

PROVANTAGE

A U T O M A T I O N



ProVantage

ProVantage Automation is a multi service turn-key automation controls systems integrator. We offer complete new automation controls design packages, custom machine upgrade services, and data management solutions to increase your manufacturing line's efficiency. ProVantage is an industry expert in PLC programming, motion control, HMI programming, data acquisition and management as well as supervisory system technologies. We also have a strong knowledge of all modern safety systems and regulations. Were here to support you every step of the way and at any time with 24 Hour Support to ensure you are never left unassisted.

Your Advantage

- **Experience:** Multi-skilled team that is capable of providing a variety of solutions
- **Complex:** We have worked on machines with 40+ servo axes
- **Fast:** We design machines that can run at speeds of up to 1300 parts per minute
- **Versatile:** We have designed and built over 250 diverse machine controls systems
- **Current:** We have cutting edge knowledge of programming, motion control, safety systems, and data analysis
- **24/7 Support:** ProV is ready to help you at any time



DESIGN - INTEGRATION - SUPPORT

ProVantage Services

Design and Integration

- PLC Programming
- HMI Programming
- Motion Control
- Panel Design and Supply
- Mechanical design for machine design
- Robot end of arm tooling



Upgrades and Improvements

- Asset Optimization
- Line Harmonization
- Legacy Controls Upgrades
- Safety Circuit Upgrades
- HMI Diagnostics
- Energy Management



Data Acquisition & Analysis

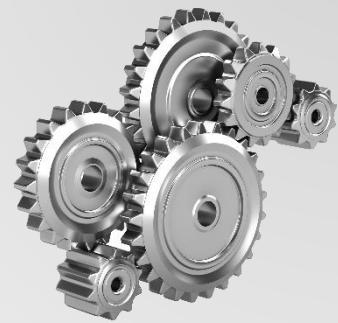
- O.E.E Tracking
- Process Variable Monitoring
- Real Time Monitoring
- Alarming and Notification
- Automated Reporting
- HMI Screen Standardization



Service and Support

- 24 Hour On-Site Support
- Project Consulting
- Concepting for Paper Converting Lines
- Training
- Energy and Overall Equipment Effectiveness Audits





AUTOMATION CONTROL



Motion Control



Safety



**Legacy Hardware
Upgrades**

Motion Control

ProVantage provides motion control services to a variety of automated electrical servo and pneumatic applications.

Legacy Hardware Upgrades

We provide solutions that update legacy controls to current industry controls, while maintaining current operation capabilities.

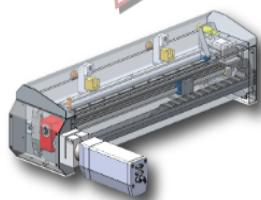
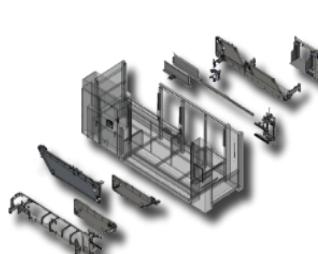
Safety

We program and install safety equipment automated cells and panels providing your company with safer work environments to operate within.





MECHANICAL DESIGN

**Redesign****Machine Design****Retrofitting**

Redesign

ProVantage provides redesigns to pre-existing machines to improve operation and performance while removing inefficient legacy machinery.

