CHAPTER - I

INTRODUCTION
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What are lubricants:

Stated in simple terms, a lubricant is any liquid that performs the function of protection of moving parts by reducing friction, and additionally, removing particles from the moving parts of the engine, sealing piston rings, preventing from fomation and also acting as a heat sink. In present day terms, lubricants used in the automotive sector are invariably synthetic.

Why lubricants are used:

Lubrication in a vehicle’s engine is what makes it capable of handling the rigorous if its existence. The quality of the oil used can make all the difference in the life of the engine as well as in the quality of its performance during its life span. The oil not only performs the function of lubrication i.e. as a heat exchanger that transfers the heat of friction away from the moving surfaces, it also forms a barrier between contact parts and washes the engine, in the process it helps improve fuel efficiency as well.

From the day when people used to pack the gap between car & two wheeler an axles with animal fat to increase the life of their cars, lubrication has been a fixture of transportation. It gained vogue during the industrial revolution when steam engines and machinery put far more demand on engineers and designers in terms of higher operation temperatures, hostile environments and higher stresses on machinery. Users found out, after with tragic consequences, that animal fats, vegetable oils and the like weren’t enough to prevent part seizures. It was at this time that inventors turned their attention to designing lubrication systems and products for these machines. These pioneers founded companies like Castrol and Valvoline. These companies are now among the larger ones in the field.

History of lubricants:

Man has known about lubrication ever since he invented the wheel, of course all he used then was animal fat or vegetables oil on a wooden axle but today, automotive lubricants have gone way beyond such thins. The utility of natural oils in the meeting the demanding conditions of modern machines was found to be limited it was then that the concept of Synthetic Oils materialized.

Synthetic oils were developed in the 1930s and used in World war II in battle tanks as well as jet engines. They have extra ordinary performance characteristics and are
able to reduce friction and wear on engine components, can function dependably at severe and extreme temperatures, and withstand rigorous and lengthy engine operation without chemical breakdown. Recognising there qualities, Lt. Col. Albert J Amatuzio, an experienced jet fighter pilot, formulated the first synthetic motor oil to be used in automobile engines. This new lubricant appeared in the market in 1972 under the brand name AMSOIL and performed like no other lubricant available at that time, giving birth to a entire new industry, in a few years these lubricants expanded the boundaries of lubrication and redefined the performance capabilities of engines.

However, due to the fact that it costs many times more than mineral oils, synthetic oil is not a very popular choice, but in many ways, synthetic oil is much better. The PAO (Polyalphaolefin) and ester base stocks are produced with properties that are predictable and stable. Synthetic base oils are made from either crude oil or natural gas, where ethylene is produced. The ethylene is then passed through catalysts and hydrogen to form the chemical structures, that make synthetic base oil. Natural petroleum base oils, on the other hand, are manufactured by refinery distillations, solvent extraction and dewaxing. The additives used to formulate natural engine oils are the same as those used in synthetics.

One of the quality of synthetic oil is its amazing resistance to viscosity change. Oil thickens with use because its lighter and volatile tiny particles boil off leaving the heavy particles behind but some synthetic formulations exhibit only one-tenth the thickening of conventional oil. This low volatility also cuts oil consumption because most of the lube is lost as it flashes into vapor at the rings (even if the engine is in goods condition). Another factor is cold weather performance. Again, the difference is impressive. At low temperatures, a good synthetic is still fluid, whereas regular oil, even with a first class pour point depressants, has the consistency of peanut butter.

A modern vehicle has thousands of parts synchronised to move together with close tolerances. Lack of a proper lubricant in such areas will build excessive friction causing rapid destruction of parts. The main purpose of oil is to provide an unbroken film of slick molecules that prevent metal-to-metal contact inside an engine, transmission or a differential. This film is what provide the lubrication characteristics of any oil. The most important of all lubricants is engine oil. Apart from preventing metal contact it also sals the rings against the cylinder walls, collects dirt, fights crankcase chemicals that form sludge and varnish, prevents corrosion, absorbs shocks, and acts as a heat exchanger.

Mineral (or petroleum) lubricants are made from the same crude oil as diesel. The base stocks from mineral oils are compounded with animal fats, vegetable oils and other ingredients to produce lubricants for automotive use. Lubricants are also other materials with or without petroleum products - these are known as synthetic oils. But no matter how carefully the base stock is refined, straight mineral lube is inadequate for proper lubrication. A number of additives are therefore mix in the oil to improve their protective
Present state of the oil industry in India

India is the ninth largest consumer of oil in the world and the fourth largest in the Asia Pacific region after China, Japan and South Korea. The average consumption of oil in India per day is about 72 million barrels, and the trend is increasing. Oil consumption in India largely depends upon the import of oil. Considering the present day situation in the international market where the prices of oil is increasing, India's balance of payments is being severely strained. Along with the hardening trend of the worked oil prices, Debits to the oil pool account have been increasing because of the burden involved of marketing of the oil products of subsidy.

The Oil and Natural Gas industry in India is dominated by the state owned companies producing almost the entire production of the Natural gas, Crude oil and the Petroleum products. It was a highly regulated industry with most of the decisions being required to be approved by the Ministry of Petroleum and Natural Gas.

The oil refining and distribution sector in India comprises of seven companies (IBP bought by IOCL) out of which three of the refining companies namely IOCL, HPCL and BPCL have the marketing rights, IBP, now a part of IOCL had only the marketing rights.

The refining companies include, Indian oil corporation limited, Bharat Petroleum corporation limited, Hindustan Petroleum corporation limited, Cochin refineries limited, Madras refineries limited, Mangalore refineries limited, Numaligarh refineries limited.

The refining process and technologies

Crude oil is a mix of hydrocarbons, and it needs to be processed for breaking into a number of products with varying arrangements of atoms of hydrogen and Carbon. This process of breakings or separating various hydrocarbons from Crude oil is called as refining and the plant is called the refinery.

The refinery process can be bifurcated as

Primary processing
Secondary Processing

Primary Processing

The components of cured oil, which have to be broken up, have different boiling temperatures. Primary processing involves heating of crude Oil up to a maximum of 430 degrees centigrade and the subsequent vaporizing of each of the components. The main part of the primary processing unit is the fractionating tower crude distillations unit, is a tall and cylindrical column through which a mixture of hot vapor and liquid crude is allowed to pass. The
lighter compounds/fractions are collected at the top of the tower and the heavier compounds are pushed down. The fractionating tower consists of a number of trays filled with special contracting devices and each of the fractions with varying boiling temperatures flow down the respective trays through a cooling process. The compounds, which are normally fractionated from distillation, are gas and LPG Naphtha, SKO and HSD. All products except SKO and HSD would require further treatment. The liquid that is still Unvaporized flows down as atmospheric residue.

The atmospheric residue, which flows out of the fractioning column, in then heated in the range of 400 degree to 600 degree to 600 degree centigrade and passed into a High Vacuum Column (HVC) The atmospheric residue is broken up to VGO (Vacuum Gas Oil) and VAC residue (also known as Short residue. VGO is the feed for secondary processing and VAC residue is used for manufacturing of FO, LSHS and Bitumen. The typical boiling ranges of each of the fractions of crude oil are given below.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>Boiling range degree centigrade</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPG</td>
<td>up to 30</td>
</tr>
<tr>
<td>LAN</td>
<td>30 – 100</td>
</tr>
<tr>
<td>HAN</td>
<td>70 – 170</td>
</tr>
<tr>
<td>SKO</td>
<td>140 – 260</td>
</tr>
<tr>
<td>HSD</td>
<td>180-380</td>
</tr>
<tr>
<td>VGO</td>
<td>350-600</td>
</tr>
<tr>
<td>VAC</td>
<td>550+</td>
</tr>
</tbody>
</table>

Residue:

Secondary process

As stated earlier, some of the products separated through distillation do not match product standards and further processing is required to render the products marketable. This is done through product specific processes like Catalytic Reforming, Amine Treating, Hydro Treating, Alkalization etc.

In addition VGO produced by HVU needs further processing to manufacture more value added products. This is done through either addition of Hydrogen or carbon rejection.

Cracking is a process by which the larger molecules of heavier products are broken smaller molecules, thereby proportionately increasing the lighter fractions.
Hydro cracking Catalytic cracking and Thermal cracking are more popular and widely used than other processing methods though the actual method would depend on the quality of crude and the required yield pattern.

Vis breaking (Viscosity Breaking or VB) is an important application of Thermal Cracking used to produce FO of lower viscosity while increasing the proportion of light products. The VAC residue needs further processing either through vis breaking to produce FO of acceptable quality or can be hardened to be sold as Bitumen.

Types of refineries

Depending upon the capability of performing complex secondary operations/processes performed by the refinery it can be classified as follows.

Topping
Hydro skimming
Cracking
Coking

Topping
Crude is a mixture of petroleum product (hydrocarbons) the topping refinery just separates the crude into its constituent petroleum product by the process of atmospheric distillation. This type of refinery can produce high amounts of naphtha but less amounts of MS.

Hydro skimming
Hydro skimming refinery is more complex than the topping refinery and it produces gasoline. Hydro skimming refinery is equipped with Atmospheric Distillation column. Naptha reforming unit and necessary treating processes. Hydro skimming refinery produce a surplus of fuel with unattractive price and demand.

Cracking

The cracking refinery is in addition to the above two(i.e atmospheric Distillation column, naptha reforming unit) is equipped with vacuum distillation column and catalytic cracking unit. The cracking refinery adds one more level of complexity to the Hydro skimming refinery by reducing the fuel oil by converting it to light and middle distillates.

Coking

The coking refinery is the refinery, which is equipped to process the vacuum residue into high value products using Delayed Coking process. The coking refining adds further
complexity to the cracking refinery by high conversion of fuel into distillates and petroleum coke.

Complexity of Refinery

Nelson Complexity Index is a measure of secondary conversion capacity in comparison to the primary distillation capacity of any is known as complexity. It is the measure of the value addition potential of the refinery. It also reflects the investments intensity of the refinery (since the larger the value addition required the larger would be the cost associated with it)

The Nelson Complexity index typically varies from about 2 for hydro skimming refineries, to about 5 for cracking refineries and over 9 for coking refineries. Refineries with high Nelson Complexity index have the flexibility of processing a wide variety of crude oils and are capable of achieving high value addition.

Complexity Indices for major oil refiners in India.

<table>
<thead>
<tr>
<th>Refinery</th>
<th>IOCL</th>
<th>HPCL</th>
<th>BPCL</th>
<th>RPL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>6.21</td>
<td>4.07</td>
<td>3.98</td>
<td>9.93</td>
</tr>
</tbody>
</table>

Major crude oil fields and crude oil production

There are 26 sedimentary basins, only six have been explored so far and six more have been taken up for further exploration. While ONGC operates on all the basins under commercial exploitation, OIL is engaged in the Upper Assam basin.

The major oil fields are located in Bombay High, Ankleshwar in Gujrat and Upper Assam. The current exploration intensity is about 12 wells per 10000 sq km as against the world's average of about 100 wells, thus there is a vast potential to explore untapped reserves.

Thus India's crude oil production that was about 0.25 mmt in 1950 quadrupled to 1mmt in 1960 with the discovery of Ankleshwar and Assam oil fields, discovery of Bombay High (North) in the mid 1970s and Heera, and Gandhar in Bombay High (South) in the mid 80s led to a quantum jump in the oil production with the total oil production peaking in 1991. A sharp rise in the production in 1991 was due to the post Gulf war instruction to NOC, to tide over the balance or payments problems due the rise in the oil prices. The NOCs were however criticized for sub optimally flogging the wells this led to a series of corrective measures due to which production fell by 20% in 1994. Although a sharp increase from 27 mmt to 34.2 mmt was reported in 1996 there has been a decline of about 7% in 1997.

The crude oil production of OIL has reduced over the last two decades from
about 3.08 mmt in 1970-71 to about 2.88 mmt in 1995-96 partly due to the social unrest in the Upper Assam basin, where all the fields of OIL are located.

Thought Bombay offshore basin has been the single most important source for increase in the oil production. There has been no major discovery in the region after Neelam oil fields in 1987 this is one of the main reason for flat production levels.

Oil exploration in India

The history of oil exploration in India can be traced back to the explorers who reported oil in the thick jungles of upper Assam in the early 1825 systematic exploration and the production began in 1889 at Digboi with the formation of the Assam Oil Co. The production from the oil fields reached a maximum of 1000 barrels per day in 1920 and then declined thereafter. The field was abandoned in 1933.

It was only after the attainment of independence that the government directed its attention towards the systematic development and exploration or and the development of the oil reassures of the country and subsequently enunciated in the industrial policy resolution in 1956. In the meanwhile however, all through the 50’s and 60’s the industrial development and economic growth was becoming increasingly dependently upon imported oil as a source of commercial energy though large reserves of coal were known, the cheapness of oil its easy availability and the convenience of transportation and efficient use attracted more and more users of oil in preference to coal.

As the first step towards the implementation of the government’s post independence policy for a wider oil based, a detailed mapping work was undertaken by the Geological Survey of India on a large scale between 1947 and 1953 in parts of Punjab, Himachal Pradesh, Cambay, Kutch and Andaman and Nicobar Islands to locate the oil bearing structures. A petroleum division was created with in the Geological survey of India in 1955 exclusively for the oil exploration work. Soon the petroleum division of GSI grew into the oil and Natural Gas Directorate which was raised to the status of Commission on 14th August 1956. It was later converted into a statutory body under the act of the parliament in 1959 with its headquarters in Dehradun and the project units all over the country. ONGC is engaged in exploration and exploitation of hydrocarbons and transportation of the products by it both onshore and offshore. Simultaneously, Oil India was incorporated in 1959 as Oil India Pvt. Limited with 2/3% Burmah Oil Company and 1/3% of Government of India participation. In 1961 the second supplemental agreement was signed by which it became a joint venture in equal partnership between the government of India and Burmah Oil Company.
Meanwhile, and exploratory work including Seismic, Geological and Magnetic surveys in different parts of the country was carried out on a massive footing. In the early 60's oil, in commercial quantities was struck by ONGC at Ankaleshwar, Kalol, Sannd and Nawagaon fields in Gujrat and Rudrasagar and Lekwa fields in Assam. Gas was found in Cambay. From 1964 ONGC ventured on to offshore areas in the Gulf of cambay and off the shores of Madras coast. In the 70's offshore drilling came to the forefront. The first of shore well drilling by ONGC at albeit in 1971. in the shallow waters indicated the presence of oil. Success in off shore drilling in deep waters unfolded in 1975 when the hidden potential of the structure, now known as Bombay high was tapped. Presently this field makes a significant contribution to the total production. Many oil-bearing structures have since been identified both onshore and offshore by ONGC. It is one of the few oil companies in the worked engaged in almost all aspects of oil exploration, drilling and production and is becoming increasingly self reliant in well advanced and sophisticated oil exploration and production technology.

From the early 1970's to 1980-91, there was a steady rise in the production of crude oil and natural gas and alongside there has also been a corresponding increase in their consumption.

**Indian Crude oil production**

<table>
<thead>
<tr>
<th></th>
<th>2002-03</th>
<th>2003-04</th>
<th>2004-05</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>2662</td>
<td>2572</td>
<td>2848</td>
<td>10.7</td>
</tr>
<tr>
<td>May</td>
<td>2816</td>
<td>2667</td>
<td>2884</td>
<td>8.1</td>
</tr>
<tr>
<td>June</td>
<td>2728</td>
<td>2754</td>
<td>2783</td>
<td>1.1</td>
</tr>
<tr>
<td>July</td>
<td>2849</td>
<td>2858</td>
<td>2864</td>
<td>0.2</td>
</tr>
<tr>
<td>August</td>
<td>2815</td>
<td>2735</td>
<td>2875</td>
<td>5.1</td>
</tr>
<tr>
<td>September</td>
<td>2710</td>
<td>2710</td>
<td>2764</td>
<td>2.0</td>
</tr>
<tr>
<td>October</td>
<td>2811</td>
<td>2886</td>
<td>2883</td>
<td>0.1</td>
</tr>
<tr>
<td>Total</td>
<td>19351</td>
<td>19183</td>
<td>19881</td>
<td>3.6</td>
</tr>
</tbody>
</table>

April From 1991 a downtrend has been noticed. The oil production by ONGC and Oil India from the existing wells has either stagnated or has been declining. The irony here is that the efforts at accelerating the rate of production and the consequent flogging of the reservoirs
Characteristics of Oils:

The main additives are:

**Detergents**: to keep engine parts, such as pistons and rings, clean and free from deposits.

**Dispersants**: to suspend and disperse materials that could form varnishes, sludge, etc. that clog the engine.

**Anti-Wear**: to give added strength and percent wear of heavily loaded surfaces such as crankshafts rods and main bearings.

