P281

Macawber Installation Case Study:

Titanium Dioxide – Illinois

IN BRIEF

The customer for this project is a paint manufacturer as well as a supplier of hardware items. In the early 1980's, the customer wanted to improve the handling requirements for one of the paint ingredients, Titanium Dioxide (TiO2). TiO2 appears to be a simple dry powder and therefore easy to convey pneumatically. However, from analysis, the opposite is true. The material particle shape as seen in the microscope shows an extremely cohesive material and it is therefore a steady challenge for pneumatic conveying. Subsequently conveying tests performed in our full-scale conveying circuits confirmed our observations which caused us to design a special arrangement for the Denseveyors®. A complete handling system was designed for the Illinois plant with two Denseveyors® serving the needs of six weigh bin reception hoppers. The systems continue to function well providing energy efficient and clean handling of this very special and demanding powder.

MATERIAL CHARACTERISTICS

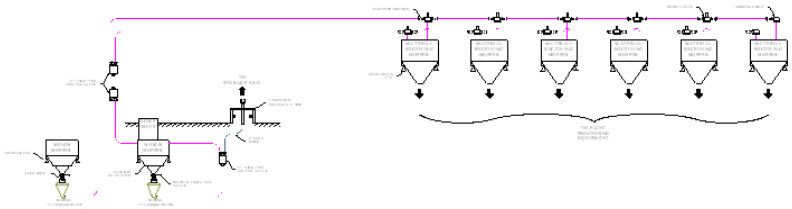
Material	Titanium Dioxide
Bulk Density	Aerated 800 kg/m3 (50lb/ft3)
Size	100% < 250 microns
Temperature	Ambient
Moisture	1.0%
Condition	Highly cohesive and adhesive powder containing agglomerated lumps Tends to coat steel surfaces Moderately abrasive
Special Note	Systems also handle calcined clay, calcium carbonate, mica, amortized silica and feldspar

SYSTEM OBJECTIVES

1. Capable of handling titanium dioxide and five other metals
2. Reliable, low maintenance operation & low pipe wear
3. Ability to prevent material build-up in vessels and pipelines

SYSTEM PERFORMANCE

Transfer Capacity	36 Mt/h (40 t/h)
Conveying Distance	122m (400ft)
Reception Points	Six



IMPROVEMENTS ACHIEVED

1. Low velocity dense phase mode of conveying resulted in low pipe wear – Macawber provides no-wear guarantees for pipe and bends.
2. Unique Denseveyor® design provides for smooth, efficient vessel fill and discharge
3. Vessel filled via the unique Macawber Dome Valve® – low maintenance and no lubrication required
4. Macawber technology requires no pipeline boosters.

www.macawber.com
sales@macawber.com

1829 Clydesdale Street,
Maryville, TN 37801 USA

Phone: +1 (865) 984-5286
Fax: +1 (865) 977-4131