

NEWS RELEASE

March 28, 2017

Kobe Steel, Ltd.
ASAHI SHIPPING CO., LTD.
MIURA CO., LTD.

Binary cycle power generation system for ships completes sea trials, Kobe Steel to begin sales of the new system in 2019

TOKYO, March 28, 2017 — Kobe Steel, Ltd. plans to start marketing a new binary cycle power generation system for ships from April.

Kobe Steel, ASAHI SHIPPING CO., LTD. and MIURA CO., LTD. began joint development of a binary cycle power generation system for ships in April 2014. Land-based testing of the system was successfully completed in September 2015. In December 2016, the system passed sea trials on a ship, and recently it received approval from Japan's ship classification society Nippon Kaiji Kyokai (also known as ClassNK). Having passed these tests, the new system will be marketed from April 2017, with sales starting in April 2019. Kobe Steel is in charge of marketing and sales.

In the past, the exhaust heat from the turbocharger attached to the ship engine was not used, but simply disposed. Kobe Steel's new system is the first in the world to generate electricity from the exhaust heat emitted by the ship's turbocharger. The electricity produced by the new system serves as auxiliary power for the ship and contributes to the efficient utilization of energy. In the sea trials, Kobe Steel confirmed that an engine output of 7,500 kW per hour generated 125 kW of electricity. This is equivalent to about 20 to 25 percent of the fuel used in marine generators, depending on the conditions, and is the largest scale of power generation from exhaust heat on a ship.

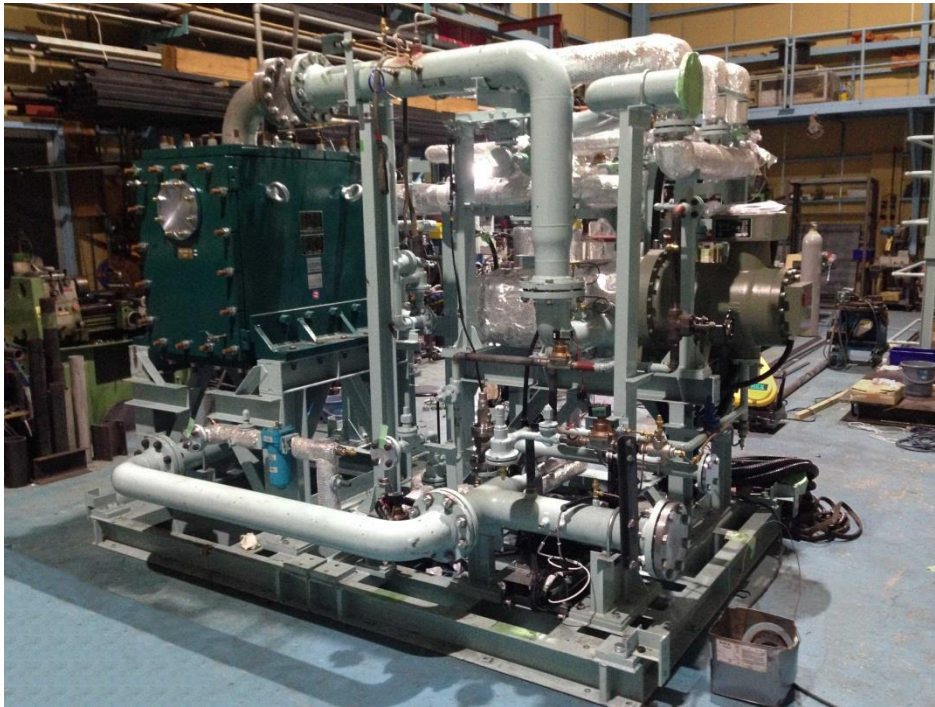
Through the new system, the three companies are promoting the effective utilization of unused energy. This project to develop the binary cycle power generation system was adopted as a joint research theme by the next-generation marine environment-related technology development support program of Japan's Ministry of Land, Infrastructure, Transport and Tourism and ClassNK and was undertaken with their cooperation.

Original features of the power generation system

1. As the binary cycle power generation system is applicable for engines in the 5,000-kW class and higher, which are used by most vessels, the system can be used in a wide variety of ships.
2. Marine engines undergo large load fluctuations. Kobe Steel's screw-type binary cycle power generation system can generate electricity under a wide range of conditions, from high loads to low loads.
3. The new system is applicable to ships already in service as the new system's parts can be brought in through the parts hatch, instead of cutting through the hull structure to make an opening.

Roles of the companies in the project

- Kobe Steel: Developed the binary cycle power generation system for ships
- ASAHI SHIPPING: Mounted the binary cycle power generation system on the MV ASAHI MARU, a large coal carrier that serves Kobe Steel and is owned by ASAHI SHIPPING
- MIURA: Developed the evaporator (a part of the main engine air cooler) to recover heat
- TSUNEISHI SHIPBUILDING: Responsible for total engineering to retrofit the ASAHI MARU



Description of photo: Kobe Steel's new binary cycle power generation system before mounting

Media Contacts

Kobe Steel, Ltd.
Publicity Group
Gary Tsuchida
Email: tsuchida.gary@kobelco.com
Tel: 03-5739-6010 Fax: 03-5739-5971

ASAHI SHIPPING CO., LTD.
Project Team
Tel: 03-3436-8536 Fax: 03-3436-8516
Email: pro@asahiline.co.jp

MIURA CO., LTD.
Ship machinery department Promotion division
Tel: 089-979-7060 Fax: 089-979-7067
Email: hakuyo_eka@miuraz.co.jp