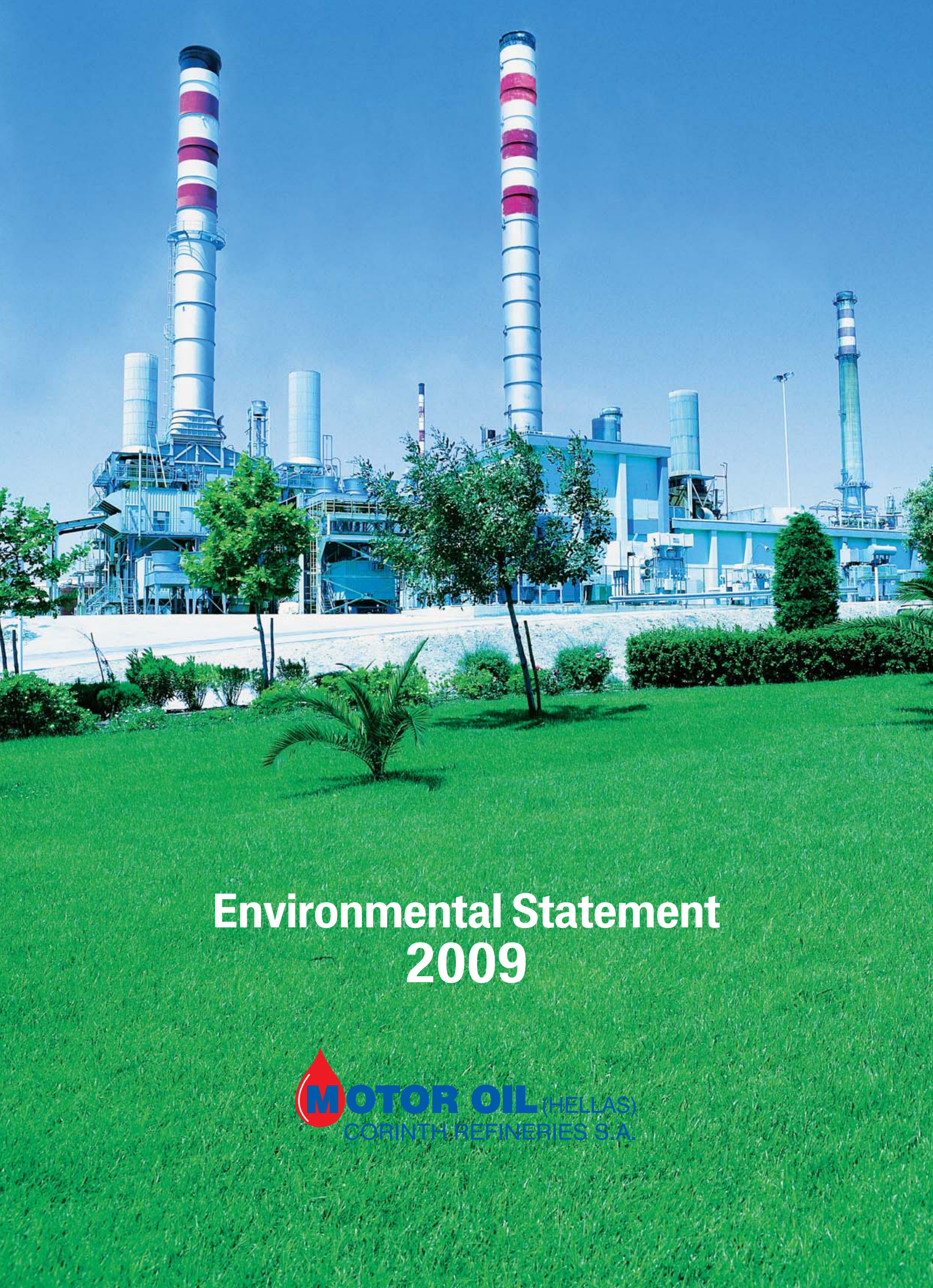


Environmental Statement 2009

MOTOR OIL (HELLAS)
CORINTH REFINERIES S.A.

Environmental Statement 2009

MOTOR OIL (HELLAS)
CORINTH REFINERIES S.A.

EMAS

VOLUNTARY ENVIRONMENTAL STATEMENT
ACCORDING TO EUROPEAN REGULATION 761/2001
EMAS (Eco-Management and Audit Scheme)

JULY 2010

Contents

Management Message

Remaining loyal to our constant commitment for protecting the environment, I have the pleasure to introduce the year 2009 Environmental Statement of our company, which we voluntarily publish according to European Directive 761/2001 for EMAS (Eco Management and Audit Scheme).

MOTOR OIL is registered at the Greek Ledger of EMAS organizations with registration number EL 000067.

This Statement is part of our commitment in the proper and rational management of Environmental issues, in the context of the Company's Integrated Management System and our policy to operate with respect to the Environment, taking into account all stakeholders.

In this Statement you will find data related to Refinery units and process activities, a reference to our Environmental Management Policy, an assessment for our 2009 Environmental performance, as well as the new objectives on which we commit.

The company investment policy is based on the development of new, environmentally friendly products implementing innovative environment and human friendly technologies, while investing in automating production processes to improve the energy efficiency and productivity of the Refinery.

In 2009 an agreement with SHELL International Petroleum Company was reached for transferring its downstream operations in Greece to MOTOR OIL, while at the same time we started construction of the KORINTHOS POWER natural gas power plant.

The investment program included the starting of the construction stage of a new 60,000 barrels per day Crude Distillation Unit. The new facility includes desulfurization units and is planned for commissioning in the second quarter of 2010.

The overall responsibility for the Environment, as well as the Health and Safety of our personnel is mine.

The duties that I have assigned to my colleagues and employees in the context of Health, Safety and Environmental Management are specific and, as I believe, effective.

I hope that you will find this Statement not only informative but also interesting.

It is my obligation at this point to emphasize that MOTOR OIL's Environmental Statement is an opportunity for communication with our associates and all stakeholders on the performance of MOTOR OIL in managing environmental issues, and in this context, my colleagues and I are at your disposal for any query or comment you might have.

M. I. Stiakakis
Manufacturing General Manager

1. Company Presentation

1.1 General Information

MOTOR OIL is a leading Company in the oil refining industry supplying the market with a wide range of high quality and reliability energy products. The Company has evolved to one of the main pillars of the national economy, while, at the same time playing a key role in the wider area of South Eastern Europe.

MOTOR OIL started operating in 1972, as a company engaged in refining and trading of oil products and has been responsibly functioning ever since, aiming at sustainable profitability and socially responsible growth. The Company's Vision and Mission define the context which drives the planning and implementation of its dynamic growth. In addition, company operation is based on a set of strict Principles and Values, which compose the elements of its business practices.

MOTOR OIL's Vision and Mission are based on three basic principles:

Respect for our People
Respect for the Environment
Transparency

Materializing the Corporate Vision and Mission is based on four corporate values:

Effectiveness
Responsibility
Social Responsibility
Integrity

The Company Refinery is located at Agioi Theodoroi, Corinth, approximately 70 km from downtown Athens. Along with its auxiliary premises and its fuel distribution premises, the Refinery constitutes the largest private industrial complex in Greece, and is considered as one of the most flexible refineries across Europe.

It can process different types of crude oil, producing a wide spectrum of oil products that meet the strictest international standards, thus serving the supply requirements of Oil Companies both in Greece and abroad.

At the same time it is the only Refinery in Greece that has a lubricant production unit. Apart from the basic units, (atmospheric distillation, catalytic reforming and hydrotreatment) the refinery includes conversion units (thermal, catalytic cracking, and hydrocracking).

The following table summarizes the company data.

Statistical Codification of Economic Activity:	232
NACE Code	DF.23.20 - Manufacture of refined petroleum products
Premises:	Agioi Theodoroi, Corinth
Installed Power:	Main electric motors power 69,3 MW Back up electric motors power 45,7 MW
Postal Address :	71st km of Old National Road Athens – Corinth, position «Soussaki».
Contact Person for EMAS and Integrated Management System	Mr. S. I. Sofos
Telephone number:	(+30) 27410-48602
Fax:	(+30) 27410-48255
e-mail:	sofossp@moh.gr
Responsible for Health, Safety and Environment	Mr. G.A.Palaiokrassas
e-mail:	palaiogi@moh.gr

Vardinoyannis Group is the major shareholder of MOTOR OIL. In 2001, the Company made an Initial Public Offering, listing its shares in the Athens Stock Exchange, substantially increasing its share capital.

The Company's shareholder structure as at 31.12.2009 is presented in the following table.

SHAREHOLDERS	%
Petroventure Holdings Limited	51.0
Petroshares Limited	10.5
Free Float	38.5
Total	**100.0**

1.2 Timeline of Company's Growth

MOTOR OIL was founded in 1972, accomplishing afterwards step-changes towards the improvement, expansion and upgrading of its Refinery. These steps are concisely presented in the following chronological table.

1972	Foundation and beginning of operation of the Refinery, comprised of a crude oil refining unit, a base lubricants production unit and port facilities.
1975	Construction of an Atmospheric Distillation Unit, with a capacity of 100,000 barrels/ day and tanks with a capacity of 1.5 million m^3.
1978	Construction of a Catalytic Reforming Unit (further processing of naphtha for gasoline production).
1980	Installation of a Fuel Catalytic Cracking Unit (processing of fuel oil into high added value products).
1984	Construction of a Power Plant that uses fuel gas as a raw material.
	Right of sale of electric power to the national grid.
1993	Quality management system certification according to ISO 9002 standard, concerning all the activities of the Company.
1996	Purchase of 50% of the Company's shares by Aramco Overseas Company BV, 100% subsidiary of Saudi Arabian Oil Company (Saudi Aramco).
	Relocation of Company Headquarters to a modern building in Marousi, Attica.
2000	Manufacture of products according to European Union standards for the year 2000, by constructing new units and converting the naphtha reformer to a continuous 103 octane reformation unit (CCR).
	New central control room and installation of a distributed control system (DCS).
	Environmental Management System certification according to ISO 14001:1996 standard.
2001	Share capital increases through public offer of shares and listing on the Athens Stock Exchange.
	Installation of the new gas turbine at the Power Plant.
	Upgrading of lubricants' vacuum unit.
2002	100% aquisition of AVIN OIL, a domestic retail marketing oil company
2003	Development of a Quality Management System according to ISO 9001:2000 standard, which was certified in January 2003.
2004	Re-certification of the Environmental Management System according to ISO 14001:2004 for three more years.
	Beginning of operation of the truck loading terminal at the Refinery.
2005	Beginning of operation of a Hydrocracker unit enabling the production of clean fuels according to 2005 and 2009 European Union specifications.
	Acquisition of the stake of Aramco Overseas Company B.V. in the Company by MOTOR OIL Holdings S.A.
2006	Re-certification according to ISO 9001:2000 for three more years (until 2009).
	Accreditation of the Refinery Laboratory according to ISO 17025:2005.
2007	Re-certification of the Company's Environmental Management System according to ISO 14001:2004, valid until 2010.
	Company Registration in the Greek Ledger of EMAS (Eco Management Audit Scheme).
2008	Certification of the Occupational Health and Safety Management System according to OHSAS 18001:2007.
	Safe implementation of the largest in company history refinery shut down program for periodic maintenance work.
	Start of construction of the New Crude Distillation Unit.
	Award, for the second consecutive year, with the «OIKOPOLIS 2008 - Environmental Investment» prize from the non-governmental organization, Ecocity.
2009	MOTOR OIL achieves record sales of 9.5 million Metric Tones.
	Re-certification of the Integrated Management System according to the new ISO 9001:2008 standard, valid until 2012.
	At the same time significant strategic initiatives were set forth: agreement with SHELL International Petroleum Company for acquiring its downstream operations in Greece (except for Lubricants Marketing), starting the construction of the KORINTHOS POWER S.A natural gas power plant, acquisition by MOTOR OIL Group of an additional 64.06% stake in OFC Aviation Fuel Services SA with which the total Group stake reaches 92.06%.

1.3 Corporate Social Responsibility (CSR)

MOTOR OIL fully embraces the importance of the effort for sustainable growth via the application of the principles and objectives of Corporate Social Responsibility. It expresses its social responsibility with the commitment that its activities are based on the respect for people, the environment and society. Natural outcome of this commitment is a holistic approach in the application of the principles of Corporate Social Responsibility, taking into consideration the protection of the environment, as well as the stakeholders- its personnel, the shareholders, the customers, the suppliers and the society in its entirety.

