

Istilah-Istilah yang Sering digunakan dalam Industri Migas

From: Agustinus, Donny

1. **Barrel (bbl)**: 42 gallons; 5.62 cubic feet; or 0.159 cubic meters.
2. **Barrel of Oil Equivalent (BOE)**: the oil equivalence of natural gas is normally based on the amount of heat released when the gas is burned as compared with burning a barrel of oil. For a typical natural gas, burning 6,000 standard cubic feet liberates about the same amount of heat as burning one barrel of an average crude.
3. **Barrels per day (b/d, bpd, or bbl/d)**: a unit of measurement used in the industry for the production rates of oil fields, pipelines, and transportation.
4. **Base gas**: gas required in a storage pool to maintain sufficient pressure to keep the working gas recoverable.
5. **Bcf**: acronym for "billion cubic feet". Bcfs are used to measure the volume of large quantities of natural gas
6. **Bill of Lading (B/L)**: a document by which the Master of a ship acknowledges having received in good order and condition (or the reverse) certain specified goods consigned to him by some particular shipper, and binds himself to deliver them in similar condition, unless the perils of the sea, fire or enemies prevent him, to the consignees of the shippers at the point of destination on their paying him the stipulated freight. A bill of lading specifies the name of the master, the port and destination of the ship, the goods, the consignee, and the rate of freight; documentation legally demonstrating a cargo has been loaded. The bill of lading is signed by the Master of the ship and the contract supplier.
7. **Blowdown**: the depressuring of a reservoir through production of gas. This can occur with either gas or oil reservoirs at any stage in their life cycle.
8. **Blowout**: an uncontrolled flow of gas, oil, or water from a well due to the release of pressure from a reservoir; may be the result of the failure of the containment system.
9. **Boil-off gas**: vaporized methane from LNG.
10. **Boil-off vapor**: usually refers to the gases generated during the storage of volatile liquefied gases, such as LNG. LNG boils at slightly above -163°C at atmospheric pressure and is loaded, transported and discharged at this temperature, which requires special materials, insulation and handling equipment to deal with the

low-temperature and the boil-off vapor (heat leakage keeps the cargo surface constantly boiling).

11. **British thermal unit (Btu):** The standard unit for measuring the amount of heat energy required to raise the temperature of one pound of water by one degree Fahrenheit (1°F) at or near 39.2°F.
12. **Brownfield project:** Any project that is built in an area where supporting infrastructure already exists. Brownfield projects are generally less expensive than a "greenfield" project (see below).
13. **Bubble point:** the temperature and pressure at which a liquid first begins to vaporize to gas
14. **Build-own-transfer (BOT):** Generally refers to an independent power project (see below) where the for-profit energy company agrees to build the plant and then transfer ownership to the host government after the government has purchased enough electricity to pay for the plant plus provide a mutually acceptable profit to the energy company.
15. **Bulk cargo:** any liquid or solid cargo loaded on to a vessel without packaging (e.g. oil or LNG).
16. **Burner tip:** the point at which natural gas is used as a fuel.
17. **Capacitance gauge:** A common form of liquid-level gauge used with LNG, it measures the change in electrical capacitance between liquid and vapor to determine the level in the tank.
18. **Capacity allocations:** allotment of space in a pipeline.
19. **Cogeneration (COGEN):** the simultaneous production of electrical energy from the combustion of a single fuel source via two means: gas turbines and steam turbines. See Combined Cycle Gas Turbine (CCGT)
20. **Combined-cycle gas turbine (CCGT):** An electrical power plant in which a gas turbine and a steam turbine are used in combination to achieve greater efficiency than would be possible independently. The gas turbine drives an electrical generator. The gas turbine exhaust is then used to produce steam in a heat exchanger (called a heat recovery steam generator) to supply a steam turbine whose output provides the means to generate more electricity. If the steam is used for heat (e.g. heating buildings), the unit would be called a cogeneration plant or a CHP (Combined Heat and Power) plant.
21. **Combined Heat and Power (CHP):** the simultaneous generation of two forms of energy from a single fuel source. Electrical energy is produced via gas turbines

and heat energy (steam) is produced via a heat recovery steam generator. See Combined Cycle Gas Turbine

