

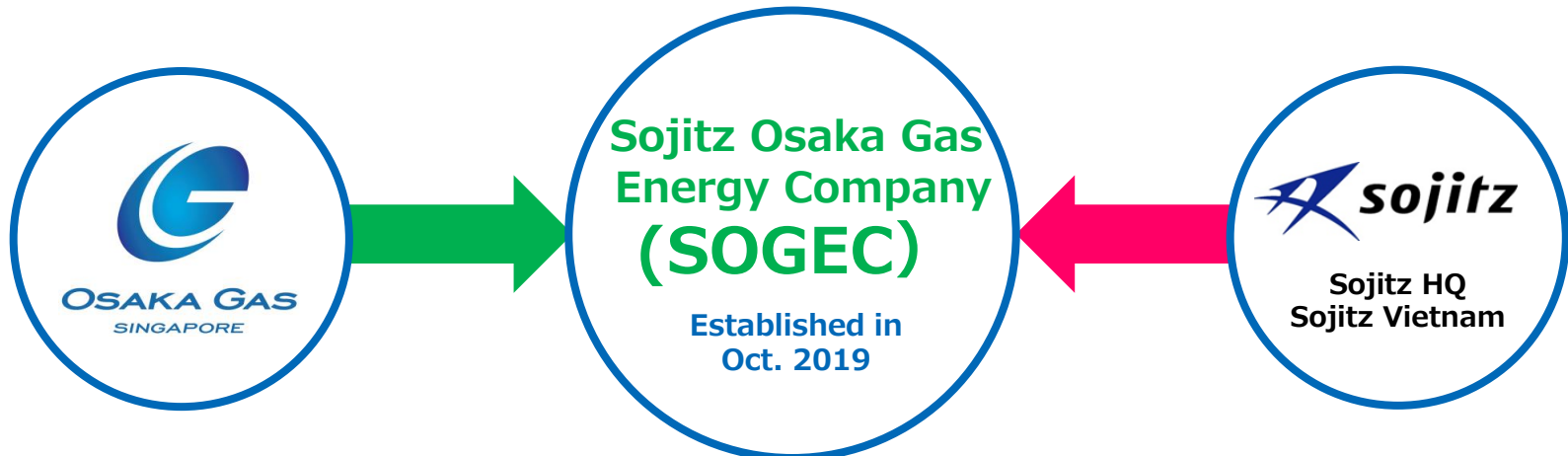
Energy reduction by Utilizing Natural Gas

Sojitz Osaka Gas Energy Co., Ltd.

