
U.S. TRADE AND DEVELOPMENT AGENCY



EXECUTIVE SUMMARY

EATCO - Suez Petrochemicals Complex Gas To Polyolefin Project Final Report September 2000

U.S. Firm: UOP, LLC
Main Contact Name: Mr. James Andersen, Project Sales Manager
Current Phone: 847-391-3075
Fax: 847-391-2253
Email: jmanders@uop.com

Project Sponsor: Egyptian Arab Trading Company
Main Contact Name: Mr. Yehya A. El-Komi, Chairman & Managing Director
Current Phone: 20-2-2419-535/2437-639
Fax: 20-2-2430-027

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1.1 Project Overview

The EATCO - Suez Petrochemical Complex project will produce polyethylene and polypropylene to primarily supply the growing polyolefin market in Egypt. The project will reduce the dependence on imports, which currently supply the entire polyolefin market in Egypt. The polyolefins will be produced from natural gas feedstock, which helps to preserve Egypt's crude oil reserves while adding value to Egypt's growing natural gas reserves. The natural gas will be supplied from the Egyptian Natural Gas Company (GASCO).

The project sponsor is the Egyptian Arab Trading Company (EATCO), which is a private Egyptian company managed and owned by Mr. El Komi. EATCO will be one of the major equity participants in the project. Kvaerner and Ferrostaal are also expected to be equity participants along with others.

The GTP facility will be a grass-roots construction comprising process plants supported by utilities/offsite plant to produce 400,000 MTA (metric tons per annum) of bagged polyolefins, 50% polyethylene and 50% polypropylene. The facility will be supplied with natural gas (for feedstock and fuel), raw water, and electric power and will generate all additional utilities required.

Location of Project

The proposed site is located in the North West Gulf of Suez Special Economic Zone, approximately 40 km south of Suez City and 120 km east of Cairo City, close to the new port at Ain El Sukhna. The Gas to Polymers (GTP) facility will be located in the southern section of the zone in the area designated "Tetroleum Section", which comprises an area of approximately 11.9 km².

This location offers; a nearby port facility with good access to markets in Europe, U.S., Far East & Middle East, a ten year tax holiday with potential to be extended to twenty years with cabinet approval, a unified customs duty rate of 5%, and the availability of natural gas, electricity, and water, as well as roads, railways and telecommunications.

Gas to Polyolefins Complex Description

A simple block flow diagram of the complex is provided on the next page. Natural gas feedstock is converted to methanol in a two-step process within the Methanol Plant. The first step of methanol synthesis converts methane to syngas (carbon monoxide and hydrogen) and then the syngas is converted to methanol. The crude methanol is subsequently fed to the MTO Plant where it is converted primarily to ethylene and propylene. Byproducts from the MTO Plant include mixed butenes, C₅+ hydrocarbons and water. The hydrocarbon byproducts are sent to the utilities and offsite facilities where they are burned as fuel and the water is recovered and purified for steam generation. The ethylene and propylene are sent to the polyolefins plant for conversion to

polyethylene and polypropylene, respectively. The polyethylene unit can alternate between the production of high density polyethylene (HDPE) and linear low density polyethylene (LLDPE).

EATCO Suez Petrochemical Complex Project

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The EATCO - Suez Petrochemicals Complex project is based on using the following process technologies:

- Kvaerner Reforming/ICI Low Pressure Methanol Process
- UOPMYDRO MTO Process
- UNIPOL PE Process
- UNIPOL PP Process

These processes offer world-class performance from reputable licensors and produce products meeting the highest quality standards.

Advantages of Gas to Polyolefins Route

The gas to polymers (GTP) approach using the UOP/HYDRO MTO process offers a new means to produce polyolefins. The majority of polyolefins are produced from olefins derived from conventional steam cracking of ethane or naphtha. While these and other options can offer profitable means to produce polyolefins, they have product limitations and require different feedstocks that make them less attractive for the objectives of the SPC project. The GT? option is the best choice for this project because;

- * GTP is the only option that can cost effectively utilize lean (high methane content) natural gas
- * GTP offers the lowest costs of production for producing both polyethylene and polypropylene.
- * GTP offers competitive economics at production capacities that are aligned with the sizes of the domestic polyolefin markets in Egypt.
- * GTP does not depend on the development and growth of other markets such as refining, aromatics, and butadiene.

1.2 Project Technical Information

The EATCO - Suez Petrochemical Complex will use natural gas as the feedstock. For this feasibility study, the hydrocarbon byproducts are utilized as fuel and effluent water is recovered and treated to minimize raw material and utility consumption. A relatively small amount of electric power is generated within the facility to fully utilize the fuel byproducts and keep the complex in balance (no export of fuel), while slightly reducing the net consumption of electrical power. The project includes a closed-loop cooling water circuit exchanged against seawater. The facilities for seawater intake, circulation, and discharge are included in the project scope.

Plot

Area

The facility will require a minimum plot area of 371,520 m' based on the preliminary site plan developed for this study. The site area is laid-out on a plot with dimensions of 576 meters by 645 meters. This site plan includes process units, control room, utilities, waste water treatment ponds, flare systems, warehouses, administration buildings, loading facilities, and parking.

Operating

Costs

The consumption of raw materials, catalysts and adsorbents, chemicals, utilities, and the operating costs are summarized in the following table.

Operating Cost Summary

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Project Implementation
Schedule

The preliminary project schedule is outlined below based on an assumed project kick-off date in January of year 2001.

Key Milestones Time	Estimated Date	Elapsed
Project Kick-Off Months	2 January 2001	0
Basic Engineering Completed	1 August 2001	7 Months
EPC Contract Awarded	2 January 2002	12 Months
Construction Started	2 September 2002	20 Months
Startup & Test Runs Completed	30 June 2004 to 31 Dec 2004	42 - 48 Months

**1.3 Project
 Cost**

The following table shows the current estimates for the various components of project costs:

	W million
SPC Complex ISBL & OSBL	704.2
EPC Contingency/Profit	Included
Consultants	Included
LSEPC Cost	799.1
Spares (Capital & Running)	Included
Insurance	Included
License Fees	Included
Catalyst & Adsorbent Inventory	Included
Land, Import Duties, Development costs and other costs	Included
Subtotal	1,069.2
Interest During Construction & Finance Fees	184.8
Total Project Cost	1,253.9

1.4 Financial Analysis Results

The financial model uses the Base Case assumptions to calculate internal rates of return (IRR) and net present value of project cash flows for the assumed 25-year project economic life period and debt service coverage ratios for the period during which debt is outstanding.

The Base Case model gives the following results:

1.5 Environmental Considerations

The process technologies used for this facility are based upon proven operating plants around the world and information gained from the operation of these plants will form the basis of the design and operation of the SPC complex.

The SPC complex is to be located in an industrial complex in the Suez region of Egypt. Nearby facilities will include other petrochemical plants, the port of Ain El Sokhna and the main highway from Suez to Zaafrana. The preliminary plant layout takes into account the prevailing wind in the region to minimize the effects of stack emissions on the facility.

No unique or unusual potential major hazards are associated with the installation and operation of the GTP complex. The design and layout of the facility will be so as to minimize inadvertent emissions to the atmosphere through the implementation of control safeguards as well as the use of well-trained operations and maintenance personnel.

	Project IRR (pre-tax, nominal)	Equity IRR (attributable CF, nominal)
-BaseCase	16.6W	'~23.8%