**Friction modifiers**: to reduce friction loses throughout the engine for more power and better fuel mileage.

**Corrosion inhibitors**: Oxygen combines with even the best of oils at high engine temperatures to form materials that damage the engine. Oxidation inhibitors reduce thickening of the oil and prevent sludge formation.

**Form Inhibitors**: the crankshaft, when spun, introduces great air turbulence in the crankcase, causing oil limit bubble growth. From inhibitors break them up quickly to prevent forthing and allow the oil pump to circulate oil evenly.

**Viscosity index improver**: A viscosity index improver adds to the natural tendency of oil to fight viscosity change with temperature variations.

**Pour point depressant**: This additive improves an oil’s ability to flow at very low temperatures.

**Properties of oil**:

**Viscosity**: In simple terms, viscosity is considered to be the internal friction of a fluid. Oil of low viscosity flows more easily than the oil of high viscosity. On an oil container, the viscosity is clearly marked with numbers like SAE OW-30, 5 W-30, 10 W-40, 20 W-50, 40W50 etc. These are the number assigned by the Society of Automotive Engineers (SAE) for oils of different viscosities for different applications. For example, SAE 10 engine oil is recommanded for cold weather operation and SAE 30 for warm weather. The added designation of “W” such as 1-W indicates that the W oil has the added ability to remain fluid or flow at a wonder temperature range. 10 W oil, therefore is used under more severe conditions than an SAE 10 oil.
Engine oils operate in very difficult environments and perform a number of important tasks. For example, they flow easily at temperature below zero as well as supply lubrication at very high temperatures. Lower viscosity oil flow well at very low temperatures. So they became the choice of severe winter conditions. Obviously, the ability to flow readily is important to start a cold engine and therefore calls or lower viscosity oil. For protection against high engine temperatures, oil must be able to function and provide the needed lubrication. When vehicle is operating under very hot conditions. The need arise for high viscosity (or which ) oil.

However, this does not mean we need to change grade oil every time the ambient temperature changes. There are engine oils with viscosities in the market, known as "multi viscosity oils. These oils have what is known as a high viscosity index. Which mean that their fluidity and body change relatively little from one extreme or temperature to the other. For instance, 10W40 meets the SAE 10W standard a-18 degree celsius and the CAE 40 standard at 99 degrees Celsius -so it flows well enough to provide a supply of lube to bearings and temperatures, yet doesn’t thin out very much when the engine get very hot. As an example, under high heat 10W-40 will have the same flow characteristics as a 20W-40 because "high number of both oil are the same. The ‘W’ refers to winter, with the special additive package to give better cold weather starting performance.

It is interesting to note that the term “ weight” has been associated with lubricants for many years. However, it has nothing to do with how much the oil weighs. Generally speaking we refer to low viscosity oil when we say "light oil’ and high viscosity when we say ‘heavy oil’. Also the SAE number of oil has nothing to do with its quality.

**Volutility**: The volatility issue is important to every car owner, yet few know about it. Volatility is related to its viscosity. Volatility is defined as the characteristic of liquid to become vapor when heat is applied. A liquid is said to have ‘high volatility’ if it tends to evaporate when heat is applied, and low volatility if it tend to remain a liquid when the same amount of heat is applied. To meet the government’s fuel mileage standards, car manufacturer recommended lower viscosity oil tends to evaporate more easily than high viscosity oil. Thus using low viscosity oil generally leads to what appears to be an oil consumption problem, when actually the problem is evaporation. The most fuel efficient oils evaporate more readily. As a result we have many potential problems related to volatility.

**Oil consumption**: More volatile oils mean higher oil consumption: less volatile oils mean less oil consumption.
Starting friction: if the lighter parts of the oil evaporate, the remaining oil will not provide the proper low temperature starting characteristics.

Engine Deposits: An oil in a vapourised state is more likely to decompose, forming harmful deposits (varnish, sludge) than oil in a liquid state.

Heat Stress: Less oil in the pan results in higher engine temperatures. Higher engine temperature. Higher oil temperatures lead to greater evaporation, more oxidation, more deposits and shorter engine life.

Engine Wear: If the oil thickens, greater wear will occur on starting, The oil’s anitwear additives will be used to fight oxidation, rather than prevent wear.

OIL QUALITY

The American Petroleum Institute (API) uses basically the same oil classification system we have today, which it worked out with both SAE (Society of Automotive Engineers) and ASTM (American Society for Testing and Materials). It is graded on a scale (under ‘S’ for service heading) ranging from SA (almost pre mineral oil, obsolete today) to SG (the highest quality) for patrol engines, Under ‘C’ for commercial (which means diesel) there’s CA 9 now obsolete to CE-for severe conditions with turbo or supercharging.) The best oils available now meet both SG and CE classifications, eliminating the need for using different oils for diesel and petrol engines.

The A to Z of Lubrication:
AGlossary of Terms

ACEA: Acronym for association des Constructors Europeans de ‘l’ Automobile. The European professional association of petroleum industry engineers. ACEA was formed in response to European engine designer concerns that API standards were not responsive to their requirements and were overly focused on American engine designs. ACEA currently specifies engine oil requirement in three categories.

A- Gasoline (Petrol)

B- Passenger Car Diesel

C- Chimerical (Truck) Diesel

Acid Number: A measure of the amount of postassium Hydroxide (KOH) needed to neutralize all or part of the acidity of a petroleum product i.e. how much free acid is contained in the product.
Additive: A material added to the base stock to improve its properties, characteristics or performance.

Alkalinity (Basicity): A measure of the ability of a lubricant to neutralize acids which are formed during the combustion process, most commonly from sulphur present in diesel fuels. Left uncontrolled, acids would cause corrosion within the engine.

API: Acronym for the American petroleum Institute. A professional association of petroleum industry engineers. API establishes standard for a wide range of products and services including those for automotive lubricants.

Antifoam Agent: An additive used to suppress the foaming tendency of a lubricant in service. Foam can interfere with the efficient operation of lubricants systems e.g. allowing air to enter hydraulic lines. Additionally, the mixing of air into lubricant will accelerate oxidation and shorten oil life. Antifoaming agents are usually silicon-oil based and act by disrupting the surface film around bubbles to prevent their formation.

Anti-Wear Agent: Additives or their reaction products, which form thin, tenacious films on highly loaded parts, such as gear teeth, prevent metal-to-metal contact and the resulting corrosion.

Ash: Metallic deposits formed in the combustion chamber of an engine of areas. Many ashes are abrasive and may lead to wear if not controlled.

Ash (sulphated): The Ash content of a lubricant, determined by burning the oil and then treating the residue with sulphuric acid and drying. Expressed as percentage by mass.

ATF: Fluids used in automatic, hydraulic transmissions in motor vehicles. ATF fluids must have carefully controlled characteristics if they are to perform correctly. Most major motor manufactures specify suitable for their transmission systems e.g. the Dexron type fluids specified by General motors or the Mercon type specified by Ford.

Base Number: The amount of acid (usually hydrochloric) needed to fully neutralise a lubricant's alkalinity, expressed as potassium Hydroxide (KOH) equivalents i.e. KOH grams per litre.

Base Stock: The base fluid, usually a refined petroleum fraction or a synthetic fluid. Into which additives are dissolved to produce the final lubricant.

Blow by: The process whereby unburned fuel and combustion products are blown past
the piston rings into the crankcase rather than being fully expelled as exhaust. Blow - by products contaminate and dilute lubricants, reducing their effectiveness. The problem is worse in older or poorly maintained diesel engines.

**Boundary Lubrication**: Lubrication between two touching surfaces where the film of oil that normally is maintained to prevent metal to metal contact is broken. This usually occurs at very high load/ low speed operation and extreme pressure (EP) additives are required to prevent equipment damage. A heavy (high viscosity) base stock with a low pour point.

**Brookfield Viscosity**: Measurement of apparent viscosity as determined by a brookfield viscometer under controlled temperature and shear rates.

**BSA**: Acronym for British Standards Agency, the British standard organisation, which sets important standards for many industrial lubricants.

**Cams**: Eccentric shafts used in most engines to control the opening and closing of valves.

**Carbon Residue**: Coked (generally blackened) material left after an oil has been subject to very high temperatures under controlled conditions.

**Catalytic Converter**: An integral part of the exhaust system of an internal combustion engine. It is designed to ensure conversion of unburned carbon dioxide, nitrogen oxides and hydrocarbons and reduce atmospheric pollution. Its use is mandatory in many countries. The catalysts used are a mixture of platinum, palladium and rhodium alloys and are poisoned by the lead present in leaded petrol. Older technology lubricants may also contain lead and high levels of phosphorous, which can also reduce the catalysts, efficiency.

**Cloud Point**: The temperature at which a cloud of wax crystals starts to form with in a lubricant while it is being slowly cooled. In operation these crystals would block oil-ways and reduce lubrication efficiency.

**Cold cranking simulator (CCS)**: A measuring device designed to simulate the conditions within an engine at start-up in cold temperature and assess the suitability of the product for low temperature use.

**Copper strip Corrosion**: A qualitative measure of the tendency of a lubricant to corrode pure copper, usually performed by immersing standard test strips of copper in the oil for a period under controlled conditions.
Corrosion Linhibitor: Additive to protect metal surface from chemical attack by water and other corrosive materials, usually by forming a barrier layer.

Demulsibility: A measure of a lubricant’s ability to separate from water after being mixed.

Density: Mass per unit volume - a given size of a more dense material (such as lead) will be heavier than the same size of a less dense material (such as water).

Detergent: An additive to keep engine parts clean and reduce build up of deposits that could reduce efficiency and impair operation. Detergents are often metallic soaps that also exhibit alkalinity.

Detonation: Uncontrolled combustion of the end gases in the combustion chamber of a spark ignition engine resulting in ‘Knocking’ or ‘pinking’.

Dilution: Contamination of the lubricant by unburned fuel leading to thinning and lowering of the flash point. Usually caused by overly rich fuel:air ratios or by blow-by in poorly maintained engines.

DIN: Acronym for Deutsche Industries norm, the German standards organization.

Dispersant: An additive that prevent particles from conglomerations to form sludge and deposits. Dispersants keep contaminants in suspension so that they can be flushed out when the oil is changed rather than setting in the sump.

Emulsifier: Additive that stabilises water: oil emulsions and prevents or retards separation.

EP (Extreme Pressure): Additive system where the lubricant deposits a solid film. Usually of iron sulphide, onto the surface of components at high temperatures to provide boundary lubrication.

Flash Point: Minimum temperature at which a material will support instantaneous combustion (a flash) but before it will burn continuously (fire point). Materials stored or handled above their flash points should be treated with care as they may ignite explosively if exposed to even the slightest spark—even a static electricity discharge. Resistance to motion of one object over or through another usually evidenced as heat. Friction depends on the smoothness of the surfaces in contact and the force with which they are being pressed together. Lubricants act to reduce friction by coming between two surfaces and creating a very smooth interface. They also act to carry friction derived heat away from the surfaces.
**Hydrocrack (HC)**: Refining process that produces synthetic base stocks with improved characteristics. Such base stocks typically have exceptionally high stability and viscosity indexes.

**Hydrofinishing**: A refinery process that saturates base stocks by treating them with hydrogen to improve their stability.

**Inhibitor**: An additive that improves performance by reducing undesirable chemical reactions such as oxidation or rusting.

**ILSAC**: Acronym for International Lubricant Standardization and Approval Committee.

**Insolubles**: Contaminants found in used engine oils such as dust, wear particles or oxidised products. Often measured by reference to matter remaining insoluble after mixing with pentane of benzene, which dissolve organic materials on differing ways.

**JASO**: Acronym for Japanese Standards Organisation. Most often encountered in standards for motorcycle oils—both two and four-stroke. There are currently three two-stroke performance ratings FA, FB and FC with the last being the highest performance.

JASO has recently established a standard for four-stroke motorcycle engines, which are not compatible with modern passenger car lubricant due to the presence of friction modifiers in the oils, which interfere with the operation of immersed clutches in most motorcycle engines.

**Kinematic Viscosity**: The measure of a fluid’s resistance to flow (essentially) its thickness or thinness) under gravity at standard temperatures, usually 40 and 100 degrees celsius.

**Lands**: The areas on a piston between the grooves (rings)

**Lead**: Toxic heavy metal present in tetramethyl lead and tetraethyl lead, which are added to leaded petrol to improve its octane rating. Expelled as lead salts with exhaust, the metal will damage catalytic converters and has been shown to have detrimental health and environmental effects. Metallic and alloyed lead are also used in sleeve bearings and bushings where the metal natural lubricating ability is useful.

**Lubrication**: The control of friction and consequent wear by the placement of a friction reducing substance, which may be a fluid or solid. Between two moving surfaces.

**Multigrade Oil**: An oil to which additives (viscosity index improvers) have been added
to reduce the oil's natural thinning at higher temperatures. This allows oils to be made thinner to allow easy cold starting without them becoming so thin as to be ineffective at full operation temperatures. Thinner oils are increasingly preferred as they reduce internal drag in the engine and improve efficiency. Modern engine tolerances are now low enough not to need thick oils to prevent leaks.

**Neutralisation Number**: A measure of the alkalinity or acidity of an oil the number is the amount, in milligrams of acid or alkali that must be added to neutralise the oil.

**Neutral Base Stock**: The most commonly used base stocks. Produced by vacuum distillation of crude oil and subsequent, finishing processes.

**Newtonian flow**: Occurs in liquids where the rate of shear is directly proportional to the shearing force. This is the case with most base stocks. However, oils that contain viscosity index and flow improvers exhibit non-Newtonian flow.

**Nitration**: Results when nitrogen oxides, formed from atmospheric gases during the combustion process in an internal combustion engine, attack an oil, usually leading to thickening and deposit formation.

**NLGI**: Acronym for National Lubricating grease Institute, American professional body most often encountered in selection of the appropriate 'thickness' of grease e.g. NLGE 2.

**Oxidation**: Naturally occurring process where atmospheric oxygen attacks oils. Leading to darkening. Thickening and deposit formation. Like all chemical reactions, oxidation accelerates exponentially with temperature and is thus more of a problem under high operating temperatures. Additive that reduces oxidation usually by reacting with oxygen radicals before they can attack the oil.

**Polishing**: Removal of the surface finishing (honing) on cylinder linings as a result of ring sticking or abrasive particles. Leads to high oil consumption and poor efficiency.

**Pour Point**: The lowest temperature at which an oil will continue to flow and, thus below which it becomes useless as a lubricant.

**Pour Point Depressant**: Additive that lowers the pour point, usually by inhibiting the formation of wax crystals in the oil.

**Refining**: A series of physical and chemical processes that convert crude oils into a wide range of products-including LPG, Petrol, Kerosene, Jet Fuel, diesel, Fuel oil, Bitumen, Waxes and lubricant base stocks.
**Refining**: Process for recycling used oils to a near virgin state.

**Ring Stick**: Sticking of the rings on the piston of an internal combustion engine of a reciprocating compressor, leading to wear and loss of power. Usually caused by a buildup of deposits in the ring grooves.

**SAE**: Acronym for Society of Automotive Engineer, American professional body most commonly seen in relation to Viscosity grades e.g SAE 10W 30.

**Shear Stability**: The measure of Viscosity Index Improvers (VII) resistance to the shearing forces in the engine. VII s with low shear stability will quickly break down, resulting in a thinning of the oil.

**Sludge**: A dark, mud-like residue that collects in the cooler parts of an engine, such as the sump, as a result of the sump, as a result, of the build up of deposits. May block pumps and oil ways. Controlled by dispersants that keep deposits in suspension and prevent them from congealing.

**Solvent Extraction**: Most common process for purification of base stocks during refining. Removes less stable components.

**Solvent Refining**: A process where solvents, such as furfural and phenol, are used to remove base stocks from heavy crude oil fractions.

**Stoke (St)**: The unit used most commonly in hundredths (on centistoke) to measure a fluids viscosity.

**Synthetic Base Stock**: Lubricating base stock made by a series of chemicals reactions to produce a finished material with Controlled and predictable properties. Includes a wide range of chemicals such as esters, PAOs, hydrocracked polyglycols and other complex polymers.

**Tribology**: The study of the lubrication and of the interaction between moving surfaces.

**Varnish (Lacquer)**: Thin, insoluble film forming on engine parts which leads to ring tricking and fouling of close tolerance parts. Primarily occurs in high temperature areas and can be controlled by detergents.