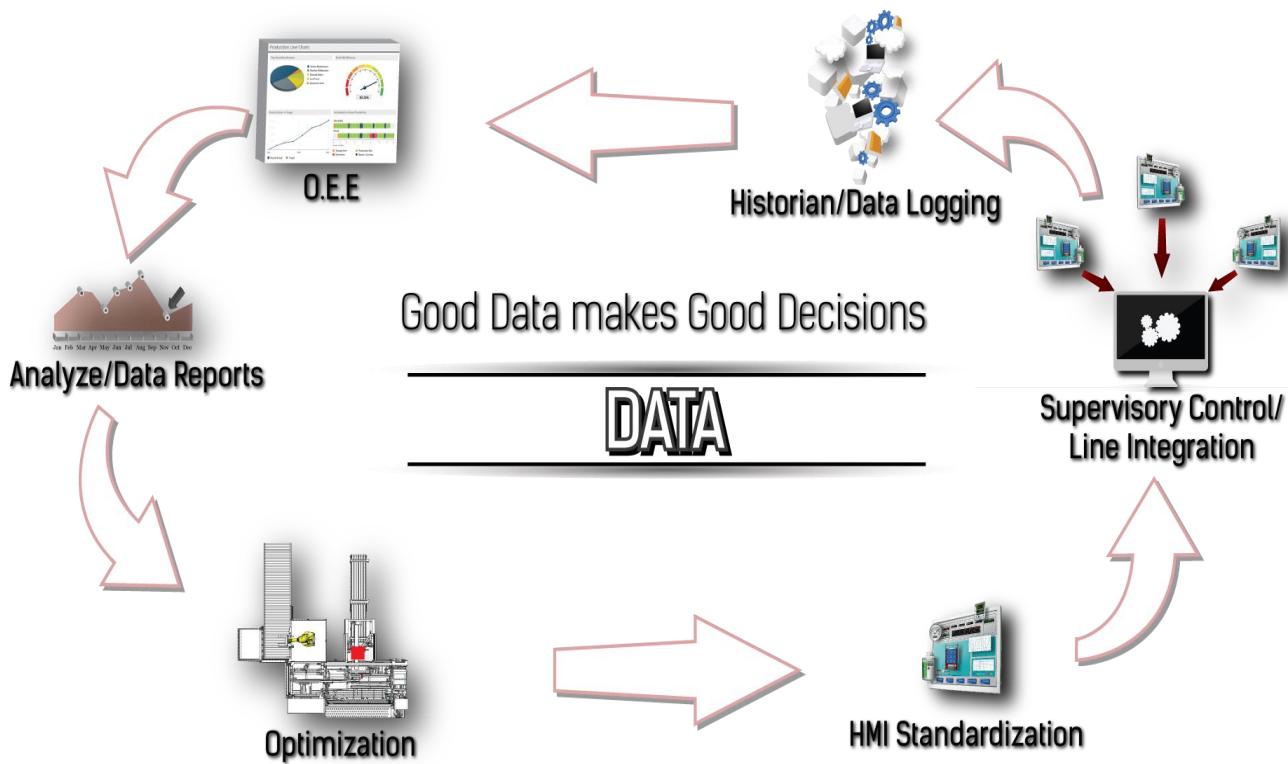
Retrofitting

We provide solutions that update legacy machinery to current industry performance standards, alleviating the need of entirely new machine purchases.

Machine Design

We have over 40+ years combined experience in machine design and development that has allowed us to produce effective, proven machinery.





Supervisory Control & Line Integration

ProVantage provides integrated line solutions that connects your automated lines no matter the distance between operations.

Alarming & Real Time Status Updating

Our solutions provide notifications in various forms to meet your company needs; email, cell phone, tablet, web portal, always keeping you informed.

Performance Analysis & Reporting

All collected data is analyzed and reported to those who need it allowing for better, well informed decisions to be made regarding your assets and processes.





Problem: Most current manufacturing systems have no automated tracking in their operations. Downtime, quality, and performance tracking is done through manual method or by operator observation to effectively gauge functionality. No effective method of accessing accrued data for quick and consistent analysis.

Solution: ProVantage provides three data solutions for automated manufacturing systems; eWON, Rockwell Automation, and Wonderware. Each provides existing systems the ability to integrate effectively with respective pieces throughout the system while providing thorough reporting of the systems operations. The solutions remove the need for manual tracking and provide automated monitoring to the system.

Benefits:

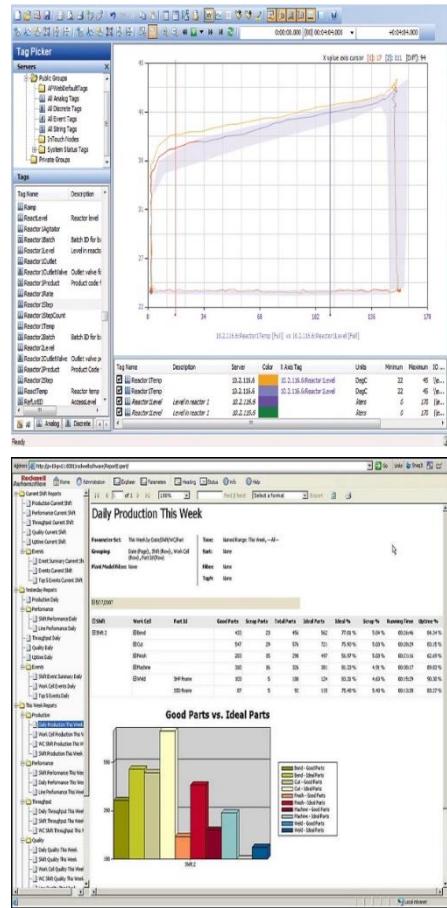
- Faster cycle time by 25%
- Remote alarming and notification machine operation
- Reportable values from collected data
- Performance tracking of processes
- Passive, no interference to current operation when installed
- Scalable for future line upgrades

