

Macawber Installation Case Study: FBC Bed Makeup Sand – California, USA

IN BRIEF

Two companies in California decided to install fluid bed combustors to dispose of waste matter harvested with their nut crop in an environmentally acceptable way. The waste comprised of grass, weed, tree branches, waste wood and unacceptable or waste crops. The fluidized bed combustion method was thermally efficient and clean because combustion took place at lower temperatures than conventional combustors to avoid the generation of CO and NO_x gasses. California has the highest demands for clean air which are rigidly enforced for new combustion plant. The bed material was a local sand with a start volume of 2.5mT (5500lb). The sand level was to be maintained to a certain level during combustion to maintain efficiency and to avoid the creation of large clinkers. This was achieved by the SANDPUMP located beneath the sand regeneration storage silo. A 50mm (2") standard steel pipeline re-circulated the spent sand to the top of the storage silo. The SANDPUMP is a low velocity dense phase pneumatic conveying system in which a special pressure vessel conveys the sand slowly to its destination. In this way very low transfer velocity is achieved to avoid pipe wear. Also, the power economy is dramatically increased since very low air supply is required. Bed replacement was required to be no less than 680 kg/hr (1500 lb/hr).

MATERIAL CHARACTERISTICS

Material	Bed Sand
Bulk Density	1250 lbs/ton
Temperature	150°C (300°F)
Moisture	0%
Condition	Highly abrasive

SYSTEM OBJECTIVES

1. Reliable consistent performance
2. Low air consumption
3. Meet government clean standards
4. Lowest possible air consumption

SYSTEM PERFORMANCE

Transfer Capacity	680 kg/hr (1500 lb/hr)
Conveying Distance	100m (328 ft)
Reception Points	Single
Air Consumption	Minimized

IMPROVEMENTS ACHIEVED

1. Competitive solution avoided wear and maintenance through low velocity transfer of material
2. Successful equipment integration into customer's larger scope project. Macawber supported the customer every step of the way, from application engineering, plant design, delivery, and startup
3. Technology application proven successful

