

Lecture Note of Innovative Ship and Offshore Plant Design

# Innovative Ship and Offshore Plant Design

## Part II. Offshore Plant Design

### Ch. 1 Introduction to Offshore Plant Design

Spring 2016

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- Ch. 4 Layout Design of Topside Systems

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## Ch. 1 Introduction to Offshore Plant Design

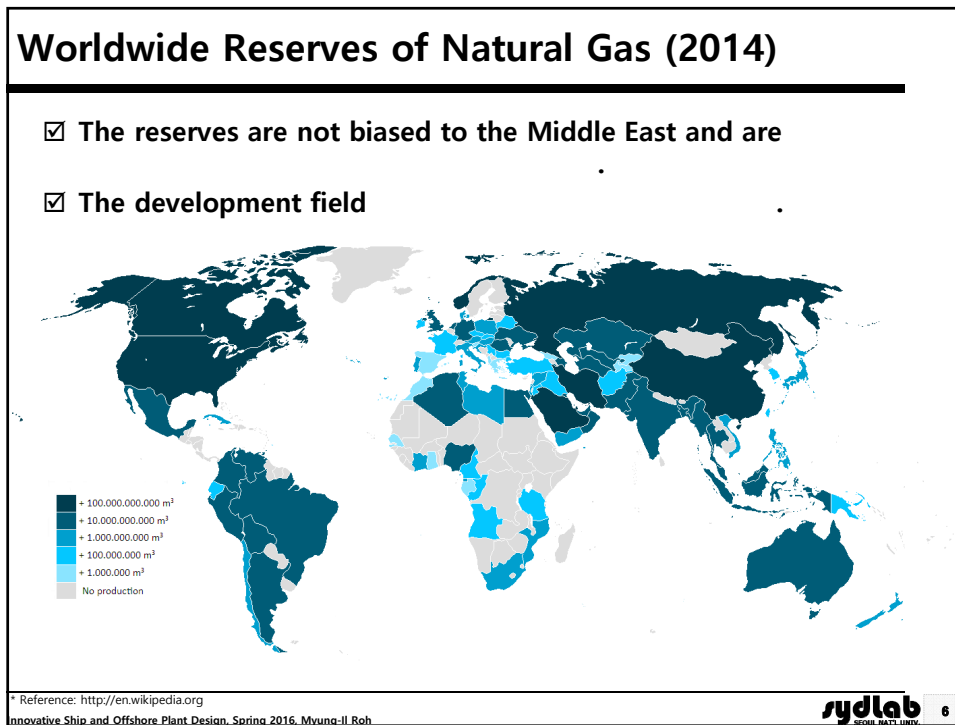
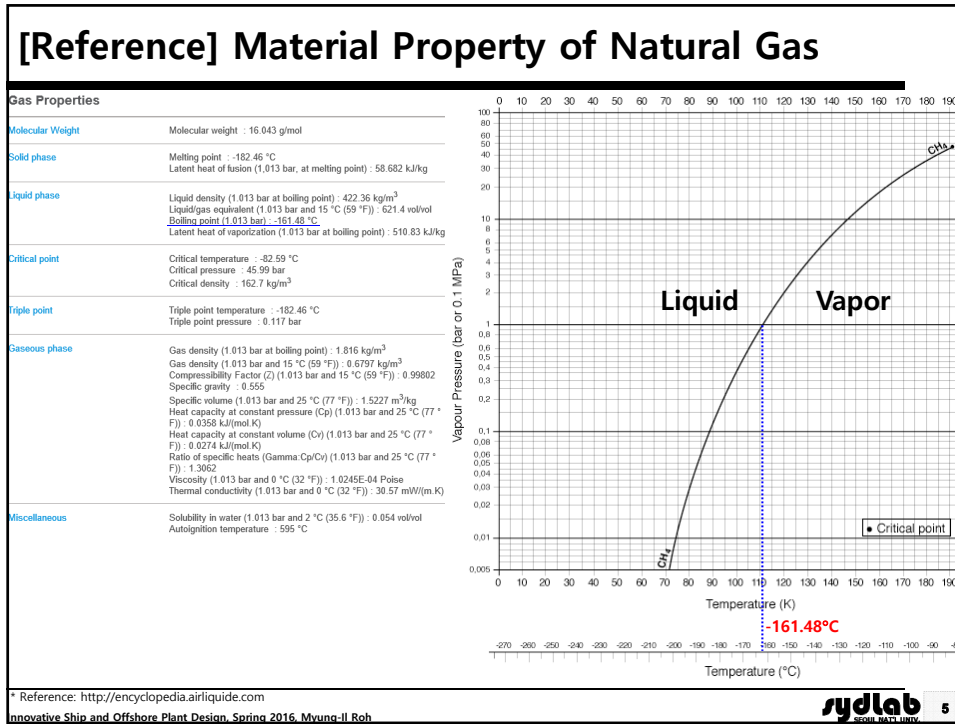
### Natural Gas (NG)

