

## **Commencement of operation of power generator and air conditioning system in Malaysia combining natural gas cogeneration and non-Freon air conditioning systems**

Tokyo Gas Engineering Solutions Corporation (TGES) and Panasonic Corporation have commenced operation of their power generator and air conditioning system at Panasonic's manufacturing plant in Malaysia through their local subsidiary and affiliate. The system combines energy service using a gas engine cogeneration system and eco-friendly non-Freon air conditioner.

In Malaysia, blessed with abundant natural resources, industrialization is driving growth in energy demand, pushed partly by the increasing installation of air conditioners at large-scale facilities such as factories. As the energy demand is expected to grow further, environmentally friendly energy supply is required in the country. TGES and the Malaysian city gas company, Gas Malaysia, in which Tokyo Gas Co., Ltd. indirectly holds stakes, jointly founded Gas Malaysia Energy Advance Co., Ltd. (GMEA) to develop an energy service business mainly using cogeneration systems based on know-how cultivated in Japan. Through this service, GMEA has been contributing to energy conservation and reduction of CO2 emissions.

On the other hand, Panasonic regards the air conditioning business as a key business that drives the company's growth. In the field of commercial air conditioning equipment, one of the company's strengths lies in the air conditioning system employing absorption chiller technology, which uses heat of vaporization released when water used as a natural refrigerant evaporates. Panasonic's non-Freon air conditioning system "Natural Chiller" with water as refrigerant effectively uses steam and waste heat generated at plants and other facilities. Since this environmentally friendly system was released in 1971, Panasonic has been adding refinements to make it more efficient and compact in design, which has enabled the company to continue to provide eco-friendly and comfortable environment to large spaces, such as public spaces and factories.

Under such circumstances, GMEA and Panasonic AP Air Conditioning Malaysia Co., Ltd. (PAPAMY), which manufactures and sells air conditioning equipment in Malaysia, signed an energy-service contract and started operation of their highly efficient power generator and air conditioning system at PAPAMY's manufacturing plant on October 17, 2018. This system consists of a gas cogeneration system and "Genelink," an absorption chiller with auxiliary waste heat recovery, and cools the plant by utilizing the waste hot water produced during generating electricity.

GMEA has installed a 2 MW cogeneration system fueled by natural gas on the premises of PAPAMY, providing comprehensive services for each phase of the project, from system design, construction, procurement of fuel, maintenance, and to electricity and hot water supply. PAPAMY utilizes waste hot water from the cogeneration system as a heat source to operate Genelink. With the installation of this system, PAPAMY aims to reduce energy inputs by approximately 9% and CO2 emissions by approximately 22%.

The companies intend to utilize the PAPAMY project as a showcase of a sustainable factory climate solution consisting of a cogeneration system fueled by natural gas and a Genelink absorption chiller utilizing water as refrigerant. They will continue to contribute to Malaysia and other Southeast Asian countries through the provision of highly efficient and environmentally friendly energy supply and a comfortable environment.

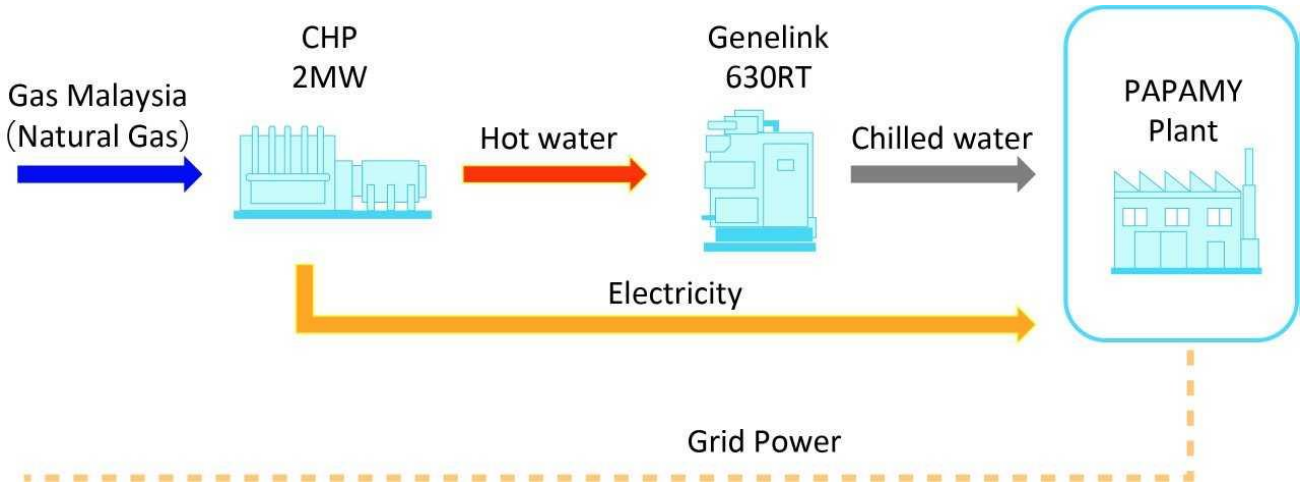


Power generator and air conditioning system at PAPAMY's plant (Right : cogeneration, Left : Genelink)

**【Main Equipment】**

Equipment	Capacity	Remarks
Gas Engine cogeneration	Generating capacity 2MW	Owned by GMEA to provide energy service
Absorption Chiller with Auxiliary Waste Heat Recovery, Genelink	630RT×1unit	Owned by PAPAMY

**【Flow chart of the system】**



**【Outline of GMEA】**

Name	GAS MALAYSIA ENERGY ADVANCE Sdn. Bhd.
COO	Mohd Shariff Lubis
Founded	April 18,2014
Headquarters	Selangor, Malaysia
Capital	50 million Malaysian ringgit
Ownership	TGES : 34% Gas Malaysia : 66%
Line of Business	Energy service business

**【Outline of PAPAMY】**

Name	Panasonic Appliances Air-Conditioning Malaysia Sdn. Bhd.
President	Hiroyuki Iwaki
Founded	April 8,1972
Headquarters	Selangor, Malaysia
Capital	22.5 million Malaysian ringgit
Ownership	Panasonic : 99.8% S.Y.A. HOLDINGS Sdn. Bhd. : 0.2%
Line of Business	Sales and manufacture of air conditioners