**Viscosity**: A measure of a liquid’s resistance to flow—its thickness, in simple terms

**Viscosity Index (VI)**: The rate at which a liquid’s viscosity changes with temperature, usually decreasing. The higher the VI the less change occurs.
Viscosity Index Improver (VII): Additive that improves the viscosity index of and oil. Usually a complex polymer that interacts with the oil molecules to reduce their mobility at a rate which increases with temperature, thereby reducing the oil’s tendency to become less viscous or thinner.

Voyatility: A measure of the oil’s resistance to evaporation, which would require more frequent top up to replace the lost lubricant.

Zinc (ZDP): zinc dithiophosphate (ZDP) is the most commonly used anti wear/oxidant additive in engine oils.
VARIOUS LUBE MANUFACTURING & MARKETING COMPANIES

1. BPCL (Bharat Petroleum Corporation Ltd.)

Bharat petroleum is a downstream oil refining and marketing company with present revenues in excess of Rs. 150 billion (US$4.28 billion). It is India’s second largest oil company in terms of revenues.

Bharat petroleum’s network is spread all over India. Its products range from LPG and kerosene for domestic consumption, to automotive fuels and lubricants for vehicles, to feedstock and fuels for industrial applications. The company also manufactures and market petrochemicals such as benzene, toluene LAB feedstock as well as MTBE an additive for unleaded petrol.

Petroleum (derived from Latin Petra-rock and oleum-oil) first came up in wells drilled for salt. People found it useful as illuminating oil and the demand for it steadily increased. “Colonel’ Edwin Drake and “Uncle” Billy Smit drilled a well with the specific objective of finding oil, and on 27th August 1859, they “Struck oil” at Titusvale, in North Western Pennsylvania, USA, at a depth of 69.5 ft.

History of Company

1928

Bharat Petroleum Corporation (BPCL) traces its history to 1928 when the Burmah shell oil storage & distribution company of India was incorporated in England to enter the petroleum products business in India. The business of the company grew substantially given the international backing of shell and it achieved the leadership position in India. In 1952, shell and Burmah oil company set up Burmah shell refineries to set up a refinery in Mumbai. The entire operations of Burmah shell in India were nationalised in 1976 and the Refinery and Marketing companies were merged to form BPCL.

1952

The company was incorporated on 3rd November, 1952 under the name Burmahshell Refineries Limited (BSR). The Burmah shell as Storage & Distributing company of India, Ltd. a foreign company established in England in 1928 was carrying
on in India the business of distributing and marketing petroleum products and for that purpose established places in India.

1955

The company has a well established refinery at Mahul, chembur (Mumbai) which has commissioned in January.

The company's refinery in Bombay was commissioned in 1955. It introduced LPG as a cooking fuel to the Indian home and all along, it went beyond selling petroleum to educate the customer.

1976

The companies name changed to Bharat Refineries Limited (BRL) on 12th February 1976.

1977

Companies name changed to its present name (BPCL) on 1st August.

1979

Pursuant to an agreement dated 23.12.1979 between Govt, of India and BSM the shell Petroleum Co. Ltd. The Burham Oil Co. Ltd. and the Burmah shell Refineries Ltd; the Govt. Of India acquired 100% equity share holdings of BSR on 24th January, 1976, Simultaneously also acquired the right to title and interest and labilities of BSM in relation to its undertakings in India.

1992

During the year the company commissioned 50 retail outlets including 9 in rural areas and 7 superior kerosene oil/light diesel oil dealership. The total number of retail outlets/light diesel oil dealership at the end of the year stood at 4,090 and 928 respectively.

During the year 20% of the shares were sold by the govt. To various financial institutions and Mutual Funds. Thus presently the President of India holds 80% of the paid up capital.

1993

During the year the company installed microprocessor based digital integrated dis-
tributed control system in catalytic reformer and new solvent unit which replaced the pneumatic control system for catalytic control unit.

1994

- During the year the corporation commissioned 124 retail outlets and 10 oil/light diesel oil dealership.

- On 25th February a joint venture company ‘Bharat Refineries Ltd’ was incorporated/ And was set up as a joint venture between Omen oil Co. Ltd. and the Corporation.

- During the year Bharat shell Ltd. was promoted by the company and shell overseas Investments. B V Netherlands for marketing shell branded lubricants in the country.

1995

- During 95-96 a 6 MMTPA joint venture refinery being set up with Oman Oil company Ltd at Bina in M.P.

1996

- During the year, the corporation commissioned 61 retail outlets and 12 SKO/LDO dealership. During the year petronet India Ltd. was set for developing and laying a network of petroleum product pipelines in the country.

- During the year LPG port terminal was commissioned at Okha in Gujrat, in October, with a storage capacity of 900 MT. of LPG.

- The company embarked upon a strategic change plan in 1996. The organisation structure has been revamped and six strategic Business Units have been created. The new structure is based on business processes, is flexible, more responsive to external changes, has fewer layers and above all ensures a much higher customer focus.

1997

- During the year corporation, has entered into a Memorandum of Understanding (MOU) with the Ministry of Petroleum & Natural Gas (MOP & NG) the performance rating awarded to BPC was “Excellent’ for the year ended March 31,1996.

- Bharat Petroleum Corporation Ltd. (BPCL) has launched Apollo air stations at its petrol pumps in Mumbai. The company had signed a memorandum of understanding recently with Apollo tyres to provide efficient air facility to customers through BPCL’s
retail network.

- Bharat Petroleum Corporation Ltd. (BPCL) and the UK based global oil major Shell are likely to float a new company for setting up the seven million tones per annum (mtpa) grassroots refinery at Uttar Pradesh.

- Bharat Petroleum Corporation Ltd. (BPCL) the second largest oil marketing public sector company has signed a fuel supply agreement with Atria power corporation Ltd to generate 103 MW of power at Hairhar, in its commitment to bring more power to Karnataka.

1998

- The Karnataka Power corporation Limited (KPCL) entered into a fuel supply agreement with Bharat petroleum corporation Ltd for its 300 mw joint venture power project at Bidadi.

- The company will open five new, state of the art, self servicing and automatic cut off nozzle facility petrol and diesel bunks in the city.

- Bharat petroleum Corporation Ltd has bagged the fuel supply contract for Kerala State Electricity Board’s Kozhikode diesel power project at Nallalam.

1999

- Bharat Petroleum corporation Ltd (BPCL) is setting up its LPG bottling plant in Hoskite Taluk near Bangalore.

- Bharat Petroleum Corporation Ltd (BPCL) has commissioned a hydrant fuelling system for aircraft at the Cochin International Airport (CIAL)

- BPCL has taken six per cent equity in the paid-up capital of the airport.

- Bharat petroleum corporation Ltd’s (BPCL) joint venture with Oman Oil Co. for setting up a six-million tonne refinery at Bina in Madhya Pradesh is expected to achieve financial closure within a month said Mr. A Sinha, BPCL’s Finance Director.

- In an attempt to set up its naphtha-fired 200 MW project at top speed the KPC Bidadi Power Corporation (KBPC) entered into a fuel supply agreement (FSA) with Bharat petroleum Corporation Ltd. (BPCL) for the supply of 25,0900 mtpa of naphtha.

- Jawaharlal Nehru Port Trust (JNPT) and Bharat Petroleum corporation Ltd.
corporations and the same received an enthusiastic response from over 2500 clients.

- The company has: petrocard' and customer loyalty programme, had enrolled over 2.25 lakh customers by the end of March 2001.

2001

The company has lunched the co-branded Smart Fleet card along with Tata Finance, a smart card targeted at vehicle fleet owners and corporates.

- BPCL has tied up with Quickly's the global coffee chain, Pepsi Foods India and quality Walls for providing beverages soft drinks and ice-creams at its petrol pumps.

- Standard Chartered Bank, HDFC Bank and Bharat Petroleum corporation have joined the eCash forum which has been set up by the Smart Card forum of India.

- Bharat Petroleum Corporation Ltd. has proposed to acquire the entire equity share holding of the Government of India in Kochi Refineries Ltd. Shell Aviation Ltd has appointed Bharat Petroleum Corporation Ltd (BPCL) as the sole distributor for Shell brands of aero lubes in India. BPCL has signed a contract with Shell Aviation for distribution rights for the next five years.

- In & Out a convenience retailing proposition, was selectively launched in 14 retail outlets during the year. This proposition includes utility payments, courier service, ATMs a coffee shop, music counters, impulse stores etc.

2002

- Bharat Petroleum Corporation Ltd has informed that Shri S Vijayaraghavan, Joint Secretary Ministry of Petroleum & Natural Gas has been appointed as Additional Director on the Board of Bharat Petroleum Corporation Ltd.

- M B Lal Director (Refineries) relinquishes office from BPCL.

- Bharat Petroleum Corporation Ltd has informed that Mr U Sundararajan has retired from the office of the chairman & Managing director, BPCL. MR S Behuria, Director (Marketing) has taken over as Chairman & Managing Director of BPCL wef July 01, 2002.
The 1860s saw vast industrial development. A lot of petroleum refineries also came up. An important player in the south Asian market then was the Burmah Oil Company. Though incorporated in Scotland in 1886, the company grew out of the enterprises
of the Rangoon oil Company, which had been formed in 1871 to refine crude oil produced from primitive hand dug wells in Upper Burma.

The search for oil in India began in 1886, when Mr. Goodenough of McKillop Stewart Company drilled a well near Jaypore in upper Assam and struck oil. In 1889, the Assam Railway and Trading company (ARTC) struck oil at Dogboi marketing the beginning of oil production in India.

While discoveries were made and industries expanded, Jhon D Rockefeller together with his business associates acquired control over numerous refineries and pipelines to later form the giant Standard Oil Trust. The largest rivals of Standard Oil- Royal Dutch, Shell Rothschilds, came together to form a single organisation: Asiatic petroleum to market petroleum products in South Asia.

In 1928, Asiatic Petroleum (India) joined hands with Burmah Oil Company - an active producer, refinery and distributor of petroleum products, particularly in Indian and Burmese markets. This alliance led to the formation of Burmah-shell Oil Storage and Distributing company of India Limited.

The company took up the challenge of reaching out to the people even in the remote villages to ensure every home had its supply of kerosene. The development and promotion of efficient kerosene-burning appliances for lighting and cooking was an important part of kerosene selling activity.

With motor cars, came canned Petrol, followed by service stations. In the 1930s, retail sales points were built with driveways set back from the road, service stations began to appear and became accepted as a part of road development. After the war Burmah Shell established efficient and up-to-date service and filling stations to give the customers the highest possible standard of service facilities.

On 15th October 1932, when civil aviation arrive in India, the company had the honor of fuelling J.R.D. Tata’s historic solo flights in a single engined de Havillian Puss Moth from Karachi to Bombay (Juhu) via Ahmedabad. Thirty years later i.e in 1962, Burmah shell again had the privilege to fuel JRD Tata’s reenactment of the original flight. Burmah shell also fuelled flying boats, which carried airmail at slightly higher rates than sea transport at several locations.

As a true pioneer would the company introduced LPG as a cooking fuel to the Indian home in the mid-1950s And all along it went beyond selling petroleum, to educate
the customer. Besides selling Bitumen, the company pioneered desert road construction training road engineers. It provided free technical services to industrial customers—big and small—and it became a part of the company’s culture.

On Stream - The Burmah Shell Refinery

An agreement to build a modern refinery at Trombay, Bombay was signed between the Burmah Shell group of companies and the Government of India on 15th December 1951. Burmah Shell refineries limited was incorporated as a private limited company under the Indian Companies Act. on 3rd November 1952 and work began on the marshland of Trombay at Bombay. May and machine worked relentlessly, and soon the swamps gave way to towers and tanks of steel and miles of pipeline.

From Burmah shell to Bharat Petroleum:

On 24th January 1976 the Burmah shell Group of Companies was taken over by the Government of India to form Bharat Refineries Limited. On 1st August 1977, it was renamed Bharat Petroleum the erstwhile Burmah shell with a modest turnover in 1928, has today become one of the most formidable names in the petroleum industry.

Bharat petroleum produces a diverse range of products, from petrochemicals and solvents to aircraft fuel and speciality lubricants and markets them through its wide network of Petrol Stations, Kerosene Dealers, LPG Distributors, Lube shoppes, besides supplying fuel directly to hundreds of industries, and several international and domestic airlines.
Product & Services

Petrol & Diesel

Retail Outlets
Speed
Services
In & Out stores
Petro Card™
Smarat Fleet Card
Pure for Sure
OSTS (one-stop truckers shop)
COCO (company owned company operated)
Oils for Vehicles
Alternate Auto Fules

Liquified petroleum gas (LPG)

- a-Bharatgas.com
- Services
- LPG Customer Relation Centre
- Bharatgas Help Line / LPG Emergency Service Cells
- Safety Tips
- Conservation Tips
- Industrial Product
- Auto LPG
- Rural Marketing
- Piped LPG

Lubricants

Lubricants used in automobiles form a unique class by themselves. They have to perform in different types of vehicle under a wide variety of operating conditions. In the last two decades, the design, efficiency and manufacture of automotive vehicles have undergone a radical change all over the world. This resulted in a variety of vehicles, both petrol and diesel, which are have found it difficult to operate without progressive advancements in lubricants performance standards.
Numerous bodies around the world establish performance standards for Automotive lubricating oils. In USA, the Society of Automotive Engineers (SAE), the American Petroleum Institute (API) and the US Military issue lubricant specifications which are very popular and internationally accepted.

In India lubricant specification are issued by the Bureau of Indian Standards, which are generally in line with the above International standards.

Bharat Petroleum offers a full range of Automotive Engine Oils, Gear Oils, Transmission oils, Specialty Oils and Greases. The correct usage of these Lubricants of right quality ensures prolonged and trouble free vehicle operation, providing maximum benefits to the users of present day modern vehicles.

Lubrication Requirement of Internal Combustion Engines. There are two types of Internal Combustion engines used in the automobiles. They are (i) Spark Ignition type (SI) and Compression Ignition type (CI). Cars and Scooters mostly make use of spark ignition type IC engines where as trucks and buses have compression ignition type engines. SI type engines use petrol as fuel and are of two types – two stroke cycle and four stroke cycle. Depending on the type of engine, methods employed for lubrication vary considerably.

- 2/3 Wheeler Lubricants
- Car Lubricants
- Truck Lubricants
- Industrial Lubricants
- Lube Stoppe
- Lube Shoppe
- Specialty Oils for vehicles

BPCL market Jet Fuel and render into-plane refuelling at all the 19 airports in India, where we have facilities. The Company is also the exclusive authorized distributor of Aero Shell lubricants, greases & Specialty products, manufactured by Shell Aviation.

- Jet Fuel marketing
- Into Plane Re-fuelling
- Aviation Turbine Fuel
- Bharat Petroleum Carnet Card
- The Carnet Card
- Aviation Lubricants
• Technology Services
• Where we are

**fuels & Slovents**

BPCL’s & IC (Industrial & Commercial) SBU endeavors to empower industrial customers by providing in bulk the products they need, at the place they need. Backed by impeccable service.

I & C deals in bulk quantities of all petroleum products – from Fuel Oils to Solvents to Bitumen. Living up to its mission of quality, reliability and timely supplies, BPCL have been entrusted with meeting the fuel requirements of top-notch Indian companies – Tata Electric, NTPC, HLL, Asian Paints, Reliance Industries, NOCIL and many more.

Enhanced customer satisfaction being BPCL’s motto, they embarked on a voyage from Brick to Click (Business-to-Business e-commerce). Once again, BPCL is the first Oil Company to do so, facilitating 400 customers receiving supplies from 7 strategic locations. This B2B initiative enables the customer to place an order and track the status of his order, on the net, The positive customer feedback has encouraged BPCL to draw up a highly ambitious plan to implement this initiative across the country – covering all their 9000- plus customers drawing supplies from 172 locations.

BPCL’s I & C (Industrial & Commercial) SBU handles the direct sales to the bulk industrial customers. It endeavors to empower industrial customers by providing in bulk the products they need at the place they need, backed by impeccable service.

**Performance:**

I & c deals in bulk quantities of all petroleum products – from fuel oils to Solvents to Bitumen. Living up to its mission of quality, reliability and timely supplies, BPCL have been entrusted with meeting the fuel requirements of top-notch Indian companies – Tata Electric, NTPC, HLL, Asian Paints, Reliance Industries, NOCIL and may more.

I&C sales form 27.5% of BPCL’s total volumes and 14.7% of its gross margins. This year, I&C registered a sales volume of 5.32 MMT recording a growth of 2.3% against the industry’s negative growth of 3.4% Furthermore. BPCL’s market share in this segment went up to 15.8% from 14.9% in the previous year.
SRATEGIES & POLICIES

Strategy Development

Bharat Petroleum recognizes that all strategis initatives must conform to the overall vision of the corporation and improve the economic value. The strategy Development effort at the corporate leavel achieves better focus in the new organizational structure, besides facilitating the SBUs in developing their respective strategies that lead to an integrated corporate strategy. A Business planning process has been put in place that not only provides opportunities for the SBUs to pursue their visionary goals in consonance with the Corporate Vision. But also continuously monitors trends and identifies strategic opportunities for the Corporation.