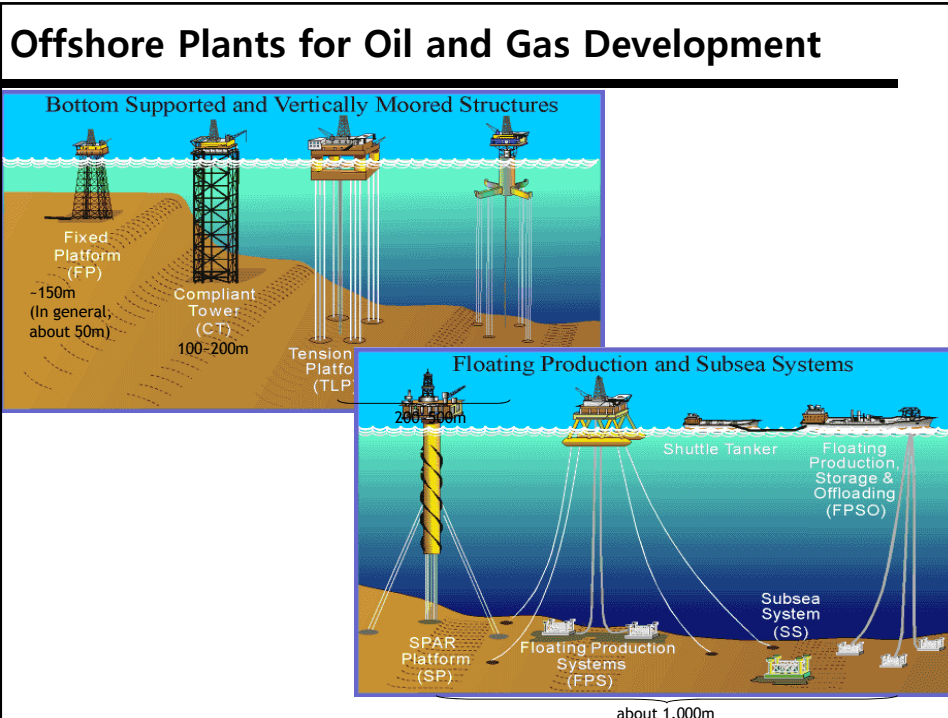
#### Natural Gas

- Hydrocarbon gas mixture consisting primarily of  $\text{CH}_4$  for preventing environmental pollution → Used for all fields of home, commerce, transportation, industry, etc.
- Providing about  $\frac{1}{4}$  of energy consumption of the world → It will be continuously increased.

#### Special Features

- Liquefied at  $-162^\circ\text{C}$  under atmospheric pressure →
- When liquefied, the volume becomes  $\frac{1}{600}$  . →





