

Macawber Installation Case Study: Coal Dust & Pellet Conveying Systems, Holland

IN BRIEF

Three dense phase, low velocity pneumatic conveying systems were supplied to convey coal dust between 1.5t/h and 2.7t/h over a distance of 525ft horizontal and 30ft vertical. The systems were 2 x 3 cu. ft. and a single 8 cu. ft. vessel all with a 3" pipe line. All pneumatic conveyors are located under a feed hopper with start and stop controlled in automatic by the feed hopper and silo reception level probes. The material handling systems are working very reliably with no line blockages and exceed the customer's expectation regarding transfer rate giving 2.9t/h for the smaller systems and 5.9t/h for the large system 1. The pipe line conveying pressure was between 8psi and 12.5psi. Convey air requirement was substantially less than that proposed at 88scfm and 180scfm. The proposed air requirement was 176scfm and 278scfm. The systems are pneumatic only to the ATEX equivalent of Eexd Class II Division 2. The customer elected to control the systems through their own high-level PLC and DCS systems.

MATERIAL CHARACTERISTICS

Coal dust	0.00016" - 0.004"
Coal pellets	0.2" - 0.4"
Bulk Density	25 lb/ft ³
Temperature	176°F
Moisture Content	0%
Condition	Free Flowing

SYSTEM OBJECTIVES

1. Dense phase low velocity conveying
2. ATEX zone 22 Cat 3D
3. Short delivery
4. Reliable operation



The three systems ready for delivery

SYSTEM PERFORMANCE

Transfer Capacity	Between 1.5t/h and 2.7t/h
Conveying Distance	528ft Horizontal and 30ft vertical
Reception Points	1 feed and 2 reception points per system

IMPROVEMENTS ACHIEVED

1. Increased transfer rate
2. Reduced compressed air requirements
3. Low than specified degradation



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