Brand Management

In the highly competitive scenario, it has become imperative to own dominant brands. The brand management team a Bharat Petorleum endaevours to build and manage a strong brand image reflecting Bharat Petroleum's core values of being “INCARE” Viz. Innovative, Caring and Reliable. Emphasis is laid on continuously understanding cUSTOM behaviours, tracking their changing needs and expectations, and meeting these needs in the most cost effective manner.

Health, Safety & Environment Policy

Bharat Petroleum strongly believes that good health, safety and Environmental performance is an integral part of efficient and profitable business management it is, therefore, intended to improve healthsafety and environement performance and the policy is guided by the following principles.

Provide Safe and Healthy Operations

It is the responsibility of all concerned in the organization to strive to create a working environment where accidents will not occur. The employees and site contractors shall be trained in the work place about health and safety, and be encouraged to adopt a healthy life style / work practices.

Progressive Improvement of the Environmental Performance

The organisation will strive for progressive improvement in the environmental performance of our facilities by reducing emissions, wastes and the optimal use of energy. Accordingly, new facilities and plants and modifications to existng facilities with latest technology will apply the best available pollution control techniques that are commercially viable. Periodic audits will be conducted to identify areas of improvements with respect to Environmental Pollution control.
Respect the interest of our Neighbours and the Community at large

The organisation will communicate openly with those who live or work in the vicinity of our facilities to ensure their understanding of our operations, vis-a-vis our understanding of their concerns. It is our responsibility to disseminate information most promptly and continuously, on safety aspects, incident data/information as also lessons learnt on a continuous basis. We will also seek active participation of Governments and other relevant statutory bodies in resolving issues connected with health, safety and Environment.

Observe the concern in Practice

The organisation will make employees observe their responsibilities in adopting healthy and safe operating procedures, in maintaining machinery and equipment in healthy condition. The management is responsible to review and upgrade/change organisation safety structure depending upon the need of the activities, to evaluate existing methods to develop sound design and Engineering practices and to adopt reliable up-dated environment-friendly technology in order to achieve an overall improvement in Safety, Health and Environment.

RESEARCH & DEVELOPMENT

Always on the forefront to innovate, Bharat Petroleum is making distinct efforts towards Research & Development (R&D). Besides the R&D facilities at the Refinery and the product Application Development Centre in Sewree in Mumbai, a new state-of-the-art R&D Centre is being set up near Delhi. The R & D Centre is being organised around three core groups - process & Technology Development, Product application Development and Environmental Engineering. A total outlay of Rs. 3,000 million has been planned to be spent in three phases up to the year 2003-04 on this project.

Bharat Petroleum has always been on the forefront of harnessing technology initiatives for maximising efficiency and achieving greater customer satisfaction.

Bharat petroleum is the first Public Sector Oil Company to implement Enterprisewide Resource Planning (ERP) solutions - SAP, The implementation project known as ENTERANS (Enterprisewide Transformation) has been awarded the ‘SAP Star Implementation Award’ with Bharat petroleum having the distinction of executing the largest and the most ambitious SAP project in India. The challenge of SAP implementation was to ensure that all the integrated elements of the complex multi-midular integrated solutions that impact the entire workflow of the organisation) work seamlessly
across the length and breadth of the country, including the remote locations. Providing online connectivity in these remote locations, given the full-fledged IT network infrastructure was in itself a daunting task.

Bharat Petroleum is reaping the benefits of the integrated system in many areas of its operations. The early gains of implementation are in the areas of tracking customer receivables, monitoring credit management, inventory management, besides easing the operations in a large number of areas.

Furthermore, Bharat Petroleum has also set up one of the biggest Centres of Excellence in Asia to provide online support to the end users and also work towards continuous improvement in business processes and handle product upgrades and new generation products.

With SAP as the IT backbone, Bharat Petroleum plans to take advantage of the Internet-based capabilities along the entire value chain with a Customer Relationship Management solution. A large data warehouse project has also been implemented, which facilitates access to real-time accurate information on key performance indicators at all Bharat Petroleum locations. This enables the management to take strategic and business decisions, thus ensuring value-added services, better customer satisfaction and enhanced shareholder value.

Over the years, Bharat Petroleum continues to meet the challenges of the rapidly changing environment, leading to changes in the marketing of products and services. In all these changes, only one factor has remained constant and has been the source of Bharat Petroleum’s strength and inspiration for any future innovations - Bharat Petroleum’s People. The feeling of ownership has facilitated all employees to understand the complexity of the market and needs of the customers, and respond theses needs with innovativeness initiatives and offerings.

For Bharata Petroleum, commitment of its employees is a critical resource. Fully realising that only a happy employee will put his best foot forward with the customers, Bharat Petroleum has taken many steps to make the organisation a great place to work. In a survey conducted by Hewitt Associates for the January 2001 issue of Business Today magazine to identify the best employers, Bharat Petroleum was ranked among the top ten employers in India. The objective of the study was to find out which companies had really charged the emotional and intellectual energy of their employees. The other companies who were selected were Infosys, Hewlett-Packard, P&G, ICICI, Hughes, LG HLL,
Compaq and Asian Paints.

Bharat petroleum fosters effective value based HR processes for development of people and their organisational capabilities with a view to provide them with a competitive edge and also to realise their personal vision in tandem with the corporate vision. The thrust areas include:

- Performance Management which links business goals with individual performance goals.
- Recognising competencies and capabilities of the staff through competency Modeling to help indentify and place the right perosn in the right job.
- Identifying competency gaps and bridging such gaps through appropriate training and developmental programmes.
- Multi - skilling to encourage employees to take up new initiatives in the areas of Enhanced Fuel proposition, Add-in stores, One stop Truck Shops, Grocery and Fast Foods stores.

Bharat petroleum has been conferred the National HRD Award 2000 by National HRD Network for making Outstanding contribution to HRD.

At the national petroleum Management Programme (NPMP) on Excellence in Creativity & Innovation (1999-2000) Bharat Petroleum employees bagged all the three awards in the individual category, along with four certificate of recognition in the team category.

Since Bharat Petroleum sells much more than it produces, building product security through acquisitions and commercial contracts with stand-alone refineries and tie-ups with other pertroleum companies is of utmost improtance.
2. HPCL (Hindustan Petroleum Corporation Limited)

Vision & Mission
Our growth as a Corporation has been strong and steady over the years in all spheres of activity. HPCL has emerged as a mega Public Sector Undertaking with a consistent record of generating profits and adding value to the stakeholder. The two Refineries owned by the Corporation have progressed from small to medium scale operations, with a growing marketing network. Having consolidated our domestic strengths, we are now ready to set world-class standards. This is reflected in the Company’s Vision and its Mission agenda to achieve this Vision.

Vision
“To be a leading world class company in hydrocarbons and energy sectors with a global presence.”

Mission
“HPCL, along with its joint ventures, will be a fully integrated company in the hydrocarbons sector of exploration and production, refining and marketing; focusing on enhancement of productivity, quality and profitability; caring for customers and employees; caring for environment protection and cultural heritage. It will also attain scale dimensions by diversifying into other energy related fields and by taking up transnational operations”.

HISTORY

Hindustan Petroleum Corporation Limited (HPCL) is the result of a successful convergence of four established companies. Today the second largest integrated oil refining and marketing company in India. HPCL was born of the merger of ESSO, Lube India Ltd. Caltex Oil Refining India Ltd and Losam Gas Company Ltd.

The company was first incorporated as standard vacuum Refining Company of India Limited on July 5, 1952, and later named ESSO India Limited, on March 31, 1962. On July 12, 1974 when Esso and Lube India were nationalised, the company was renamed Hindustan Petroleum Corporation Limited with effect from July 15, 1974. The undertakings after nationalisation were then vested in HPCL. The Government of India also nationalised the Caltex undertakings in the year 1976, which were subsequently merged with HPCL in 1978. In the following year, the undertakings of Kosan Gas Company Ltd. the concessionaires of HPCL thus, the various amalgamations, at different points in time,
have given rise to HPCL that has ever since been growing from strength to strength. HPCL had humble beginnings in 1974 with one refinery at Mumbai that had a refining capacity of 3.5 million metric tonnes per annum (MMTPA). The Lube oil refinery at Mumbai. Stood around 165000 Tonnes per annum. The sales turnover in that year was only Rs. 3.67 billion and the net profit Rs. 58 million. But over the years the corporation has made judicious use of its assets to achieve tremendous growth. Dedicated and well experienced manpower Strategically located refineries at Mumbai and Visakh and a widespread marketing network have enabled the company to carve a niche in the Indian oil industry today.

Organization is producing the crude oil and petroleum all petrol and disel and many types of lubricants and gear air grish for example miley, lal ghoda, Hylube, sundari, finit a finit a spray for away the mosquito and organization is raising many refinery for refining t crude oil. Organization also involved in shipping, marine Business. Organization also start producing LPG Gas in the market from some times. Organization also run a power plant vishakhapattnum. Organization is joint promoter of petronet India ltd. For development petrolenum product pipeline in the country.

The main business of organization provide better full facility to us and the organization is stable in market as huge group and main competitor of the oil producing organization.

Hindustan petroleum corporation ltd. is Indias largest petroleum organization and there is no doubt that a time will cover when organization is stable in the market as a market leader because every whear companies performance is going on a better postion

This is a record from the organization that organization never face loss from last from year's continuously.

Now organization is launching L.P.G. gas in the market and organization is continue increasing of petrol pump in the market. now the orginasation is introduction himself in I.T. field. the organization is also involve in social process and relief.

Refainary division is organization is currently running many reainary

1-  Mumbai reainary
2-  Vikash reainary
- producing petrol and diesel
- producing L.P.G. gas
- Producing many types of lubricants
FUTURE PLANNING

Additional Tankages

Construction work is in progress for additional product tankage and allied facilities at three locations, with a total tankage of 53100KL, at an estimated cost of Rs 58 crores which are scheduled to be completed in phases during 2001-2001.

LPG Plants /TOPs

Construction work for 3 LPG bottling plants with a total capacity of 132 TMTPA and capacity augmentation of 11 LPG bottling plants by a total of 290 TMTPA is in progress.

The projects are estimated to cost Rs. 85 crores and are scheduled to be completed during 2001-02. In addition, two LPG TOPs on GAIL's Jamnagar–Lonipipeline are under implementation at an estimated cost of Rs 60 crores.

Visakh Vijayawada Pipeline (VVPL) Extension

The project of VVPL capacity expansion and its extension from Vijaywada to Secunderabad to cater to the important consumption zones of Andhra Pradesh is under construction. The project is estimated to cost Rs 377.55 crores with a completion schedule of May 2002.

The 16"/14" dia. Pipeline will traverse a distance of around 223 K.M. between Vijaywada and Secunderabad with a Top Off terminal intermediate pumping station located at Suryapet, designed for a throughput of 1.94MMTPA in phase -1 expandable to 3MMTPA. The capacity of Visakha-Vijayawada pipeline would also be augmented from 4.1 to 5.5 MMTPA (phase -I) AND FURTHER TO 7.7 MMTPA (phase-II)

Punjab Refinery Project

Company has initiated activities towards setting up of a new grass root Refinery of 9 MMTPA capacity at Phoolokhari in the Bhatinda district of Punjab, costing Rs. 9806 crores(June 98 prices) including a foreign exchange component of Rs. 3219 crores. A subsidiary company, "Guru Gobind Singh Refineries Ltd" has been incorporated on December 13, 2000 Land admeasurin 2000 acres (approximately) has been acquired at Phulokhari, near Bhatinda, All environmental/ staturoty approvals have been received. Technical evaluation for Engineering and project Management Consultant Services for SPM/COT/ crude oil pipeline and detailed route survey for 1006 km pipeline has been completed.
HPCL POLICY

a) Environment Policy
b) Health Policy
c) Safety Policy

Environment Policy:-

The Corporation is committed to conduct its operation in such a manner as compatible with environment and economic development of the community its aim is to create an awareness and respect for the environment stressing on every employee involvement in environmental improvement by insuring health operating practices, philosophy and training the objectives of our environmental policy are to:

a) Adopt environmental sound operating systems practices and procedures.
b) Strive to progressively bring about an improvement in the environmental performance of our facilities by adopting eco-friendly techniques/ processes for optimal use of energy and to reduce hazardous emissions and wastes.
c) Establish procedures and devise suitable methods for disposal of toxic and other hazardous waste and scrap.
d) Create environment protection.
e) Comply with the relevant statutory Rules and Regulations and devise appropriate standards on the cases where required.
f) Maintain highest standards of vigilance and preparedness to respond to emergencies supplemented with mutual aid of neighboring facilities and government agencies.
g) Endeavour to associate with and support R & D on environment by Government agencies and reputed research institutes.
h) Program reviews and evaluation to measure progress of compliance with the policy.

Health Policy:

To provide a structured program to look after and promote the health of vital "Human resource" essential productivity and effectiveness of the Corporation. Objectives of this policy are as to:

1. Assess potential health risks arising from operation likely to affect its employees and contractors or the public. Institute measures to control and eliminate such risks and monitor health of employees.
2. Establish and maintain the highest possible degree of physical and mental well being of the employees.
3. Provide timely and adequate medical facilities for treatment of employees in case
of medical emergencies.

4. Comply with relevant statutory Rules & Regulations and devise appropriate standards in other cases where ever required.

5. Establish pre-employment medical fitness and subsequent periodic medical check ups to determine employee’s ability to carry out their functions any risk to themselves and to others.

6. Bring awareness among employees and community about the harmful effects of substance abuse through counseling and periodic programmes.

7. Ensure availability and use of personal protective equipment and use of personal protective equipment while handling toxic & other hazardous chemicals.

8. Program reviews and evaluation to measure progress of compliance with the policy.

Safety Policy:

As an integral part of its business, HPCL believes that no work or service or activity is so important or urgent that safety be overlooked or compromised. Safety of the employees and public protection of their as well as corporations, assets shall be paramount. Corporation considers that safety is one of important tools to enhance productivity and to reduce national losses. The Corporation will constantly endeavour to achieve and maintain high standards of Safety in its operation. The Objectives of this policy are to:

- Design, create and maintain facilities, provide training, establish procedures/safety rules in all the fields.

Touching lives - Social Concerns

Beyond balance sheets and bottom lines lies a complex world it may not always seem to add up. But one we can make a difference to. If only we reach out and touch with our hearts. Amidst all the hustle & bustle of Corporate Lives...... trying to give this growing Nation the energy it needs...... and at the same time maintaining profitable operations, HPCL has not distanced itself from its social responsibilities. Through our network spread across the country, we carry out welfare activities for the betterment of the underprivileged.

Over the years HPCL has done considerable work under a special component plan. Our aim... to contribute towards improving the quality of life. Be it primary education or health care, provision of drinking water or vocational training, development of the infrastructure in rural areas through adoption of villages or assistance to the physically challenged...... through a wide range of assistance programs we are trying to help
people help themselves.

It all started in 1986, when we made a humble beginning by launching our special component plan and tribal sub plan by adopting a tiny hamlet of Manyapalem, situated near our Visakha Refinery. At that time, the village comprised of 27 families who survived by selling firewood collected from the nearby forest. While the Government of Andhra Pradesh provided them with dwellings, HPCL took upon itself the task of initiating a number of health, welfare and educational activities, as well as income generating schemes.

After the success of its development project at Manyapalem, HPCL undertook many such projects all over the country, especially in villages inhabited by the socially and economically weaker sections.

One of HPCL’s numberous success stories is Joduvanipallem, a small tribal village in Andhra Pradesh. Comprising of not more than 50 families, the people of this village were largely dependent on the age-old custom of shifting agriculture, that gave them foodgrain enough only for a few months in a year at best. Today, with the help of the State Government, these tribals have been allotted land and their mak-shif homes have been replaced with regular houses. Provisions for irrigation like bore wells and water pumps have been made. A small school has also been set up to extend basic education to the children. Today, the residents of Joduvanipallem feel confident enough to sustain their growth on the strength of their own efforts and HPCL is looking to move on to find another Joduvanipallem.

And this is not just it...... HPCL has always been in the forefront whenever the nation has needed its assistance. At all times of crises, be it natural or man made the corporation and its employees have contributed selflessly towards allaying the pain and trauma of those affected, in fact, HPCL was the first in the oil industry in India to commission a retail outlet for the welfare of the dependents of the brave soldiers who laid down their lives during the largal conflict. A large number of such retail outlets and LPG distributorships are being set up across the country.