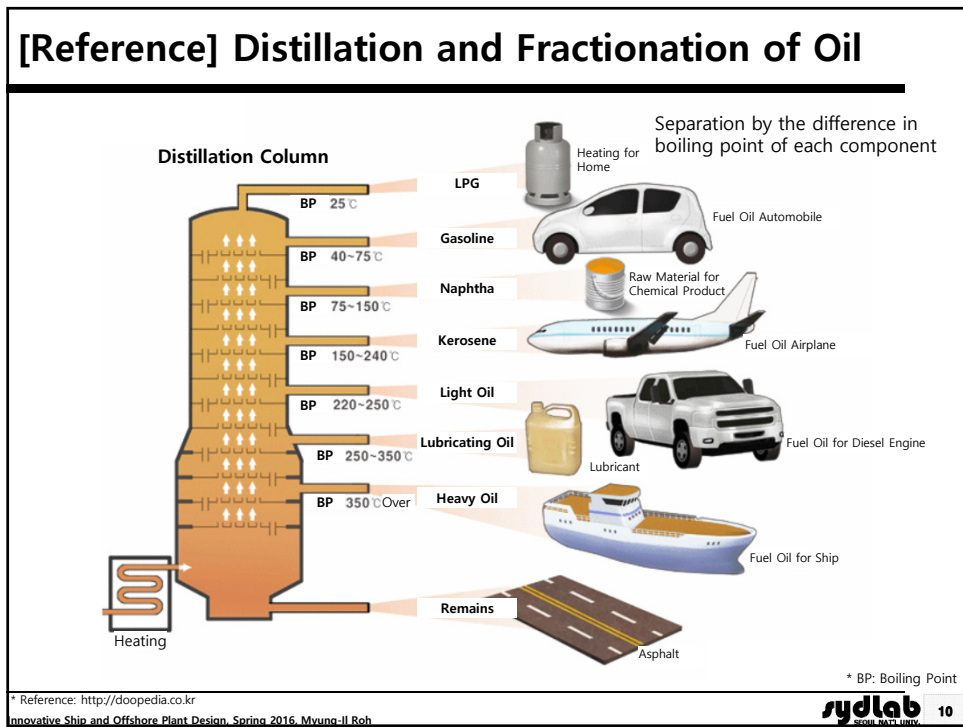
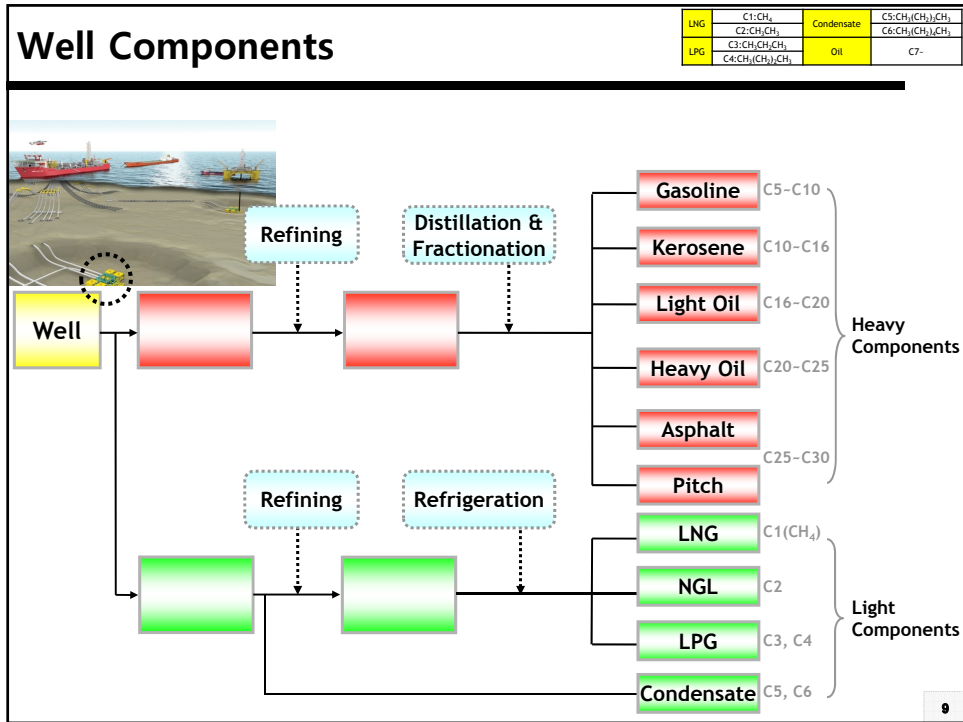
### Offshore Plant for the Development of Deep Sea

