Definitions for LNG plant size include small, mid and large plants. Many base load LNG plants for international LNG trading in recent years are large size having a production capacity of 3 to 5 million tons per annum (MTPA) to take advantage of economies of scale. Mega LNG plants of 8 MTPA production capacity are in operation in Qatar to liquefy the natural gas from the super large gas field.

Conversely, mini or small scale LNG plants of less than 1 MTPA production capacity are in operation for the LNG supply chain in local and domestic areas. An LNG peak shaving plant is one application of a mini LNG Plant.

Mid-sized LNG plants, with production capacities in the 1 to 2 MTPA range, to develop medium size gas fields and medium size LNG value chains, have the following advantages:

- Easier to step in due to smaller investment costs and smaller risks
- Easier to secure long-term product off-takers
- Increased chances of new player the participation

LNG projects require many stages including long design, procurement and construction periods. Investors constantly seek to recover costs in the shortest time.

Chiyoda Mid-sized LNG delivers faster LNG production, shortens payback periods and delivers additional gains for investors, by:

- Seamless Pre-EPC & EPC
- Standardized Design
- Modularized Design

Liquefaction Process Technology

Each plant consists of a gas treating section (Inlet Facility), Acid Gas Removal, Dehydration, Mercury Removal and Liquefaction where the treated gas is liquefied by refrigeration. Suitable liquefaction technology is selected depending on production capacity.

For 1 and 1.5 MTPA plants, the Single Mixed Refrigerant (SMR) process is applied because of its simple plant configuration and low investment cost.

For 2 MTPA plants, a Propane Pre-cooled Mixed Refrigerant (C3-MR) process is applied because of its improved energy efficiency.

Both liquefaction processes are licensed by Air Products and Chemicals Inc. who supply a special heat exchanger for the liquefaction process.

Chiyoda provides three standard design packages for mid-sized LNG plants, each delivering significant schedule improvements:

- 1.0 MTPA Production Class
- 1.5 MTPA Production Class
- 2.0 MTPA Production Class

Optimized design is embedded into the standard design package to realize the lowest CAPEX considering minimum plant layout, minimum piping/cable length and minimum construction work volume without compromising HSSE standards, constructability, operability and maintainability. The standard design packages are developed on the basis of Chiyoda’s original “LNG Design Standard & Specification”, which are based on the philosophy of “fit for purpose” and “necessary and sufficient for safe and reliable continuous operation”.

Chiyoda provides comprehensive Support to Clients from Feasibility, FEED, EPC and O&M for the entire LNG business value chain.