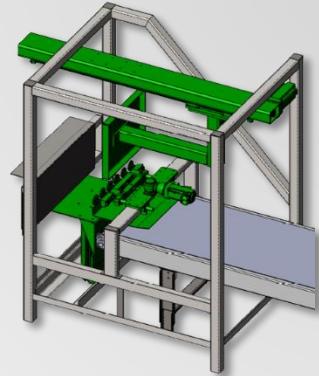
Price: Starting at \$12,000

Delivery: 8 Weeks

Installation: 10 Days

Description: These solutions utilize a server computer and connect to the existing automated hardware on the line. Connections are made between the line and solution hardware via Ethernet while connection paths are configured for data transfer. The software is then configured to interact with the pre-existing programs to return the appropriate data accrued in operation. Hardware included outside of the solutions software consists of Ethernet cable, PC server, and bus nodes where required for additional I/O.





Problem: Most legacy case packers are typically equipped with large pneumatic cylinders used to collate product and fill cases. These pneumatic assemblies are extremely expensive to maintain and limit accuracy, speed, and performance.

Solution: ProVantage provides a turn-key solution that includes a custom retrofit to replace all of the existing pneumatic cylinders with servo actuators. This design allows for more efficient machine operation and directly addresses maintenance and performance issues. This upgrade is more cost effective than a complete machine replacement.

Benefits:

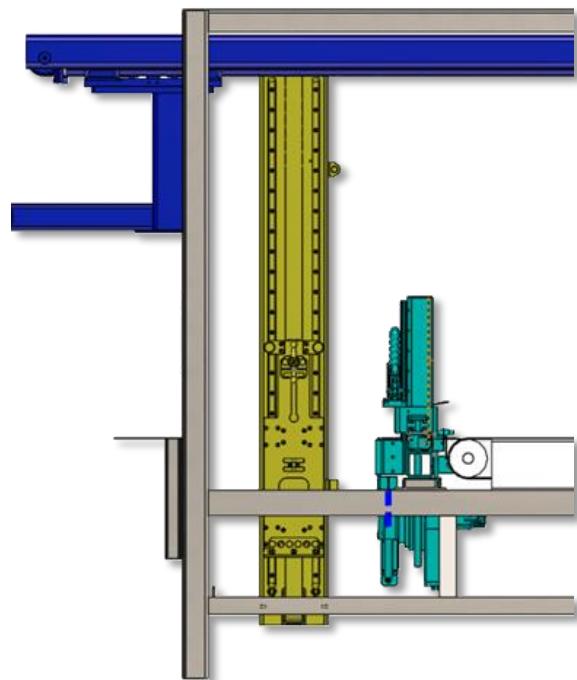
- Faster cycle time by 25%
- Less maintenance and preventative measures required
- Improved recovery from jams and early jam detection
- Improved operator safety
- Adjustable speed and motion profiling
- Storage of all servo parameters within a Recipe for each Product SKU
- More energy efficient, no air consumption
- Utilizes standard spare parts and controls hardware

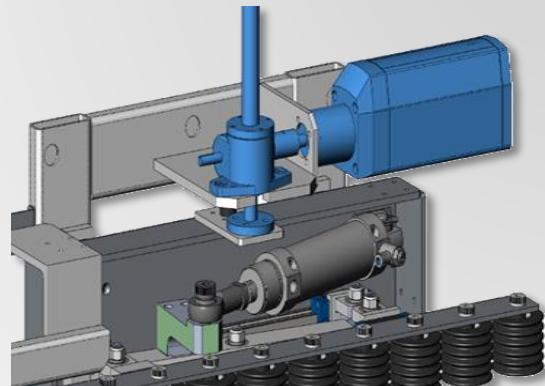
Price: Starting at \$45,000 w/ safety guards

Delivery: 8 Weeks

Installation: 3 Days

Description: This 3 axis servo retrofit directly replaces the large pneumatic cylinders, valve banks and shocks while utilizing the existing frame, guarding and change parts. ProVantage supplies and installs all hardware that is tested and documented with accurate installation instructions. The most common 3 servo axis' include an infeed lifter, pusher and clamp. All assemblies and linear actuators mount in the same location as the previous pneumatic assemblies and utilize the existing change over adjustments and change parts where possible. Hardware includes Allen-Bradley servo motors and drives, heavy duty planetary gearboxes, Breco-flex timing belt and pulleys and all mounting hardware.





Problem: Machines using legacy hardware for manual adjustments are found to be inaccurate between changeovers, unable to repeat the process effectively nor precisely. These setups are found to be inefficient and unable to produce a controlled, fast, and wear efficient operation for the machine

Solution: ProVantage provides upgrades to existing machinery using Servo Motors at each critical adjustment location. This design allows for more efficient machine operation and directly addresses changeover and performance issues. This upgrade is more cost effective than a complete machine replacement.