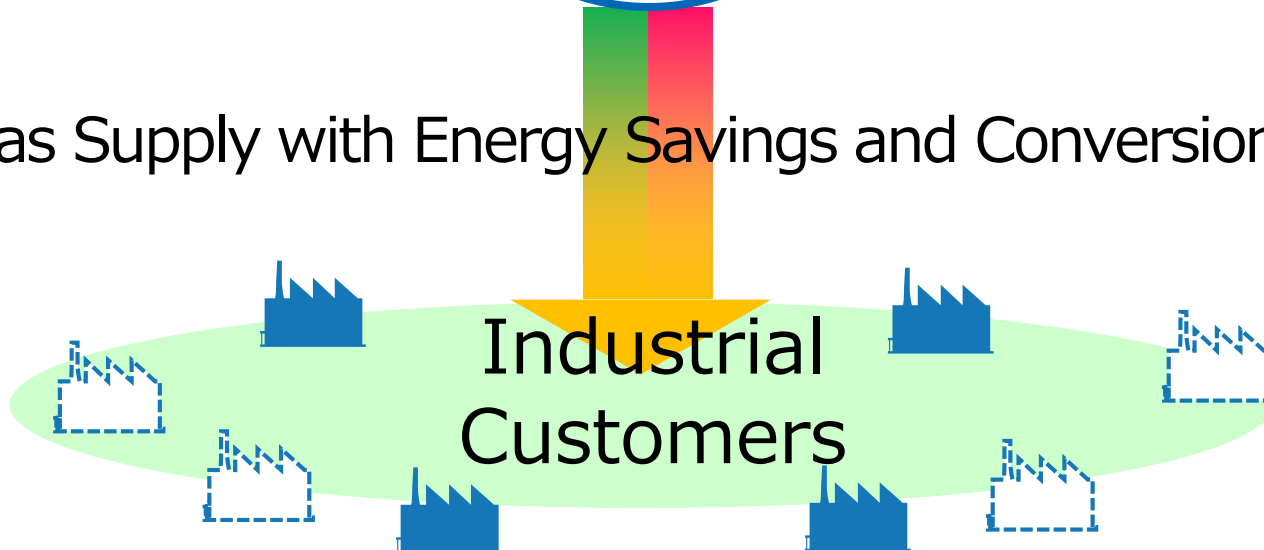
17th March, 2021

Introduction of Sojitz/OG Gas Supply business

Sojitz Group and Osaka Gas Singapore established a company in 2019 to sell **Natural Gas** to Vietnamese industrial customers.



Natural Gas Supply with Energy Savings and Conversion Solutions



Business of SOGEC (Phu My 3 I.P.)

- Supply natural gas to industrial customers by pipeline.



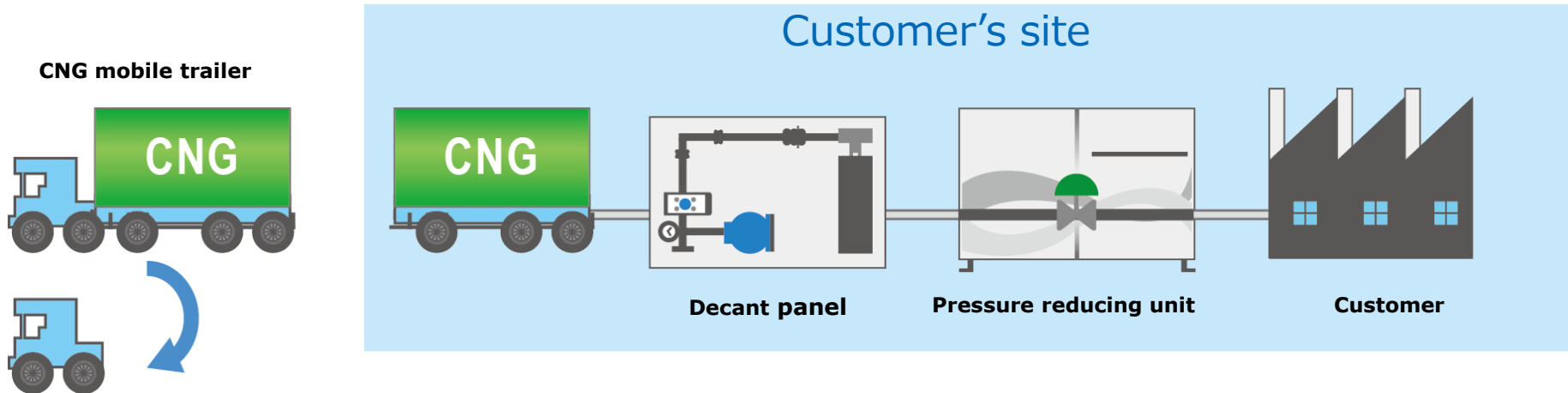
① Natural gas supply station
• Adjust the gas pressure
• We have a Back-up system by Synthetic Natural Gas (LPG and air mixing)

② Natural gas pipeline
• Supply natural gas by pipeline from natural gas station to each customer.

Business of SOGEC (CNG)

- CNG is supplied by CNG tracks from mother station.
- CNG is cheaper than Fuel Oil, Diesel Oil, and LPG.

