

Case Summary***Amereya Petroleum Refining Company (APRC)*****Company Information:**

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Position:	Chairman.
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Sector:	Public Company.
Number of labors:	3300
Project Title:	Using N-Methyl 2-Pyrrolidone (NMP) as solvent instead of Phenol
Type of Project:	Wastewater and workplace

1. Basic Information:**1.1 Main Products:**

Main Products	Average Annual production (t/y)
Propane	1015
Butane	82764
Naphtha	546370
Mazot	1146568
Kerosene	119114
Solar (Gas Oil)	1011670

1.2 Raw Materials:

Raw Material	Quantity per year	Raw Material	Quantity per year
Crude Oil	3.9 million ton	Hydrochloric Acid	43000 ton
Alum (Aluminum Sulfate)	600 ton	Anti-Corrosion Agents	11 ton
Sodium Hypochloride	80 ton	Ammonia	9191 ton
Ferric Chloride	20500 ton	Methyl Ethyle Ketone (MEK)	537023 ton
Sodium Hydroxide	1700 ton	Tri-Sodium Phosphate	0.44 ton
Diethanol Amine (DEA)	2915 ton	Sodium Sulfate	1475 ton
Dimethyl Disulfide	0.6 ton	Hydrazine	0.45 ton
Perchloroethylene	129300 ton	Propane	522950 ton
Sodium Chloride	2400 ton	Phenol	247000 ton
Energy:			
Natural gas	164774 ton	Fuel Oil	4693 ton
Refinery Gas	10740 ton	Electricity	209014000 kw
Water:			
Municipal water	21 m ³ /hr	Product Cooling (Brackish Water)	12000 -15000 m ³ /hr
Steam generation (Boiler feed water)	200 m ³ /hr	machinery cooling water (Purified water)	500 m ³ /hr

1.3 Project Location:

- Merghem, Elkilo –17 of Alex/ Cairo desert road P.O. Box 99 middle.

1.4 Project Objectives:

- Reducing pollution load of phenol in waste water by 99%
- Eliminate fugitive phenol emission to work place.
- Protect the Marriott lake from discharging waste water

1.5 Project Description:

- The project consists of implementing a new Bechtel technology that uses Normal Methyl 2-Pyrrolidne (NMP) as a solvent instead of phenol. The existing phenol extraction unit will be modified to be suitable to the new solvent.
- Currently the phenol extraction unit is being assessed to identify the required modifications

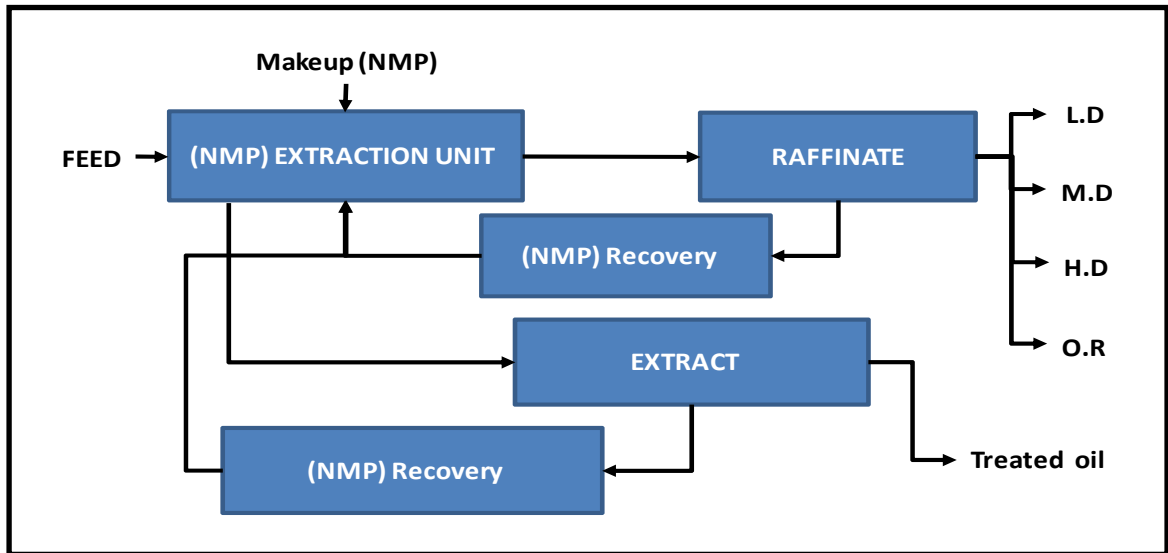


Figure (1) Process Flow Diagram for N- Methyl 2-Pyrroladin (NMP) Extraction System

