

CO<sub>2</sub>

# Carbon Dioxide



## Sustainable application for a green energy transition

As climate change continues to be a critical global issue, **MAYEKAWA** is committed to helping industries reduce their greenhouse gas emissions through innovative **Carbon Capture solutions**.

CCU

### Carbon Capture and Utilization

**CCU** is a technology that captures carbon dioxide without releasing it into the atmosphere and reuses it in various ways.

Carbon recycling is a technology that can contribute to both global warming countermeasures and effective resource utilization, and is thought to play an important role in realizing a **decarbonized society**.

The carbon capture technologies include innovative ways to reduce CO<sub>2</sub> emissions through processes aimed at capturing, purifying and liquefying CO<sub>2</sub>. **MAYEKAWA** solutions are available for the compression of CO<sub>2</sub> from small to big flow rates up to 30 ton per hour for package.

In addition, **MAYEKAWA** refrigeration units with ammonia, a natural refrigerant can be installed in the stage of the process for liquefying CO<sub>2</sub>. The liquefied CO<sub>2</sub> can be transported for applications in food industry or in the chemical industry (e.g. to produce carbonated beverages).



# [CCUS]

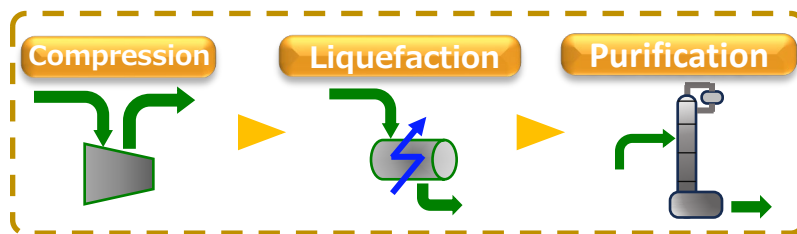
## Carbon dioxide Capture Utilization and Storage

### ✓Typical CCUS Scheme



CO<sub>2</sub> capture from On-land /Board facility

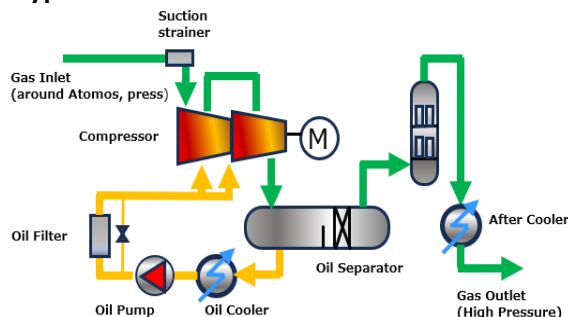
### SCOPE OF **MAYEKAWA**



Mayekawa can handle a wide range of processes, from compressing, liquefying, and purification CO<sub>2</sub> after capture.

### CO<sub>2</sub> Compressor Unit

#### ✓Typical Schematic



#### Unit Contents

- Compressor Unit (incl. Lubrication system)
- After Cooler
- Flow Range : 100 – 17,800 m<sup>3</sup>/h
- Discharge Press : ~25bar, ~50bar
- Oil Carry Over : Min. 0.01ppmw

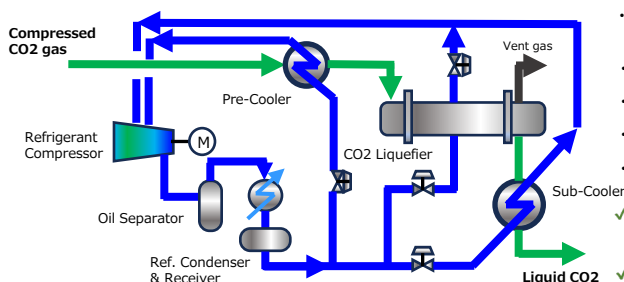
- ✓ High Maintainability
- ✓ Flow control using internal slide valve
- ✓ Applicable for wide flow range



Compound Two Stage Compressor

### CO<sub>2</sub> Liquefaction system

#### ✓Typical Schematic

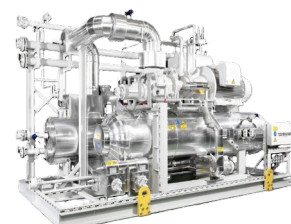


#### System Consists

- Refrigerant Compressor Unit (Incl. lubrication system)
- Refrigerant Condenser / Receiver
- Pre-Cooler
- CO<sub>2</sub> Liquefier
- Sub-Cooler

