

# تكرير TAKREER



شركة أبوظبي لتكرير النفط

We **Refine** Right



# Abu Dhabi Oil Refining Company (TAKREER)

## INTRODUCTION

Abu Dhabi Oil Refining Company (TAKREER) was established in 1999 to take over the responsibility of refining operations from ADNOC. This covers the crude oil and condensate refining, supply of petroleum products and production of granulated sulphur. Takreer's main objective is to develop the refining industry in the UAE which started with the inauguration of Abu Dhabi Refinery (ex. Umm Al Nar) in 1976 and Ruwais Refinery in 1982.

TAKREER is considered a prominent oil refining Company regionally and internationally contributing to oil markets and to the rapid growth of UAE economy. Since our inception, Takreer maintained its position as a leading refining Company, thanks to the high standard and efficient refining operations consistent with sound health, safety and environment practices as well as the world standard performance of both operations and employees.

TAKREER has grown over the years and gained much of experience in its market which made it more competitive and successful in the field of hydrocarbon products. The Company has redefined its mission, vision and values statements to reflect its learning and future outlook to maintain its leading role in the oil refining industry and to continued endeavor towards excellence.

### OUR MISSION, VISION & VALUES

**Mission:** To safely produce environmentally friendly, competitive hydrocarbon products and contribute to National growth.

**Vision:** To become a leading diversified refining company with the safest, most efficient operations and highly committed and competent staff.

#### CORE VALUES:

- **Safety & Reliability:** A safe, healthy and environmentally friendly operation is our number one priority.

- **Integrity & Fairness:** We are open, honest and fair in all our dealings with customers, our owner, employees, suppliers and the community we serve.

- **Technical and Business Excellence:** We believe in upgrading technology and in developing our employees to achieve the highest levels of technical and business excellence.

- **Quality & Continuous Improvement:** We believe in quality products, operations and people and strive for continuous improvement of our organization and individual competencies.

- **Teamwork & Shared Responsibility:** We believe in teamwork and a "no blame" culture where everyone feels a sense of ownership and a shared responsibility.

### CORE BUSINESS

For more than two decades, our refineries have provided products to meet society's expanding energy needs, and we are proud to be involved in this vital industry. As one of the leading Oil Refining Companies in the Gulf region, we are sensitive to the diversity of social business culture. We know that our reputation for maintaining high standards throughout our day-to-day dealings with others is essential to our continued success.

In conjunction with these efforts, we recognize the need to explore, produce, transport, and manufacture energy products in an environmentally responsible manner, with the highest regard for safety and health of our workforce and of the communities in which we operate.

At Takreer, we strive to be a good neighbor by providing sustainable benefits to local communities, and by incorporating economic, environmental, and social codes of conduct into our business strategy. We strive to foster a responsive, diverse organization that is highly-motivated, team-oriented, and dedicated to innovative solutions and open communication. Our core values are at the heart of the positive reputation we continue to build.

The Ruwais and Abu Dhabi Refineries constitute our core business. They are referred to as the Takreer's Business Lines. They produce over 23 million tons per year of products for the local and export markets.

The company's objectives for the new millennium include the task of fulfilling national aspirations for quality assurance and environmental protection. It is also keen on implementing national policies aimed at providing employment opportunities for the national workforce.

To achieve that, Takreer has designed a number of special development programs for UAE Nationals to provide them with the necessary skills to join the workforce. The number of our employees is approximately 1,800 from over 40 nationalities.

Meanwhile, Takreer conducts high standard and efficient refining operations consistent with sound health, safety and environmental practices. Its activities are based on total quality management principles, in a customer and employee oriented environment. Its aim is to provide reliable, quality products that satisfy the requirements and needs of its customers and partners.

In the future, Takreer will work on enhancing its performance to meet its overall objectives. It will also improve its cost control and adopt state-of-the-art equipment and technology to optimize its operations.

