

Case note

ABB machinery drives double rate of tomato packing



ABB high performance machinery drives control the speed of the tomato handling conveyors.

D&D Engineering (Hull) Ltd in the UK is a manufacturer of conveyors and product handling equipment. Eighty percent of its customers are in the food industry, mainly in the prepared produce sector, with some involved in the production of chilled products and bakery goods.

One of D&D Engineering's recent customers is John Baarda Ltd, a company specializing in the growing of tomatoes. John Baarda Ltd needed to replace its current tomato handling conveyor system, which used inefficient chains and sprockets, with a solution that would allow it to pack tomatoes more quickly and accurately while allowing quality inspection of the tomatoes.

Co-ordinating machinery speeds in perfect time

The company was experiencing difficulties with the mechanically interfaced conveyors, as their co-ordinating series of chains and sprockets are subject to wear and stretch. This causes maintenance problems, with any timing adjustments having to be made mechanically, leading to production interruptions and reduced output.

Gavin Walker, Engineering Sales Manager of D&D Engineering (Hull) Ltd explains: "The speed of the conveyor must be

co-ordinated with the speed and timing of the wrapper to ensure that the tomatoes are delivered to the flow-wrapper at exactly the right time."

Quick and accurate packing

D&D Engineering (Hull) Ltd designed a conveyor system that uses ABB servo motors and ABB high performance machinery drives to control the speed of the tomato handling conveyors, matching the speed of the packing machine and ensuring that the tomatoes are packed quickly and accurately. An ABB component drive runs rollers on the conveyors, allowing the tomatoes to be turned automatically and inspected for quality.

The two feeder conveyors are each driven by an ABB high performance machinery drive in master-slave configuration, with the master receiving an encoder signal from the wrapper. This ensures that the drive knows where the wrapper is in its cycle and can control the speed of the conveyor precisely to ensure the tomatoes arrive at the wrapper at the correct time. If the speed of the wrapper changes, the drive can alter the speed of the conveyor accordingly to maintain the correct timing.



ABB machinery drives help to reduce operation and maintenance costs.

Doubling the packing rate

Tim Howarth, Business Development Manager with John Baarda says: "With mechanical systems, we can achieve a maximum rate of around 60 packs per minute. With stoppages, this averages around 40 packs per minute. The ABB machinery drive based electronic control system gives us an average of 70 to 80 packs per minute."

The ABB high performance machinery drives can be used with both synchronous and induction motors and their modular design and flexible software make them suitable for use in a range of machinery applications, including those of the food and beverage industry, material handling and packaging.

Challenges:

- Accurate co-ordination of tomato handling conveyor with wrapping machine to allow quicker packing of tomatoes while providing quality inspections

Solution:

- ABB servo motors controlled by ABB high performance machinery drives match the speed of the tomato handling conveyors to the speed of the packing machine
- ABB component drive controls rollers on the conveyors, allowing the tomatoes to be turned for inspection

Benefits:

- Tomatoes are packed quickly and accurately
- Packing rate has doubled from 40 packs per minute to up to 80 packs per minute
- The drive's programmed product menus allow different products to be run on the conveyor with quick changeovers
- The AC drive electronic solution is easier to build than the previous mechanical interfaced system which used a series of chains and sprockets to achieve the necessary co-ordination
- Operation and maintenance costs reduced

For more information please contact:

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