

Macawber Installation Case Study: Barley Grain Conveying Systems, Scotland

IN BRIEF

Two systems were supplied to convey 10t/h and 25t/h over a distance of 213ft horizontal and 82ft vertical. The systems were 12 cu.ft and 30 cu.ft. vessels with a 6" pipe line for the smaller system and an 8" pipeline for the larger. Both systems are located under a feed hopper with start and stop controlled in automatic by the feed hopper and silo reception level probes. The system control panels are located in a safe area not far from the vessels. The systems are working very reliably with no line blockages and exceed the customer's expectation regarding transfer rate giving 12t/h for the smaller system and 29t/h for the larger system. The particular difficulty with this application was the very small reception silos offering little more than a single cycle volume and an undersized reception silo vent filter. The problem of pressure build up and filter bag damage was resolved by optimizing for low conveying pressure and low velocity while still meeting the expected transfer rate. Convey air manifold pressure regulator setting was reduced to 40psi from the standard 60psi giving an actual pipe line conveying pressure of just 13psi. Air usage for system 1 was 495scfm and for system 2 was 250scfm.

MATERIAL CHARACTERISTICS

Barley & wheat grains	0.08" – 0.12"
Bulk Density	34 - 41 lb/ft ³
Temperature	Ambient
Moisture Content	0%
Condition	Free Flowing

SYSTEM OBJECTIVES

1. Dense phase low velocity conveying & low degradation
2. Short delivery
3. Reliable operation

SYSTEM PERFORMANCE

Transfer Capacity	System 1 = 29.2t/h, System 2 = 11.9t/h
Conveying Distance	295ft
Reception Points	1 feed and 1 reception point per system

IMPROVEMENTS ACHIEVED

1. Increased transfer rate
2. Reduced compressed air requirements
3. Low grain damage



System 2 fully installed and running



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