### ABU DHABI REFINERY

After the discovery of oil in Abu Dhabi in 1958, and the first export shipments of crude oil in 1962, plans were drawn up for construction of refinery with a capacity of 15,000 barrels per stream day (BPSD) to meet a mounting domestic demand for petroleum products. Construction work in the refinery commenced in 1973 and the project, costing an initial sum of \$45 million, was inaugurated in April 1976.

On ground of the growing demand of oil products, work began almost immediately on installing additional capacity to process a further 60,000 BPSD which was commissioned in 1983 to satisfy local requirements.

The increasing demand in the fast developing Emirate included ADNOC to expand capacity yet again, bearing in mind environmental considerations, to include additional units for gas oil desulphurization and sulphur recovery. The expanded refinery started up in December 1992 with a rated capacity of 85,000 BPSD.

### REFINERY INSTALLATIONS

**Crude Distillation Unit (85,000 BPSD):** Prior to the actual distillation process, crude oil flows through desalters to remove the undesirable salts, water and sludge which are generally associated with any type of crude. After preheating the oil by

Heat exchangers and finally heated in furnaces, the crude is then fractionated in the atmospheric distillation column into the basic row petroleum fractions of naphtha, kerosene, gas oil and residue.

**Naphtha Hydrodesulphuriser Unit (22,795 BPSD):** The Naphtha Hydrodesulphuriser sweetens the straight Run Naphtha from crude unit. In this unit three products are produced namely: Heavy Naphtha, Light Naphtha and Sour Liquefied Petroleum Gases.

**Kerosene Merox Unit (21,250 BPSD):** This unit converts Mercaptans at straight Run Kerosene into disulphides to meet the final products quality for aviation Kerosene.

**Catalytic Reformer Unit (14,000 BPSD):** The reformer improve the heavy Naphtha cut Octane- anti-knock before being used as gasoline blending component. This unit characteristics of continuous catalyst regeneration type and does not need to be shut down periodically for regeneration of catalyst.

**Gas Oil Hydrodesulphuriser Unit (22,500 BPSD):** The Gas Oil Hydrodesulphuriser Unit reduces gas oil sulphur content to 0.05wt% for improving product quality.

**LPG Treating and recovery Unit (3,480 BPSD):** In this unit Raw LPG from Naphtha Hydrodesulphuriser and Catalytic Reformer Unit are being processed. The produced Butane is used as a blending component in gasoline and also blended with propane to from LPG used for domestic purposes.

**Excess Naphtha Stabilization Unit (3,325 BPSD):** This unit Stabilizes the Excess Naphtha from crude unit before being exported to Ruwais Refinery.

**Gas Sweetening Unit (35 Tons/Days H<sub>2</sub>S Removal):** Sour gases produced in the refinery facilities are sweetened using amine solution to remove hydrogen-sulphide to minimize sulphur oxide emissions. The sweetened Nature gas used as fuel for Heaters at refinery.

**Sulphur Recovery Unit (35 Tons/Day):** Sulphur extracted from the acid gases produced from gas sweetening unit and converted to liquid sulphur, which is then transported to Ruwais Sulphur Handling Terminal via road tankers.

**Jarn Yaphour Crude Oil Stabilization plant (10,000 BPSD):** Remove hydrogen sulphide, water and hydrocarbon condensate before it is injected into ADNOC's main gas network. The stabilized crude ids sent to the refinery crude distillation unit for further separation into petroleum fractions. Additional Effluent water treatment facilities were installed for reducing rigid oil in water to 10 ppm maximum.

## RUWAIS REFINERY

The Ruwais Industrial Complex is located approximately 240 km to the west of Abu Dhabi, the capital. The compound has been established mainly to enrich the national economy attracting huge investments.

The history of Ruwais scheme goes back to the seventieth when a plan was set up for construction of a green field project that would contribute even to topographical transformation of the deserted region, changing the features of the area into modern and developed industrialized community provided with all necessary subsistence and services.

Centered around Ruwais Refinery, the Complex was officially inaugurated in 1982 by the late Sheikh Zayed Bin Sultan Al Nahyan, former president of the UAE, ruler of Abu Dhabi and the founder of the modern UAE.