MOTOR OIL is a founding member of the Hellenic Network for Corporate Social Responsibility, and has subscribed and participated in the Initiative of the United Nations Organization for the UN Global Compact, the aim of which is to direct the enterprises to viable growth through voluntary and responsible behavior and actions.

CSR indicates the balanced approach of the financial, social and environmental impact of the company operations according to the three dimensions of "society-environment-economy" that are globally accepted by the responsible members of the business community. These outline the main objective of an organization to create value for its shareholders, while at the same time taking care of its customer satisfaction, its personnel, the environment and society in general. Relevant to this is also the concept of sustainable growth, meaning the growth that aims at covering today's needs without jeopardizing the availability of resources for future generations.

Consequently MOTOR OIL commits for its complete conformity with the ten principles of the UN Global Compact regarding:

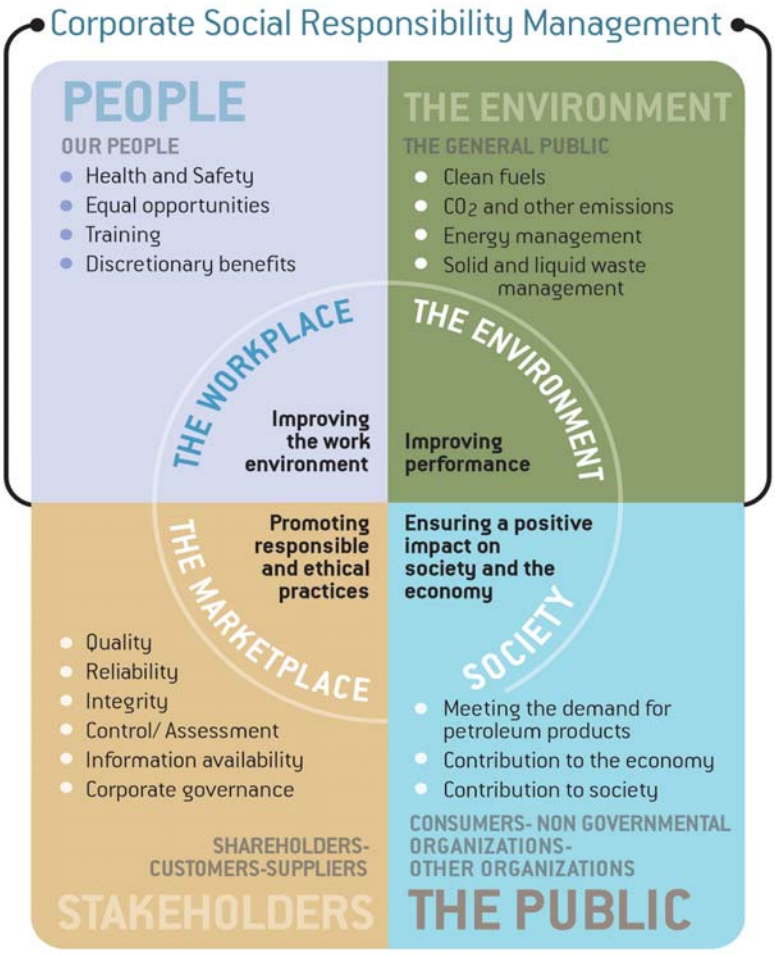
Human rights,

Labor relationships,

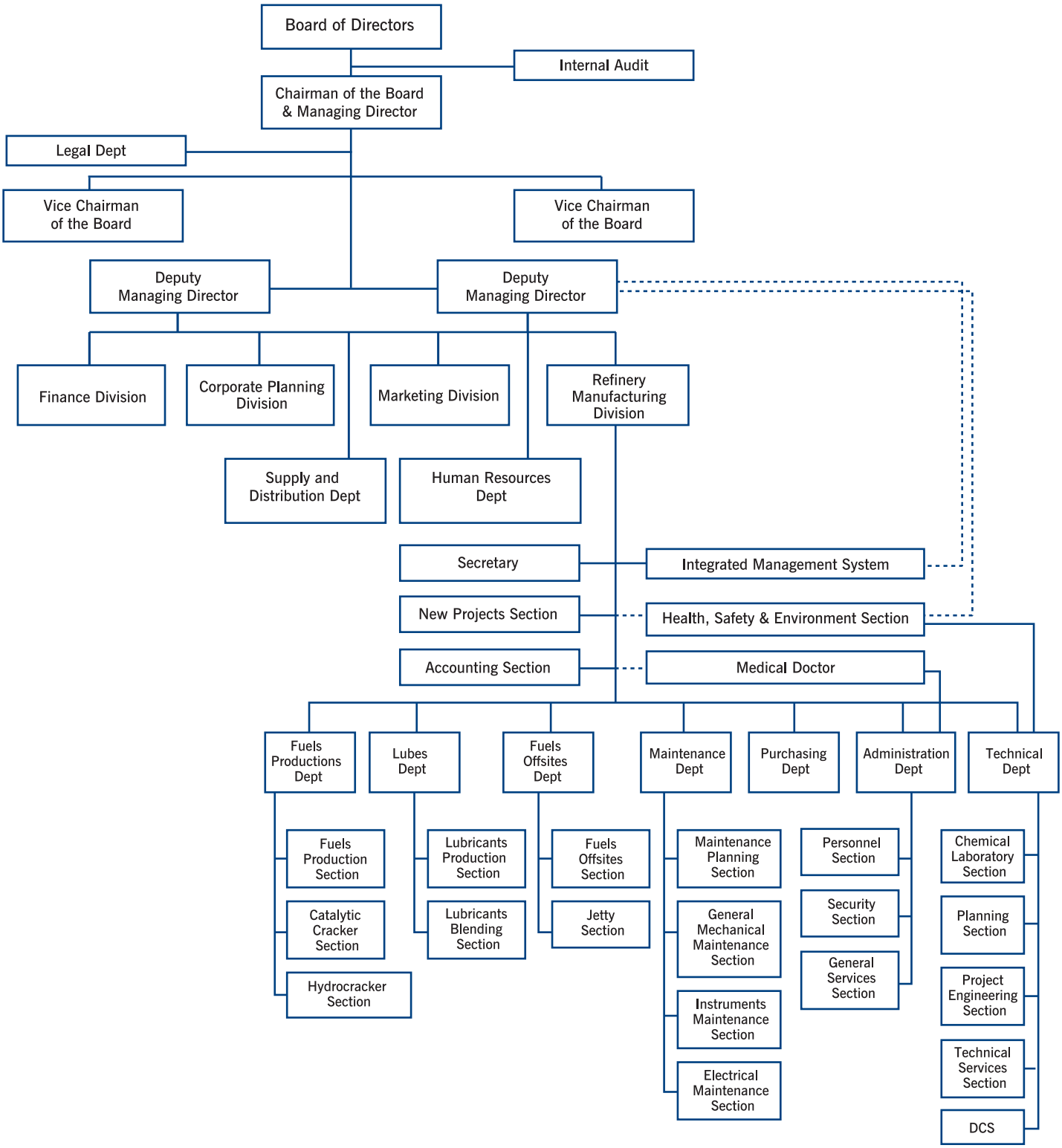
The environment and

Transparency (anti-corruption)

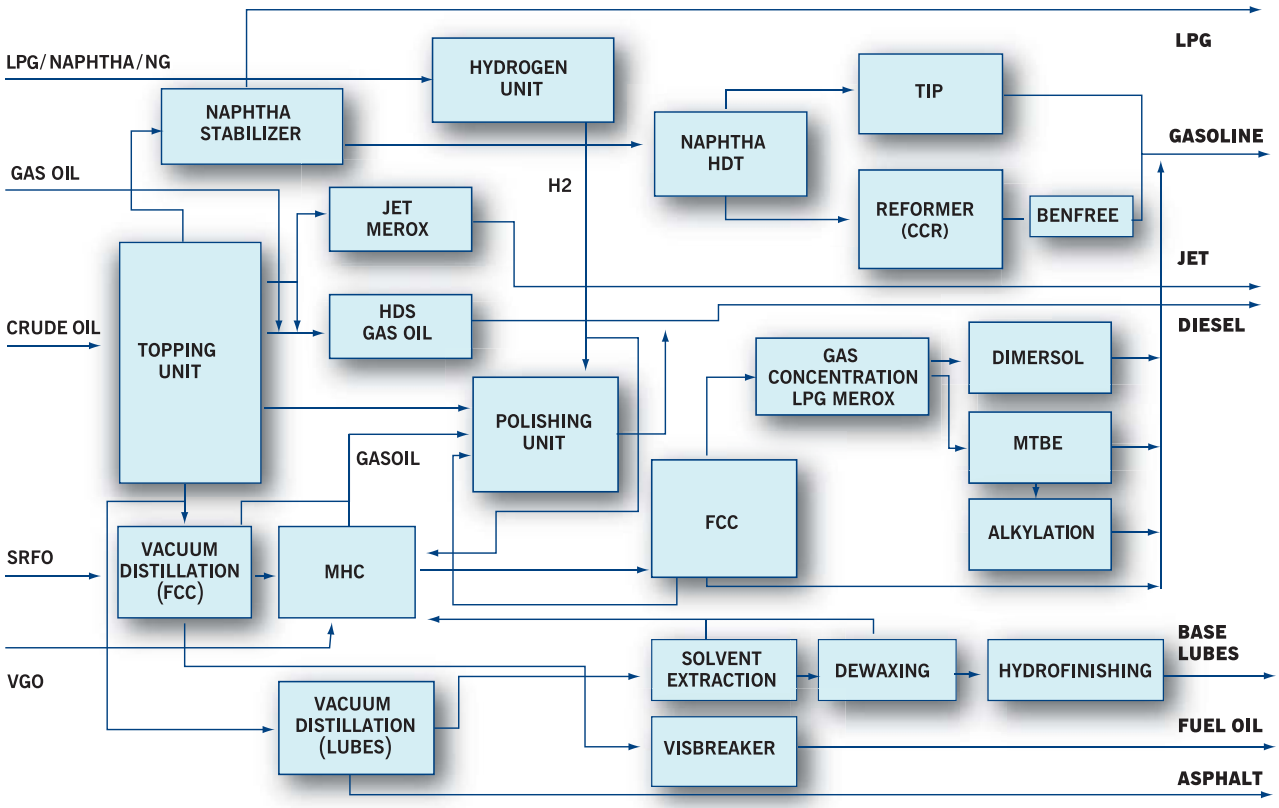
Amongst the challenges that MOTOR OIL faces, the most important ones are related with managing Health, Safety and the Protection of Environment. The frame for the management of these challenges and the achievement of continuous improvement in these particular sectors, according to the principles of Corporate Social Responsibility and the UN Global Compact, is defined by the policy for Health, Safety and the Environment.

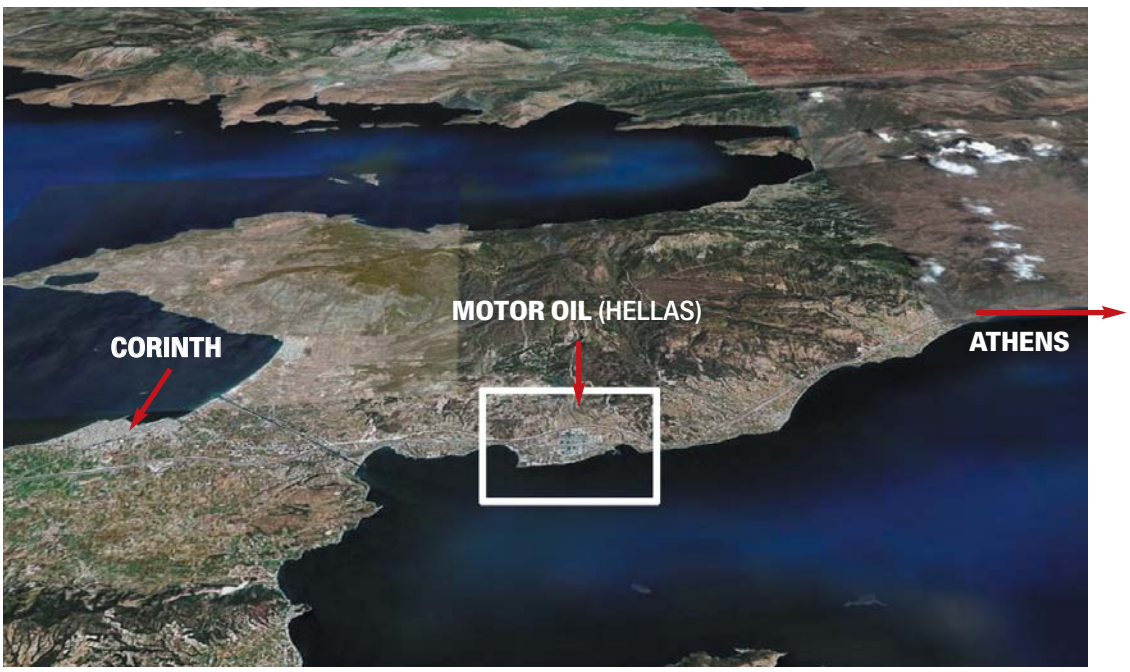


1.4 Organization Chart



1.5 Refinery Processing Flow Chart





1.6 Production Activities – Products

MOTOR OIL Refinery processes several types of crude oil, manufacturing a wide range of oil products that fulfill the strictest international specifications, serving this way oil companies both in Greece and abroad.

