

OceanaGold - Didipio Project, the Philippines

Cavex® 400CVX10 Hydrocyclone Cluster

WEIR

Minerals

Case Study



Above: Cavex® 400CVX10 hydrocyclone

Right: Cavex® 400CVX10 hydrocyclone cluster on site



INDUSTRY

Gold and Copper Mining

CUSTOMER

OceanaGold
Didipio Project, the Philippines

APPLICATION

Mill Circuit

PRODUCT

Cavex® 400CVX10 hydrocyclones

Cavex® 400CVX10 hydrocyclone cluster reduces circulating load by 246%

Background

Didipio is a high-grade underground gold and copper mine located on the island of Luzon in the Philippines. In 2018, the project produced 114,985oz of gold and 14,999t of copper.

The Didipio Mine delivers significant socio-economic benefits to the Barangay of Didipio, neighbouring communities, the provinces of Nueva Vizcaya and Quirino and the Philippines.

It directly employs over 1,500 workers of which 97% are Philippine nationals and 59% are from local communities.

It provides several thousands of additional livelihood opportunities and indirect jobs through partnerships with cooperatives and social development organisations.

The challenge

Initially the site was processing 2.5 mtpa of ore. With the installation of a new jaw crusher and other improvements in the grinding circuit, the production increased to 3.5 mtpa. This increase in tonnage affected the incumbent competitor hydrocyclone feed density and increased the circulating load.

At times, the circulating load was as high as 700%, restricting the hydrocyclone feed pump capacity.

The Weir Minerals team discussed this issue with the customer on site and determined that the incumbent competitor hydrocyclones were not fit for this application.

The solution

The Weir Minerals team specified a trial of a cluster of 19 Cavex® 400CVX10 hydrocyclones. At 15" diameter, the Cavex® 400CVX10 is smaller than the existing competitor units and ideally suited to the application with the high hydrocyclone feed densities.

The process managers on site were already familiar with the Cavex® 400CVX10 hydrocyclones from their experience at the OceanaGold sites in New Zealand.

The results

With the installation of the Cavex® 400CVX10 hydrocyclones, the circulating load was reduced from 620% to 374%. This directly led to savings in power consumption, ball consumption, and pump maintenance costs of over US\$815,000 per annum.





1. OceanaGold Philippines Didipio Project
2. Cavex® hydrocyclone cluster from above
3. Engineers on site with Cavex® hydrocyclone cluster at Didipio
4. Cavex® hydrocyclone cluster on site at Didipio

“Having had good performance from Cavex® hydrocyclones at our New Zealand sites, we were confident that retrofitting Cavex® hydrocyclone cluster at Didipio, with an increased number of smaller cyclones than we had at the time, would help reduce our problematic circulating load and lever multiple benefits in doing so. The Q4 2016 change over to Cavex® hydrocyclones has exceeded our expectations, enabling higher throughput and lower consumable costs without being penalized in grind size.”

Gary Webb, Processing Manager, OceanaGold Didipio Project

Cyclone cluster comparison

	COMPETITOR CYCLONE CLUSTER	CAVEX® HYDROCYCLONE CLUSTER
P80	143µm	146µm
Circulating load	620%	374%
Reduction	-	246%
Power draw by BM p.a.	4504kW	4115kW
Savings p.a.	-	US\$507,000
Power draw by cyclone feed pump p.a.	391kW	272kW
Savings p.a.	-	44%
Ball consumption p.a.	1989 drums	1643 drums
Savings p.a.	-	US\$248,428
Cyclone feed pump maintenance costs p.a.	US\$215,113	US\$152,730
Savings p.a.	-	US\$62,383
Total savings p.a		US\$817,811

Cavex® CVX hydrocyclone

Cast housing lined with a variety of wear-resistant materials, the Cavex® CVX hydrocyclone is designed to provide exceptional performance together with strength and corrosion resistance. With sizes from 40mm to 1200mm diameter.

Key features/benefits

- Cast or FRP housing for small units
- Fabricated housings for larger units
- Moulded rubber liners up to 50mm thick
- Sizes up to 1200mm diameter

Processes

- Classification and Separation (Mining)
- Mine Dewatering Systems
- Tailings Management
- Classification and Separation (Aggregates)