- ✓ Design and Customizing according to process requirement

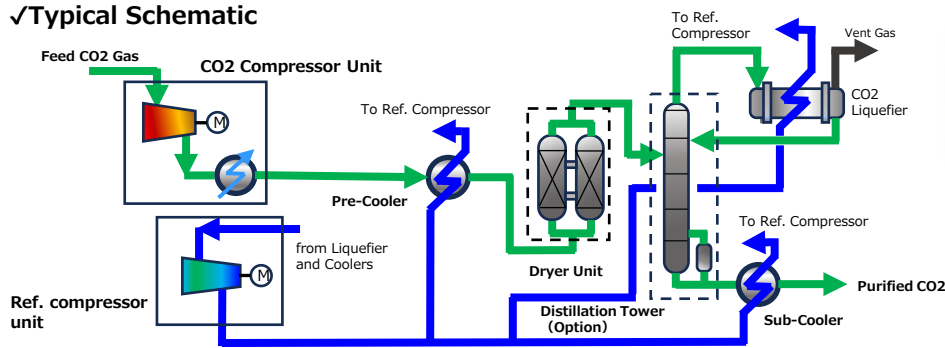
- ✓ Possible to offer the System with "Environment-friendly Refrigerant" such NH<sub>3</sub> and Hydrocarbon (Natural refrigerant)



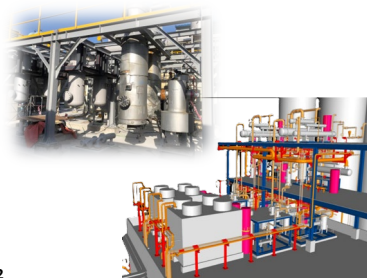
Refrigerant Compressor Unit

### Total system including CO<sub>2</sub> Compression, Liquefaction and Purification

#### ✓Typical Schematic

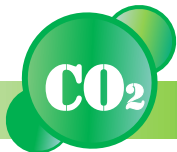
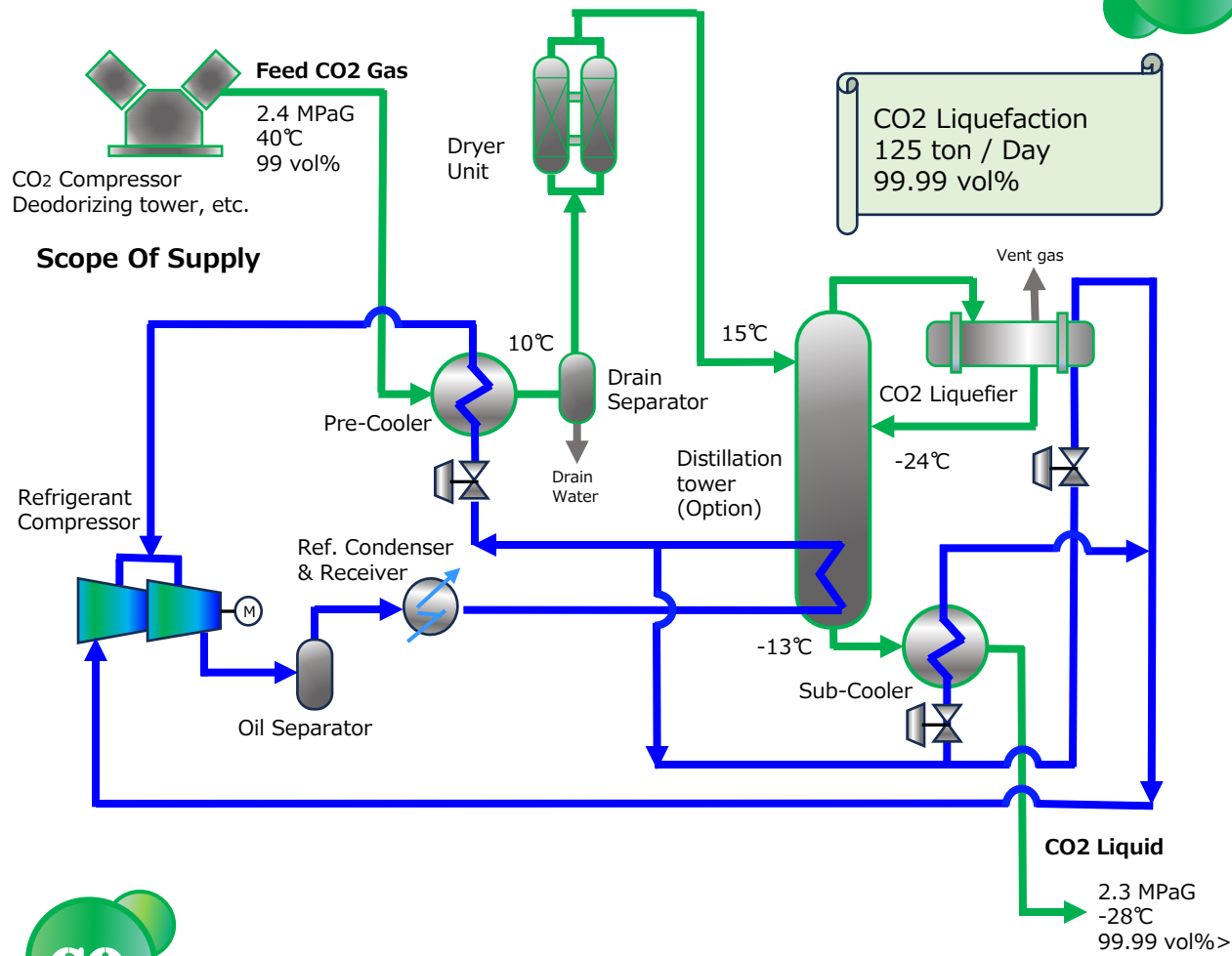
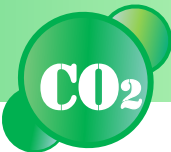


