Asahan No.3 Hydroelectrical Power Plant Project (Civil Works) Team - Indonesia

【Nippon Koei Co., Ltd., Shimizu Corporation】

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Asahan 3 Hydroelectric Power Plant was planned as a dam type (rockfill dam) power plant through feasibility studies and detailed designs conducted from 1982 to 1987. However, due to the lengthy relocation of residents in the reservoir and the high construction costs, its construction had not progressed for a long time. In such a situation, Nippon Koei conducted a feasibility study again in 2004 to change the plan to a run-of-river type power plant (174MW, water usage 106.8m3/sec, maximum head 198m), and the revised plan was accepted by the Indonesian government, and the project was funded by a yen loan (ODA) from the Japan International Cooperation Agency (JICA), and construction was carried out with Indonesian state-owned electricity company PT. PLN as the Employer.

Civil Works commenced on March 28, 2019, which was designed and supervised by Nippon Koei Co., Ltd., and constructed by Shimizu – Adhi Karya Joint Operation. Despite issues such as the COVID-19 pandemic that led to the suspension of supplies of materials and equipment and travel restrictions, construction continued without interruption and was completed on time on March 14, 2024.

During construction, Indonesian staff and workers were actively employed and efforts were made to develop them through technology transfer. This created jobs in the surrounding area and actively promoted human resource development, contributing to raising the level of construction workers in North Sumatra. In addition to direct employment, local materials and equipment were actively used, including cement, reinforcing bars, rental of machinery, and consumable materials such as formwork, thereby indirectly creating jobs for Indonesians.

In terms of improving productivity and work style reform, the BIM (Building Information Modeling) for civil engineering work was integrated with the models for steel pipe and gate work and electrical equipment work, and interference checks were performed in advance in the complex intertwined space, preventing rework in the construction and ensuring the schedule. In addition, information obtained during the tunnel construction, such as face photos and geological development maps, was integrated into the BIM model and provided as an AIM (Asset Information Model) to be used after operations began. These measures will enable productivity to be improved not only during construction but also during operation. In the camp, which includes accommodation, a clinic, and welfare facilities, a mosque, a women's accommodation building, and cafeterias for Muslims and non-Muslims were established, promoting DE&I and proceeding with the construction in cooperation with multiple countries and religions.

Asahan 3 Hydropower Plant started commercial operation in December 2024, and an opening ceremony was held on January 20, 2025, attended by President Prabowo, Minister of Mines and Energy, and the Governor of North Sumatra, where Japan's contributions were introduced. This plant not only contributes to easing the tight electricity demand in the North Sumatra grid and improving the stability of supply, and further improve the investment environment that will foster industrial and economic development, but it will also play an important role in realizing the energy transition in Indonesia, which has set a national goal of achieving net zero by 2060 along with economic growth.

Due to the above outstanding achievements and expectations for future development, this project is worthy of recognition in the field of international contributions.

Intake Weir and Facilities

Underground Powerhouse