22. **Compressed natural gas (CNG):** Natural gas compressed to a volume and density that is practical as a portable fuel supply. Even when compressed, the natural gas is not a liquid, but a super-saturated fluid.
23. **Cost, insurance and freight (CIF):** Generally refers to the transfer point where a product is sold. CIF includes the cost of the product plus freight and insurance to its destination. See also free onboard (FOB).
24. **Cost, insurance and freight (CIF) contract:** in an LNG CIF contract, the buyer takes ownership of the LNG either as the LNG is loaded onto the vessel or on the voyage to the receiving terminal. Payment is made at the time ownership transfers but the seller remains responsible for the transportation and insures the cargo on behalf of the buyer. See ex-Ship contract and Free on Board contract
25. **Cubic feet per day (cf/d):** at standard conditions, the number of cubic feet of natural gas produced from a well over a 24 hour period, normally an average figure from a longer period of time. Generally expressed as mcf/d = thousand cubic feet per day, mmcf/d = million cubic feet per day, or bcf/d = billion cubic feet per day.
26. **Cubic foot:** The amount of gas required to fill a volume of one cubic foot under stated conditions of temperature, pressure, and water vapor.
27. **SCF = Standard Cubic Foot** (One cubic foot of gas at standard conditions, i.e. 14.73 psia and 60° F without adjustments for water vapor)
 - MCF = One Thousand Cubic Feet (Multiply by 1,000)
 - MMCF = One Million Cubic Feet (Multiply by 1,000,000)
 - BCF = One Billion Cubic Feet (Multiply by 1,000,000,000)

Note: the above symbols are the most commonly used symbols in the US gas industry. In certain companies and countries, the metric symbols are used instead. Under this system one thousand cubic feet is abbreviated to KCF; one million cubic feet is abbreviated to MCF; and one billion cubic feet is abbreviated to GCF

28. **Deadweight tonnage (DWT):** a common measure of ship carrying capacity:
 - the number of tons (2,240 lbs.) of cargo, stores and bunkers that a vessel can transport;
 - the difference in weight between a vessel when it is fully loaded and when it is empty (in general transportation terms, the net) measured by the water it displaces. This is the most common, and useful, measurement for shipping as it measures cargo capacity and;
 - the difference between the number of tons of water a vessel displaces "light" and the number of tons it displaces when submerged to the "deep"

load line". A vessel's cargo capacity is less than its total deadweight tonnage.

29. **Emergency Shutdown Systems (ESD):** a system, usually independent of the main control system, that is designed to safely shut down an operating system. For example, at 'shipshore interface', LNG cargo transfer between ship and shore is accomplished by a series of shore-based articulated loading arms, usually three or four liquid arms and a single vapor arm. The configuration is similar at both the loading and discharge terminals. These arms have flexibility in three directions to allow for relative motion between ship and shore. If this allowable motion is exceeded, alarms sound on the ship and shore. Cargo transfer is automatically stopped, either by the shore pumps shutting down during loading, or the ship's pumps shutting down during unloading.
30. **Free onboard (FOB):** Generally refers to the transfer point where a product is sold. FOB is the price for the product available for pickup at the production point. It excludes freight and insurance to the customer's delivery address. See also cost, insurance and freight (CIF).
31. **Free on Board (FOB) contract:** in an LNG FOB contract, the buyer lifts the LNG from the liquefaction plant and is responsible for transporting the LNG to the receiving terminal. The buyer is responsible for the shipping, either owning the LNG ships or chartering them from a shipowner. In a FOB contract, the seller requires assurance that the shipping protocols provide a safe and reliable off-take for the LNG to prevent disruption to the Sale and Purchase Agreement (SPA). See Cost, insurance and freight (CIF) contract, Ex-Ship contract and Sale and Purchase Agreement (SPA)
32. **Gas-to-liquids (GTL):** refers to processes that convert natural gas to ambient liquid fuels, such as diesel, naphtha, kerosene, DME and methanol
33. **Liquefied Natural Gas (LNG):** Natural gas, primarily methane, that has been cooled to minus 160°C (minus 259°F) at atmospheric pressure and stored in insulated containers in a liquid state.
34. **LNG cargo containment systems:** the method of storing LNG during marine transport. One of four methods is normally employed: Self-Supporting Prismatic Type 'B' (Conch/IHI), Dual Membrane (Gaz Transport), Single Membrane (Technigaz), and Self-Supporting Spherical Type 'B' (Kvaerner Moss).
35. **LNG feedgas requirements to LNG plant:** each million tonnes of LNG annually delivered to a customer is equivalent to approximately 130 mmscfd of natural gas. Over a typical twenty-year sale and purchase agreement (SPA), this amounts to 1 tcf (trillion cubic feet) of natural gas. Around 10-15 per cent of the gas is lost in the process of production, liquefaction and transportation of the LNG, therefore the daily rate of gas production necessary to deliver 1 mtpa (million tonnes per

