

July 10, 2024

JX Advanced Metals Corporation

**Auxiliary Wind Propulsion System Installed on Ore Carrier *Koryu*:
Reducing CO₂ Emissions in Marine Transport Through Wind Power**

Pan Pacific Copper Co., Ltd. (President: Murao Yosuke; “PPC”), a 47.8%-owned affiliate of JX Advanced Metals Corporation (President: Hayashi Yoichi; “the Company”), has been working to install an auxiliary wind propulsion system, or rotor sail, on the mineral and sulfur carrier *Koryu*,¹ which is operated by Senko Group’s Nippon Marine Co., Ltd. (60% owned by Senko Group Holdings Co., Ltd. and 40% owned by the Company). The installation is part of a project to decarbonize marine transport based on an agreement between BHP, a major mining company, and Norsepower Oy Ltd. (“Norsepower”), a global manufacturer of auxiliary wind propulsion systems for ships.

Norsepower’s rotor sail is approximately ten times as efficient as a traditional sail and requires no crew intervention during operation. It uses wind power to create a Magnus effect,² which maximizes the ship’s fuel efficiency and in favorable wind conditions can reduce the main engine’s revolutions sufficiently to lower fuel consumption by a projected 5–6%, without affecting speed or voyage time. We will verify the effectiveness of these reductions and consider how to further reduce CO₂ emissions.

The Company entered into a Green Enabling Partnership (GEP) with BHP on July 11, 2023, with the objective of reducing greenhouse gas (GHG) emissions in the copper supply chain and making it more sustainable.³ The Company and BHP aim to continuously develop a responsible copper supply chain by strengthening traceability and origin certification of raw materials across industries, from upstream resource development to downstream sectors such as semiconductors, information and communications, and the automotive industry. In addition, the parties are working under the GEP to further pursue resource recycling and GHG reduction through the supply of copper concentrate and sulfuric acid between them, as well as sharing knowledge on calculating and reducing the carbon footprint (CFP) of electrolytic copper. The installation of a rotor sail on this mineral sulfur carrier is part of efforts under the GEP to reduce CO₂ emissions in marine transport.

This initiative is also a concrete step toward reducing the CFP of copper, which is one of the four key initiatives set out by the Company in its Sustainable Copper Vision announced on August 3, 2022.⁴ Our Group has set a target of achieving net zero CO₂ emissions by 2050, and is also actively working to address “Scope 3” emissions, which means reducing CO₂ emissions across the entire supply chain, including raw material production and logistics.

- 1 A specialized vessel for the transportation of copper concentrate and sulfuric acid. Deadweight tonnage: 53,762. Carries approximately 150,000 tons of copper concentrate and 100,000 tons of sulfuric acid between Japan and Chile each year.
- 2 A phenomenon in which lift is generated when wind hits an object moving in a circular motion.
- 3 Press release dated July 11, 2023: “[JX Metals and BHP sign MoU for a Green Enabling Partnership](#)”
- 4 Press release dated August 3, 2022: “[Sustainable Copper Vision: JX Metals Aims to Supply Sustainable Copper](#)”



M/V KORYU with Rotor Sail installed