Products produced in the Refinery include:

FUELS
● Liquified Petroleum Gas (LPG)
● Naphtha
● Gasoline
● Jet fuels
● Diesel Oil
● Fuel Oil
LUBRICANTS
● Base lubricants
● Automotive lubricants
● Gear Oils
● Industrial lubricants
● Marine lubricants
OTHER PRODUCTS
● Asphalt
● Paraffin

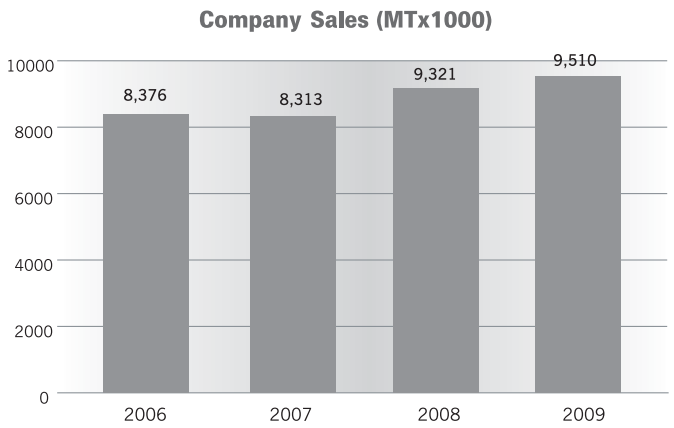
The maximum annual capacity of the main production units is the following:

Atmospheric Distillation Unit	4,958,160 MT
Visbreaker	1,314,000 MT
Vacuum Distillation Unit/ Lubricants	823,440 MT
Heavy H/C Desulphurization Unit	1,314,000 MT
Naphtha Desulphurization Unit	832,200 MT
Naphtha Catalytic Reforming Unit	569,000 MT
Benfree unit	444,815 MT
Vacuum Distillation Unit/ FCC	2,741,880 MT
Fluid Catalytic Cracking	1,533,600 MT
Mild Hydrocracker Unit	2,014,800 MT

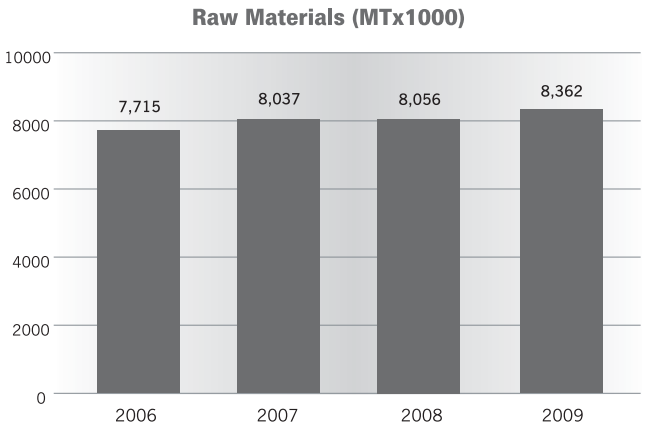
Storage capacity and distribution premises include:

9 tanks for crude oil storage	1,080,000 m^3
113 tanks for intermediate and final products storage	1,243,000 m^3
Docks for tankers' loading and unloading	
Pipelines for transferring raw materials and products	
Truck Loading Terminals	

Company sales over the last four years are shown in the following table:



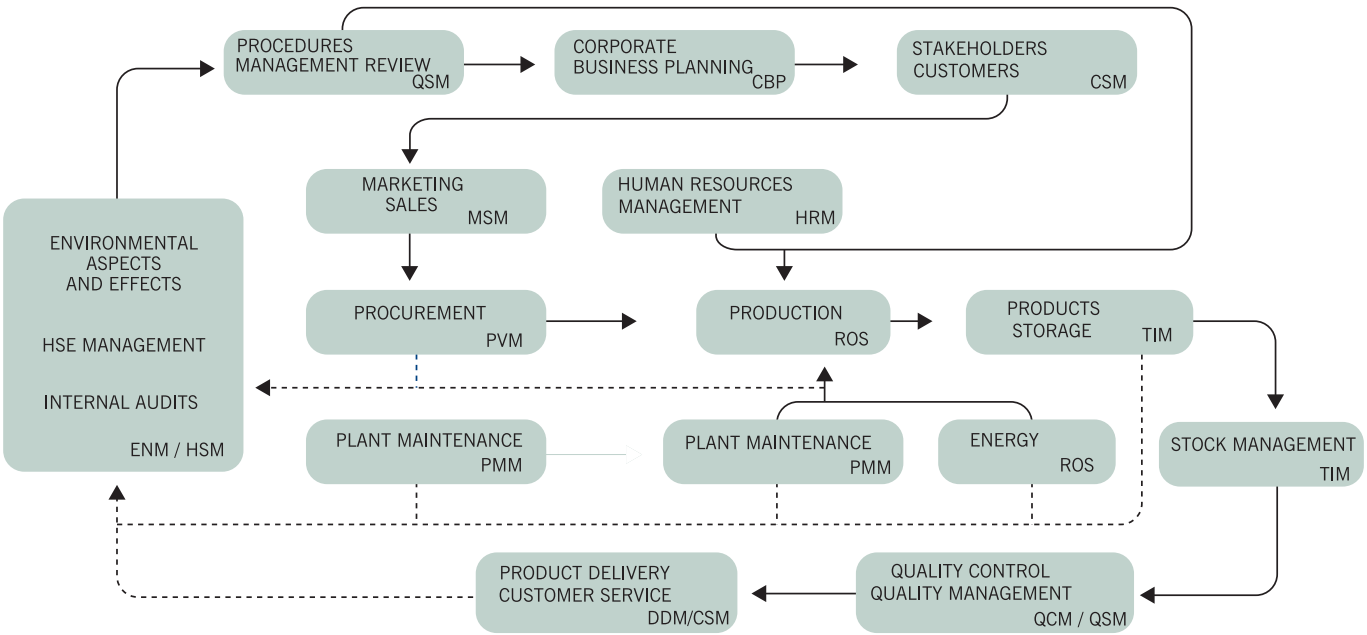
Raw materials (crude oil, straight run fuel oil, vacuum gasoil) over the last four years, are:



2. Environmental Management

2.1 Environmental Management System

Integrated Management System: Interrelation Process Diagramm.



Making a continuous and systematic effort, MOTOR OIL has developed and implemented an Integrated Management System that governs Quality, Environment and Safety Management, according to the ISO 9001:2008 and ISO 14001:2004, OHSAS 18001:2007, ISO 17025:2005 standards, as well as, the European Regulation 761/2001 (EMAS). This System concerns the manufacturing and distribution of fuels, lubricants, biofuels, waxes and oils. The Management System consists of a series of mutually interacting processes as it is depicted in the Interrelation Process Diagram. These processes include the production, the critical as well as the supporting processes.

Necessary clarifications on terminology for the Integrated Managing System are given on the table bellow

CBP	Corporate Business Planning
MSM	Marketing Sales Management
TIM	Tank Inventory Management
ROS	Refinery Operating Scheme
DDM	Delivery & Dispatch Management
ENM	Environmental Management
HSM	Health & Safety Management
PMM	Plant Maintenance Management
CSM	Customer Satisfaction Management
PVM	Procurement Vendors Management
QCM	Quality Control Management
HRM	Human Resources Management
QSM	Quality System Management

Environmental Management is included in the Company's supporting processes. The Environmental Management System aims to the accomplishment of continuous environmental improvement, compliance with the current Greek and European environmental legislation and the continuous effort to minimize the effects on the Environment from the various operations.

The System structure follows the steps of the dynamic cyclical process as depicted in the following diagram.

MOTOR OIL's Environmental Management System includes the following levels of documentation:

A Manual of the Integrated Management System, which, constitutes a guide for the implementation, maintenance and improvement of the Environmental Management System

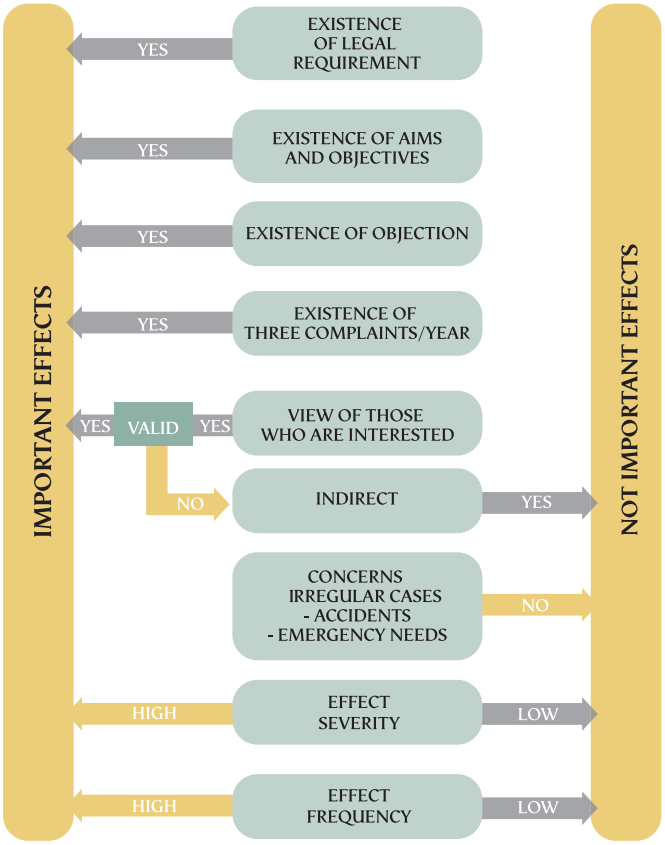
Procedures – Environmental Management Guidelines, which describe the sequence of actions and the assignment of authorities.

Files – Forms and Documents.

One of the main points in planning and implementing the Environmental Management System is the identification of environmental aspects and the evaluation of the environmental impacts.

The environmental impacts are assessed according to a series of criteria. The environmental impacts assessment method is shown on the following diagram, from which the most important environmental impacts are extracted.

ENVIRONMENTAL SIDE EFFECTS



2.2 Health, Safety and Environmental Policy (HSE Policy)

MOTOR OIL operates with respect to Health, Safety and the Environment. To achieve that, MOTOR OIL is commits to:

- set objectives and targets in order to accomplish a continuous improvement of the implemented management systems concerning Health, Safety and the Environment.
- meet or exceed the demands of legal and other requirements
- manufacture products of quaranteed quality that comply with, or exceed Health and Environment Protection specification for each product, with efficient use of raw materials, energy and technology.
- report both good or bad performances (high or low), as a responsible corporate citizen.
- maintain emergency preparedness and response systems and plans, which and tests regularly performing the right drills.
- integrate Health, Safety and Environmental issues into all business decisions, plans and operations in the framework of the Integrated Management System.
- provide consultation, information and training to employees, contractors and other staff working on its behalf and ensuring their commitment and awareness.
- consciously and strictly implement the environmental terms of operation that define the allowed level of produced wastes.
- cooperate with all stakeholders so as to develop balanced Health, Safety and Environmental Protection programs, which take into account the needs of all stakeholders.

At MOTOR OIL, whatever we schedule, plan or do, we do it safely, environmentally friendly and cost-effective manner.