1.6 Project Components:

- A list of equipment has been prepared by APRC for replacement of APRC's Phenol Extraction Unit (PEU) to NMP refinery.

Sr.	Equipment	Sr.	Equipment
1	Towers	2	Vessels
3	Heat Exchangers	4	Vacuum package
5	Chemical Injection	6	Relieve valves
7	Fired heaters	8	API centrifugal pumps
9	Control Valves	10	Instruments bulk materials
11	Filters	12	Field instruments
13	Piping bulk	14	Piping Valves
15	UPS	16	Cable trays & accessories
17	Grounding & lighting	18	Cables
19	Switch Gear	20	Steal Structure

1.7 Estimated Project Cost:

- The total estimated cost is 19,272,200 US\$ with a finance from EPAP II co-financers about 15 million US\$ for the equipment.

1.8 EPAP Technical Support:

- EPAP had hired a local consultant to prepare the Environmental Audit & CAP.
- The company hired a consultant (Self Finance) to prepare technical specification.

2. Eligibility Criteria

2.1 Environmental:

- Reducing pollution load of phenol in waste water by 99%.
- Eliminate phenol emission to work place.

2.2 Financial:

- The total estimated cost is 19,272,200 US\$ with a finance from EPAP II co-financers about 15 million US\$ for the equipment.
- The Payback period is about 3.77 years.

3 Current status of project procedures

3.1 Steering committee approval: approved

3.2 Co-financers approval: approved

3.3 Technical Procedures:

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

3.4 Implementation Procedures:

3.4.1 Procurement Procedures:

According to the petroleum sector rules in Egypt, the APRC uses its commercial practices accepted by the Egyptian General Petroleum Company (EGPC) to procure the project through the following steps.

1. Contract with Enppi (self financed by APRC):

- APRC has contracted the consulting firm Enppi to carry out Detailed Engineering, Assistance with Procurement, Construction Supervision and Commissioning and Start-of the project.

2. Licenses from Bechtel (self financed by the APRC):

- APRC has contracted Bechtel Corporation to purchase a Process Licence Package for the Project, utilizing Bechtel's proprietary MP Refining SM technology.

- The choice of technology to be utilised for the upgrading of the existing Phenol Extraction Unit at the APRC has been made by APRC on the basis of a bidding procedure which was carried out previously. The license agreement between APRC and Bechtel is confidential. However, APRC have informed EPAPII that the agreement does not include any special specifications which would limit the availability of the required equipment.
- 3. Procurement of Equipment:
 - APRC decided to divide the equipment to allow supply from several sources of specialized manufacturers and suppliers, for these reasons:
 - ✓ There is no single supplier/manufacture for all project commodities
 - ✓ Not all Invitations for Quotations or Bids would need to be issued at the same time, but the procurement of each item of equipment shall be based on completion of the detailed engineering for the item in question
 - ✓ The evaluation of the bids/quotations for each item to be procured will be easier
 - The procurement of the equipment required for the new extraction unit can proceed in accordance with the procedures used on EPAP II as follows:
 - ✓ Equipment with an estimated cost below USD 500,000: Shopping (15 items)
 - ✓ Equipment with an estimated cost of above USD 500,000 but below USD 8m: Limited Competitive bidding (5 items).

3.4.2 Status of Implementation:

Technical Document	submitted	Date	
		Achieved	Planned
Credit worthiness certificate	Y	06/03/2008	
Sub loan Agreement	Y	May 2010	2009
Bidding document	N	N	2009
Technical and financial Evaluation	N	N	2009
Awarding and Contracting	N	N	2011
Installation and Commissioning	N	N	2011
Monitoring:			
Q1:			
Q2:			
Q3:			
Q4:			