【How to supply CNG】



【CNG compression station】



【CNG tank in customer site】



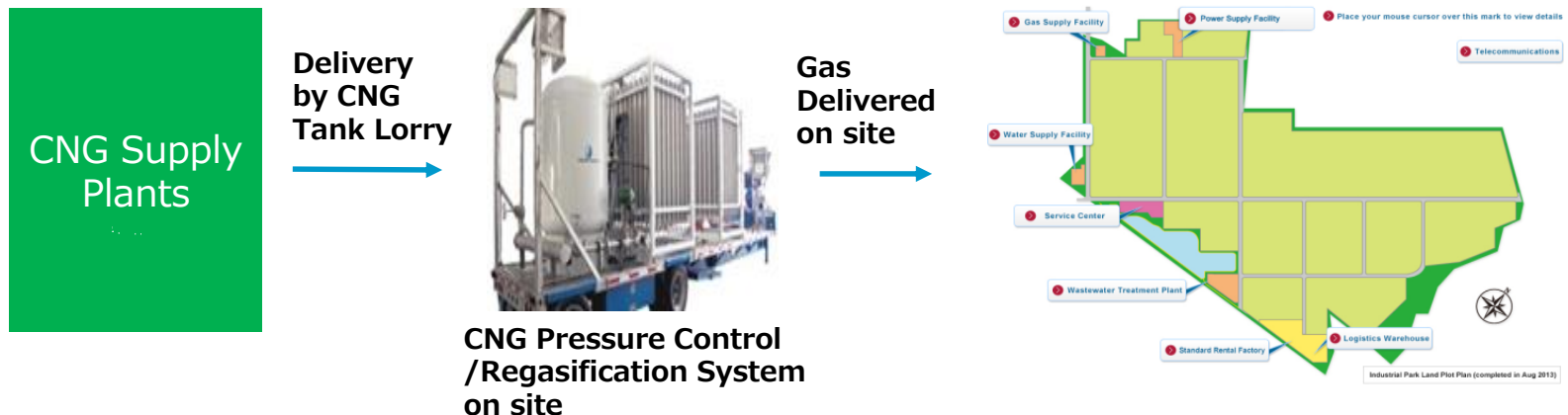
Sojitz : A Pioneer in Vietnam Market

Longest history in Vietnam

- ◆ Sojitz (Nissho Iwai) was the first company allied with the Western bloc to establish a liaison office here in Vietnam in 1986.
- ◆ And started business here in 1990s such as Afforestation, Wood Chip Production, Compound Chemical Fertilizer and Industrial Park Business. Then, we are expanding activities here and have more than 20 subsidiaries such as IPP, food, retails, and energy businesses.

CNG Supply to Industrial Park Customers

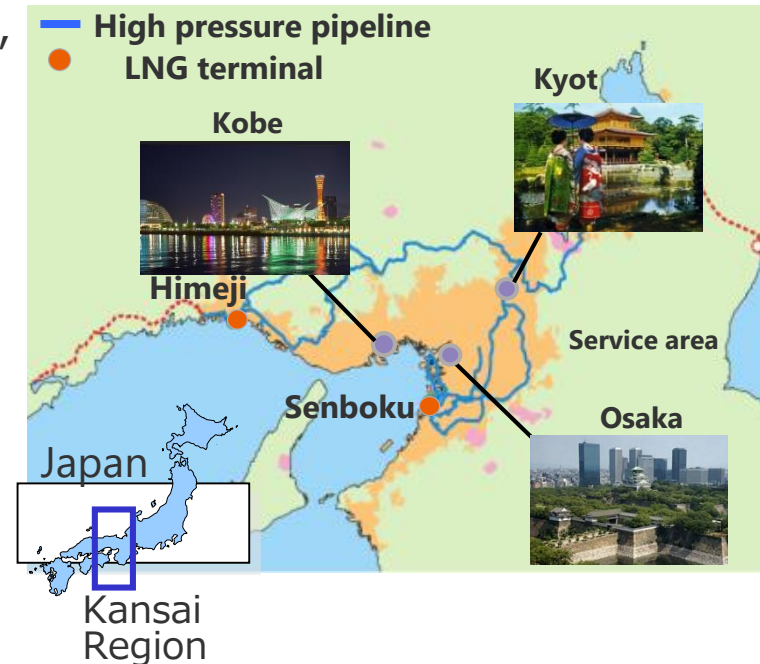
- ◆ Started CNG (Compressed Natural Gas) business in Vietnam in 2013 (Long Duc IP)