2.3 Environmental Programs, Objectives and Improvements

During the years 2006-2009 the Company has implemented numerous programs aiming at the minimization of the environmental impacts of its activities, while reducing losses, recovering raw materials residues and reducing production cost. The programs implemented and their time of completion is shown in the following table:

	2006	2007	2008	2009
AIR				
10% reduction of local leakages of volatile organic compounds by implementing the LDAR program for detecting, controlling and repairing leakages.				
- During 2006, this program expanded into the new truck loading terminal (TLT) and during 2007 to the Hydrocracker complex	●	●		
A specific measurement schedule is enforced since 2001.				
Reduction of H_2S, SO_2 emissions and other air pollutants:				
- Optimization of the performance control of the sulfur recovery units, using a continuous measuring system,monitoring H_2S/SO_2 at the tail gas of the Claus units and installing a new Clauss unit.		●		
- Upgrading the ambient air quality monitoring station at the port with a continuous measuring system monitoring particulate matter ($PM_{2,5}$)			●	●
- Evaluation of CO_2 emissions by measuring carbon content in fuel gas. At the same time, accreditation of the MOTOR OIL laboratory concerning the measurements of gas emissions was held.			●	
WATER				
Upgrade and modernization of the processing stages.	●			
Installation of a system to deal with the foaming problem at the biofilter of the facility.			●	
Aeration of the stabilization tank for the sludge produced by the Waste Water Treatment Plant, in order to improve the quality of the sludge to be disposed.			●	
Installation of an on-line chlorine meter at the sanitary wastewater treatment plant output to improve operation monitoring				●
SOIL				
Completion of the results report of land environmental control, in the region where, the process of landfarming took place formerly.		●		
Completion of research for managing and neutralizing the sludge from the M-4000 wastewater treatment plant, so that it is suitable for use as an alternative fuel or to be legally disposed at Sanitary Landfills.			●	●
Tear-down asbestos-cement sheets of 1075 m2 surface and disposal through a licensed company			●	
Reduction of the quantity of the solid wastes,stored in the refinery				●
Tear-down asbestos-cement sheets of 1500 m2 surface and disposal through a licensed Company				●
ENERGY				
Connection with the national natural gas network and use of natural gas in the production process.			●	

2.4 Environmental Aspects and Impacts

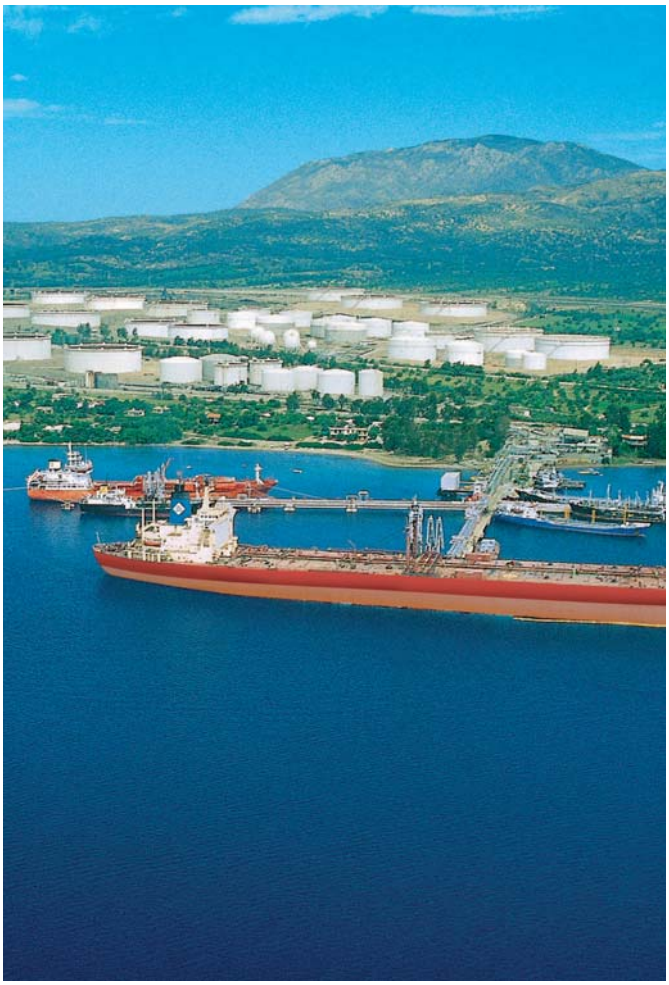
All the environmental impacts related to the operation of the Refinery have been evaluated according to their significance and among them the following are characterized as important:

- Air emissions from stationary sources (combustion plants) and refinery production processes
- Industrial and Sanitary waste water
- Solid waste, hazardous or not
- Energy and water consumption
- Noise

All the above environmental impacts are monitoring and recording on a time-schedule program and measures are taken continuously so that the Company will act accordingly in order to improve its environmental performance. A similar identification and definition of the significance of the aspects and impacts has been developed in the phase of new constructions.

At the same time the Company has evaluated the indirect environmental impacts resulting from the interaction with third parties products and services over which the Company does not have the management control.

The key environmental aspects associated with air emissions,water and solid waste, as well as, the indirect environmental impacts are described in the following sections:



2.4.1 Air Quality

The sources and the pollutants of air emissions associated with the Refinery's activities, products and services are shown on the following diagram.

Furnaces Boilers and Burners	**CO_2, NO_x, SO_2, Particulate matter** Air emissions from combustion plants
Stripping gas units Sulfur recovery units (Catalytic conversion of H_2S into elemental sulfur and then incineration of fuel gases)	**SO_2, H_2S** H_2S gas emissions are minimal because of their complete conversion into sulfur
Fuel storage API Oil Separators Loading and unloading of raw materials and products Leakages from the distribution network	**VOC's Emissions** Volatile Organic Compounds emitted from fuel storage tanks, API Oil Separators, operation, as well as from leakages that may occur during transportation of fuels within the refinery

The Refinery takes a series of measures, plans and implements programs aiming to reduce air emissions in the environment. These measures include:

The treatment of sour and liquid gases before their storage, or their use as a fuel, aiming to control hydrogen sulfide.

Installation of sulfur recovery units aiming to convert the produced hydrogen sulfide into solid sulfur, which is environment friendly.

The reduction and control of hydrocarbon emissions by taking several measures such as the installation of closed circuits during gas processing, the routing of gases from safety valves to the flares, the setting of secondary seals in floating roof tanks, the setting of floating covers in oil separators and the installation of a Vapor Recovery Unit (VRU) in the Truck Loading Terminal.

Performance control of burners and boilers.

Measuring and recording of air emissions.

2.4.2 Wastewater

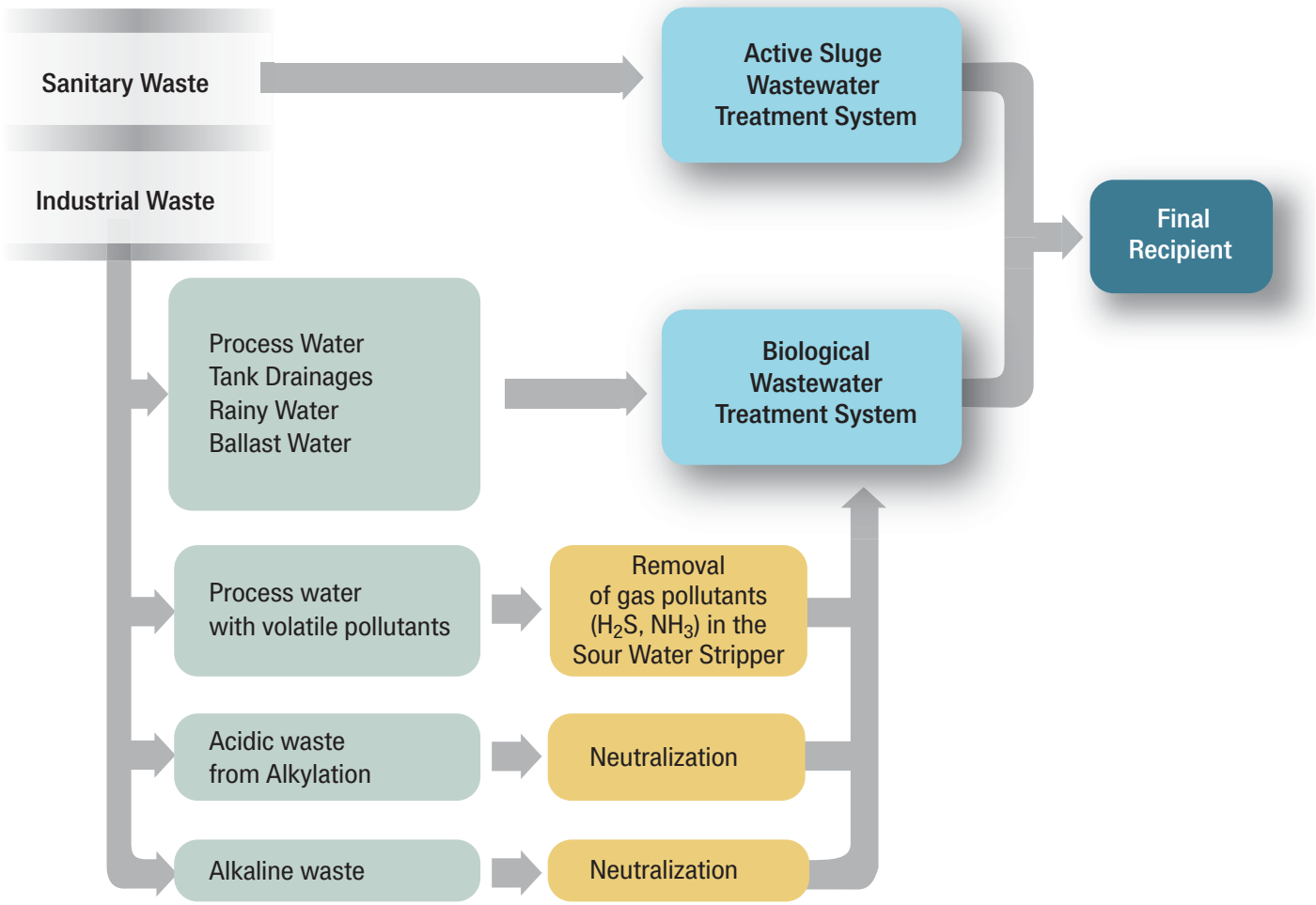
Wastewater produced in the refinery is distinguished in two categories:

Industrial waste water

Sanitary waste water

Industrial wastewater, which includes water coming from production units, tank draining, rain water and the ballast of vessels is routed either directly, or after some pre-treatment process, to the Industrial Waste Water Treatment plant (secondary treatment), where their waste load is reduced, before their final disposal, according to the environmental provisions and terms.

Sanitary waste water coming from personnel catering and hygiene areas is treated into an active sludge wastewater treatment system (tertiary treatment). The qualitative characteristics of the treated wastewater are within the defined legislative discharge limits.



2.4.3 Solid Waste

Solid wastes produced in the Refinery are classified in urban waste due to human activities (consisting of household solid waste such as, papers and metal, food leftovers etc.) and in industrial solid wastes which are created during the different stages of the production process (such as scrap materials, spent catalysts, etc.).

In order to ensure their safe environmental management and to prevent or reduce the negative consequences to the environment as well as any risk to human health and safety, the Company implements a thoroughly organized procedure in all stages of waste collection, transportation and temporary storage or treatment, until the final disposal. The final disposal is performed by licensed companies, depending on the nature of the materials while the ultimate goal is waste reduction or reuse.

The company submits an annual waste report to the competent authorities of the Ministry of Environment, Energy and Climate Change, where all the waste types that result from the activities of the premises as well as the way of disposal / management, are reported.

In the table bellow, the main types of solid waste produced by the company facilities are presented.

