

PT Putra Perkasa Abadi

Multiflo® Mudflo™ MM-200 Hydraulic Submersible Slurry Pump and Multiflo® MF Slurry Booster Pump Units



Minerals

Success Story



Above: Multiflo® Mudflo™ hydraulic submersible slurry pump.

Right: Multiflo® Mudflo™ MM-200 hydraulic submersible slurry pump on site at BIB.



INDUSTRY
Coal Mining

CUSTOMER
PT Putra Perkasa Abadi, Indonesia

APPLICATION
Sediment Catchment Dam Reclaim

PRODUCT
Multiflo® Mudflo™ MM-200 hydraulic submersible slurry pump
Multiflo® MF slurry booster pump unit

Dredge-mounted Multiflo® Mudflo™ pump reduces mud processing time by 60%

Background

PT Putra Perkasa Abadi (PPA), located in South Kalimantan, Indonesia, is a full-service coal mining contractor that specialises in overburden removal and run-of-mine coal hauling.

Weir Minerals has worked with PPA for over a decade. The Weir Minerals team was approached by their team to aid in creating a solution for their customer, PT Borneo Indobara (BIB) coal mine site to include into their mining contract the maintenance of the site's sedimentation dams.

The challenge

It is common practice for mine sites to use a 'truck and shovel' method to remove mud from sediment dams and haul it as a part of their ongoing pond maintenance program. This method requires at least a spotter, an excavator operator and potentially multiple truck operators, and multi-million dollars in associated machinery and fuel costs. This process is deemed costly, labor-intensive, time-consuming and has a considerably higher carbon footprint. It is also considered a safety hazard with the transport of mud through a site.

The PPA team and BIB site had estimated that there was over 25,000m³ of mud contained in series within the sedimentation dams at the time of approaching Weir Minerals for an alternative solution.

The tonnage of mud at the BIB site presented environmental and production risks as the dams were reaching capacity and were at risk of flooding.

PPA needed to find an alternative solution to using extensive machines such as several 30 tonne excavators and multiple Articulated Dump Trucks (ADT) to remove the mud.

The solution

The Weir Minerals team designed, fabricated, assembled, installed, and commissioned a Engineered-To-Order Multiflo® Mudflo™ 200 hydraulic submersible slurry pump mounted to a dredge. The team then paired it to multiple Multiflo® diesel driven slurry booster pump units. The process; from purchase to commissioning, took approximately six months to complete.

The Multiflo® Mudflo™ solution combines elements of the Warman® MGS submersible slurry pump-end, a custom Multiflo® designed bearing assembly coupled to a hydraulic motor.

The Mudflo™ 200 is then paired with twin Multiflo® CB33 hydraulic cutters that utilise ESCO excavation teeth. The Multiflo® CB33 hydraulic cutters provide efficient mechanical agitation of the settled solids which allows for the pumping of abrasive and highly charged slurries and mud.





Top: Installation of Multiflo® Mudflo™ hydraulic submersible slurry pump at the BIB site.

Middle: Multiflo® CB33 hydraulic cutters with ESCO excavation teeth.

Bottom: Weir Minerals engineer on site with Multiflo® MF slurry booster pump units.

The solution cont.

Combining the Multiflo® Mudflo™ hydraulic submersible slurry pump with the Multiflo® slurry booster pumps was integral to keeping the slurry in transport. The Multiflo® pump units utilise specially adapted Warman® AH® 8/6 pump wet ends driven by a Caterpillar® C18 diesel engine. The slurry fluid needing to be pumped had a specific gravity (SG) of 1.3kg/m³, with excursions up to an SG of 1.6 during operation. This required a total of three booster pumps to transport the slurry over two kilometres away into an unused void on the site.

The results

PPA noted for their customer, BIB, three major improvements: an increase in uptime, an improvement in environmental protection and a decreased operating expense (OPEX).

Increased uptime - The Multiflo® Mudflo™ hydraulic submersible slurry pump with the Multiflo® MF slurry booster pumps have achieved over 2000 hours in operation since installation and commissioning in 2020.

Environmental protection – As the Multiflo® Mudflo™ hydraulic submersible pump solution contains the slurry liquid in a pipeline, slop and slosh generally associated with the traditional methods are removed and as such, this mine can prevent caustic mud contaminating into the environment. Another aspect through the fuel savings relative to this project meant that there was a reduction in BIB’s carbon footprint.

Decreased OPEX - Compared to the conventional truck and shovel mud hauling technique, the Multiflo® Mudflo™ is estimated to be up to 13 times more affordable due to a decrease in operating costs including labour and fuel.

Multiflo® Mudflo™ MM-200 Hydraulic Submersible Slurry Pump Improvements Table

Amount of mud contained and required to be moved (m ³)	25,000
Wear life since commission (hours)	2000 +
Cost savings (AU\$ per m ³)	2.15
CO ² reduction (tonnes)	117

*Cost savings is cubic meter of mud pumped versus traditional method, excluding labour and maintenance costs of project.