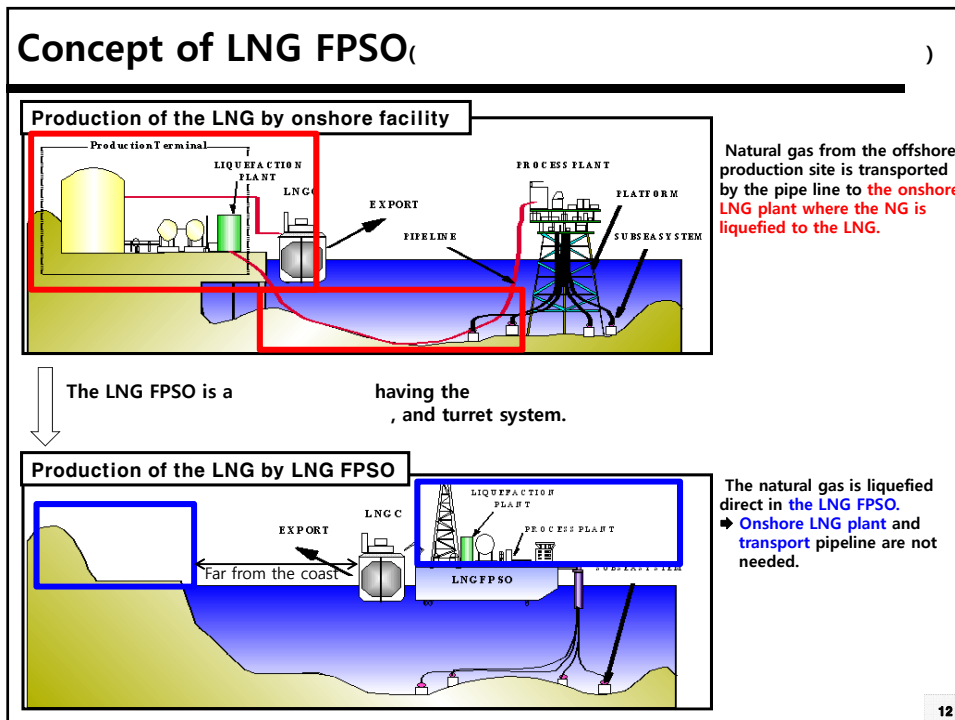
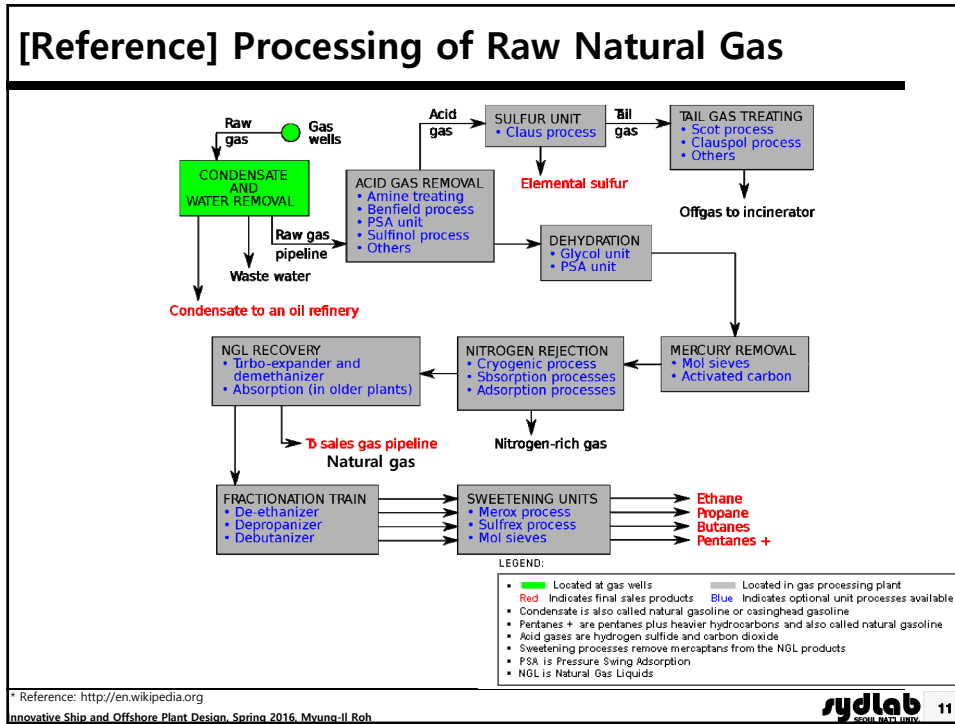
- Production plant for separating the well stream into oil, gas, and water and then transferring them to onshore
- for the production and for the storage of oil and gas
- and for topsides equipment and instruments
- Oil FPSO / LNG FPSO

Topsides

Hull

Well





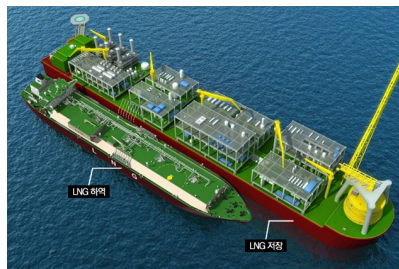
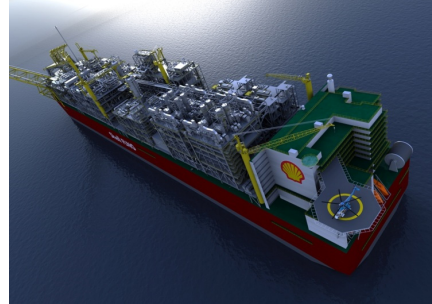
## [Article] Shell decides to move forward with groundbreaking LNG FPSO.

### The World's First LNG FPSO

Shell, the world's largest oil company, is now ready to start construction of what will be the world's first LNG FPSO, in a ship yard, Samsung heavy industry, in South Korea.

LNG FPSO cools down the temperature of the natural gas (NG) from 27°C to -162°C to shrink in volume by 600 times.

The **liquefaction process system** for LNG is most important system of the LNG FPSO.



\* MTPA: Million Ton Per Annual  
 \* Reference: [Article] Yonhapnews, Shell decides to move forward with groundbreaking floating LNG, 2011.5.20  
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