On each and every occasion, HPCL has risen to lend a helping hand to the country...... Just a small step towards building a great nation.

Objective of Organization

Hindustan Petroleum Corporation Ltd. is a public sector which was established by Government as corporate division. Few objectives of organization are as follows: the objectives are helpful to the organization a right way.
1. To make country self dependent in petroleum sector.
2. Proper channel of distribution
3. Represent himself as market leade in petroleum lubricant and LPG
4. Provide easy availability to Retailer's and consumer's.
5. Develop new technology to develop working atmosphere.
6. Maintain the profitability.

**HPCL Refining & Marketing Activities**

The crude petrolim that nature yield from the vace for a large number of products, the H.P. Refineries upgread the crude oil into value added products like petrol, high speed Diesel, Superior Kerosenes oil, liquefied petrolim Gas, aviation turbine fuek, naptha, furnace oil, bitumen, low sulphur heavy stock, solvents, propelylene and over 300 grades of lubricants, specialities and greases. HPCL accounts for about 20% of the nations refining capacity. Today we have two costal Refinaries, one in Mubai and the other Visakhapatnam. we have also promoted the only joint venture refinery in the country, the manglore refinery & petrochemicals ltd. (MRPL) and are well on our way towards setting up another grassroots Refinery near Bathinda in Punjab. our lubricanting oils Refinanry at Mumbai and Visakha Refinary were the frstst in India to undertake the implementation of comprehensive automation of offsite product handling facilities. these refinaries have implimented projects and upgraded facilities to produce green fuels like unleaded petrol and sulphar Diesel. The refineries have been benhmarked by an international agency for various performance paramaeters and there is a constant endeavur to excel in all spheres of refining operations. Both the reineries have been confered with muberous awards by national and internation agencies in recognition of their efforts in the area of Energy conservation, Environment and safty.( to know more about the refining sector in India and about HPCL refining activities, visit our Refineries section)

Like in any other business marketing is the vital link in the chain between the manufacturing uint and the consumer. The petroleum products produced at the refineries ultimately reach the consumers through our widespread infrastructur. Our contry wide marketing network consists of various Zonal / Regional offices, Terminals, Depots, Aviation, Service Felicities, LPG Bottling Plants and Lube filling plants. Added to this is a large number of retail outlets, PLG/SKOLDO dealers and distributors.

The business process re-engineering exercise, Initated in early 1997 has hepled us streamline our markein activities. In a bid to sharpen our competitive edge and improve
customer orientation, we have now set up three strategic Business unit to add focus to the marketing and sales efforts in our retail, direct sales and LPG Business lines. The streamlining has enabled us to provide bettered and faster service, and real time response to the consumers.

We also own and operate two cross-country pipelines to move petroleum products from the refinery to the consumption centres. The Mumbai - Pune pipeline (MPPL) transports major fuel products from the Mumbai Refinery to Pune, while the Vishakhapatnam-Vijayada Pipline (VVPL) carries products from the Vishakha Refinery. Together plants various lubricants of different formulations are produced to cater to industrial as well as automotive segments.

HPCL also has an international Divisional that apart from having exports of surplus refinery products has now started facilitation of naphtha exports for Oil and Natural Gas corporation (ONGC). The Division is also engaged in direct export of lubricating oils to countries like Nepal, Bangladesh, Malaysia, Sri Lanka and Saudi Arabia. In order to expand its operations and tap the export market the division has started appointing distributors for marketing of lubricating oils and special products. Presently distributors in Nepal, Bangladesh and Sri Lanka are regularly marketing HP products in these countries and we are actively looking at appointing distributors in Africa and Malaysia.

Products profile

1. REFINERIES:-
   a) Mumbai refineries
   b) Vikash refineries

2. PETROL

3. DIESEL

4. LUBRICANTS
   a. Hylube miley
   b. Gear oil
   c. Spray oil
   d. Laal ghora
   e. Hylube HDX
f. SUNDARI

g. Wheel bearing grease

h. Chassis grease

5. FNIT SPRAY

6. LPG GAS

7. Power plant

Infrastructure

Keeping pace with the Nation’s energy requirements, the HPCL infrastructure today boasts of refineries, cross-country pipelines, LPG bottling plants, lube blending plants and other facilities. Add to this our extensive network of retail outlets, regional offices, terminals and depots that truly make us an industry leader.

The HP Network

4 Zonal Offices
37 Retail Sales Reginal Office
18 Direct Sales Reginal Offices
21 LPG Sales Regional Offices
32 Terminals, Installations and Tap - Off Points
2 LPG Import Installations
37 LPG Bottling Plant
10 Aviation Servicing Facilities
6 Lube Blending plants and a lube pipeline for base oil evacuation
78 Inlay Relay Depots
4600 Retail outlets
1631 SKO/LDO Dealership
1601 LPG distributorships

The Corporation has its own product pipelines. The Mumbai-Pune products Pipeline (MPPL) in Western India of 3.67 MMTPA capacity is 161 kms long and is used for transporting MS, SKO, HSD & LDO to the terminals at Vashi and Pune. Another Pipeline, from Visakhapatnam in the South-East to Vijaywada, runs for 350 kms and has as capacity of 4.1 MMTPA which is being extended to Secunderabad with an expanded capacity of 5.4 MMTPA.
Distribution channel for diesel & petrol

- REFINERIES
- BOTTLING PLANT
- PETROL PUMPS
- CONSUMER

Distribution channel for lubricants

- CRUDE OIL
- REFINERIES
- FACTORY FOR FINISHING
- DISTRIBUTORS
- CONSUMER
3. IOCL (Indian Oil Corporation Ltd.)

Corporatite
Indian Oil is the country’s largest commercial enterprise, with a sales turnover of Rs. 1,50,677 crore and profits of Rs. 4,891 crore for the financial year 2004-05.

Indian Oil is India’s No. 1 Company in Fortune’s prestigious listing of the world’s 500 largest corporations, ranked 189 for the year 2004 based on fiscal 2003 performance. It is also the 18th largest petroleum company in the world. IndianOil has also been adjudged No. 1 in petroleum trading among the national oil companies in the Asia-Pacific region for the Second year in 2004.

Vision
A major diversified, transnational, integrated energy company, with national leadership and a strong environment conscience, playing a national role in oil security & public distribution.

Mission
- To achieve international standards of excellence in all aspects of energy and diversified business with focus on customer delight through value of products and services, and cost reduction.
- To maximize creation of wealth, value and satisfaction for the stakeholders.
- To attain leadership in developing, adopting and assimilating state-of-the-art technology for competitive advantage.
- To provide technology and services through sustained Research and Development.
- To foster a culture of participation and innovation for employee growth and contribution.
- To cultivate high standards of business ethics and Total Quality Management for a strong corporate identity and brand equity.
- To help enrich the quality of life of the community and preserve ecological balance and heritage through a strong environment conscience.

*Indian Oil people*

*Towards Excellence*
• To create a strong research and development base in the field of oil refining and stimulate the development of new product formulations with a view to minimize/eliminate their imports and to have next generation products.

• To maximize utilization of the existing facilities in order to improve efficiency and increase productivity.

• To optimize utilization of its refining capacity and maximize distillate yield from refining of crude to minimize foreign exchange outgo.

• To minimize fuel consumption in refineries and stock losses in marketing operations to effect energy conservation.

• To further enhance distribution network for providing assured service to customers throughout the country through expansion of reseller network as per Marketing Plan/Government approval.

• To avail of all viable opportunities, both national and global, arising out of the liberalization policies being pursued by the Government of India.

• To achieve higher growth through integration, mergers, acquisitions and diversification by harnessing new business opportunities like petrochemicals, power, Lube business, consultancy abroad and exploration & production.

India’s Flagship National Oil Company

Beginning in 1959 as Indian Oil Company Ltd, Indian Oil Corporation Ltd. was formed in 1964 with the merger of Indian Refineries Ltd. (Estd. 1958).

As India’s flagship national oil company, IndianOil accounts for 56% petroleum products marked share among PSU companies, 42% national refining capacity and 69% downstream pipeline throughout capacity.

The Indian Oil group of companies owns and operates 10 of India’s 18 refineries with a current combined rated capacity rated capacity of 54.20 million metric tones per annum (MMTPA) or one million barrels per day (bpd). These include two refineries of subsidiary Chennai Petroleum Corporation Ltd and one of Bongaigaon Refinery and Petrochemicals Limited. IndianOil owns and operates the country’s largest network of cross-country crude oil and product pipelines of nearly 7,730 Km, with a combined capacity of 56.85 MMTPA.
Refining
Indian Oil controls 10 of India’s 18 refiners – at Digboi Guwahati, Barauni, Koyali, Haldia, Mathura, Panipat, Chennai, Narimanam and Bongaigaon with a current combined rated capacity of 54.20 million metric tones per annum (MMTPA) or one million barrels per day (bpd) Indian Oil accounts for 42% of India’s total refining capacity.

Pipelines
Indian Oil owns and operates India’s largest network of cross-country crude oil and product pipelines of nearly 7,730km, with a combined capacity of 56.85 MMTPA. Indian Oil also operates two Single Buou Mooring system in the high seas off Vadinar coasts in the Gulf of Kutch for receipt of crude oil.
Indian Oil owns & operates 69% of India’s downstream pipeline throughput capacity.

Marketing
Indian Oil controls 10 of India’s 18 refineries at Digboi, Guwahati, Barauni, Koyali, Haldia, Mathura, Panipat, Chennai, Narimanam and Bongaigaon – With a Current combined rated capacity of 54.20 million metric tones per annum (MMTPA) or one million barrels per day (bpd). Indian Oil accounts for 42% of India’s total refining capacity.

Indian Oil’s countrywide network of over 23,000 retail sales points is backed for supplies by its extensive, well spread out marketing infrastructure comprising 165 bulk storage terminals, installations and depots, 95 aviation fuel stations and 87 LPG bottling plants. Its subsidiary, IBP CO. Ltd, is a Stand-alone marketing company with a nationwide retail network of over 3000 sales Points.
Indian Oil caters to over 56% of India’s petroleum consumption.
Indian Oil touches every customer’s heart by keeping the vital oil supply line operating relentlessly in every nook and corner of India. Indian Oil’s vast distribution network of over 23,000 sales points ensures that essential petroleum products reach the customer at the “right place the right time”. Our marketing share is 56% among oil public sector undertakings in India. With sales of 50.01 MMT of petroleum products in fiscal 2004, Indian Oil serves millions of customers everyday – big or small – with equal Zeal and care, with focus on upgrading petrol and diesel stations to international standards by providing additional facilities and value-added services.
Indian Oil reaches indane cooking gas to the doorsteps of 42.4 million households in over 2,100 markets through the country’s largest network of over 46.00 Indane distributors.

The country’s leading SERVO brand lubricants from Indian Oil, with over 42% market share and 450 grades, are sold through over 10,000 retail outlets, besides a countrywide
network of bazaar traders.

IndianOil's ISO-9002 certified Aviation Service, with 65% market share, meets the fuel and lubricants needs of domestic and international flag carriers, Defence Services and private aircraft operators. Between one sunrise and the next, IndianOil refuels over 900 aircrafts. In fact, the refueling never stops and neither does our customer service, which is round the clock. IndianOil Aviation Service, the leader in the aviation fuels business in the country, has launched a unique initiative for customers on the internet.

An interactive website ioclebz.com will help customers to log on and do business from anywhere in the world. With this initiative, IndianOil Aviation Service, which is acknowledged as one of the leading supplier of aviation fuels in the world, is reaching out to customers at their workplace.

Research & Development

IndianOil's world-class R&D Centre has won recognition for its pioneering work in lubricants formulation, refinery processes, pipeline transportation and bio-fuels. It has developed over 2,100 formulations of SERVO brand lubricants and greases for virtually all conceivable applications - automotive, railroad, industrial and marine-meeting stringent international standards and bearing the stamp of approval of all major original equipment manufactures. The Centre has to its credit over 140 national and international patents. Apart from leadership in development and commercialization of bio-fuels, the R&D Centre is currently the nodal agency of the hydrocarbon sector in India for ushering in Hydrogen fuel in the country.

Expanding Horizons

IndianOil is currently metamorphosing from a pure sectoral company with Dominance in downstream in India to a vertically integrated, transnational energy behemoth. The Corporation is implementing a master plan to emerge as a major player in petrochemicals by integrating its core refining business with petrochemical activities, besides making large investments in E&P and import/marketing ventures for oil and gas in India and abroad.

Spreading Wings

Indian Oil is also strengthening its existing overseas marketing ventures and simultaneously scouting new opportunities for marketing and export of petroleum products to new energy markets in Asia and Africa.

Two wholly-owned subsidiaries are already operational in Sri Lanka and Mauritius, and a regional office at Dubai is coordinating expansion of business activities in Middle East region. Within a year of incorporation, Lanka IOC Pvt. Ltd. (LIOC) has captured a 25% market share in Sri Lanka, with a target to take it to about 40% in the near future. IndianOil is investing US$ 35 million in Mauritius through its subsidiary, Indian Oil Mauritius Ltd. (IOML). To set up a range of marketing infrastructure there.
The Corporation has launched several joint ventures in partnership with some of the most respected corporates from India and abroad - Lubrizol, Nyco SA, Petronas, Ottanking GmbH, and Marubeni to name a few. SERVO Lubricants are being marketed in Dubai, Nepal, Bhutan, Kuwait, Malayasia, Bahrain, Indonesia, Sri Lanka, Kyrgyzstan, Mauritius, Bangladesh, etc.

Indian Oil has been lending its expertise for nearly two decades to various countries in several areas of refining, marketing, transportation, training and research & development. These include Sri Lanka, Kuwait, Bahrain, Iraq, Abu Dhabi, Tanzania, Ethiopia, Algeria, Nigeria, Nepal, Bhutan, Maldives, Malaysia and Zambia.

Indian Oil's sincere commitment to Quality, Safety, Health and Environment is reflected in the series of national and international certifications and awards (current ones listed separately) earned over the years.

Linear Integration

E&P: Indian Oil is focusing on acquiring equity oil & gas in India and abroad. Indian Oil was awarded two exploration blocks under NELP-1 (New Exploration Licencing Policy of the Government of India) in partnership with ONGC (Oil & Natural Gas Corporation Ltd).

Under the 2nd round of NELP, Indian Oil, in consortium with ONGC, GAIL, GSPC and OIL, was awarded eight exploration blocks. Under the 3rd round of NELP, Indian Oil, in consortium with ONGC, was awarded one exploration block in Mizoram.

Indian Oil-ONGC combine has also been awarded two blocks in the first round of bidding for exploration of Coal Bed Methane (CBM).

The ONGC-Videsh-IOC-OIL consortium has been awarded Farisi exploration block in Iran under Service Contract. IOC-ONGC combine was also qualified by KOC/KPC as non-operators for the development of Northern oil fields of Kuwait. A Consortium of BP-Occidental-IOC ONGC, under the operator ship of BP, has been formed for participation in Kuwait bidding round.

IOC has acquired a 27% participating interest in the block AAP-ON-94/1 from HOEC, which is operated by Premier Oil with 38% a participating interest. HOEC and OIL have a 25% and 10% participating interest in this block.

LNG: As co-promoter of Petronet LNG Limited (PLL), Indian Oil has tied up the complete sale of LNG allotted to it through strategic gas sales agreements with key Customers. PLL's Dahej terminal received its first parcel of LNG by January-end, 2004 and commercial supplies to customers commenced from April 2004 onwards. Major customers who have signed up with Indian Oil for gas supplies include Essar Steel, Gujarat State Petroleum Corporation, Haryana Sheet Glass, Hindustan National Glass Industries Ltd. And Surya Roshni Ltd.

Petrochemicals: Indian Oil has developed a master plan to emerge as a major Player in petrochemicals, mainly through vertical integration with its core refining
Business and using the existing refinery streams. Towards this, it has planned huge investments entailing an investment of Rs. 25,000-30,000 crore, to be made in Phases by 2011-12.

As part of this, the company is setting up a naphtha cracker complex at Panipat in Harayana based on surplus naphtha that would be available from its refineries at Panipat, Mathura and Koyali. The project, estimated to cost Rs. 6,300 crore, would involve a naphtha cracker with 80,000 metric tones per annum of ethylene production and associated units including hydrogenation, butadiene and benzene extraction besides downstream polymer units like a swing unit (LLDPE/HDPE), a dedicated high-density polyethylene (HDPE) unit, a polypropylene unit and a monoethyl glycol (MEG) unit. Following the LAB (Liner alkyl benzene) project at Gujarat refinery and the PX/PTA (paraxylene/purified terephthalic acid) plant coming up at Panipat, this will be the third mega petrochemicals project floated by Indian Oil.

