

Petroleum engineers

*make a*

*world of difference*



**energy4me**

energy4me.org



# Where Would We Be Without Petroleum?

You can kiss lipstick good-bye.

Artificial Hearts

Aspirin

Balloons

Bandages

Blenders

Cameras

Candles

CD Players

Clothing

Compact Discs/DVDs

Computers

Containers

Crayons

Credit Cards

Dentures

Deodorant

Digital Clocks

Dyes

Fertilizers

Food Preservatives

Footballs

Furniture

Garbage Bags

Glasses

Glue

Golf Balls

Hair Dryers

Hang Gliders

House Paint

Ink

Insecticides

Life Jackets

Lipstick

Luggage

Medical Equipment

Medicines

MP3 Players

Pantyhose

Patio Screens

Perfumes

Photographic Film

Photographs

Piano Keys

Roller Blades

Roofing

Shampoo

Shaving Cream

Soft Contact Lenses

Surfboards

Telephones

Tents

Toothpaste

Toys

Umbrellas



# Fossil Fuels - Nature's Battery



## Fossil Fuels

- Oil
- Natural Gas
- Coal

## Today's Energy

- 85.5 percent = fossil fuels
- 14.5 percent = nuclear and all other sources

## By 2025

- 87 percent = fossil fuels (oil, gas, coal)
- 13 percent = nuclear and all other sources

Source: US Energy Information Administration

# Oil: A Timeless Energy Source

Ancient times



## **3000 B.C.**

Mesopotamians used “rock oil” in architectural adhesives, ship caulks, medicines and roads

## **2000 B.C.**

Chinese refined crude oil for use in lamps and to heat their homes

Even though fossil fuels were used thousands of years ago, mass consumption of oil and gas began only “recently.”

# *Oil: A Timeless Energy Source*

Oil industry saves the whales



## **Mid-1800s**

Whales hunted to near extinction

## **1849**

Method to distill kerosene from petroleum discovered

## **1853**

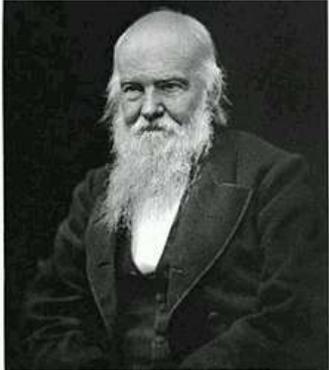
Polish chemist Ignacy Lukasiewicz discovered how to make kerosene from crude oil on an industrial scale.

## **1859**

Kerosene took over lighting market.

# Oil: A Timeless Energy Source

Dawn of a new age



James Young

**1847**

The world's first oil well was drilled in Baku, Azerbaijan

**1851**

Scottish chemist James Young opens the world's first oil refinery near Edinburgh, Scotland

**1859**

Colonel Edwin Drake drilled the first successful commercial oil well in northwestern Pennsylvania.

**1896**

The first known offshore oil well is drilled at the end of a 300-foot wharf in Summerland, California.

**1901**

On January 10, Spindletop, an oil field located just south of Beaumont, Texas, produces a "gusher" that spills out 100,000 barrels of oil per day.

**1917**

The Bolivar Coastal field, South America's largest oil field, discovered in Venezuela



Colonel Edwin Drake

# *Oil: A Timeless Energy Source*

Cars drive need for oil

**1903**

Entrepreneur Henry Ford incorporates the Ford Motor Company.

**1908**

Ford's mass-produced Model T drives consumer demand for gasoline.

125,000 cars on US roads.

Oil is found in Persia (modern Iran), leading to the formation of Anglo-Persian Oil company, the forerunner of BP

**1930**

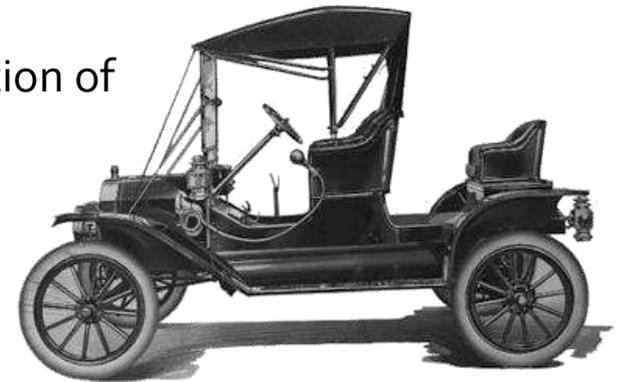
26.7 million cars in the US.

