

KNIGHT PIÉSOLD FOR THE KIKAGATI HYDROPOWER PLANT FOR BERKELEY ENERGY UGANDA THROUGH KIKAGATI POWER COMPANY



The Kikagati Hydropower Project (KHPP) is a newly constructed 16 MW run-of-river hydropower station on the Kagera River, which serves as a border between Uganda and Tanzania. This project replaces a former mini hydropower station destroyed in 1979 during the war that ousted Idi Amin from power in Uganda. The development was spearheaded by Berkeley Energy Uganda through Kikagati Power Company Limited (KPCL), with construction occurring from 2018 to 2022 under an EPC contract. PAC SpA was the civil works contractor, while Voith Hydro handled the electrical and mechanical equipment installations.

Construction of the HPP commenced on the left bank to advance the powerhouse and gated river regulation facility. The first phase coffer dam was extended to allow exposure of the foundations for the first 30 m of dam wall, and a detailed geotechnical assessment of the foundation rock mass was made. The presence of competent granite rock mass over the extent of the foundation supported a concrete dam type as an attractive solution for the weir.

Knight Piésold Consulting (KP) was then appointed to carry out a review of the rubble masonry concrete dam (RMD) design details and to provide supervision during the rubble masonry concrete (RMC) trial section, leading up to the main construction phase, that had been programmed over roughly 6 months.

A gravity dam design using mass concrete was proposed as a more conventional and feasible solution. The design details were adapted to simplify construction in the project's isolated setting. Optimised mass concrete trial mix designs, full-scale trials, and placement techniques were developed alongside ongoing river diversion implementation to address quality, programming, safety, and labor requirements.

The construction, costing US\$87 million, was successfully completed, and the Kikagati Hydropower Project now generates 115 GWh of renewable, reliable electricity annually for Uganda and Tanzania.



Project Team

Client: Berkeley Energy Uganda through Kikagati Power Company Ltd

Consulting Engineers: Knight Piésold

Civil Works: PAC SpA

Electrical and Mechanical Installations: Voith Hydro