

Mechanical Automation

Saving Time and Reducing Labor Costs During Harvesting



Vogel Squash Harvester

Vogel Engineering, a manufacturer of specialty agricultural and harvesting machinery, was tasked by a customer to develop machinery to improve harvesting results for squash, pumpkins and gourds with a machine that required less labor and delivered “hand-picked quality” results.

Challenge

To create a mechanical solution to pick up the vegetables with care, while handling industry standard pallet crates quickly and efficiently.

Solution

Kraft automated the handling of the pallet containers allowing for faster cycle times with exact placement of the crates as the machine filled them, unloading the full crates to the ground where they were picked up by multiple forklifts, and keeping the picking mechanism flowing constantly by minimizing the downtime between changes when a new pallet needed to be put in place.

Kraft’s Plus+1 programmed microcontroller used a combination of operator inputs and proximity sensors to accurately complete the cycle in minimum time allowing crews to harvest more productively than hand picking alone. The PVG 16 proportional valve controlling the pallet mover system was automated by the controller with the option to manually control when needed using Danfoss JS120 joysticks.

The machine is propelled by a (Kraft supplied) Danfoss Series 90 pump driving Danfoss H1 variable displacement bent axis motors. The final drives are Fairfield W16 Torque Hubs. Work functions are powered by Danfoss Series 45 variable displacement pumps with pressure compensating and load sensing controls.

Results

Vogel’s customer saved time, reduced labor costs and resources with a fully automated system while being able to safely harvest much more productively than hand picking alone.

CLIENT NAME

Vogel Engineering, Inc.

LOCATION

Holton, MI

PROFESSIONAL SERVICES

- Software Design
- Software Programming
- Developing Statement of Work
- Electrical Wiring Schematics
- Hands-on Field Testing

EQUIPMENT SPECIFIED

- Danfoss Series 90 closed circuit pump
- Danfoss H1 variable displacement bent axis motors
- Fairfield W16 Torque Hubs
- Danfoss Series 45 variable displacement open circuit pumps
- Danfoss PVG 16 proportional directional valves
- Danfoss Plus+1 microcontroller
- Danfoss JS120 joysticks

RESULTS

- Increased Overall Efficiency
- Reduced Labor Costs
- Improved Productivity by 500%

CLIENT QUOTE

“Our client harvested 1,000 boxes of squash per day with a crew of 8, rather than 1 box per man-hour with traditional hand-picking method,” said Wayne Vogel. “They were quite happy with the results.”