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Case Study

Project Title

Planning and Construction of an Automatic Mine Water Treatment Plant for the Settling Pond at PT Kideco Jaya Agung

Project Snapshot

Client: PT Kideco Jaya Agung **| Location:** East Kalimantan, Indonesia

Sector: Coal Mining **| Period / status:** 2026 / Completed

Ganeca Services: Planning, Design, and Construction (Engineering, Procurement & Construction) of a Solar-Powered Automatic Mine Water Treatment Plant

Project Overview

PT Kideco Jaya Agung needed a mine water treatment unit for its settling pond before discharge into the receiving water body, while the settling pond itself was located in a mining area far from the PLN electricity grid and difficult for operators to monitor continuously. Ganeca designed and built an Automatic Mine Water Treatment Plant (MWTP) housed in a 20 ft container, fully powered by a stand-alone solar power system (PLTS) and equipped with PLC-based automatic control and real-time water quality monitoring sensors, allowing the treatment process to run without a full-time operator on site.

The Challenge

Water collected in the settling pond has a suspended solids (TSS) content that fluctuates depending on rainfall intensity and mining activity, so the coagulant/flocculant dose needs to adjust to actual conditions rather than remain fixed. The settling pond's location is far from the PLN electricity grid, so the treatment unit had to be able to operate independently on its own power supply. The mining area also has a limited number of operators available to continuously monitor effluent quality, while mine wastewater quality standards (TSS and pH) still had to be met before the water is discharged into the receiving water body. In addition, accurate discharge flow measurement on the open channel was required for environmental monitoring and reporting purposes.

Our Solution

Ganeca designs and constructs containerized, automatic MWTP units that operate independently using solar power (PLTS), eliminating reliance on the PLN grid. The entire water treatment process—from raw water intake and chemical dosing to mixing and sedimentation—is automatically managed via an integrated control system. The system incorporates backup configurations for key equipment to ensure uninterrupted operations. Water quality and flow rates are monitored in real-time through an automated system, allowing for continuous oversight and control of the treatment process. Additionally, the unit is equipped with operational safety systems to ensure workplace safety within the mining area.

Results & Value

Since commencing operations, this MWTP unit has successfully met all challenges associated with its remote settling pond location. It has maintained stable, round-the-clock operations independent of the

grid, demonstrating the reliability of the solar power system (PLTS) as a self-sufficient energy source for a mine site lacking conventional electrical infrastructure. Treated water quality has consistently met regulatory standards despite fluctuations in raw water inflow caused by rainfall and mining activities; this highlights the effectiveness of the automated dosing system in rapidly responding to changing conditions without the need for manual adjustments. Flow rate and water quality data are now recorded accurately in real-time, streamlining environmental reporting a process previously hindered by limited on-site personnel. Furthermore, the unit has experienced no significant downtime during its operational period, thanks to a pump redundancy scheme and safety protection systems that have functioned exactly as intended.

Project Photos

Layanan terkait: [Water and Wastewater Treatment Solutions]