pires
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Sector:	Private
Project Title:	"Installation of a Solvent Recovery System"
Type of Project:	Air pollution control.

1. **Basic Information**:

1.1 **Main Products:**

Products	Ton/year
Printed packing material	4,303.306

1.2 **Raw Materials and Utilities:**

Raw Materials:	Ton/Year
Ethyl Acetate	1,223.11
Inks	48,553
Plastic films	4,362.356
Energy:	
Natural gas, m3/y	921,960
Electricity:	
National Grid, Kwh/y	26,820,361
Water:	
Public Network, m3/y	10,000

1.3 **Project Location**:
Plot 78 - 4th Industrial zone, 6th of October

1.4 **Project Objectives:**

- *Reduction of Ethyl Acetate stack emissions to comply with the environmental law 9/2009.*
- *Improving the working environment and surrounding area.*
- *Improvement in labor health condition.*

1.5 **Project Description:**

The proposed solvent recovery plant uses activated carbon technology for recovery of organic vapours in conjunction with carbon regeneration using Nitrogen instead of the older steam regeneration technology. The proposed solvent recovery system consists of a number of processes.

a. Filtration and Cooling

Solvent laden air from the process is drawn into the solvent recovery system with the help of the blower system, is filtered by means of a continuous filtering section and then cooled in a heat exchanger using water. It is then introduced to the adsorption system.

b.Adsorption

Solvent vapours are adsorber by activated carbon while the clean air is discharged to the atmosphere through the final stack.

The adsorption process goes on in the same adsorbers until the solvent concentration in the air directed to the atmosphere reaches the established limit value. The concentration in the cleaned air is continuously monitored by an analyser which indicates the total organic carbon content. Once the established limit value is reached, the adsorber, which has been for the longest time in adsorption, is automatically switched to the regeneration phase by the control system.

c. Regeneration

When an adsorber achieves the maximum of its working capacity the regeneration with nitrogen gas is carried on. The regeneration phase of each adsorber is projected to recover the solvent adsorbed on the activated carbon bed.

d. Liquid phase- Molecular sieves

From the raw ethyl acetate tank, the solvent recovered containing 0.8 to 1.5 % water is sent, through a pump, to an adsorber containing molecular sieves where the content of water is reduced to the 0.1 %. When the sieves are saturated, after emptying the adsorber and stripping it with nitrogen, the regeneration is carried out by means of warm air. At the end of the sieve regeneration, the cooling of the sieves in closed circuit is performed.

E. Distillation

The distillation of the recovered solvent is necessary in order to separate the high boiling components (contained in the inks or formed during the process), alcohols and Ethyl Acetate. There are three columns:

The first column, working at atmospheric pressure, is used for separation of Acetate and alcohols from high boiling (bottom column).

The second column, working at 6 bar pressure, is used for separation of azeotropic mixture consisting of Ethyl Acetate and Alcohol (top column) from N. propyl acetate and Ethyl acetate (bottom column).

The third column, working at vacuum condition, is used for separation of alcohols (bottom column) from azeotropic mixture that is re-circulated to the second column (top column). In this way all the solvent can be reused with exception of the high boiling solvent coming from bottom of the atmospheric column.

1.6 Project Components

Solvent recovery plant complete with absorption beds, regeneration system, cooling system and distillation columns.

1.7 Project Cost:

Estimated of total Cost is US$ 4.4 million EPAP II financing US$ 4 million.

1.8 EPAP II Technical Support:

EPAPII TA supported the company in preparing the Technical Studies

EPAP II PMU assisted the company in preparing:

- Tender document.

2. **Eligibility Criteria:**

2.1 **Environmental:**

- The project will allow the company to comply with the law regarding Ethyl Acetate stack emissions. Reduction in load will reach 95%

2.2 **Financial aspects:**

- The project costs less than US$ 8 million

3. **Current status of project procedures:**

3.1 **Technical Procedures:**

Technical Document	submitted	Approved	Date
Environmental Assessment	Y	Y	Mar 11
Compliance Action Plan (CAP)	Y	Y	Mar 11
Environmental Impact Assessment (EIA)	N	N	
Technical Agreement	N		

3.4 **Implementation Procedures:**

3.4.1 **Procurement Procedures:**

The company follows the company Commercial practice to issue National Competitive Bidding (NCB) (1 stage bidding) for Installation of solvent recovery system

3.4.2 **Status of Implementation:**

Technical Document	submitted	Date	
		Achieved	Planned
Credit worthiness certificate	Y	Jan2011	
Financial Agreement	Y	26/8/2011	Jan11
Bidding document	Y	4/3/2012	Jan 12
Technical and financial Evaluation	Y	11/4/2012	Aug 11
Contracting	Y	19/4/2012	March 12
Installation and Commissioning	Y	Feb 2014	Nov 12
Monitoring: Q1:			