BULKHANDLING TECHNOLOGIES

FEEDING GRAPHITE FILTER CAKE

Screw Feeders and Conveyors

PROJECT SCOPE

Client:	Syrah Resources
Project:	Balama Graphite Project, Northern Mozambique
Material:	Graphite Filter Cake (Flake and Fines)
Equipment:	Screw Feeders
Capacity:	8 – 42 TPH
Scope:	Design and supply of three (3) twin screw feeders Design of mass flow storage hopper
Aim:	To achieve reliable and uniform extraction from hopper with even and controlled discharge of filter cake to process

With many years' experience in the design of bulk material feeders, Bulk Handling Technologies (BHT) was approached during early plant design to provide specialist advice on possible methods to reliably feed graphite filter cake from storage. Following review and consideration of variations options, BHT was awarded the contract for the design and supply of three (3) Twin Screw Feeders.

Located under the graphite concentrate pressure filter hoppers, the Screw Feeders are required to feed Graphite Filter Cake to the dryer feed conveyors.

DESIGN CHALLENGES AND CONSIDERATIONS

As with most filter cakes, graphite filter cake is a damp, sticky material and requires careful consideration to ensure reliable, controlled discharge from storage. Specialist material testing of a representative sample was carried out to determine the range of potential flow properties.

Based on the results of material testing, critical hopper dimensions were determined, the outlet size and head load conditions were established and BHT recommended a ribbon flight twin screw feeder for the duty.

Further material testing using a scale hopper and screw test rig confirmed that the ribbon flight design proposed was the correct selection, with standard flights suffering significant build-up, resulting in reduced feeding capacity and eventual blockage.

Additionally, due to the extremely high nobility of graphite, the design incorporated specialty steels and special surface treatments.

THE FINAL SOLUTION

The three twin screw feeders were manufactured, assembled and tested by BHT in Perth, WA. The final design had a span between bearings of over 7m and incorporated the following key features to meet the specific requirements of the application:

Installed Power:	2 x 11kW suitable for VVVF operation
Drives:	Foot mounted planetary gearboxes with low speed gear couplings
Flights:	Variable Pitch, stainless steel proprietary ribbon design
Shafts:	Heavy Wall stainless steel pipe

For more information on this project, or any other enquiries, contact us + 61 (0)8 9332 3454 or sales@bhtgroup.com.au