

CASE STUDY

KLEERFLO: AUTOMATIC SELF-CLEANING FILTER

EXXARO GROOTGELUK COAL MINE – FLUIDISATION NOZZLES



Client: Exxaro Grootgeluk Coal Mine
Industry: Coal Mining and Processing
Region: Limpopo, South Africa
Product: Kleerflo self-cleaning filter

Challenge

- Two new dense media coal beneficiation plants were built at the Exxaro Grootgeluk Coal Mine which, at full capacity, will supply the Medupi Power Station with about 14.6 Mt of powerstation-grade coal annually for the next four decades.
- Coal mine beneficiation plants require an uninterrupted supply of clean process water, particularly for the operation of reflux classifiers for fines beneficiation - which incorporate fluidised beds with fluidisation nozzles.
- Blocked fluidisation nozzles are a common and widespread problem in fluidised bed systems, causing considerable downtime, high maintenance and operational costs, as well as damage to downstream equipment. And loss of separation efficiency.

Application

Kleerflo self cleaning filters prevent nozzle blockages in fluidised bed separation processes, protect downstream equipment from damage, and save maintenance and operational costs. And increasing efficiency.

Solution

- Following a specialist consultation – freely available to all design engineers and end users

- a trial Kleerflo filter unit was made available to the mine for a test run.

- Factors taken into consideration:
 - the filters have no electric motor, no close tolerance elements, no rotating parts, and very few moving parts
 - high quality, durable, stainless steel wedgewire screens eliminate the need for manual pre-screens and never have to be replaced
 - the filters eliminate nozzle blockages and offer long uninterrupted filter runs and completely autonomous function, including backwash.

Results

- Superior Filtration engineers were able to provide valuable technical input based on their extensive experience at other fluidised bed systems installations.
- A trial Kleerflo filter unit was installed for a test run.
- The mine was satisfied that the KPI's set out at the commencement of the trial had been satisfied, that the success criteria had been fulfilled and that the Kleerflo filters had proved to effectively remove oversized particles from nozzle feed water.
- The Kleerflo self-cleaning filters reduced downtime almost entirely, used very little electrical energy, and considerably reduced maintenance costs. They offered the lowest lifetime cost of the alternatives examined.