



PROJECT PROFILE

Troy Resources

Karouni Gold Project

Flocculant Mixing Plant

CDMS Consulting Engineers (CDMS) designed and built a semi-automated flocculant batch system, known as CDMS-FBS2000. The unit will use operator loaded flocculant powder and connections to plant raw water supplies to produce a 2m³ batch of 1% flocculant solution that is transferred to the site storage tank.

OUTCOME

- Developed 2000L batch system
- One hour batch time
- Skid mounted turnkey system

BACKGROUND

Flocculant is described as a long chain polymer which requires gentle mixing to ensure that the polymer chains are not broken down by the dissolution and mixing process. The flocculant batch plant feeds concentrate to the storage tank for the pre-leach thickener supply.

PROJECT OBJECTIVES

- Operate efficiently and reliably
- Designed with effective dissolution and mixing
- To act as a standalone system

CHALLENGES

- If the powder is not finely dispersed lumps will form and the polymer will not fully mix and age.
- The system had to be tailored to suit the high rainfall and humid conditions in the dense jungle location
- Controls and drives were designed and commissioned to suit the site power supply which was different to that available locally.

OUR APPROACH

Considering the transport requirements for this project, controlling dimensions were selected for the skid unit that would permit truck or container transport. The aging tank was sized to suit the required batch volume and optimised to minimise wastage based on available fabrication materials. The flocculant feed hopper and the tank were positioned to allow a single point of access to service both the wetting head and the new flocculant addition.

CDMS engineers selected a suitable micro batch feeder and calculated the dilute phase conveying requirements. A custom vacuum hopper was designed incorporating conveying through a venturi eductor, with motive air supplied by a side channel blower. To prevent clogging of the system under the local environmental conditions, a sealed hopper was designed with discharge valve and trace heating on the conveying line. On top of the tank a custom high flow wetting head, designed in house, ensured complete flocculant coverage and prevented any 'fish eyes'.

The design of the wetting head incorporated a quick release coupling on the discharge tube and Camlocks on all water and pneumatic lines for ease of disassembly & maintenance. CDMS designed the electrical and control system with Factory Acceptance Testing (FAT) of the control cabinet prior to skid assembly. The batch system was fabricated and wet commissioned in WA before being shipped overseas for installation and hot commissioning.