

Benchmark Briefing

Automated Ergonomic Handling





Automating electronics production

Automated inventory handling supports 24-hour delivery of custom products

Combining innovative engineering, advanced manufacturing and nine decades of experience, Christie has a reputation of delivering superior, dependable visual display solutions and providing unprecedented levels of customer service and support. With over 100,000 projection systems installed worldwide, Christie technologies include solutions for cinema, large audience environments, control rooms, business presentations, training facilities, 3D and virtual reality, simulation, education, media and government.

The manufacturing facility in Kitchener, Ontario, Canada is the worldwide center for manufacturing. With over 200,000 square feet (sq) of production floor space and 600+ employees, the certified ISO 9001:2000 and ISO 14001 facility houses top of the line technology, equipment and employees. The manufacturing process is based on the Kaizen Lean Manufacturing philosophy that focuses on continuous improvement processes and the 5S methodology.

Two Vertical Lift Modules Kardex Shuttle each equipped with automatic tray extraction and crane handling support Christie in delivering custom projection systems in under 24 hours.

Case at a glance

Site

Christie, Kitchener, ON, Canada

Application

Manufacturing and distribution of projection systems

Equipment

Two Kardex Shuttles with Kardex Power Pick System inventory management software

Saved
70%
floor space

Improved
worker
ergonomics

Increased
throughput
by 90%



Ergonomic automation

With production already at capacity and limited room for expansion, Christie installed two Vertical Lift Modules Kardex Shuttle; recovering 70% floor space, improving worker ergonomics and increasing picking time by 90%. Each Kardex Shuttle is equipped with automatic tray extraction and is integrated with a crane for proper ergonomic handling.



2 Kardex Shuttles



Automatic tray extraction



Integrated crane handling



Kardex Power Pick System inventory management software

Meeting customer needs

With orders increasing, Christie needed to double the number of sub-assembled projectors they kept on hand. Previously, Christie maintained an inventory of 100 sub-assembled projectors, each stored on a cart that was two ft by three ft.

"To double inventory, we would have had to expand the area to make more room for 200 carts on the floor, buy more carts and hire more people," said Philip Hibberd, Sr. Manufacturing Engineer.

All Christie projection systems are configured to order, but customers were also demanding quick delivery times. While increasing capacity and improving worker ergonomics were the main project focus, Christie also sought to give their customers the best of both worlds: custom built projectors with 24-hour order turnaround time.

Automation – benefits and processes

Room to grow

Each Kardex Shuttle currently holds 100 sub-assembled projectors. Both have room for more capacity, allowing inventory to increase based on sales projections. Including the work aisle, each Kardex Shuttle occupies only 180 sq ft, compared to the 600 sq ft occupied by the previous cart system; providing a 70% floor space savings.

Adding another VLM allowed Christie to double capacity and only occupy an additional 180 sq ft “The recovered floor space has been used to expand the sub-assembly process from 6 assembly stations to 9 assembly stations,” said Hibberd.

Ergonomics & safety

With each projector weighing in at approximately 52 pounds, worker ergonomics and safety was a concern. “The projectors are heavy and lifting them puts the employee at risk of injury and the projector at risk of damage,” says Hibberd. Each Kardex Shuttle has automatic tray extraction so all sub-assembled projectors are accessed with an ergonomic hoist; no lifting, pushing or pulling is required.

Speeding manufacturing

Previously, four workers were required to pick and finish the sub-assembled projectors. Using a FIFO (first in, first out) picking strategy, it took a worker an average of 15–20 minutes to find a projector. “The sub-assembled projectors all look the same, so the operator would need to check each serial number until they found the correct one,” said Hibberd. With the Kardex Shuttles, only two workers are needed, and the required projector is delivered to the worker in under a minute. Christie is retrieving the projectors over 90% faster with half of the labor.



How it all works

In the new system, after the projector is sub-assembled and tested, it is moved into one of the Kardex Shuttles for storage. Customer orders are processed through JD Edwards software and sent to the Kardex Power Pick System inventory management software which manages the Kardex Shuttle workstation.

When ready, the operator processes the order with the click of a button and the Kardex Shuttle automatically presents the projector required. Each projector is stored by serial number and sub-assembly date, allowing the Kardex Power Pick System software to pick the projectors in FIFO order.

Upon delivery, the tray is automatically extracted (pushed) out onto a table attached to the Kardex Shuttle so the operator can use an ergonomic hoist to lift the projector from the tray onto an assembly cart. The operator wheels the cart over to the workstation to customize the projector based on the options the customer requires.

The completed projector is then delivered to electrical testing. Once electrical testing is completed, the projector is sent to shipping, where Christie ships custom configured projectors within 24-hours.

Lean facility flow

“The Kardex Shuttles fit nicely into the lean flow in our facility. From subassembly to testing to storage to configuration to verification testing to shipping—we strive for a lean process—cutting wasted time and effort from the process.”

Philip Hibberd, Sr. Manufacturing Engineer