Corporate Initiatives

Health, Safety & Environment: Indian Oil’s business plans always have an Underlying concern for the community and the environment. Its seven refineries, four Pipeline systems, R&D Centre and select retail outlets have earned ISO-14001 Certification for Environment Management Systems. All major installations are surrounded by green belts to serve as pollution sinks. Ecological parks developed at the refineries provide sanctuary for populations of migratory birds.

A learning Organisation: We believe that to learn is to grow. Continuous growth—That’s the focus at Indian Oil. A Challenging task that calls for non-stop learning and constant updation of skills.

Indian Oil operates 17 training centers throughout India for up-skilling, re-skilling and multi-skilling of employees in pursuit of corporate excellence. Among these, the foremost learning centers—the Indian Oil Institute of Petroleum Management at Gurgaon, the Indian Oil Management Centre for Learning at Mumbai, and the Indian Oil Management Academy at Haldia—have emerged as world-class training and management academies. Indian Oil Institute of Petroleum Management, the Corporation’s apex center of Learning, conducts advanced management development programmes in collaboration with reputed Institutes. Beyond learning, Indian Oil stimulates individual growth through a culture of participation, innovation and cross-functional exposure. Exploring every dimension of the learning process to open new professional and personal growth avenues for every team member. Building competency, confidence and capability to face the challenges of the market place.

IT Vision: Indian Oil aims at maintaining its Leadership in the Indian hydrocarbon Sector by
continuous assimilation of emerging Information Technology and web-Enabled solutions for integrating and optimizing the Corporation's hydrocarbon value Chain. It has recently implemented an IT re-engineering project titled Manthan, Which includes an Enterprise Resource planning (ERP) package which will Standardize and integrate the Corporation's business on a common IT platform Through a robust hybrid wide area network with appropriate hardware.

Select Add-On packages are also being customized to work in tandem with the ERP. Solution with an integrated approach for optimization.

Community Development: Wherever IndianOil builds capacity, the local Community benefits by way of substantive improvements in the quality of life, in Provision of safe drinking water, health care, education, etc. IndianOil scholarships Help students pursue higher education in engineering, management and medicine.

The IndianOil Foundation is a non-profit trust for protecting, preserving and promoting the rich architectural heritage of India. For more information on IOF,

Obligations
Towards Customers and dealers To provide prompt, courteous and efficient service and quality products at fair and reasonable prices.

Towards Suppliers
To ensure prompt dealings with integrity, impartiality and courtesy and promote Ancillary industries.

Towards employees Develop their capability and advancement through appropriate training and career Planning.

Expeditious redressal of grievances Fair dealings with recognized representatives of employees in pursuance of healthy Trade union practice and sound personnel policies.

Towards Community To develop techno-economically viable and environment-friendly products for the Benefit of the people. To encourage progressive indigenous manufacture of products and materials so as to Substitute imports. To ensure safety in operations and highest standards of environment protection in its manufacturing plants and townships by taking suitable and effective measures.

Towards Defence Services
To maintain adequate supplies to Defence Services during normal and emergency Situations as per their requirement at different locations.

Financial Objectives
To ensure adequate return on the capital employed and maintain a reasonable annual Dividend on its equity capital.
To ensure maximum economy in expenditure
To manage and operate the facilities in an efficient manner so as to generate adequate internal resources to meet revenue cost and requirements for project investment, without budgetary support.

To develop long-term corporate plans to provide for adequate growth of the activities of the Corporation.

To endeavour to reduce the cost of production of petroleum products by means of Systematic cost control measures.

To endeavour to complete all planned projects within the stipulated time and cost estimates.

The Path of Growth:

1958
- Indian Refineries Ltd. Was formed with Mr Feroze Gandhi as Chairman.

1959
- Indian Oil Company Ltd. Was established on 30th June 1959 with Mr S. Nijalingappa as the first Chairman.

1960
- Agreement for supply of SKO and HSD was signed with the then USSR. M.V. "Uzhgorod" carrying the first parcel of 11,390 tonnes of HSD docked at Pir Pau Jetty in Mumbai on 17th August 1960.

1962
- Guwahati Refinery was inaugurated by Pt. Jawaharlal Nehru.
- Construction of Barauni Refinery commenced.

1963
- Foundation was laid for Gujarat Refinery
- Indian Oil Blending Ltd. (a 50:50 Joint Venture between Indian Oil and Mobil) was formed.

1964
- Indian Oil Corporation Ltd. Was born on 1st September, 1964 with the merger of Indian Refineries Ltd. With Indian Oil Company Ltd.
- Barauni Refinery was commissioned.
- The first petroleum product pipeline from Guwahati to Siliguri (GSPL) was commissioned.

1965
- Gujarat Refinery was inaugurated by Dr. S. Radhakrishnan, the then President of India.
- Barauni-Kanpur Pipeline (BKPL) and Koyali- Ahmedabad product pipeline (KAPL) commissioned.
• Indian Oil People maintained the vital supply of Petroleum products to Defence in 1965 War.

1966
• The first long-term agreement was signed for harmonious employee relations.

1967
• Haldia Baraurii Pipeline (HBPL) was commissioned.
• Bitumen and Marine Bunker business began.

1968
• Techno-economic studies for Haldia-Calcutta, Bombay-Pune and Bombay-Manmad Pipelines submitted to the Government.

1969
• Indian Oil undertook the marketing of Madras Refinery Products.

1969
• Indian Oil undertook the marketing of Madras Refinery products.

1970
• Indian Oil acquired 60% majority shares of IBP.
• The same was offloaded in favour of the President of India under a Directive in 1972.

1971
• Dealership/reservation was extended to war widows, disabled Defence personnel, Freedom Fighters, etc., after 1971 War.

1972
• R&D Centre was established at Faridabad.
• SERVO, THE FIRST INDIGENOUS LUBRICANT WAS LAUNCHED.

1973
• Foundation-stone of Mathura Refinery was laid by Mrs Indira Gandhi, the then Prime Minister of India.

1974
• Indian Oil Blending Ltd. (IOBL) became the wholly owned subsidiary of Indian Oil.
• Marketing Division attained a new watershed with a market participation of 64.2%.

1975
• Haldia Refinery was commissioned.
• Multipurpose Distribution Centres were introduced at 132 Retail Outlets pioneering rural convenience.
1976
- Private petroleum companies nationalized.
- Burmah Shell became BPC.

1977
- R&D Centre launched Nutan wick Stove.

1978
- Phase-wise commissioning of Salaya-Mathura Crude Oil Pipeline (SMPL) began.

1979
- Barauni Refinery and Bongaigaon Refinery and Petrochemicals Ltd (BRPL) affected
  By Assam agitation

1980
- The second Oil Shock was witnessed as a result of Iranian Revolution. Crude Oil price
  Flared to a new high of $32 per barrel.

1981
- Digboi Refinery and Assam Oil Company’s (AOC) marketing operations were vested
  In IndianOil. It became Assam Oil Division (AOD) of IndianOil.

1982
- Mathura Refinery was commissioned.
- Mathura-Jalandhar Pipeline (MJPL) was commissioned.

1983
- Massive augmentation of LPG storage and distribution facilities were undertaken.
- Proposal for the 6 MMTPA Refinery at Karnal was submitted at an estimated cost Of
  Rs.1,181 Crore.

1984
- Taluka Kerosene Depots (TKOs) were commissioned for improved availability of Kero-
  sene in rural and hilly areas in addition to Multipurpose Distribution Centres.
- Foreshore terminal at Kandla Port was commissioned.
- Integrated Corporate Planning-ten year Perspective Plan and five year LRP initiated.

1985
- The new office complex for the Registered Office of the Corporation and head Office of
  Marketing Division with a total area of 23,110 square metres was completed.
- Additional Coking Unit at Barauni Refinery Commissioned.

1986
- A new Foreshore Terminal at Madras Commissioned.
1987
- Test marketing of 5 Kg. LPG Cylinders began in 1986-87 in Garo Hills and Kumaon.

1988
- DFR of Karnal (Panipat) Refinery was submitted to the Government of India.

1989
- Salaya-Mathura Pipeline (SMPL) was suitably modified for handling Bombay High Crude during winter.

1990
- Kandla-Bhatinda Pipeline (KBPL) project was approved.
- The first LPG Bottling Plant of Assam Oil Division (AOD) at Silcher was commissioned.

1991
- Digboi Refinery Modernisation project was initiated.
- Bunkering facility at Paradip was completed.

1992
- Revamp of Vacuum Distillation Unit at Mathura Refinery was completed.
- Two of the Indian Oil Table Tennis players represented the nation at Barcelona Olympic Games.

1993
- New era of Micro-processor based Distributed Digital Control System (DDCS) Replacing the pneumatic instrumentations began in Refineries, in phased manner.

1994
- India’s First Hydrocracker Unit was commissioned at Gujarat Refinery.
- Vision-2000, the Retail Visual Identity programme was launched to upgrade facilities at Retail Outlets.

1995
- 1,1443 Km. Long Kandla-Bhatinda Pipeline (KBPL) was commissioned at Sanganer.
- The Indane Shoppe was launched.

1996
- State-of-the-art LPG Import Terminal at Kandla with a capacity of 6,00,000 tonnes per annum was commissioned.
- 1 million metric tonner per annum (MMTPA) new CDU at Haldia Refinery was executed with in-house supervision.
- The first batch of one year International MBA (iMBA) programme was successfully conducted by Indian Oil Institute of Petroleum Management (IIPM).
1997
- Commercial Production of SERVOIII Titex Grease commenced at the world’s first Titex Plant at Vashi, Bombay.
- Business Development received new thrust.
- IndianOil entered into LNG business through Petronet LNG – a JV company.

1998
- Panipat Refinery was commissioned.
- Haldia, Barauni Crude Oil Pipeline (HBCPL) was completed.
- The Administrative Pricing Mechanism (APM) was withdrawn from the Refining Sector effective 1’ April 1998. Phase-wise dismantling of APM began.
- Indian Oil Board was reconstituted under the Navaratna concept, with the induction of five Part-time non-official independent Directors.

1999
- Indian hydrocarbon Vision-2025 was announced at PETROTECH-99, Organised by Indian Oil on behalf of the Oil Industry.
- India attained self-sufficiency in Refining.
- Diesel Hydro-desulphurisation Units commissioned at Gujarat, Panipat, Mathura and Haldia Refineries.
- Manthan - the IT re-engineering project was launched.

2000
- Indian Oil crossed the turnover of the magical mark of Rs. 1,00,000 Crore — the first Corporate in India to do so. The IndianOil Foundation — a non-profit trust — the first of its kind in Corporate India, was unveiled to protect, preserve and promote the country’s heritage.
- Y2K compatibility achieved.
- JNPT Terminal was commissioned.
- The Lube Blending Plant at Asoti and the Once through Hydrocracker Unit at Mathura refinery were commissioned.
- IndianOil entered into Exploration & Production (E&P) with the award of two exploration blocks to Indian Oil and ONGC consortium under NELP-1.

2001
- Digboi Refinery completed 100 years of continuous operation.
- Chennai Petroleum Corporation Ltd. (CPCL) and Bongaigaon Refinery and Petrochemicals Ltd. (BRPL) were acquired.
- Fluidised Catalytic Cracker Unit at Haldia Refinery was commissioned.
- Augmentation of Kandla-Bhatinda Pipeline (KBPL) to 8-8 MMPA completed.
- Eight Exploration blocks awarded to the IndianOilled consortium under NELP-II.
- Two Coal Bed Methane (CBM) blocks awarded to the consortium of IndianOil and
ONGC under CBM-I.
- The investment proposal for Integrated PX/PFA project at Panipat was approved.

2002
- IBP Co. Ltd. Was acquired with management control.
- Barauni Refinery expansion project completed.
- New generation auto fuels IOC Premium and Diesel Super introduced.

2003
- Lanka IOC Pvt. Ltd. (LIOC) Launched in Sri Lanka
- Retail Operations began in Sri Lanka. IndianOil became the first Indian Petroleum company to begin downstream marketing operations in overseas market. Lanka IOC became an independent oil company in Sri Lanka.
- Gasahol, 5% ethanol blended petrol, was introduced in select states.
- INDMAX UNIT AT GUWAHATI refinery commissioned.
- Indian Oil Technologies Ltd. For marketing intellectual properties of R&D center was launched.
- Foundation Stone of Panipat Refinery Expansion and PX/PTA projects laid.
- Maiden LPG supplies to Port Blair.
- KVSPL (Product) Pipeline commissioned.
- Concept of XTRA, covering Retail Outlets and customer service, launched
- SERVO became a Super Brand

2004
- IndianOil turned a Gas marketer by sale of regasified LNG
- IndianOil Mauritius Ltd.'s 18 TMT State-of-the-art Oil Storage Terminal at Mer Rouge Commissioned

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• Concelpt of XTRA, covering Retail Outlets and customer service, launched.
• ERVO became a super Brand.
• IndianOil Board approves merger of subsidiary IBP with parent company IndianOil in May
• IndianOil Mauritius (IOML) terminal inaugurated.
• IndianOil became the only oil PSU in the country to adopt instruments of risk management in international trading and commerce, derivatives trading to protect refining margins.
• IndianOil pays the highest-ever dividend of 20% (for fiscal 2003), amounting to Rs. 2453 crore, to shareholders.
• Indian Oil signs MoU with IIM (Ahmedabad) to offer one-year Post Graduate Programmes in Management (Energy) to be conducted at IIPM, Gurgaon.
• Indian Oil signs MoU with Haryana government to set up the 6300 crore Naptha Cracker & Polymer Complex at Panipat.
• R & D Centre bags the prestigious National Technology Award for successful Commercialisation of INDMAX technology for conversion of low value heavy petroleum residues into high value LPG.
• Indian Oil moves up by two places to the 189th position in the Fortune ‘Global 500’ ranking based on fiscal 2003 performance.
• Indian Oil’s Rs. 1248 crore LAB (Linear Alkyl Benzene) plant, the world’s largest single train kerosene-to-LAB unit, was commissioned at Gujarat, thus signaling IndianOil’s entry into petrochemicals business.
• Indian Oil signs Memorandum of Collaboration (MoC) with Mahindra & Mahindra to roll out the country’s first hydrogen vehicle in the next two years.
• Indian Oil’s 60 Km-long Rs. 76 crore Panipat Rewari Product Pipeline commissioned.
• Indian Oil signs MoU with Nepal Oil Corporation Limited to lay a product pipeline between Raxaul (India) and Amlekhganj (Nepal)
• The year marked Indian Oil’s entry into gas business. As Co-promoter of Petronet LNG Limited, complete quantity of gas (2.52 MMSCMD) allotted to IndianOil was sold out and commercial supplies commenced April 2004 onwards.
• Indian Oil was voted as the most trusted petrol pump brand in the country in a survey of India’s most trusted brands conducted by the Economic Times Brand Equity.
• LIOC (Lanka IOC), IndianOil’s subsidiary, created history on the Colombo Stock exchange as the biggest ever equity issue. Issue, LIOC’s IPO offering 25% stake was oversubscribed 11.6 times on the first day itself.

2005
• IndianOil turned a gas marketer by sale of regassified LNG
• IndianOil Mauritius Ltd.’s 18 TMT state-of-the-art Oil Storage Terminal at Mer Rouge Commissioned
• The year marked Indian Oil’s big ticket entry into the high stakes business of E&P. The Indian Oil and Oil India consortium signed its Exploration and Production Sharing Agreement (EPSA) with the National Oil Corporation of Libya for Block No. 86, in the Sirte basin of Libya.
• IndianOil Mathoura Refinery was the first refinery in India to attain the capability of producing entire quantity of Euro-III compliant diesel by commissioning the Rs. 1046 crore DIHDT (Diesel hydrotreating unit).
Mathura Refineries also commissioned India’s first MS quantity upgradation unit to produce Euro-III compliant petrol.
• IndianOil becomes the top oil trading company amongst national oil companies in the Asia pacific region for the second consecutive year.
• IndianOil signs a Supply Purchase Agreement (SPA) to procure 1.75 MMTPA LNG to be received by the last quarter of 2009 at Petronet LNG Limited Dahej terminal.
• IndianOil breached the Rs. 150,000 crore mark in sales turnover by clocking Rs. 150,677 in turnover in fiscal 2004.
• IndianOil signed a JV agreement with GAL to enter the city gas distribution projects in Agra and Lucknow.
• IndianOil allowed by Government of India to charter crude oil ships on its own instead of going through Transchart, the chartering with of the Ministry of Shipping.

