



CASE STUDY: Optimizing Efficiency: Automated Pallet Washing for Enhanced Productivity and Sustainability

Background & Challenge

Niagara Systems was tasked with developing the world's largest and fastest automated pallet washer to help a customer replace their manual washing process. The objective was to wash up to 1,000 pallets per hour, improve efficiency, reduce labor costs, enhance worker safety, and comply with government regulations, all while delivering consistent, high-quality cleaning results.

Solution & Results

Niagara Systems developed a state-of-the-art automated pallet washer designed to handle high throughput while maximizing energy and water efficiency. The washer utilizes advanced robotics for automated pallet handling, reducing labor costs by eliminating the need for manual loading and unloading. Equipped with sophisticated sensors, the system scans for defects and ensures consistent, high-quality cleaning, reducing downtime and increasing productivity. The design integrates a closed-loop water recycling system, minimizing water usage while maintaining powerful cleaning capabilities. Additionally, remote monitoring allows for real-time adjustments and performance tracking, optimizing the system's operation and reducing malfunctions.

The results were immediate and impactful, with the new system improving operational efficiency and sustainability. By automating the cleaning process, the system reduced labor-related injuries and chemical exposure, enhancing workplace safety. The elimination of manual handling and chemical use helped streamline operations while also ensuring compliance with environmental and safety regulations. This innovation not led to significant cost savings and boosted productivity and safety, providing the company with a scalable solution that could adapt to growing needs.



Market(s):

Food
Pharmaceutical

Solutions:

The system offers automated pallet washing, high throughput, energy and water efficiency, automated loading/unloading, precision cleaning with sensors and robotics, and custom software for control and monitoring.

Key Outcomes:

- Reduced labor costs by \$1,028,928 annually, with payback in under 12 months.
- Able to wash 1,000 pallets per hour, increasing operational capacity.
- Eliminated 52,000 hours of annual downtime from breaks and vacations.
- Reduced water usage by 288,000 gallons annually and energy costs by \$7,660.