Type of Waste	EWC Code	Management Method
Scrap materials	170407	Recycling
Wood packaging	150103	Recycling
Plastic packaging	150102	Recycling
Paper or cardboard packaging	150101	Recycling
Tyres at the end of their life cycle	160103	Recycling
Used activated carbon	190904	Use as an alternative fuel or as a raw material
Saturated or spent resins	190905	Collection and disposal to legal recipient
FCC spent catalyst	160804	Re-export to the suppliers
Sludge resulting from tank cleaning (biodegradable material)	050103*	Treatment in the sludge processing unit and biodegradation by using the land farming method.
Paraffin production waste	160305	Recycling
Alumina	050199	Use as an alternative fuel or as a raw material
Inactive pellets	050199	Recovery
Recovery linings and refractories from non-metallurgical processes	161106	Collection and disposal to legal recipient
Stabilised wastes other than these reported in the point 190304	190305	Collection and disposal to legal recipient
Waste from electrical and electronic equipment	200136	Recycling
Mixed municipal waste	200301	Collection and disposal to legal recipient
Batteries Ni, Cd	160602*	Recycling
Accumulators	160601*	Recycling
Used mineral oils	130208*	Recycling
Spent catalyst	160803*/ 160802*	Recovery
Metal Wastes, contaminated by hazardous substances	170409*	Collection and disposal to legal recipient
Other construction and demolition wastes (including mixed wastes) containing hazardous substances	170903*	Collection and disposal to legal recipient
Packaging containing residues of hazardous substances or contaminated by such substances	150110*	Collection and disposal to legal recipient
Laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals	160506*	Collection and disposal to legal recipient
Fluorescent tubes and other mercury-containing waste	200121*	Collection and disposal to legal recipient
Soil and stones containing hazardous substances	170503*	Collection and disposal to legal recipient
Construction materials containing asbestos	170605*	Collection and disposal to legal recipient

2.4.4 Indirect Environmental Aspects

The indirect environmental impacts are mainly related to the air pollution caused by clarks and other vehicles, the H/C emissions during loading and unloading of the products into the ships, the noise coming from road tankers traffic and vessel stopover in anchorages, the wastewater of AVIN station, as well as, the side effects in case of an accident during the transfer of products to and from the refinery either from suppliers or from customers.

Within the framework of the Integrated Management System, the Company evaluates its environmental performance and trains its suppliers, contractors and subcontractors on several environmental issues and continuously gives information to its customers regarding the usage and distribution of the products. At the same time, it looks for new mild, environmental ways for transportation and attends to the effective organization of its raw materials and products transportation.

2.4.5 Environmental Incidents

Having set as main priorities the prevention of consequences that may result from the operation of the units, and the minimization of hazards during operations, the Company aims to the elimination of environmental incidents/ accidents.

For that purpose the Company has compiled Emergency Plans that are fully compliant with the local and national plans for fighting pollution through which it provides necessary directions for the right decision making and actions. At the same time, the Company trains systematically its personnel in order to ensure the right reaction in the case of emergency.

The effectiveness of the above activities is verified by having zero environmental incidents/ accidents during 2009.

3. 2009 Results

3.1 Environmental Performance

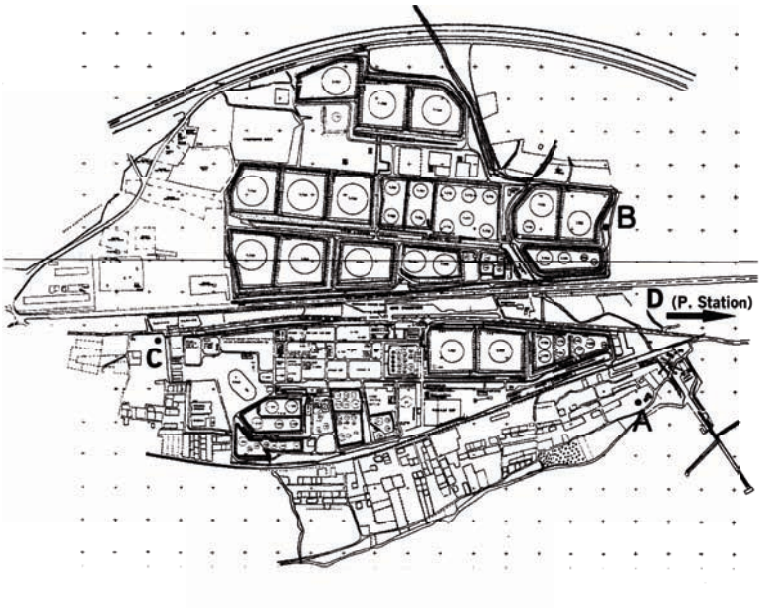
3.1.1 Air Quality Management

Aiming at the protection of air quality, the company fully and constantly monitors the air emissions both in Refinery units and in the wider area through continuous measurements that are executed not only on stationary sources (stacks, flares) but also on diffused emissions.

The industrial premises of MOTOR OIL utilize modern equipment concerning the monitoring of air quality and spot emissions coming from different sources during the production process. The Monitoring System of Air Quality consists of a mobile station (A) that has the capability to measure and record pollutants such as hydrogen sulphide (H_2S) sulphur dioxide (SO_2), suspended solids (PM_{10}), suspended solids ($PM_{2,5}$), nitrogen oxides (NO_x), methane (CH_4), nonmethane hydrocarbons (NMHC), total hydrocarbons (THC), carbon monoxide (CO), as well as, meteorological parameters. In addition there are three stations for measuring hydrogen sulphide (H_2S) and sulphur dioxide (SO_2) around the refinery. Two out of three permanent stations are located within the refinery premises (B, C), and the third one at the Agioi Theodoroi Police Station (see map).

Furthermore, oxygen measurements are performed in all combustion spots in order to control combustion, and sulfur dioxide (SO_2), PM_{10}, nitrogen oxide (NO_x) measurements are made in the Large Combustion Plants with a capacity of more than 50MW (central chimneys). Moreover, continuous and non-continuous measurements are made in non-associated stacks.

Map depicting the key locations of air quality monitoring stations



Air Quality:
SO_2, NO_x, PM_{10}, $PM_{2,5}$, CH_4, NMHC, THC, CO

The results of the monitoring program show that the air quality of the Refinery area is quite satisfactory.

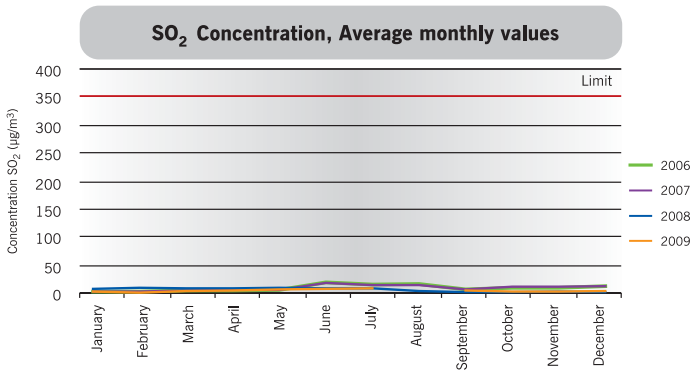
Specifically, the air quality data during the years 2006, 2007, 2008 and 2009 show that not only there aren't any excesses of the permitted hourly limits stated by the legislation (SO_2: 350 μg/m^3, NO_2: 200 μg/m^3) or any excesses of the permitted daily limits (PM_{10}: 50 μg/m^3, SO_2:125 μg/m^3), but also the observed values are much lower than that of the marginal ones.

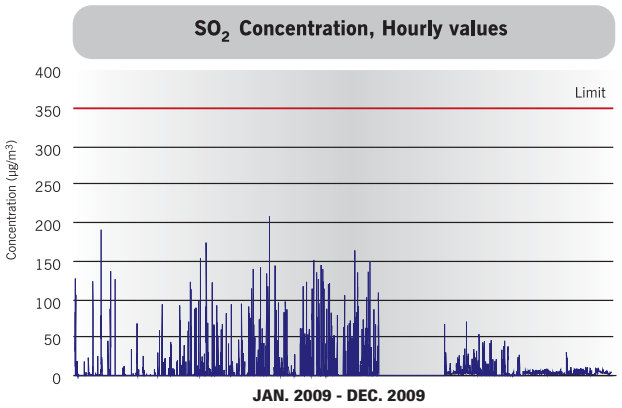
The average hourly values of pollutants per month measured by the mobile station of the Air Quality Monitoring Network are presented in the following table and the corresponding diagrams. Additionally the diagrams show the hourly values of pollutants during the year

	SO_2	H_2S	NO_2	NO_x	CH_4	NMHC	THC	CO	PM_{10}	$PM_{2.5}$
JANUARY	3.4	26.2	21.3	24.9	2,193.3	1,392.7	3,586.0	0.11	18.8	21.1
FEBRUARY	0.9	14.8	17.6	19.8	NO DATA	NO DATA	NO DATA	0.00	16.5	16.8
MARCH	4.8	21.7	19.2	21.5	1,458.4	1,580.9	3,039.3	0.00	15.4	17.2
APRIL	4.9	15.9	21.4	24.0	1,570.5	1,728.7	3,299.2	0.00	15.6	22.1
MAY	7.6	11.2	21.6	23.0	1,777.2	1,673.8	3,451.1	0.00	22.2	20.7
JUNE	9.0	10.0	23.3	25.4	2,446.6	2,474.8	4,921.5	0.00	16.4	18.7
JULY	9.5	6.5	16.4	20.0	3,008.9	2,497.3	5,506.3	0.00	16.5	18.0
AUGUST	NO DATA	NO DATA	18.1	22.4	3,381.6	2,272.2	5,653.7	0.00	5.2	22.2
SEPTEMBER	5.3	2.3	19.8	21.9	3,305.6	1,827.1	5,132.7	0.00	9.3	19.2
OCTOBER	3.7	3.1	19.2	23.4	3,317.4	2,078.8	5,396.2	0.00	13.4	16.0
NOVEMBER	3.0	4.9	23.1	26.7	3,363.7	2,344.8	5,708.5	0.00	16.9	18.6
DECEMBER	3.9	5.0	24.8	34.8	3,421.9	2,145.8	5,567.7	0.00	16.5	16.2

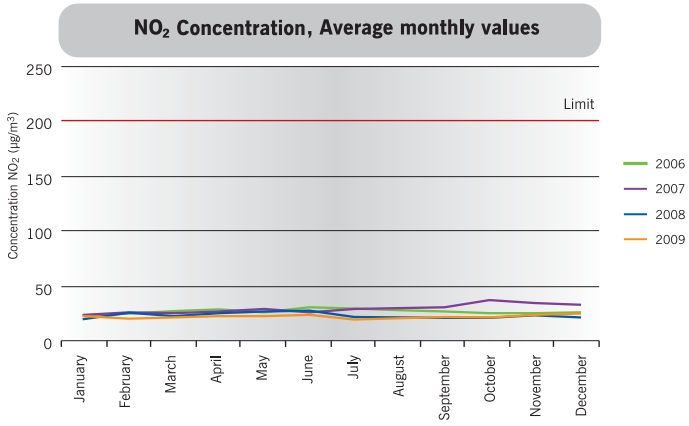
* Where NO DATA is indicated, this is due to malfunction of the analyzers during that period, as reported according to the Ministry of Environment

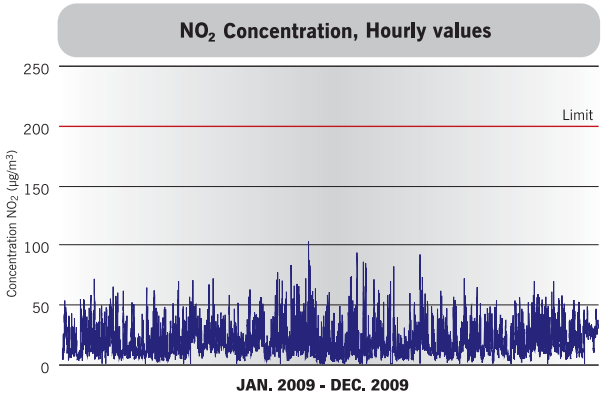
Sulphur Dioxide





Nitrogen Oxides



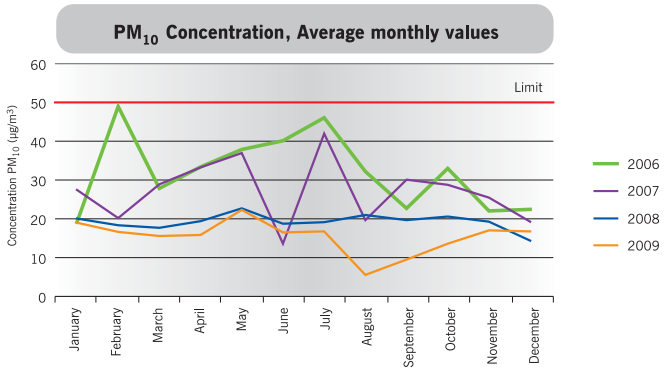


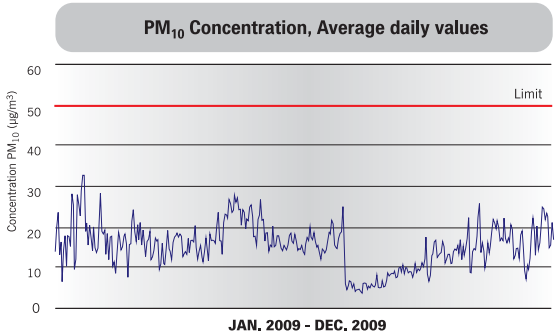
The measurements of Suspended Solids ($PM_{2,5}$) during 2009 are presented bellow

It should be noted that the Refinery is only one among many sources that produce air pollutants in the wider premises area. Some other sources that produce air pollutants include the traffic on the Athens – Corinth national road, the presence of several nearby industrial units, as well as, the railway network.