annum) to the customer is about 150 mmscfd. This is equal to 1.1 tcf over a twenty-year SPA. A world-scale LNG project delivers at least 7 mtpa, which means it requires a feed of over 1 bcf/d (billion cubic feet per day) of natural gas. LNG production has to be sustained at the plateau level for the life of the project so the gas reserves must be able to support production of over 1 bcf/d in the twentieth contract year. The gas reserves for a project of this dimension have to be in excess of 9 tcf when taking into account the gas that must remain in the reservoir to allow production to be maintained over the life of a twenty-year contract.

36. **LNG markets:** there are two primary LNG markets:

- the Atlantic Basin (or western market) includes Belgium, France, Italy, Spain, Portugal, Greece, Turkey, and the US;
- the East Asian market includes Japan (world's largest), South Korea and Taiwan, soon to be followed by the large emerging markets of India and China.

37. **LNG project characteristics:** primary LNG project components are:

- upstream development of long-term, natural gas supply for feedgas to an LNG plant;
- downstream development of liquefaction, storage and loading facilities;
- marine transportation;
- further downstream development of receiving terminals for regasification and pipeline transportation to market.

Defining economic characteristics of LNG projects include :

- commercial activities organized around project components in which the buyer and seller are closely linked for 20-25 years;
- significant front-end infrastructure investment for each tonne of LNG delivery capacity - the critical mass of infrastructure for an LNG project must be very large in order to achieve production quantities adequate for realization of economies of scale and to secure project financing; and iii. long-term contracts based on large, proven gas reserves.

38. **LNG refrigerant (for liquefaction) cycles:** natural gas liquefaction requires removal of sensible and latent heat over a wide temperature range using a refrigerant. The refrigerant may be part of the natural gas feed (an "open-cycle process") or a separate fluid continuously recirculated through the liquefier (a "closed-cycle process"). Three general types of refrigeration cycle are used: cascade, mixed-refrigerant, and expander cycle.

39. **LNG storage tanks:** vessels that are specially constructed to contain LNG. The tanks are generally constructed of nickel steel (steel containing 9% nickel) to withstand cryogenic temperatures, and are insulated to maintain the LNG at -161

