

## **Tshwane banana ripening facility chooses York YVWA chiller from Johnson Controls**

30<sup>th</sup> of October 2018

The Tshwane Fresh Produce Market sells on average about R15 million in produce every day. Banana sales account for 11% of this figure. About 1.3 million kilograms of bananas are processed weekly by the state of the art banana ripening facility at the market. This facility is responsible for distribution of bananas to sales outlets nationally and in Africa. To drive this process reliably, the Centre selected Johnson Controls' YORK YVWA chillers.

Says Francois Knowles, Deputy Director: Commercial Services at the Centre: "The Banana Ripening Centre provides a critical service to farmers, acting as a staging facility and platform for banana sales. Our highest priority is ensuring 24x7 uninterrupted service. Maintaining a constantly chilled environment to ensure staged ripening of the fruit is crucial. With growing volumes of produce moving through the market—turnover reached R3 billion in the 2016/17 financial year—this contributed to the need to upgrade our aging banana cooling equipment.

"We chose the Johnson Controls York YVWA chillers for their reliability, ease of control, as well as their potential to drive operational savings."

### **The ripening process**

The Banana Ripening Centre is performance driven. Acquired from the Banana Board in 1994 by the Tshwane Municipality, it contributes 11 percent of the total output of the Tshwane Market, playing an important role in the agricultural value chain.

Explains Knowles: "We source bananas from across South Africa and Africa, reaching as far as Zimbabwe and Mozambique. The bananas arrive green, are palletised and stored in one of our 55 ripening chambers. Market agents at the market act on behalf of the farmers, securing sales from wholesalers and retailers. Collection and distribution of the bananas are synchronised with our six-day ripening process, ensuring the produce reaches its destination at the right level of ripeness for optimal retail sales."

The ripening process relies on three factors:

- Keeping the temperature at 13 to 14 degrees C.
- Ensuring the correct air flow or circulation through the ripening chambers.
- The release of ethylene gas at the right time to initiate the ripening process.

Each ripening chamber can accommodate thirty pallets to be ripened. Sensors in the chambers constantly measure environmental temperature and communicate with the chillers, driving outputs to keep the chambers at the right temperature. A fan coil unit at the back of the facility circulates cool air through the chamber. The ripening process takes place over six days.

### **The chillers**

Two York water-cooled screw type YVWA chillers with variable speed drives (VSDs) were selected to replace the four chillers at the Centre that have reached end of life. "These chillers will help meet the Centre's strategic goals of reliability and enhancing control of the environment to drive service excellence. The VSDs will also help lower energy costs, driving down operating costs," notes Russell Hattingh, Engineering Manager at Johnson Controls Systems and Service.

The use of VSDs on chiller compressors can cut energy use by up to 30 percent per annum while maintaining operating reliably over a wide range of conditions. "This is accomplished in two ways,"

explains Hattingh. “At part load when cooling capacity can be reduced, a VSD chiller inherently uses less energy than a constant speed chiller as the compressor speed can be reduced to more closely match the load. At low-load conditions, when ambient temperature conditions are cooler than design, even greater energy savings can be realised if a VSD is employed.”

The chillers were installed and commissioned in June 2017 by the Johnson Controls team. “The team was familiar with the Centre’s operational needs, having serviced its previous equipment, notes Hattingh, “so the implementation, which included a parallel upgrade to the Centre’s reticulation system, went smoothly. We are pleased to be able to continue providing support at the Centre.”

### **Future perfect**

“I believe our investment in the York chillers will help gear the Centre to maintain its high level of service into the future,” says Knowles. “The Centre is closely aligned with the University of Pretoria, providing a training ground for students, but is also very focussed in setting higher standards in terms of agricultural best practices. Excellence in control and automation at the facility is an important part of achieving that.”