✓Mayekawa offers suitable system according to Customer's requirement

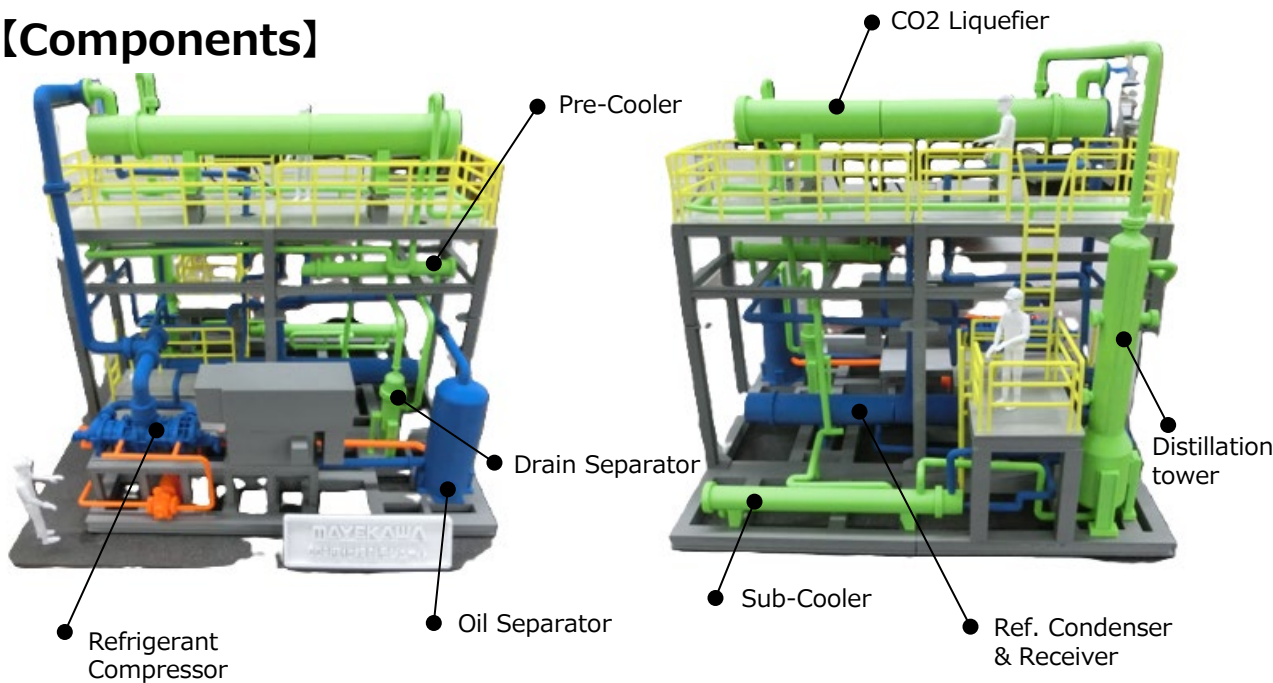


CO<sub>2</sub> Liquefaction / Purification Total system

# 【Flow sheet of Model Case】

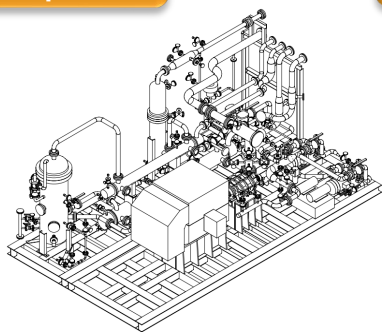


## 【Components】



# 【Package Layout】

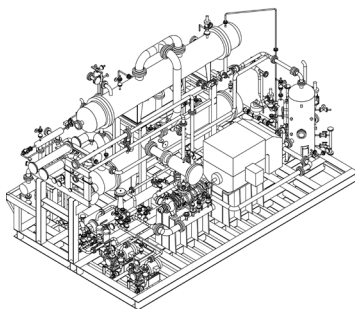
## Compression



### ●CO2 Compressor Unit

- Capacity : 145 ton / Day
- Unit Size : L7.5m x W4.2m x H3.0m

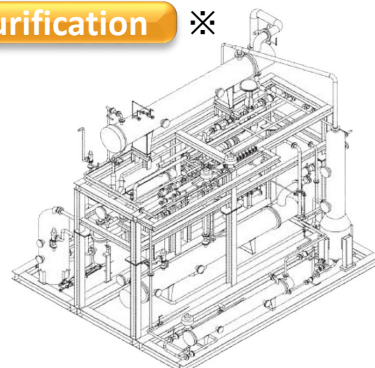
## Liquefaction ※



### ●Refrigerant Compressor Unit for CO2 liquefaction

- Capacity : 145 ton / Day
- Unit Size : L8.5m x W5.0m x H4.8m

## Purification ※



### ●CO2 Liquefaction and Purification Unit

- Capacity:125 ton / Day (99.99 vol%)
- Unit Size:L8.0m x W6.5m x H6.7m

※Not included CO2 Compressor Unit and Dryer Unit.

## 【Delivery record ※For reference】

	Customer	Purpose	Year	Capacity
Japan	Gas Company	-Liquefaction & Purification	2000	125 Ton / Day
Japan	Beverage Company	-Liquefaction & Purification	2002	22Ton / Day
Japan	Beverage Company	-Liquefaction & Purification	2003	22Ton / Day
Japan	Oil & Gas Company	-Liquefaction	2005	432 Ton / Day
Japan	Oil & Gas Company	-Compression & Liquefaction	2011	145 Ton / Day
Japan	Gas Company	-Liquefaction	2018	36 Ton / Day
Japan	Liquid Charcoal Company	-Liquefaction	2020	216 Ton / Day
Thailand	Oil & Gas Company	-Compression & Liquefaction	2014	300 Ton / Day
Thailand	Oil & Gas Company	-Compression	2018	100 Ton /Day
Oversea	Oil & Gas Company	-Compression & Liquefaction & Purification	2012	150 Ton / Day
Oversea	Oil & Gas Company	-Compression & Liquefaction & Purification	2019	60 Ton / Day
Oversea	Dry Ice Company	-Liquefaction	2020	326 Ton / Day
Oversea	Oil & Gas Company	-Compression & Liquefaction & Purification	2013	150 Ton / Day
Oversea	Gas Company	-Compression & Liquefaction & Purification	2023	120 Ton / Day
Oversea	Energy Company	-Compression & Liquefaction & Purification	2023	300 Ton / Day
Oversea	Shipbuilding Company	-Liquefaction	2024	25 Ton / Day

These records are just a small part of the whole thing.

Mayekawa designs units and systems according to the application and customer requests.

Please feel free to consult us.

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