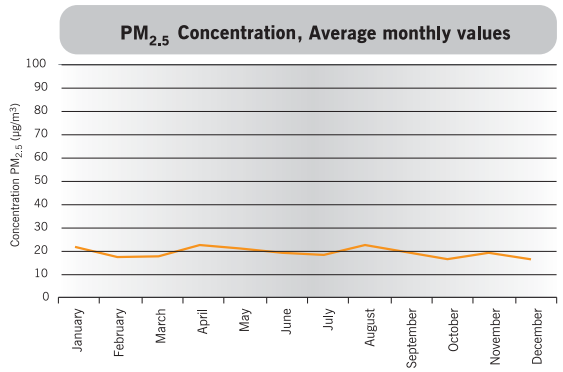
In the following diagrams the concentration of Methane (CH_4) and Nonmethane Hydrocarbons (NMHC) is presented.

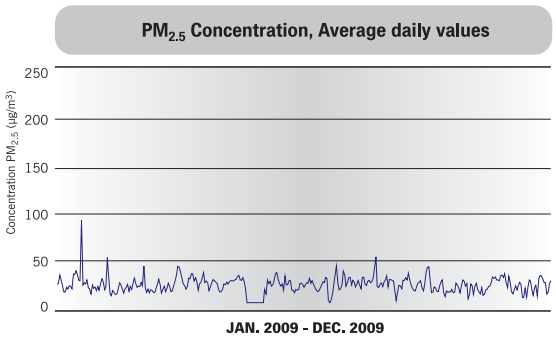
Suspended Solids



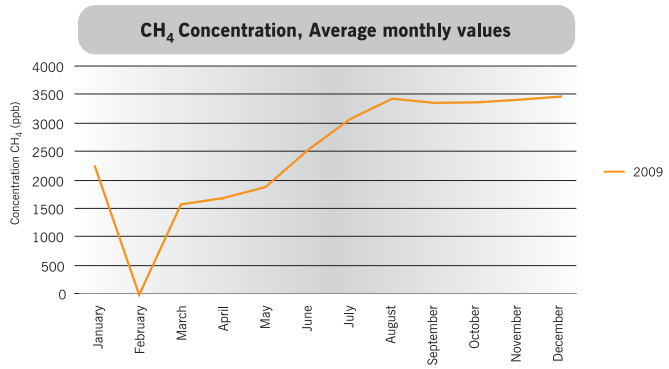


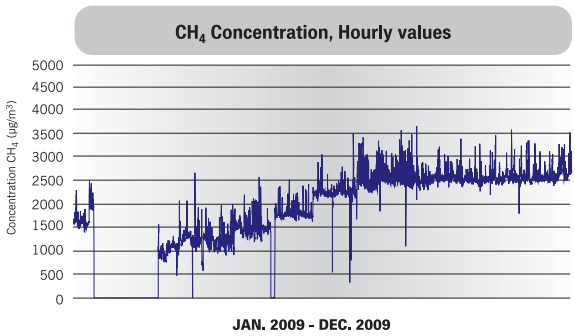
$PM_{2,5}$ Suspended Solids



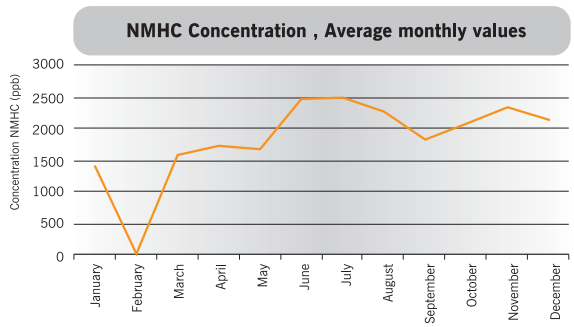


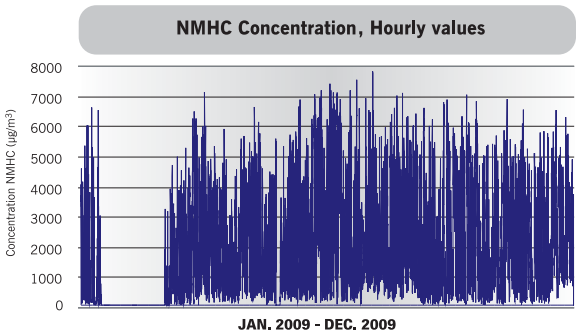
Methane





Non-Methane Hydrocarbons





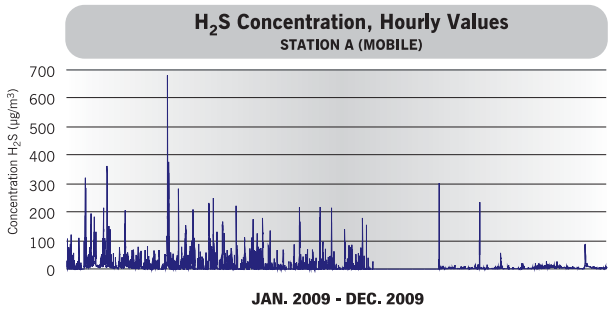
Air Quality: H_2S

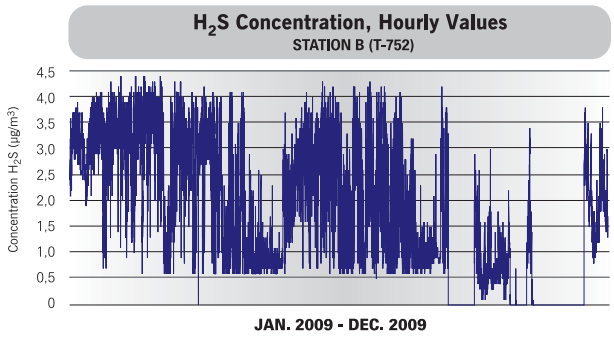
The refinery has achieved minimization of hydrogen sulfide emissions by upgrading the sour gas processing units, as well as, the sulfur recovery units.

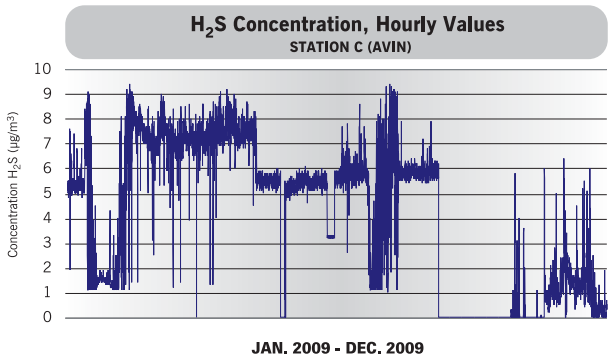
H_2S concentration is monitored on a daily basis in all of the four stations of the Air Quality Monitoring Network.

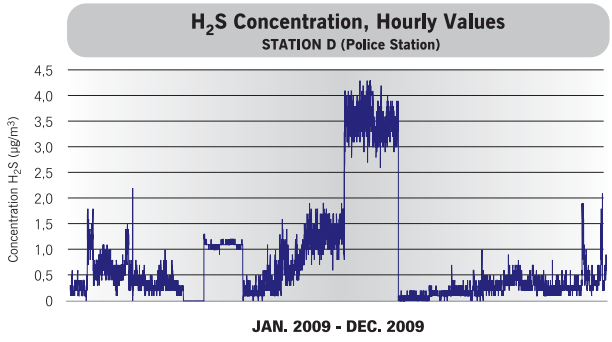
Analyzing the results, it is concluded that H_2S concentration in the wider refinery area is remarkably low, according to the measurements of the station located at Agioi Theodoroi (Police Station).

Hydrogen Sulfide










BUREAU VERITAS
Certification

Certification

Awarded to

MOTOR OIL HELLAS (CORINTH REFINERIES) S.A.
Agioi Theodoroi, P.O. Box 23, 201 00 Corinth
HQ Irodou Attikou 12A, Maroussi
GREECE

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

ISO 14001:2004

Scope of supply

PRODUCTION, TRADING AND DELIVERY OF FUELS, BIOFUELS, LUBRICANTS, WAXES, BITUMENS AND SPECIAL OIL PRODUCTS.

Original Approval Date: 14 December, 2000

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 28 January, 2010

N. TRILIZAS

Date: 29 December, 2008

Certificate Number: 349982


BUREAU VERITAS
Certification

Certification

Awarded to

MOTOR OIL (HELLAS) CORINTH REFINERIES S.A.
Agioi Theodoroi - P.O. Box 23
201 00 Corinth
GREECE

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

EMAS ER 761/2001

Scope of supply

PRODUCTION & DELIVERY OF FUELS, LUBRICANTS WAXES & OILS.

Original Approval Date: 13 July, 2007.

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 6 July, 2010.

N. TRILIZAS

Date: 13 July, 2007

Certificate Number: 070310


BUREAU VERITAS
Certification

Certification

Awarded to

MOTOR OIL HELLAS (CORINTH REFINERIES) S.A.
Agioi Theodoroi, P.O. Box 23, 201 00 Corinth
GREECE

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

OHSAS 18001:2007

Scope of supply

PRODUCTION, TRADING AND DELIVERY OF FUELS, BIOFUELS, LUBRICANTS, WAXES, BITUMENS AND SPECIAL OIL PRODUCTS.

Original Approval Date: 24 December, 2008

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 23 December, 2011

N. TRILIZAS

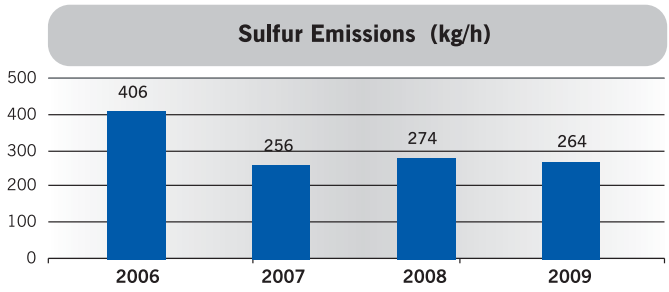
Date: 29 December, 2008

Certificate Number: GR080482S

HSE

Sulphur Emissions

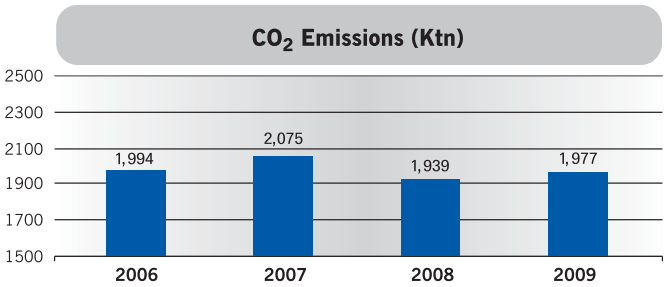
In 2007 the emissions were remarkably reduced compared to previous years, despite the expansion of the process units and increased production. This is mainly due to decrease of the sulphur content in self-consumption fuel. This environmental performance continued in 2008 and 2009, with the new value for sulfur emissions remaining very low.



In addition further reduction of sulfur emissions is achieved, due to the continuously improved emission control technology used, and mostly because of the new sulfur recovery units where the hydrogen sulfide produced is converted to elemental sulfur, and then used by fertilizer manufacturers as raw material.

Carbon dioxide emissions

Total carbon dioxide emissions for 2009 were 1,976,541 metric tones. The reduction in the amount of the emitted CO_2 over the last two years is attributed to the Environmental protection investments that took place in the past years, and to the improvement of the control and monitoring of emissions by various sources.

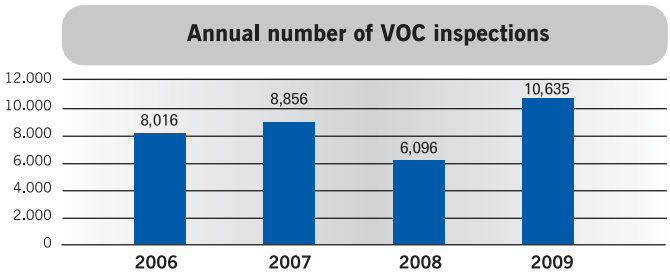


Emissions of Volatile Organic Compounds (VOCs)

Having set the reduction and control of Volatile Organic Compounds as a goal, the Company has implemented amongst other a series of programs that include the reduction of diffused emissions coming from different sources (oil separators, unit equipment) and the installation of secondary seals in the floating roof tanks.