The Marketing Network:

Indian Oil’s Marketing Network is spread throughout the country with over 22,000 sales points (the largest in the country). These include petrol/diesel stations, consumer outlets, lube distributors, SERVO SHOPS, SKO/LDO dealers, LPG distributors, etc.
The Regional offices look after the North, East, West and Southern regions of India, and Assam Oil Division Supplements operations in the North East. A number of state Level, Divisional and Indane Area offices have been established in each Region.
Petroleum products are essential inputs to the industrial, transportation, commercial and household sectors our marketing share is about 53.2% among oil Public Sector Undertakings in India.
The extensive network of sales points is made of:

<table>
<thead>
<tr>
<th>Unit</th>
<th>Number/ Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divisional Offices</td>
<td>44</td>
</tr>
<tr>
<td>LPG Area Offices</td>
<td>35</td>
</tr>
<tr>
<td>State Offices</td>
<td>15</td>
</tr>
<tr>
<td>Terminals and Depots</td>
<td>162</td>
</tr>
<tr>
<td>Aviation Fuel Stations</td>
<td>94</td>
</tr>
<tr>
<td>Total Product Tankage</td>
<td>68.74</td>
</tr>
</tbody>
</table>
Lakh K1
LPG (Indane) Bottling Plants 87
LPG Bottling Capacity 3674
Tonnes
p.a.
Petrol/Diesel Stations 9138
SKO/LDO Dealers 3521
Indane Distributors 4350
SERVO Stockists 204
Bulk Consumer Outlets 4858
Retail Outlets 9138
Towns with Indane 2064
Indane Customers 375.1

Lakh Markets covered by Indane 2177*

(Above figures as on 1.4.2004)

The Marketing Mantra for IndianOil is to continuously provide the best products and services at the most reasonable cost. The “New Look” petrol/diesel service stations Selectively have “Convenio” shopping stores, snap services, quick Lube change, automatic car wash and multi-product dispensing pumps To facilitate easy transaction, many of our stations accept major credit cards. In fact, IndianOil and Citibank have Launched a special co-brand card, the “IndianOil Citibank Card” which is not only accepted at Indian Oil petrol stations but at many restaurants, shops, airlines, etc. Also, IndianOil’s tie-up with Coca-Cola ensures that select petrol stations stock and dispense “Coke” - thus quenching the thirst of the vehicles and the motorists!

A new concept of “Jubilee Retil Outlets” has also been launched to set up petrol/Diesel stations on highways with comprehensive value added facilities for various customer segments, namely truckers, farmers, tourists and passenger transport. These include motels, restaurants, parking lots, weighbridges, sale of tyres, batteries, accessories, agricultural machinery repairs and recreational facilities provided selectively. The first such retail outlet was commissioned at Ongole, District Prakasam, Andhra Pradesh in August 1998.

IndianOil’s “INDANE LPG” is being marketed in 349 lakh Served by a network of 4120 distributors - One of the largest networks in the world.

SERVO ® Lubricant range is the largest selling Lubricant brand in India. IndianOil’s Aviation Service Continues to be the market leader in the aviation fuel Business with a market share of nearly 67.7%. IndianOil was the first to introduce Hydrant Refueling System
in India. IndianOil is also bunkering all types of marine fuels and lubricants required by the Shipping Industry in India.

**PIONEERING EFFORTS IN INDIA: Indian Oil FIRSTS**

- Hydrant Refueling System at Mumbai
- State-of-the-art LPG Import Facility at Kandla with Cryogenic Storage
- Mounded Storage for LPG and Automatic Electronic Filling System at Madurai LPG Bottling Plant
- Mobile LPG Bottling
- Rural Marketing of LPG by Mobile LPG Filling Truck introduced by Chief Minister of Tamil Nadu in Thanjavur on 18th May 1997. The Second such Rural Marketing Vehicle (RMV) was launched in Allahabad District of Uttar Pradesh during December 1998. As of April 1999, both RMVs are catering to over 17,800 customers. Each RMV, with a Storage Vessel of 5T capacity, has 2 filling machines at 15 m safety distance.
- Equipment for quality control check and rollable fencing.
- First oil marketing company in India to get ISO-9002 certification for Aviation Services, Lube Blending Plants, Quality Control Labs, and R&D Centre.

Plant at Vashi (near Mumbai) ensure that SERVO Lubricants produced there meet International Standards.

This portal provides information on various LUBRICATING OILS AND GREASES Marketed by Indian Oil and approved by Indian and foreign OEMs. However, for proper recommendation and application of these products, our customers are requested to avail the services of our experienced Technical Services Engineers, who are available across the country. We also provide the best possible guidance on Lubrication to our customers for optimum utilization of their resources.

**4. Gulf Oil Corporation Ltd.**

The Lubricant industry is growing at a tremendous rate and with international auto Giants entering the Indian market the need for high quality Lubricants will increase exponentially.

A pioneer in the Lubricant industry, Gulf Oil India is one of the largest private, Comprehensive lubricant manufactures in India. Its product range encompasses The entire spectrum of light and heavy vehicles, from:

- Two-wheelers to Cars
- LCV's to Trucks
• Tractors to Earthmovers
• Industrial to Defence Machinery equipment’s & Railways
• Ships to Airplanes

Technology
A 75000 tonnes p.a., ISO 9002 certified, completely computerized facility in Silvassa acquires specially selected and imported European base stocks and Tailor-made performance additives developed at the Gulf Oil Research Laboratories in USA and Europe for blending and filling.
The fully equipped laboratory with internationally trained and experienced Chemists conducts over 1200 tests every day to guarantee final product performance, Specially built programmable logical control systems, aided by imported French-made software, ensures precise control of the finished product properties.

Quality
Quality through unswerving customer satisfaction has been Gulfs strong suit. Change is important and the ISO certified company continuously upgrades its Quality by introducing products developed with newer technology.

Marketing-Customised Solution
Gulfs vast industrial product range covers every application known to man—from Water-dissolving cutting oil and high temperature grease to fire-resistant hydraulic Fluids. In fact, it is likely that everything you use has been processed on machinery touched by Gulf Oil.

Network
Gulf Oil started operations in 1993 with a distribution network of approximately 600 dealers and 54 stockists in the West Zone. Today, this distribution network has morphed into gigantic operation covering 120 exclusive Gulf Shoppes, 85 depots, over 1200 dealers and 18000 retail outlets, and the count is rapidly, inversing.

Update
Shareholders have recently approved gulf Oil India’s merger with IDL Industries Ltd. In a 2:1 swap ratio, this merger will enable the Hinduja Group Consolidate its Position in the Indian chemical segment and give it better synergies and a larger Network for both domestic and international marketing.

Lubricants Division
Automotive Products : Two-Three Wheelers
• Gulf Power Trac 2T Oil Jaso FC
• Gulf Pride 2T
• Gulf Pride 4T 20W40
• Gulf Front Fork Oil

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Automotive Products: Passenger Cars
- Gulf Multi G 20W50
- Gulf Multi GT 15W40

Automotive Products: Diesel Engine Oils
- Gulf SMO 40
- Gulf XHD 40
- Gulf SXC 40
- Gulf SD Plus 15W40
- Gulf SMO 20W40
- Gulf XHD 20W40
- Gulf Super Fleet 15W40
- Gulf LCV Special

Automotive Products: Gear Oil
- Gulf MP Gear Oil 90
- Gulf MP Gear Oil 140
- Gulf EP Gear Oil 80
- Gulf EP Gear Oil 90
- Gulf EP Gear Oil 140
- Gulf ST Gear Oil 90
- Gulf ST Gear Oil 140
- Gulf AGTF Type A

Automotive Products: General Machinery
- Gulf GML

Automotive Products: Brake Fluid
- Gulf Super HD Brake Fluid Dot -3

Automotive Products: Greases
- Gulf MP Grease, Gulf Chassis Grease, Gulf WB Grease

Automotive Products: Coolants
- Gulf Summer Coolant

Automotive Products: Genuine Oils
- Ashok Leyland GEO 20W40
- Ashok Leyland GEO 90, Genuine Ford Tractor Gear Oil, Genuine Ford Tractor Utto

Industrial Products: Tractor Oils
- Gulf Universal Tractor Fluid

Industrial Products: Turbine & Hydraulic Oils
- Gulf Harmony HVI 32, Gulf Harmony HVI 46, gulf Harmony HVI 100, Gulf Harmony

**Industrial Products:** **Industrial Gear, Rock Drill & way Oils**
Gulf Sentae 460, Gulf Sentae 680, Gulf Merit 100, Gulf way 32, Gulf way 46, Gulf way 68, Gulf way 100, Gulf way 150, Gulf way 220, Gulf Way 320, Gulf Way 460, Gulf Way H 57.

**Industrial Products:** **Compressor & Refrigeration Oils**
Gulf Refrigeration Oil 46, gulf Refrigeration Oil 68

**Industrial Products:** **Marine & Railroad Products**
Gulf Diesel Motive 473

**Industrial Products:** **Processing Oils**
Gulf Spin 10, gulf Spin 12, Gulf Therm 32, Gulf Super Quench 70, Gulf Quench 32, Gulf Quench 44, Gulf Quench 68, Gulf Quench 100, Gulf Rex Re 26 (Bulk)

**Industrial Products:** **Greases**
Gulf Crown LC3 Grease

**Industrial Products:** **Metal Working Oils – Neat**
Gulf Metsil C, gulf Metsil Al Super, Gulf Metsil Z, gulf Metsil ZZ

**Industrial Products:** **Metal Working Oils – Soluble**
Gulf Emulsil NT, Gulf Emulsil NA, Gulf Emulsil NA Sopl

**Industrial Products:** **Products**
Gulfcut 28 A, Gulfcut 45 B, Gulf Compress 100, Gulf Compress 150, Gulf Compress C100, Gulf Crest 32, Gulf Crest 46, Gulf Crest 57, Gulf Crest 68 Gulf Crest 76, Gulf Cut II D, Gulf Diesellube HD 10W, Gulf Diesellube HD 10, Gulf Diesellube HD30, Gulf Diesellube HD 40, gulf EP Gear Lubricant 100, Gulf EP Gear Lubricant 150, Gulf EP Gear Lubricant 220, Gulf EP ear Lubricant 320, gulf EP Gear Lubricant 460, gulf EP Lub HD680, gulf FG 3, Gulf FG 4, gulf Harmony 32, gulf Harmony 32 (R&O Tyype), gulf Harmony 46, Gulf Harmony 46 (R&O Type), gulf Harmony 68, Gulf Harmony 68 (R&O Type), Gulf Harmony 100, Gulf Harmony 100 (R&O Type), gulf Harmony 150, Gulf Harmony 150 (R&Otype), gulf Harmony 220, Gulf Harmony 220 (R&O Type), gulf Harmony 320, gulf harmony 320 (R&O Type), Gulf Harmony 460, gulf Harmony 460 (R&O Type), Gulf Harmony Super 46,Gulf Harmony Super 68, Gulf Htf C3 10, Gulf Htf C3 30, Gulf Htf C3 40, Gulf Htf C4 10, Gulf Htf C4 30, Gulf Htf C4 40, Gulf Par 5.6 (Bulk), Gulf SDMO 10 W, Gulf Super Diesel Plus 5W40, Gulf Super Diesel plus 20W40, Gulf Super Fleet Special 15W40, Gulf SXC 10 W 20, Gulf Univ 100, Gulf Univ 220, Gulf Univ 320, Gulf Univ 460, Gulf Universal Tractor Fluid, Gulfno Rust C, Gulfno Rust C 1,

Energy welled up in the womb of mother Earth. When refined and processed the plenitude of its products.

History:
In the year 1901 an enterprising group of individuals drilled the world’s first high volume oil well in Texas, USA. “Spindletop”, as millions worldwide knew it, was the foundation upon which the GULF Oil Company was built, Ever since that pioneering day, GULF Oil has been at the forefront of advancement in the global Oil industry.

The first launch of today’s GULF logo was the Day in 1913 when the orange disc appeared over what. Was in fact the world first drive-in filling station at Pittsburgh, USA, Technological breakthrough followed which Revolutionized the way in which crude oil is refined, such as the First manufacture of Gasoline by a method now known as Catalytic Cracking.

In 1923, GULF’s main refinery at Port Arthur in Texas, USA Became the world’s first combined oil processing and production Facility. A couple of years later, “Gulf Pride” Motor Oil was Launched. In 1926 GULF made the leap across the Atlantic Ocean and established its brands in Europe. As the pace of Technological advance began to gather speed, GULF set up new State-of-the-art R & D laboratory in Harmarville, Pennsylvania, USA. This establishment discovered new, more effective and efficient Uses of crude oil and its derivatives, and also pioneered the techniques of “Aerial Seismology” in 1936. This breakthrough not only helped Geologists to discover new oil wells, but it was adopted by the US Armed forces to track Submarines during world War II, With liberalization policies of Government of India introduced in 1992, GULF Oil Corporation Limited (“GULF”) was promoted in 1993 by Ashok Leyland Limited With its associated companies and 50% equity participation from GULF Oil International along with Hinduja Consultancy Ltd. To became first such company in India within the Industry.

Ashok Leyland Ltd (“ALL”) is India’s second largest manufacturer of commercial Vehicles and diesel engines. ALL has five plants in India and with its own R&D base it has established a tradition for technological leadership and a strong reputation for product liability.

ALL was the first to introduce 3-axle trucks and full air-brakes in India, Recently, as a result of almost $ 200 million investment program and technology from IVECO a new generation of world class trucks – the cargo series, has been added to its products range.

It also manufactures 60 other models in the light, medium and heavy duty Vehicle range, ALL was the first automotive manufacturer in India to receive the ISO 9002 certificate. For the year ended March 2001, ALL registered sales Turnover of Rs. 26067 millions and PAT of Rs.
817 millions.

GULF has agreement with GULF Oil International (Mauritius) Inc. for Trademarks Licence and Technical Know-How. Initially GULF introduced a whole range of GULF’s international products into the country through tool blending arrangements.

In 1995 the Company set up its first State-of-art blending plant at Silvasaa. The Silvassa plant has the lubricating oil production facility for 75,000 tpa and is equipped with the ‘State-of-the –art equipments including PLC for blending Control.

In 1994 the Company promoted a subsidiary company viz. GULF Care India Limited (‘GCIL”) with a technical collaboration with SIPAL Arexons SpA, Italy and Member of Flat Group Companies for manufacture and marketing of wide range of vehicle maintenance products.

GCIL launched its product range of ‘Do-it-yourself that keep the vehicle fit. The name of GULF CareX India Limited was changed to GULF Carosserie India Limited in 1996.

On August 31, 1996 GULF merged with Pita Ashish Oils & Lubricants Ltd., a listed Company and subsequently on September 4, 1996 the merged entity changed its name from Pita Ashish Oils & Lubricants Ltd. To GULF Oil Corporation Limited.

GULF’s Manufacturing and Quality Control facilities, Supply and Distribution, Technical Department along with Regional Sales, Marketing and Personnel & Administration are certified under ISO-9002 certification, Now GULF is embarking on QS-9000 certification.

Consequent to the merger of GULF Oil India Limited, Mumbai with IDL Industries Limited W.e.f 1st January 2002, the Company’s name changed to GULF Oil Corporation Limited, a copy of Order of Hon’ble High Court of Mumbai and Andhra Pradesh alongwith fresh Certificate of Incorporation is enclosed.

In India, gulf Oil Lubricants has almost a 6% market share in the Automotive Sector, and another 3% on the industrial market share, Among the private Sector, it is next to Castrol, and ranks among the top 5 in the industry. It Provides, a wide spectrum of Lubricants to meet the diverse requirement of both the automotive as well as an Industrial sector, and is one of the reputed OEM Suppliers to various leading brands including Ashok Leyland, Kinetic, Mahindra & Mahindra, etc. Over a period of years, Gulf Oil, has reputed itself to be a Company, so conscious of its quality that among the industry, it has been a Company of choice for the requirement of Lubricants.

Apart from catering to the local requirement Gulf Oil India Limited, also sells its Lubricants
to Countries like Bangladesh, Nepal, Indonesia, Taiwan, Saudi Arabia, Thailand, Philippines, etc., Gulf Oil India, acts as the technical hub for quality and Formulation support for other international affiliates.

Continuous up-gradation to meet the challenges posed by the environment Requirement of the automotive industry, has been fully met by the Gulf team in Formulating the products of the required specification.

5. Castrol India Ltd.

On 19th March 1899, Charles ‘Cheers’ Wakefield set up an oil Company in England. Ten years later, he produced a new lubricant that would revolutionise transport in the first half of the twentieth Century. He called the new oil Castrol.