**1938**

Major oil reserves are discovered in Kuwait and Saudi Arabia

**1950 – present**

Oil became most-used energy source because of automobiles.



# Oil: A Timeless Energy Source

## Recent consumption



### 1993 – present

US imports more oil than it produces - needed because of growing petroleum demand used for fuel, electricity and manufacturing plastic.

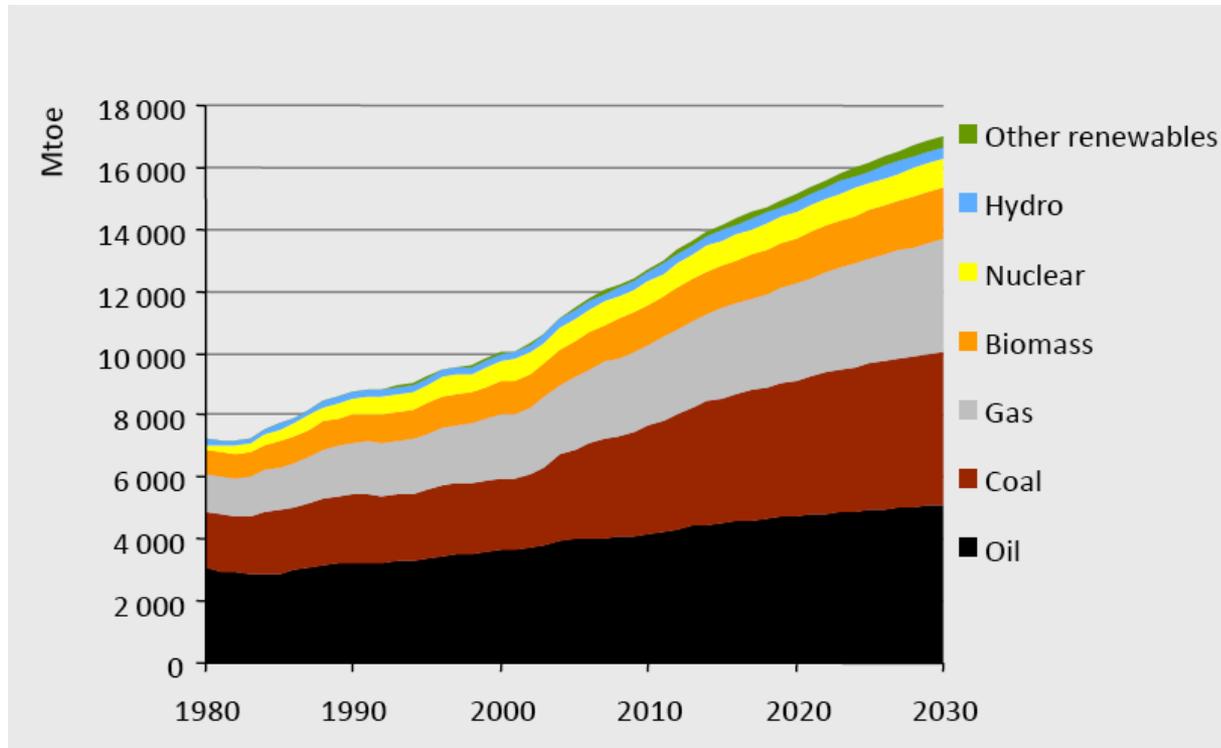


### 2007

World uses about 86 million barrels of oil per day – 40,000 gallons every second



# World Demand for Energy Will Continue to Grow



**World energy demand expands by 45% between now and 2030 – an average rate of increase of 1.6% per year – with coal accounting for more than a third of the overall rise**

# *Who Will Discover Oil and Gas in the Future?*

## The Finders

### **Geoscientists** (geologists, geophysicists)

- Study the Earth to search for clues to where oil and gas might be hidden
- Analyze minerals, soil, and rocks samples
- Evaluate underground geologic structures to find oil and gas fields

## The Movers

### **Petroleum engineers**

- Determine best drilling methods to find oil and gas deep in the Earth
- Manage production when oil and gas are drained from underground

# *Are you a future petroleum engineer?*



1. Do you love nature (oceans, jungles, and deserts)?
2. Do you want to travel?
3. Do you play computer or video games?
4. Are you creative or imaginative?
5. Are you a good communicator?
6. Do you like working with technology?
7. Are math and science your favorite courses?
8. Do you want to experience financial freedom and security?
9. Do you want flexibility in your work environment?
10. Do you want to really make a difference in our world?

