Round the Clock Bagging at Tate & Lyle Meets Growing Demand for Big Bags

Webster Griffin Ltd have installed a high speed Big Bag (F.I.B.C. - Flexible Intermediate Bulk Container) weighing, filling and conveying system at the Tate & Lyle Silvertown refinery.

The filling system is part of the new £15.0m bulk handling and storage terminal designed and constructed by Amec, Stratford-upon-Avon. The object of installing the Webster Griffin system was to significantly increase Tate & Lyle's ability to service the growing appetite from the UK and export markets for granulated sugar in Big Bags.

The Silvertown refinery produces sugar 24 hours per day, it is economically unviable to stop and start the process of converting cane into pure white sugar, therefore, the refined sugar flows continuously. The main stream of refined sugar is delivered to the many secondary processing and packaging lines throughout the factory which produce a variety of products ranging from icing sugar to 1kg bags for the domestic market, as well as the new bulk storage silos above the road tanker loading and the new Big Bag filling system.

Tate & Lyle, Silvertown
Bulk Sugar Storage Silos

High Speed Bagging 35-40 b/h

A stack of empty pallets is loaded onto the fork type pallet magazine which dispenses the wooden pallets one by one onto the empty pallet infeed conveyor. (The system is able to handle a variety pf pallet sizes, including the 1200 x 1000 GKN - CHEP Blue Packer used in the UK, a square 1100 x 1100 pallet and an unusual export pallet which is 1143 long x 914 wide.)

All pallets, whatever the size, are automatically centralised along the centre line of the conveyors, prior to entering the filling station, before a cardboard slip sheet is placed onto the deck of the empty pallet. As a filled bag is discharged from the IBC-PF3 weigh-fill station, the next pallet enters the machine.

Whatever bag size is being filled the telescopic spout is lowered to a convenient height for the operator to apply the empty bag onto the filling machine, it is then raised, inflated and filled before being lowered down onto the pallet. After completion of the auto weigh-fill cycle the full bag is check weighed and discharged.

As the bag is conveyed out of the filling station the operator places the next bag onto the machine and initiates the auto weigh-fill cycle, he then has sufficient time to tie up the neck of the first bag and place the identification ticket onto a pocket on the bag.

The filled bags are accumulated on a series of pallet conveyors awaiting removal by a fork lift truck to Tate & Lyle's despatch warehouse where they are stuffed into containers for export or loaded on to lorries' for distribution to UK clients.
Prior to bagging the sugar is stored in a specially heated and insulated buffer hopper directly above the filling station which serves to provide a consistent head, thus guaranteeing regular flow characteristics- essential for good weight accuracy

Owing to the possible varying nature and flow characteristics of the sugar a Matcon cone discharge valve is mounted at the base of the buffer hopper, special software written by Webster Griffin controls the pulsing of a valve, gradually decreasing the width of the annulus around the valve through which the sugar flows in order to provide a dribble of product for fine accuracy towards the end of the weigh-fill phase.

Testing @ WG Factory

The modular design of the Webster Griffin equipment enabled Webster Griffin to adopt a building block approach avoiding the need to offer any prototype design, in fact the only non-standard item - the automatic pallet centring device operates very reliably and has since been incorporated on a system bagging table salt at 45 tonnes per hour at Beer-Sheva on the shores of the Dead Sea, Israel in ambient temperatures up to 50°c.

The system is controlled by a Mitsubishi FX PLC and was fully assembled, wired and tested and Webster Griffin's works in Kent prior to installation.

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