To this day this name is synonymous with premium quality, high performance and leading edge technology in lubrication. The success of company owes much to the original philosophy of Charles Wakefield. He drew on the held and encouragement of his customers in developing his new Castrol Oils because he had the foresight to see that working in partnership was the best way to achieve success for both parties. This rationale is as relevant to us today as it was then. Charles Wakefield played a major role in the rapidly developing transport industry, placing his faith in the potential of the internal combustion engine as the power source of the future. Working hand in hand with pioneering aviators and motorists of the day as aircraft, the motorcycle and the motorcar were emerging, he aimed to create the highest quality engine oils—and then to improve them. In doing so, he contributed to exciting record achievements. It was natural that Castrol was the chosen oil for breaking world speed and Endurance records, on land, on sea and in the air, The Land Speed Record alone has been broken an amazing 21 times by
cars using Castrol lubricants.

Castrol products were tested and proved at the very limits of endurance—a technique we continue to this day. Many of our lubricants that started out as competition grades have become available to the everyday motorist, allowing millions of people worldwide to share in the benefits of face-proven technology. Our founder was also a pioneer in marketing—before marketing had even been invented. His strategy of advertising record-breaking and sporting feats achieved by pace-setting Castrol users was pure original thinking, and certainly put Castrol ‘on the map’ in England and around the world. Our support of international teams in many areas of motorsport continues to be a key part of our promotional activity in the new century. With more than one hundred years of experience in satisfying our customers’ needs, we remain as committed today to providing the most technically advanced lubricants and services as was Charles Cheers Wakefield when he founded the company.

History:

1899-1909

In March 1899, Charles ‘Cheers’ Wakefield founded CC Wakefield & Co Ltd, later to become Castrol. The Wakefield Lubricator, patented in the 1890’s for Lubricating the axlebox of steam locomotives, was invented. It is still in use today. The Wakefield Motor Oil ‘Castrol brand’ was registered in 1909.

W. Handley rides to victory

The 1920’s

Castrol ‘R’ helps flight pioneers Alcock and Brown for their first non-stop flight across the Atlantic. In 1925, M. Campbell sets a new World Land Speed record. W. Handley becomes the first rider to win two Isle of Man TT races in one week. Bentley win Le Mans in 1928 at an average speed on 69 mph.

Amy Johnson

Early 1930’s

The Wakefield Trophy award for World Land Speed Record holders, is Commissioned by Charles Wakefield. Amy Johnson is the first Woman to fly solo from England to Australia in 1930. Detergent-based ‘Patent Castrol’ for cleaner Engines appears in 1935.

In 1968 CaMercedes Benz racing

1951 – 1960

Geoff Duke wins the 500cc World Championship for Norton at the Belgium GP in 1951, 2 years later, the first semi-synthetic racing motor oil, Castrol R20, is developed in partnership with Mercedes Benz.

Queen Elizabeth II
• The Sixties
• The luxury liner Queen Elizabeth II is launched in 1968, Castrol GTX,
• The first multigrade oil with a 20W/50 viscosity rating is launched. It is to become
• The most famous motor oil of all time. In the 1970 London to Mexico rally, 16 of
• The 23 finishers are lubricated by Castrol.

Bjorn Waldegard
1978 – 1983
Bjorn Waldegard wins the World Rally Drivers Championship in 1979, 1983 sees Nelson
Piquet (Brabham BMW) winning the F1 Drivers Championship, Freddie Spencer (Honda)
the 500cc World Title and Richard Noble setting a new World Land Speed Record (633
mph) in Thrust II.

Wayne Rainey on Yamaha
The early Nineties
As in 1988, Jaguar completes the double by winning the Le Mans and Daytona 24 Hour races in 1993. Wayne Rainey wins his third world title on a Yamaha YZR500. The Toyota
Castrol Team with Juha Kankkunen win both the Drivers’ and the Manufacturers’ titles
in 1994.

Thrust SSC
1996 & 1997
G Capellini is Formula One Powerboat World Champion for the fourth time in a row in
1996. In 1997, Andy Green in Thrust SSC sets a new World Land Speed Record at 763
mph (1227 kph), faster than the speed of sound. Jacques Villeneuve wins the F1 Drivers
Championship, and Williams the Constructors.

Colin Edwards celebrating
1999 & into the 21st Century
We celebrate 100 years. The new century sees C. Edwards winning the World Superbike
Championship on a Honda VTR1000 SP-1. In 2001, G. Capellini becomes a speedboating
legend winning his sixth title. Teams using Castrol win 5 World Championships, including
a tenth title for drag racer J. Force.
Partnerships with leading manufacturers extend outside the Automotive industry. Also
have a major global business association with the Komatsu Group.
Partnering with leading manufacturers – in the motor industry or other sectors where
Castrol operate – is a vital and integral part of business strategy. The aim of such partners-
ships is to make sure that both organizations benefit from improved global Performance
and overall cost efficiencies. Ultimately, this benefits customers too. Long-term global
partnership with the BMW Group follows a long and successful working relationship
between two companies – and two of the world’s strongest automotive brands.
Castrol and the BMW Group
partnerships with leading manufacturers extend outside the automotive industry. Also have a major global business association with the Komatsu Group, one of the world’s leading construction equipment manufacturers.

Castrol and Komatsu
Castrol have been appointed as the worldwide strategic lubricants partner for Jaguar Cars Ltd., Land Rover, Volvo Car Corporation, and Aston Martin.

Castrol and Jaguar, Volvo, Land Rover, Aston Martin
In addition to these global partnerships, castrol also have agreements with many other leading automotive. In addition to these global partnerships, castrol also have agreements with many other leading automotive.

Manufacturers, at a country or regional level.
Castrol, we have the highest expectations for motor oil safety and the environment. This is why castrol is committed to listening and responding to the needs of our customers and to working within our industry to raise HSE standards.

The care that we Castrol put into the safety of products and practices directly benefits customers, their employees and the communities in which they operate. As a company, Castrol committed to comply with environmental laws and regulatory standards on a Worldwide basis. Castrol will continue to drive down the environmental and health impact of operations by reducing waste, emissions and discharges and by using energy efficiently. they will produce quality products that can be used safely by our customers. Castrol stated goals are.
- no accidents
- no harm to people
- no damage to the environment

Castrol continue to develop high-performance, technologically – Advanced motor oils and lubricants, carry out our research and Product development in own laboratories around the world. Global Centres of Technical Excellence global headquarters for R&D, which also co-ordinates the work carried out in Technical Centres of Excellence across the globe, including the USA, Germany and India, is located in Pangbourne, UK. research facilities liaise closely with leading manufacture, Scientific and technical centers and Universities. focus on technology has delivered industry-leading products such as Castrol Magnatec-one of the best engine-wear lubricants in the world0-as well as best-in-class fuel economy products for diesel truks, such as Castrol Elixion-the only 'heavy duty’ lubricant to guarantee the customer 4% fuel savings-and Unrivalled motorcycle products. Such innovative technology also enables us to make
outstanding, world-class product offers to major OEMs (Original Equipment Manufacturers) such as BMW and Volkswagen. In addition to research and development in automotive engine lubricants, Castrol also devote high-level resources to the development of products for other vital areas such as driveline applications, maring Transport and the industrial sector.

**Better for business — and the environment**

Products are designed to deliver superior performance and greater reliability, reducing our customers’ operating costs. At the same time, the ‘green agenda’ is very important and development teams also continue to explore ways of making lubricants more environmentally friendly while maintaining high levels of performance.

Castrol India Ltd. (Castrol) is a 51% subsidiary of BP Amoco plc, UK. Subsequent to global takeover of Burmah Castrol plc by BP Amoco, Castrol India become as subsidiary of BP Amoco since Burmah Castrol had a majority stake in Castrol India Ltd, through Castrol Ltd. UK. Castrol is a dominant player in the lubes industry with 20% market share.

The company has efficient marketing and distribution network along with good brand equity.

However stiff competition from PSUs like IOC, HPCL and BPCL, which own over 60% of the market, could effect Castrol’s market share. An increase in base oil prices with no corresponding increase in product prices coupled with additional advertisement expenditure is likely to keep margins under pressure.

PSUs dominate the Rs 55bn lubricant market, with 60% market share, MNCs have about 5% share and balance with the unorganized market. Improved technology in the end user industry and better oil quality has effected lubes market. Growth in this industry has declined to 6% you.

Lubricant market is divided into automotive grade (60%) and industrial grade (40%). Automotive lubes are further bifurcated into diesel based lubes (70%) and petrol based (30%). In the early ‘80s, all MNCs, except Castrol decided not to comply with FERA (dilute equity to 40%) and hence folded their operations in India, in 1992 the segment was deregulated, which meant no restriction on base oil supply. Subsequently Castrol’s sales and market share gained.

Other major MNCs in the segment include Gulf, Pennzoil, Elf, Idemitsu, Mobil, etc with fragmented market shares.

British oil giant BP Amoco Pic took over Burmah Castrol Plc for 3bn pounds (Rs 206bn). The merger would provide BP Amoco significant opportunity in Indian market. Ntum Castrol Products would be made available to new consumer worldwide. The acquisition
of Castrol Worldwide is unlikely to effect the day to day management structure in Castrol India. Rather this merger has ensured the company uninterrupted supply of base oil from BP Amoco at competitive prices.

In Castrol's worldwide operations, Indian Operations ranked second in volume and third in profit Terms respectively, next only to USA and Germany. The management team is highly Professional and has demonstrated its marketing prowess by propelling market share from 6% to 20% over a span of last 8 years.

Castrol is particularly strong in the diesel lube segment with its leading brand CRB. The Company has built up strong brand equity particularly among truck drivers.

Pursuant to global takeover by BP Amoco, back in India, in Dec 2000. BNP Amoco and Castrol UK made an open offer to acquire an additional 20% of Castrol India at Rs. 311.91 per share. But the offer ran into rough weather with stock market regulator Sebi insisting that the offer Price be upped to Rs. 350. According to Sebi, the offer price must be based on the average Price of the stock over six months. Sebi wanted the company to base the offer price on the average price over six months before March instead of July as chosen by the company. BP Amoco Castrol has challenged Sebi's decision and the offer is now on hold.

Castrol commenced operations in India in 1919AD with 4 regional offices in Mumbai, Delhi Culcutta and Madras. In 1981AD the Indian undertaking and business was amalgamated with Indrol Lubricants and Specialties Ltd. Castrol Ltd., UK then has 40% stake in the Company, In 1990AD the company was rechristened as Castrol India Ltd. The company had its maiden issue way back in June '86. The issue size was 0.9mn shares of Rs. 10 each at a premium of Rs.40. In 1993AD the parent company increased its stake to 51% through fresh allotments of 3.54m shares at a premium of Rs 100 each.

BP Amoco acquired last year Burmah Castrol plc Worldwide. Burmah Castrol plc holds 51% in Castrol India through its subsidiary Castrol Ltd.UK.

**Plant Locations**

The Company has 5 blending plants, at geographically dispersed locations. The company has Plants at Patalganga (Maharashtra), Paharpur (West Bengal). Silvassa (Gujarat). Tondiarpet (Tamil Nadu) and Ballabgarh (North). After closing down its Mumbai's plant in July 2000, Castrol has just decided to phase out the manufacturing facility located at Hosakote (Karnataka) and offered VRS to the workers to be effected by the phase out move.

The Silvassa plant enjoys fiscal advantages of sales and income tax exemptions. The plant's Annual capacity is 50,000 KI per shift. Within the Castrol group, it is the second largest plant in the world. The plant has flexibility to manufacture industrial as well as automotive lube oils. Now enables consumers in 7 leading cities, to get free
home delivery of Castrol products.
Another novel concept aimed at consumer convenience was the launch of "Castrol Drive-Ins-
which are independent workshops, supported by Castrol. Apart from providing technical advice, including floor designs, to ensure safe, efficient, cost effective and friendly service to customers, Castrol partners these workshops by providing modern service equipment and marketing support.

Commercial Business

For FYOO, the company’s business with all major original equipment manufactures increased. The company has long term first fill contracts with Escort, JCB and L&T. Maximum Requirements of this segment was met through Silvassa plant, which give the end user added Benefit of sales fax exemption.

Industrial Business

Industrial Lubricants include metal cutting Oil, anti-rust, hydraulic oil, gear oil, turbine oil. Refrigeration oil, greases and specialties etc. The Company’s brands Tribol and Optimal are
Popular in this segment. The market for industrial lubes comprise fabricated goods, plastics, Machinery manufacture and metal manufacturing, distributor, powergen, process industry and TEM segments.
The Castrol Plus program, launched in FY12/99 was extended to new customers in FY 12/2000. This program provides for the handing over of complete responsibility for Managing the customer’s needs for chemicals, including lubricants, the company. New Customers to whom the program was extended in FY12/2000 included Maruti Udyog Ltd. This segment is characterized by low margins therefore the company has adopted the strategy of providing value-added services by bundling the engine oils with additional services like Monitoring the machines, producing oil suitable for the respective engines etc. These a Additional services bring the required margins. Castrol is the sole supplier to Hindustan Power Plus for its Caterpillar engines.

Marine Business

The company has increased its market share in Marine segment despite negative growth in Indian shipping tonnage. Upgradation at Silvassa plant for marine blending and strengthening of supply chain enabled the company to reduce lead-time and provide prompt service.
Recommendation from Telco for all its Cummins engine fitted vehicles. Castrol CRB
Plus Tractor Special, was launched specifically for the tractor segment, in consumer friendly 7.5 litre pail Packs. The success story of the year was however, Castrol Active 4T, a superior 4 stroke engine oil, Which within less than a year of its launch, has emerged as the unchallenged market leader in its segment. Another innovation in the two wheeler segment was the introduction of Castrol Scootek Hi Mile, in a new Ezee Tube 40 ml pack the first of its kind in India. In the Passenger Car market, Castrol GTX Magnatec was launched nationally and has carved a niche for itself within the discerning consumer segment. Besides product innovations, Castrol also initiated pioneering efforts in the channel management And route to market areas. A consumer service called “Castrol Call for a Can”, now enables consumers in 7 leading cities, to get free home delivery of Castrol products. Another novel concept aimed at consumer convenience was the launch of “Castrol Drive Ins” which are independent workshops, supported by Castrol. Apart from providing technical advice, including floor designs, to ensure safe, efficient, cost effective and friendly service to customers, Castrol partners these workshops by providing modern service equipment and marketing support. The Company is also in the process of implementing a programme on World Class Customer Management which will benchmark the company’s customer management practices with the best in the world and help achieve the highest level of customer service.

**Industrial**

The focus of the Industrial Business is to create value for Customers through improved Productivity and lower manufacturing costs by providing high performance products and value Added services. The company has sought to achieve this through strategic alliances with Original Equipment Manufacturers, high performance products and a dedicated distribution channel for Industrial Customers. The Castrol plus program, launched in 1999, was extended to new customers in 2000. This Progarme provides for the handing over of complete responsibility for managing the customers Needs for chemicals, including lubricants, to the Company. New customers to whom the program. Was extended in 2000 included Maruti Udyog Ltd.Growth was recorded in the Fabricated Goods (22%) . Plastics (16%) and Metal Manufacturing (9%) segments. However there was a sizeable decline in the Distributor (20%). Powergen (14%), Power Industry (5%) and TEM (10%) segments.
Castrol logo evolution

1917

1929

1946

1958

1967

1983

2001
PRODUCTS

Passenger Car Motor Oils
GTX Magnatec
GTX Extra
GTX 20 W – 40
GTX 15W – 40

Greases
AP Grease
Heavy Duty AP 3 Grease
Ultratack AP3 Grease
Wheel Bearing Grease
AP 2 Grease
Chassis Lubricating Grease

Brake Fluid
Universal Brake Fluid
Q- Stop

Multigrade Diesel Engine Oils
CRB plus +
CRB Turbo
RX Super Plus
RX Super Max
Delta 4 X
CRD 20 W – 40 Multigrade
Tractormax
Deusol super Euro
Deusol Super
CRD Sona Multigrade
CRB Prima
CRB Prima Plus
Tractormax Power

Gear Oils / Transmission Fluids
ST 80 W – 90
TQ
Hypoy 80EP Light
Hypoy B
Long Life Gear Oil 80 W – 90
Extreme Pressure 90 EP
High Pressure Rear Axle 140 EP
Long Life Rear Axle85 W – 140

Coolants
Long life Coolant
Heavy Duty Coolant
HD Coolant – NA

Hydraulic Oils
L & T Castrol Hydroil Light
L&T Castrol Hudoel Viscus
Excavator Fluid 0 TH 46

Monograde Diesel Engine Oils
CRD 30 Xtra
CRD 40 Xtra
PSO 2
CRD 30
CRD 40

Motorcycle Oils
Power 1
Activ 4T
Go 4T
Super TT
Scooter 2T
JettX
Front Fork Oil
Two Wheeler Gear Oil