# Petroleum Engineers

work in teams to...



- Use creative solutions to find oil and gas
- Understand rock formations
- Analyze oil and gas fields' qualities
- Monitor drilling and production
- Design equipment, processes so maximum amount of oil and gas is recovered
- Manage drilling of oil and gas wells
- Ensure operation runs smoothly and safely

# Petroleum Engineers

are high-tech

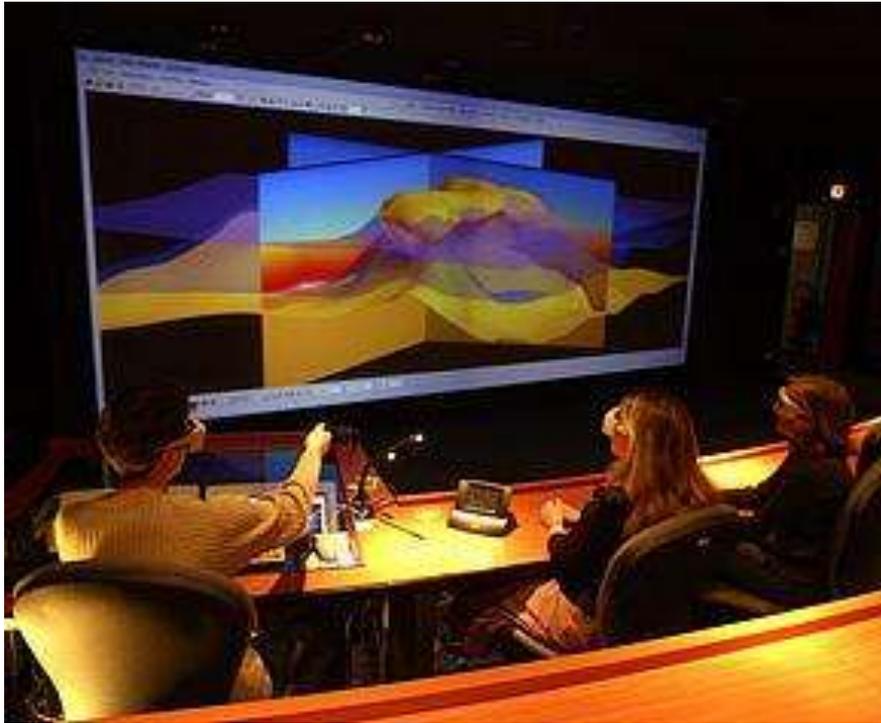


Photo courtesy of [www.planete-energies.com](http://www.planete-energies.com)

- Shoot 3D “pictures” to virtually walk around inside an image of Earth
- Guide drilling rigs from control rooms miles away
- Work with cutting-edge technology
  - Advanced directional drilling technology
  - Sophisticated software
  - Remote-operated vehicles (ROVs) under water
  - 3D visualization

# *Petroleum Engineers*

work in a variety of settings

- High seas
- Remote jungles
- Vast deserts
- Mountain ranges



- In laboratories
- Offices
- Outdoor sites

across the world

# *Petroleum Engineers*

offer many skills and talents



Petroleum engineers...

- Are good communicators
- Enjoy creative problem solving
- Like working with people
- Excel at math and science
- Are analytical
- Adapt easily to change
- Thrive on challenges

# Petroleum Engineering

job prospects are bright



## **Hot job market**

Severe worker shortage for the next 10 years and more

## **Excellent pay**

Highest starting salary of any engineering degree

## **Graduates in demand**

Scholarships available

## **Choice of work environment**

Varied work situations, global locations, field or office

## **Fast track career**

Industry promotes from “within” to fill managerial positions

# Petroleum Engineers

are environmentally concerned



Help solve the world's energy problems

*while protecting the environment...*

# *Shhkkk! Don't Disturb the Bears*



When drilling in an area that was home to grizzly bears, petroleum engineers ....

