

## The Post Harvest Washing Case Study

### The Application and Challenges

A harvest washing factory washes and packs various products to be sold in supermarkets and stores. If the products do not sell until expiration date, they are returned to the factory. The number of returned products pack's dramatically affects the factory's profits thus keeping the amount returned products as low as possible is crucial. Two main reasons affects amount of returned products: browning and bruising. Bruising is caused by the mechanical process, while browning is caused by inconsistent chlorine levels in the washing baths that enabled bacterial processes. Adequate levels of chlorine must be present in the washing baths in order to kill microorganisms. Since organic matter in the water inactivates chlorine, chlorine levels must be constantly monitored and corrected.

### Blue I's Solution

The browning issue was addressed by upgrading the gas flushing machine which was adjusted to the increased product volume (Week 14-16). The next step was to ensure that correct chlorine and pH levels are maintained in the washing baths for an effective sanitization of the product. This was achieved by using the HYDROGUARD HG-702 (Week 19-onwards). The HG-702 controller constantly measures the Bath's Chlorine and pH levels and sends a signal to a solenoid valve, whenever a predefined set point is reached. A chlorine solution is then poured into the water stream until the predefined control limit is reached, causing the automatic valve to be closed. The HG-702 controller also regulates the pH level of the water, by stopping and starting a small acid dosing pump. The free chlorine level is being maintained a 9ppm with a pH level of 7.



HG-702 accurate controlling of the free chlorine and pH levels in the washing water proved to be beneficial:

- Browning effect caused by bacteria was reduced
- Less products were returned due to longer shelf life (3 days more)
- Safer and less handling of chemicals (hoppers are filled once in two weeks)
- Improved efficiency and higher productivity due to maintaining the correct washing water solution at all times
- Reduced chemical costs, ( 30% saving compared to Chlorine dioxide and 45% saving compared to Oxonia)
- Reduced water costs due to fewer water is replacements ( 35% water saving)

### Summary

Blue I Water Technologies accurate monitoring of disinfection processes proves to be safer to the public and the environments as well as more economical. An efficiently monitored pH and Chlorine levels reduced browning effects, prolonged products shelf life as well as reduced operation costs such as water and chemicals.