Subsequently after commissioning the original Hydroskimming refinery in June 1981 of production capacity 120,000 barrels daily, plans were drawn to add further 27,000 bpd capacity Hydrocracker complex which came into service in 1985. For consolidation of the operations and utilities a plan was drawn in 1982 for supply of power and water to the region and merged with the refinery.

## PROCESSING UNITS

**Crude Oil Distillation - 120,000 barrel daily:** After desalting, crude oil is subjected to distillation process to yield full range naphtha, kerosene, light gas oil, heavy gas oil which are further reprocessed in downstream unit.

**Naphtha Hydrodesulphurization - 34,350 barrel daily:** The full range naphtha from the crude oil unit and heavy naphtha from the hydrotreated to remove the sulphur ingredients extracting LPG from whole naphtha. After dehydration, the row LPG is sent to GASCO-NGL plant for further processing while the whole naphtha is split into light naphtha, used for gasoline blending, and heavy naphtha, used as feedstock for the Catalytic Reformer Unit.

**Catalytic Reformer - 19,150 barrel daily:** Heavy naphtha is processed to improve its anti-knock properties by using a bimetallic platinum-based catalyst. The Reformate obtained is used as the main blend component for production of gasoline. The Hydrogen-rich gas is used in the reaction section of Hydrotreaters while the residual gas goes to the refinery Fuel Gas system.

**Kerosene Hydrotreater - 20,780 barrel daily:** This unit improves the burning quality for kerosene by desulphurization and saturation of aromatics required to meet international specifications for jet fuel.

**Gas Oil Hydrodesulphurization - 21,850 barrel daily:** This unit removes sulphur components in the heavy gas oil from the

crude oil unit using a cobalt/molybdenum oxide-based catalyst. The hydrotreated heavy gas oil is used as a blending component to produce different grades of gas oil.

**Vacuum Unit - 46,000 barrel daily:** This unit processes atmospheric residue from the crude oil unit to produce heavy vacuum gas oil as feedstock for the Unibon unit. Ruwais residue is supplemented by residue from Abu Dhabi Refinery.

**Unibon Unit (Hydrocracker) - 27,000 barrel daily:** This unit converts the heavy vacuum gas oil feed into lighter products in the reactor section by passing the feed, plus hydrogen, over catalysts under high pressure and temperature. Products from this reaction are then separated in the fractionation section to yield high value finished products ranging from LPG to gas oil.

**Hydrogen plant - 60,000 Nm<sup>3</sup>/hr H<sub>2</sub>:** The Hydrogen Unit converts natural gas and steam into hydrogen with the aid of catalysts. Propane can also be used as an alternative feed.

**Two Sulphur Recovery Plants - 49/50 tons daily:** These units recover sulphur from hydrogen sulphide-rich gas produced in the Hydrodesulphurization and Unibon units by converting it into elemental sulphur through a thermal and catalytic reaction. The liquid sulphur is then sent to the Sulphur Handling Terminal for granulation and export.

**Two Condensate Splitters - 2x 14,000 barrel daily:** Each splitter is designed to process condensate from the On-shore Gas Development and Asab Gas Development fields. The splitters fractionate the condensate into unstabilized light naphtha, medium naphtha, heavy naphtha, kerosene, light gas oil, heavy gas oil and atmospheric residue, which are further processed in downstream units.

**Two Naptha Stabilizers - 2 x 27,500 barrel daily:** Each Stabilizer is designed to process 27,500 barrels of unstabilized light naphtha daily from the condensate splitters. LPG after treatment is sent to GASCO while stabilized light naphtha is routed to storage and blending.

**Two Kerosene Sweetening Units - 2 x 52,000 barrel daily:** Kerosene produced in the Condensate Distillation Units contains mercaptans and naphthenic acids. The Merichem Sweetening units reduce the mercaptans by converting them into disulphides. The sweetened kerosene from each unit is routed to storage and blending.

## CONTACT DETAILS:

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