- Restricted human access by using remote technology to monitor drilling
- Controlled hours of road use
- Drilled wells only during winter
- Muffled equipment noise
- Let sleeping bears lie

# Offshore Drilling Platforms Become "Pit Stops" for Monarch Butterflies



- 300 million monarchs fly from Canada, U.S. – spending winters in warm central Mexico
- Offshore oil-industry equipment in Gulf of Mexico offers ideal rest stop
- Monarchs attracted to structures with bright yellow paint
- Sleep-over lets them rest

Source: Gary Noel Ross, PhD, professor emeritus of biology, Southern University, *Louisiana Environmentalist*.

# Petroleum Engineering

## Areas of Specialty

### Petroleum Engineers

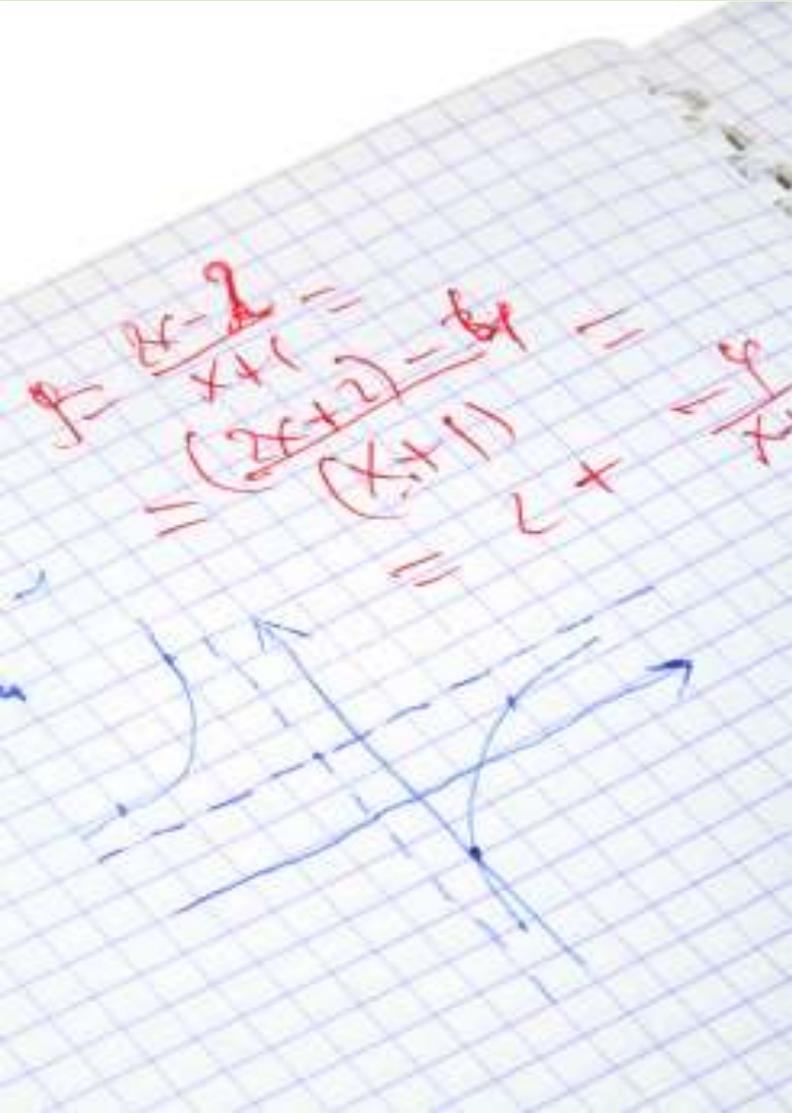
- production engineer
- drilling engineer
- reservoir engineer
- completion engineer
- environmental engineer
- and more!

### Allied careers

- petro-physics
- geology
- geosciences
- geophysics
- chemistry
- hydraulics
- environmental sciences
- information technology
- safety

# Petroleum Engineering

Prepare for your career



- Take college preparatory courses, including advanced math and science courses
- Participate in engineering and technology student organizations
- Take part in science fairs and math competitions
- Read about petroleum engineers on [Energy4me.org](http://Energy4me.org)

# *Plan your future*

Plan your future in petroleum engineering at **[www.energy4me.org](http://www.energy4me.org)**

- Listing of petroleum engineering university programs
- Scholarships
- Career guidance

Contact [EnergyEd@energy4me.org](mailto:EnergyEd@energy4me.org) for more career information.



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