Osaka Gas : Vertically Integrated Gas company

- ◆ Headquarters in **Osaka, Japan**
 - Affiliates : Perth, New York, Houston, London, Singapore, Bangkok, Jakarta and Manila
- ◆ Started business operations in **1905**
- ◆ Serving over **7 million natural gas customers** in the Kansai Region
- ◆ Procures about **9 MTPA of LNG**
- ◆ Developing **4.0 GW of power business** (Japan, USA, Canada, Australia and Abu Dhabi)
- ◆ Investing in **6 countries for LNG & upstream assets** (Australia, Indonesia, Oman, USA, Norway and Papua New Guinea)

Service Territory



Steps of Fuel Conversion

- ◆ SOGEC provides one-stop support for fuel conversion



STEP1 : Facility Investigation

- ↓ - Investigate customers' facilities
- ↓ - Provide a quantitative analysis of the points at issue



STEP2 : Development/Customize of Burner

- ↓ - Develop/Customize a burner in line with the needs from customers
ex. Improve temperature profile in the burner to achieve energy saving



STEP3 : System Proposal/Production Test

- ↓ - Analyze production process of the plant, and design energy system
- ↓ - Conduct proving test in our laboratory



STEP4 : Fuel Conversion for a Whole Factory

- ↓ - Conduct fuel switching that can achieve high energy saving with low cost



STEP5 : Follow-up/ Maintenance

- Follow-up/Maintenance is important to ensure energy/cost saving as expected by the customers.

High-efficiency once-through boiler

■ High Boiler Efficiency

- Boiler Efficiency More than 98 % (High Efficiency gas Boiler)

■ High safety

- Multiple safety sensors are standard equipment

■ Easy operation

- Automatic operation control and quick start-up

■ High efficiency operation by multiple boilers

- Installation of multiple boilers and boiler numbers control system

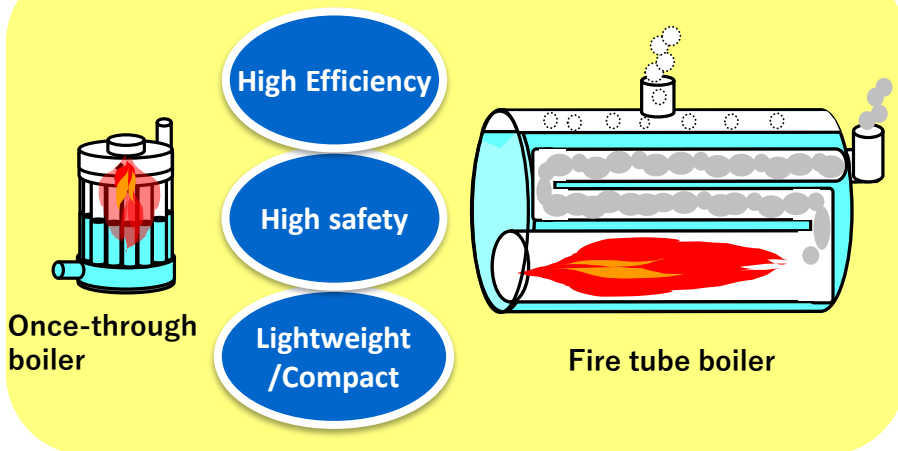
■ Light weight and compact

- Boiler space can be reduced



High Efficiency gas Boiler

Comparison with other type of Boiler



Installation of multiple boilers
(Photo is an example in Japan)