Diffused emissions of Volatile Organic Compounds, is a chemical and oil industry characteristic that not only is a source of pollution but also a cause of forgone profits and loss of products for the industry. Thus, the goal of reducing such emissions is dual. The anti-pollutant measures taken in order to reduce the emissions coming from oil products storage and distribution units, include equipment upgrades (tanks, pumps, etc), as well as regular inspections and maintenance of all units, which is very crucial in emissions control. In order to reduce the emissions arising from the loading of Road Tankers, a vapour recovery unit has been installed, in accordance to current legislation which is internationally accepted as the most effective measure to minimize such emissions.

Specifically, in order to check the equipment, the Leak Detection And Repair (LDAR) program has been applied, by which the leakages are observed and recorded during regular inspections done by the departmental operators. The inspections are carried out with portable devices and the leakages are fixed the soonest possible. As shown in the following diagram, the number of inspections in 2009 is significantly higher compared to any previous year.



3.1.2 Wastewater

Physical, chemical and biological methods are used to remove contaminants from industrial waste water in order to achieve different levels of contaminant removal individual waste-water treatment procedures are combined into a variety of systems and stages. (API Oil Separators, Dissolved Air Floatation (DAF) units, sand filters, biofilters, sludge treatment). At the same time, the sanitary waste-water treatment is an individual process.

The industrial and urban wastewater treatment plants are completely equipped with automated and advanced technology systems so that the treated effluent meets the discharge legislative limits . Instrumentation and automatic control allow continous monitoring of process variables, rapid transfer to the operator or manager, and immediate automatic execution of corrective measures when needed.Composite sampling consists of a collection of individual discrete samples taken at regular intervals over 24 hours,every day,providing the only verifiable indication of treatment plant performance, is on a daily basis.

The quality characteristics of the effluents are shown on the next tables where one can conclude that in most cases the measured values are much lower than those defined by the legislation.

Terminology

BOD : Biochemical Oxygen Demand
COD : Chemical Oxygen Demand

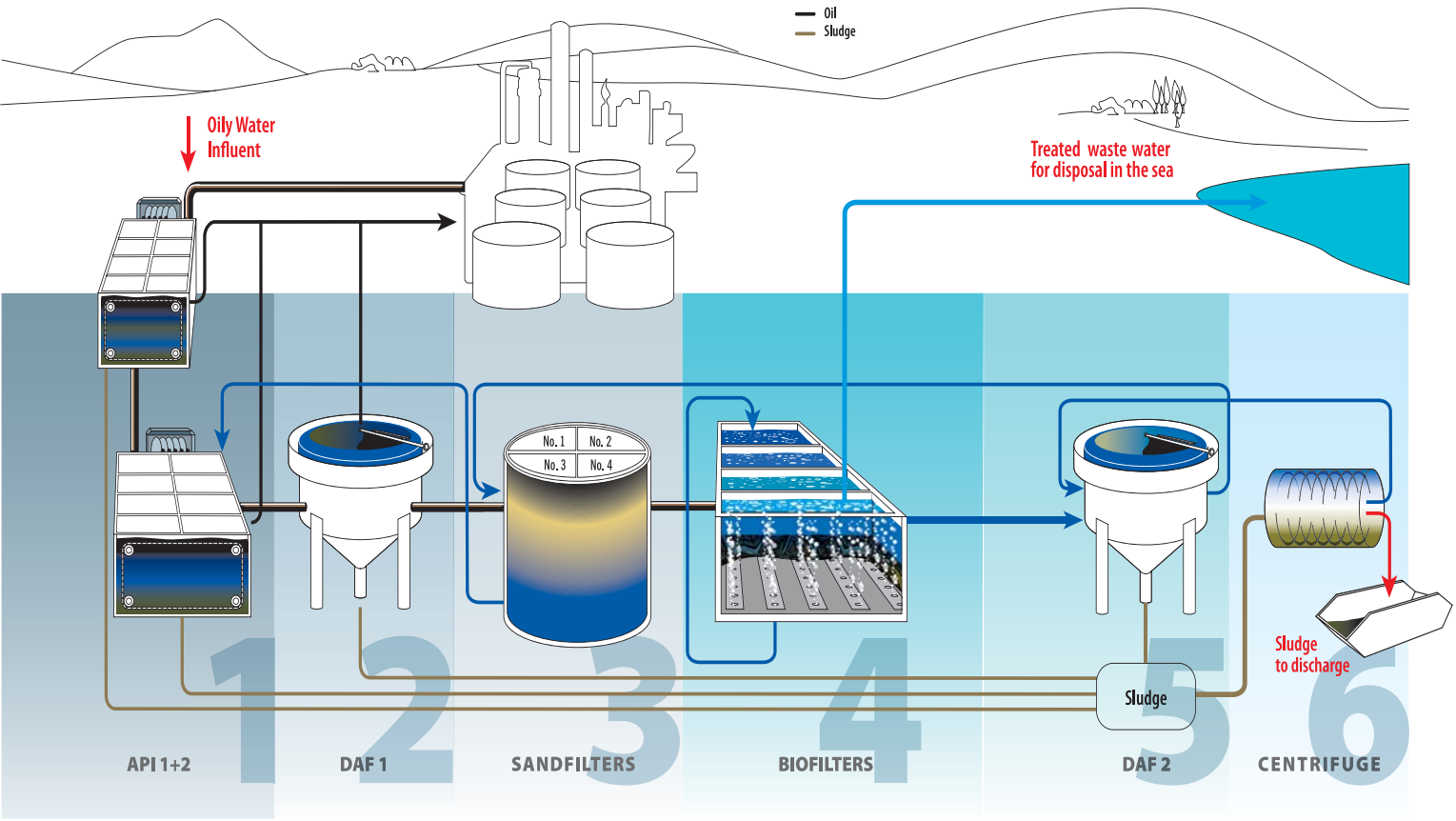
Concentration of polluting parameters of the WWTP effluent:

Industrial Wastewater Treatment Plant effluent

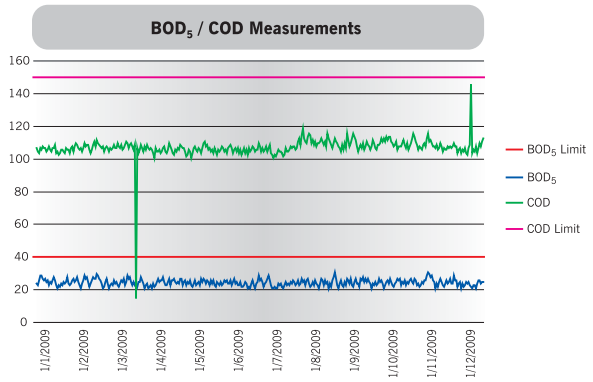
Parameter	Average values 2009	Threshold limits
pH	7.7	6- 9
Threshold Limits (°C)	33	<35
Oil content (mg/l)	3	<10
BOD_5 (mg/l)	23	<40
COD (mg/l)	106	<150
NH_3 (mg/l)	14	<15
Phenols (mg/l)	0.36	<0.5
Sulfides (mg/l)	0.7	<2
Suspended solids (mg/l)	17	<40

The hydraulic and polluting load from the output of the WWTP is presented as follows:

Parameter	Average 2006 value	Average 2007 value	Average 2008 value	Average 2009 value
Discharge (m^3/day)	8,976	10,385	10,297	10,224
BOD_5 (kg/day)	305	286	265	241
Suspended solids (kg/day)	143	208	174	177
Phenols (kg/day)	2.51	2.58	3.79	3.71



In the following diagram the year 2009 variation of the BOD and COD values of the industrial wastewater treatment plant is presented.



Sanitary Wastewater Treatment Plant Outlet

Parameter	Average 2008 values	Average 2009 values	Threshold limits
pH	7.8	8.1	6-9
BOD_5 (mg/l)	15	18	<40
COD (mg/l)	37	43	<150
Suspended solids (mg/l)	10	11	<40
Phenols (mg/l)		0.19	<0.5

3.1.3 Solid Waste

Solid waste produced during the refinery operation is gathered and processed according to the following methods:

Recycling (ex-situ)

Recovery (ex-situ)

Treatment in situ

Re-use

Final disposal (ex-situ)

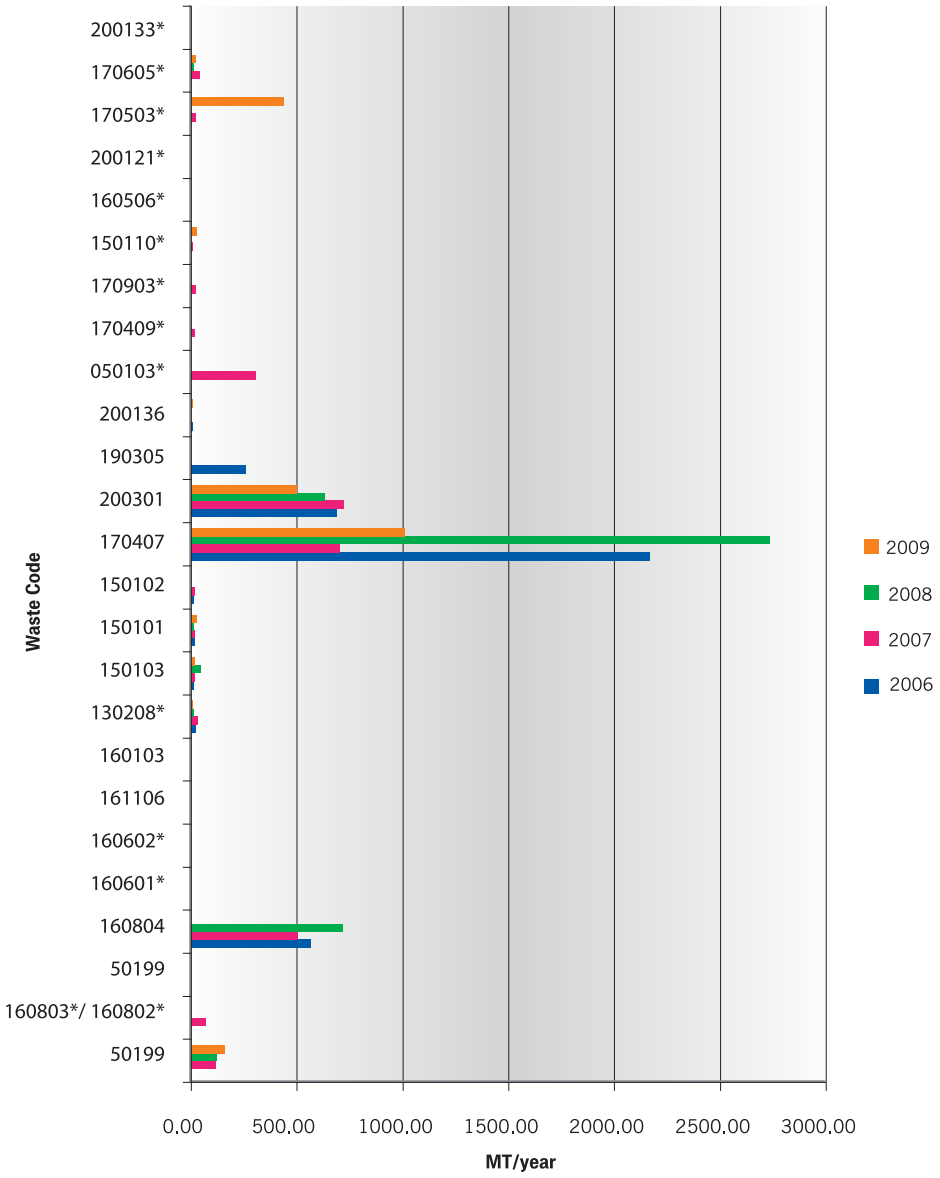
The Refinery is aiming at the increase of recycling and re-use of the produced waste. The annual 2009 quantity of solid waste that were treated ex-situ are shown in the following diagram.

