



Case Study: Gasifier Ash – SES, Shandong Prov., China

IN BRIEF

Coal gasification is an upcoming clean coal technology whereby the carbon materials in the coal are removed before the combustion process takes place. The gasification process is proven and is operational in several commercial and demonstrational plants worldwide. In the case of our customer Synthesis Energy Systems, there was a need to handle waste material from the gasification process while keeping the customer's process pressure up. Macawber achieved this requirement with two x 8/8-4/8 Denseveyor Pressure Letdown systems for removal of the waste material originating from coal gasifier baghouses and electro-static precipitators. The systems were designed to operate at baghouse and ESP pressure for filling and then lock down to atmospheric pressure for conveying the waste material away to storage while maintaining process upstream pressure.

MATERIAL CHARACTERISTICS

Material	Gasifier Ash
Bulk Density	Aerated 1,264 kg/m ³ (79 lb/ft ³)
Size	140 – 6 mesh
Temperature	150°C (302°F)
Moisture Content	2%
Condition	Free flowing when aerated, highly abrasive.

SYSTEM OBJECTIVES

1. Pressure letdown lock system
2. Reliable consistent conveying.
3. Maintain low pipe and valve wear.
4. Provide a competitive solution to previous poor supplier.

SYSTEM PERFORMANCE

Transfer Capacity
7.5 Mt/h each system

Conveying Distance
80m (260ft)

Reception Points
One per system

Air Consumption
Average 4.5 Nm³/min (160scfm)

1. System operation is stable, reliable and efficient
2. Elevated pressure in baghouse and ESP is maintained
3. Competitive solution beat customer expectation in quality and after sales service