- °C. Some of the stored LNG boils off and the resulting vapor is used as fuel gas for the plant. There are three main designs of LNG storage tanks: single containment, double containment and full containment. The difference in these systems lies in the functionality of the secondary containment, when the primary containment is breached. For single containment, neither liquid nor vapor will be held by the secondary containment; for double containment, liquid will be contained and for full containment, liquid and vapor will be contained.
40. **LNG Tanker:** An ocean-going vessel that transports natural gas in specially designed containers. These vessels can transport up to 165,000 cubic meters of LNG.
 41. **Loading arms:** Couplings that extend from a ship to a stationary platform for loading or unloading liquid cargo.
 42. **LNG value chain:** in planning, funding and executing an LNG project, each element of the complex chain which links the natural gas in the ground to the ultimate consumer ("from the wellhead to the burner tip") is considered. The main links are natural gas production, liquefaction, shipping, receiving terminal including regasification), distribution of the regasified LNG and, lastly consumption of the gas.
 43. **Mcf or MMcf:** Mcf stands for one thousand cubic feet, using the Roman numeral M for 1,000. MMcf stands for one million cubic feet, again using the Roman numeral M x M for 1,000,000.
 44. **Methane:** The most common hydrocarbon gas, methane is odorless and colorless and burns efficiently with few by-products. It is the simplest molecule in the carbon-chain series of hydrocarbons.
 45. **Methanol (CH₃OH):** Methanol is the simplest alcohol, containing one carbon atom. It is a colorless, tasteless liquid with a very faint odor and is commonly known as "wood alcohol."
 46. **Mtpa:** million tonnes per annum
 47. **Ozone (O₃):** An oxygen molecule with three oxygen atoms that occurs as a blue, harmful, pungent-smelling gas at room temperature. The ozone layer, which is a concentration of ozone molecules located at six to 30 miles above sea level, is in a state of dynamic equilibrium. Ultraviolet radiation forms the ozone from oxygen, but can reduce the ozone back to oxygen. The process absorbs most of the ultraviolet radiation from the sun, shielding life from the harmful effects of the radiation. Ozone is normally present at ground level in low concentrations. Lightning, for example, produces ozone. In cities where a high level of air pollutants is present, the action of the sun's ultraviolet light can, through a complex series of reactions, produce harmful concentrations of ozone in the air.

The resulting air pollution is known as photochemical smog. Certain air pollutants can drift up into the atmosphere and damage the balance between ozone production and destruction, resulting in a reduced concentration of ozone in the layer.

48. **Production Sharing Agreement (PSA):** contract between a government and an oil and gas company, granting the oil and gas company a contractual right to explore and produce hydrocarbons in a specified area in enabling the company to recover its costs and a certain profit.
49. **Production-sharing contracts (PSC):** Generally between the host government and the energy producer, the PSC gives the host government control over the development of its natural resource.
50. **SCADA System (Supervisory Control and Data Acquisition): a computerized automation system that brings together the following technologies:** telemetry, telecontrol, supervisory control, and data acquisition, analysis and presentation. When a SCADA system is employed in an LNG process plant or pipe line, information from remote data gathering devices is made available to a central location. Moreover, information gathered can be used by a human operator as the basis for issuing commands to the remote locations.

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Komentar boleh ya ?

* Istilah no. 19,20,21 :

Saya kira pendefinisian istilah Cogeneration (no.19) dalam artikel ini sebagai “the simultaneous production of electrical energy from the combustion of a single fuel source via two means: gas turbines and steam turbines”, adalah tidak tepat. Definisi ini bisa diterapkan untuk “Combined

Cycle power plant”

Cogeneration lebih tepat didefinisikan sebagai “The simultaneous production of energy using a single

primary fuel source”.

“Energy” di sini biasanya berupa energi listrik + energi thermal (steam untuk keperluan process, direct heating, cooling, dll).

Pada umumnya Europeans lebih suka menggunakan istilah Cogeneration, sdgkan Americans like to use “Combined heat and power (CHP). Tapi pada dasarnya 2 istilah ini (Cogeneration dan CHP) ini menunjuk ke sistem energi yg sama.

“Cogeneration” dan “Cogeneration plant” sebetulnya satu istilah, nggak ada bedanya (refer to istilah no.20).

Cogeneration atau Combined heat & power (CHP) tidak melulu hanya Gas Turbine dan Steam Turbine seperti dinyatakan dalam istilah no.21, akan tetapi bisa menggunakan konfigurasi “all means of equipment” untuk menghasilkan listrik + energi thermal.

Jadi bisa saja Gas Engine + Waste heat Boiler, atau Diesel Engine + Waste heat boiler, atau Boiler + Back-pressure steam turbine, dll.

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