SOLID WASTE MANAGEMENT (MT/year)

		2005	2006	2007	2008	2009
50199	Waste not otherwise specified	468.90		115.00	120.60	158.26
160803*/ 160802*	Spent Ni-Mo catalyst	443.192		68.42		
50199	Inactive pellets	55.97				
160804	FCC spent catalyst	63.54	565.66	502.28	716.24	
160601*	Lead batteries	8.05	1.98	0.14	2.52	1.91
160602*	Ni, Cd batteries	3.87	1.56			
161106	YRecovery linings and refractories from non-metallurgical processes	104.44				
160103	Tyres at the end of their life cycle	5.94				
130208*	Other engine, transmission and lubricant oils	4.79	22.07	29.60	13.10	4.50
150103	Wood packaging	79.33	11.94	17.79	44.73	15.21
150101	Paper or cardboard packs	7.28	17.05	14.31	11.44	24.70
150102	Plastic packaging	2.34	9.24	17.60		0.39
170407	Scrap materials	1,453.60	2,165.08	704.08	2,731.81	1,012.13
200301	Mixed municipal waste	604.30	686.20	721.96	633.03	500.06
190305	Stabilised waste other than those reported in the code 190304		260.34			
200136	Electrical and electronic equipment waste		7.16			3.90
050103*	Sludge from tank bottoms			301.93		
170409*	Metal Waste. contaminated by hazardous substances			15.41		

SOLID WASTE MANAGEMENT (MT/year)

		2005	2006	2007	2008	2009
170903*	Other construction and demolition waste (including mixed waste) containing hazardous substances			21.67		
150110*	Packaging containing residues of hazardous substances or contaminated by them			8.22	3.05	26.00
160506*	Laboratory chemicals, consisting of or containing hazardous substances, including mixtures of laboratory chemicals			0.04	0.10	
200121*	Fluorescent tubes and other mercury-containing waste			0.06	0.34	
170503*	Soil and stones containing hazardous substances			21.24		439.88
170605*	Construction materials containing asbestos			40.58	11.56	20.48
200133*	Mixed Batteries				0.187	0.48

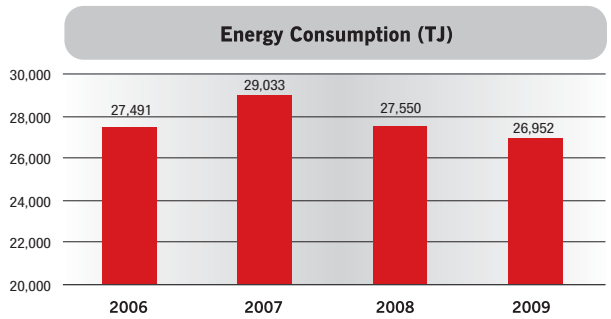


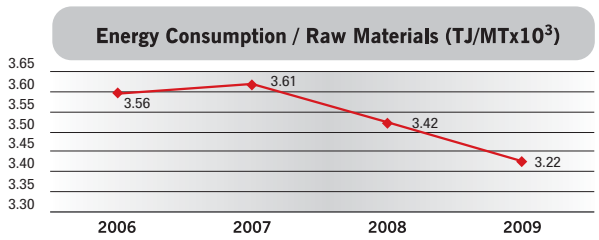
3.1.4 Energy Consumption

The energy consumed by the refinery includes fuel used in combustion processes and electric power used for the operation of mechanical equipment, which is almost exclusively produced by the Power and Steam co-Generation Plant. The refinery fuel mixture includes fuel oil, fuel gas, liquefied gas and natural gas.

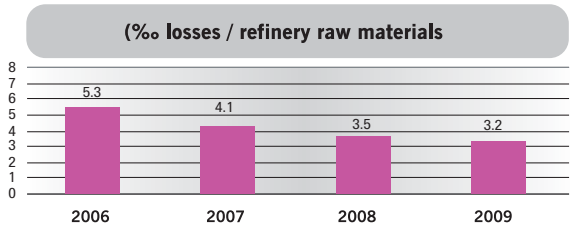
The projects that were completed in 2009 and the years before (mainly the introduction of natural gas in the refinery fuel mixture in 2008, the replacement or extensive maintenance of gas turbines, the upgrade of the preheating furnaces, the increase of the recovery level of condensates, the installation of an Advanced Control System, the usage of hot streams to preheat cold streams, the maximization of refinery gas usage etc), combined with the systematic monitoring of energy efficiency and the preventive maintenance schedules, contributed to the stable reduction of the refinery energy consumption over the last years, even though the production volume increased. This way, the energy consumption by the refinery processes for 2009 is 26,952 TJ, which as an absolute figure is the lowest of the last four years, as shown in the diagram. Even better, the increase of energy efficiency is shown by the ratio of Energy/ thousand of Metric Tons of raw materials used, which was reduced from 3.56 in 2006 to 3.22 in 2009.

The reduction in energy consumption has an immediate positive impact both on emitted CO_2 and on other pollutants, since its optimization results in minimization of emissions.





It is important to mention that total losses have decreased during the last four years, and they reach approximately 0.32% (or 3.2 ‰) of the aggregate quantity of refinery raw materials for 2009. This improvement is a result of the effort made to reduce flare losses as well as local energy losses.

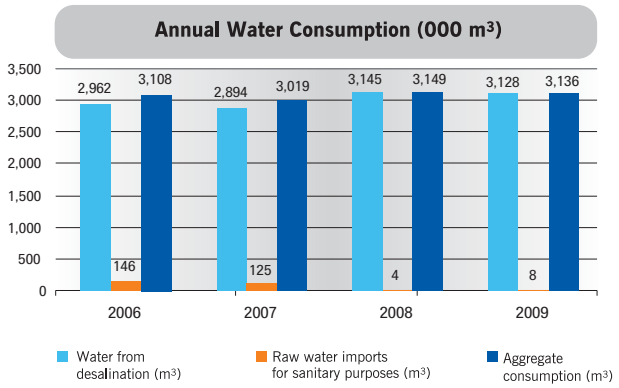


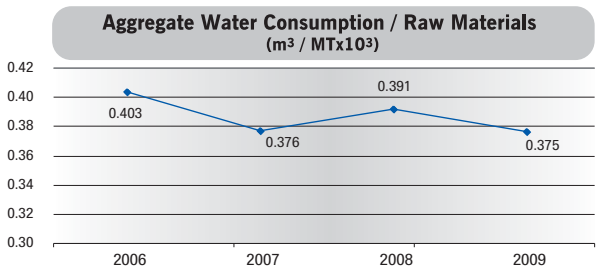
3.1.5 Water Consumption

Water used for the Refinery's various operations is mostly obtained by sea water desalination, and much less by raw water carried by tank vehicles and vessels.

The water quantity that is annually consumed has increased and that is due to the installation of new units, and the increase of production. It should be underlined that the water which is being used in the manufacturing process comes exclusively from the processing of sea water, consequently, there is not any negative impact on natural resources of the area. As shown on the diagram the percentage of water obtained from desalination is continuously increasing while simultaneously the raw water that is imported for sanitary purposes is decreasing (effectively down to zero).

As shown on the following diagram the water consumption per thousand tons of raw materials processed at the refinery is reduced, as a result of better water management.





It is pointed out that in the context of the company's social contribution, amounts of water are granted free of charge covering the water supply needs of nearly two hundred neighboring residences.

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Certification
Awarded to

MOTOR OIL HELLAS (CORINTH REFINERIES) S.A.
Agioi Theodoroi, P.O. Box 23, 201 00 Corinth
HQ Irodou Attikou 12A, 151 24 Maroussi
GREECE

Bureau Veritas Certification certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

ISO 9001:2008

Scope of supply

PRODUCTION, TRADING AND DELIVERY OF FUELS, BIOFUELS, LUBRICANTS, WAXES, BITUMENS AND SPECIAL OIL PRODUCTS.

Original Approval Date: 10 December, 1993

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: 16 February, 2012

To check this certificate validity please call (+ 30 210 4063 000).
Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.

N. TRILIZAS

Date: 11 November, 2009

Certificate Number: GR123 10Q

Hellenic Accreditation System S.A.

ESYD

ACCREDITATION CERTIFICATE

No. 297

The Hellenic Accreditation System S.A. (ESYD), as the national accreditation body of Greece, in accordance with the Law 3066/2002,

ACCREDITS

the
Chemical Laboratory
of
MOTOR OIL (HELLAS)
Corinth Refineries S. A.
at Agioi Theodori, Corinth

under the terms of the ELOT EN ISO/IEC 17025:2005 Standard, to carry out testing, as specified in the attached Scope of the Accreditation, which may be revised by ESYD.
This Certificate is valid until September 18th, 2010 and it is subject to continuing compliance of the accredited body with the Regulations and the Criteria of ESYD.

Athens, 19 September 2006

C. Kagarakis
Chairman of ESYD

Quality Management and Control Certificates

3.1.6 Noise

Having set as a goal the reduction of environmental noise levels within the Refinery premises, the Company has taken all the necessary measures which include the installation of silencers, as well as the purchasing of low noise level equipment.

In order to achieve reduction noise levels sound curtains have been installed at the aeration units of the wastewater treatment plant.

The noise levels are monitored on a regular basis by conducting measurements at a large number of locations around the Refinery. The positions of measurement are presented on the following Map.

Indicative measurements for 2009 are presented on the following table:

Locations	Measurements		
	February 2009 (dBA)	June 2009 (dBA)	Threshold Limits (dBA)
Perimeter of the Refinery (excluding the south side)	50.0 – 63.0	50.0 – 65.0	65.0
South side	51.0 – 55.0	50.0 – 55.0	55.0

4. Objectives

4.1 New objectives and programs

MOTOR OIL constantly implements new programs and actions aiming to improve its environmental performance, while it plans new objectives for the future. The objectives and programs that are planned for the following years are presented in the following table.

	2010	2011	2012
AIR			
Certification of the continuous measurement online analyzers on the stacks according to international standards, aiming at monitoring and reducing emissions and improving air quality.	●		
Installation of deodorant plates at the fuel oil tanks (T-754,755, 756, 757, 768, 777, 778)			●
Upgrading of the air quality station in the port, by monitoring additional pollutants (benzene).	●		
Odor monitoring in the refinery wider area with use of a suitable device	●		
WATER			
Use of available inactive equipment in the industrial wastewater treatment system		●	
SOIL / EARTH			
Reduction of the volume of solid waste stored in the Refinery and implementation of new alternative management methods:			
- treatment of the WWTP sludge		●	
- Alternative management and use of solid waste (catalysts, resins, bleaching earth) by the cement industry (through a licensed third party).		●	
- Find an alternative way to manage the sludge from the bottom of the storage tanks, after the Decanter processing.	●		
- Complete the research for managing and neutralizing the sludge from the M-4000 wastewater treatment plant, so that it is suitable to use as an alternative fuel or for disposal at Sanitary Landfills		●	
OTHERS			
Installation of a cover at the API IV and V separators.			●
Conduct a hydrogeological study to define the water direction of the aquifer, in order to finalize the location of monitoring and control bores.	●		

Registration Information / Next Environmental Statement

The company is registered in the European System of Ecological Management and Audit Scheme EMAS. Moreover the company is registered in the Greek Ledger of EMAS Organizations with registration number EL000067.

The present Environmental Statement constitutes the whole body of the Environmental Declaration of the company and concerns the years 2007-2009. The next Environmental Statement will be edited, verified and issued on January 2011.

Mr.Spyros I. Sofos, Responsible of the Integrated Management System, is responsible for issuing the Environmental Statements.

Company Name	MOTOR OIL (HELLAS), CORINTH REFINERIES S.A.
Postal Address	Agioi Theodoroi, PO BOX23, 20100 CORINTH
Internet Site	www.moh.gr
Contact Person	S. I. Sofos
e-mail Address	sofossp@moh.gr
Activities Code NACE	DF.23.20
Number of personnel	1023
Verifier	P. Amoratis
Accreditation No	246
Range of Accreditation	NACE 23
Date of the next verification of the Environmental Statement	January 2011

Corinth, July 2010

Spyros I. Sofos
Responsible of the Integrated Management System

EMAS

MOTOR OIL (HELLAS)
CORINTH REFINERIES S.A.

MOTOR OIL HELLAS CORINTH REFINERIES S.A.
AGIOI THEODOROI, P.O. 23, 20100 CORINTH
Tel.: (+30) 27410 48602, Fax: (+30) 27410 48255
e-mail: motoroil.refinery@moh.gr

www.moh.gr

ISO 9001 BUREAU VERITAS Certification

ISO 14001 BUREAU VERITAS Certification