Description: ProVantage provides compact Servo Motors and gearboxes sized to directly replace the current hardware in the same location. The retrofit directly replaces the existing cylinders, hand cranks, slides, racks. ProVantage supplies and installs all hardware that is tested and documented with accurate installation instructions. Servo hardware available with Schneider Electric, Allen-Bradley, and Festo Servo Motors.

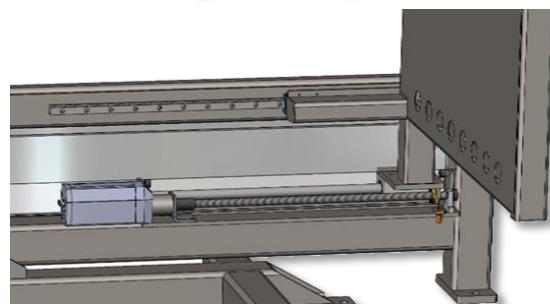
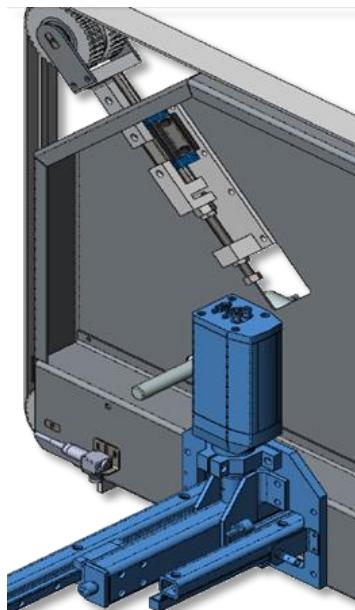
Benefits:

- Faster Changeover
- Greater degree of accuracy
- Recipe specific set-points for each SKU
- Faster, smoother, more precise timing
- More energy efficient, no air consumption
- Standard controls hardware
- Less technical ability required for changeover
- 24 VDC

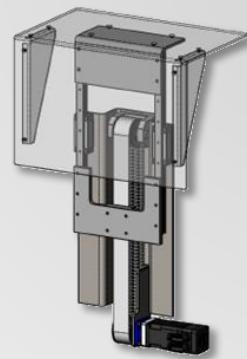
Price: \$6,000 per Adjustable Axis

Delivery: 6 Weeks

Installation: 1 Day per axis



DESIGN - INTEGRATION - SUPPORT



Problem: Most legacy case packers and converting assets are typically equipped with pneumatic assemblies used to collate and manipulate product. These assemblies can be extremely expensive to maintain and limit accuracy, speed, and performance.

Solution: ProVantage provides a turn-key solution to replace all of the existing pneumatic cylinders and obsolete assemblies with servo actuators. These designs allow for more efficient machine/system operation and directly address maintenance and performance issues

Description: ProVantage designs and supplies a customized servo retrofit assembly that directly replaces pneumatic cylinders, actuators and obsolete assemblies while utilizing the existing frame and guarding. ProVantage supplies and installs all hardware that is tested and documented with accurate installation instructions. ProVantage understands that each servo application is unique and provides an engineering/servo analysis to determine the correct motor, drive and gearbox sizes specific to the application and performance requirements. Hardware includes all major servo brands such as Allen-Bradley, Schneider, Bosch, and Siemens along with heavy duty planetary gearboxes, and all mounting hardware.

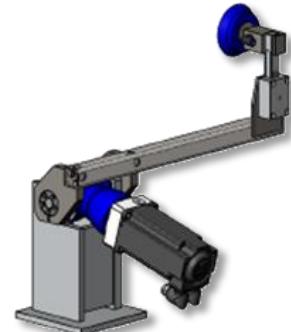
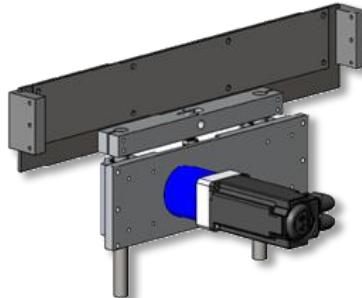
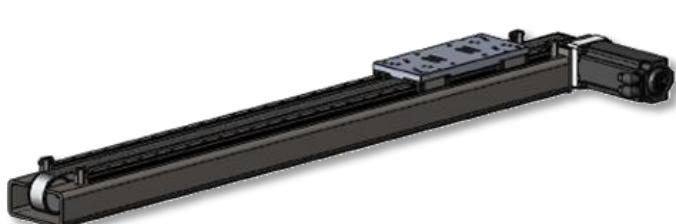
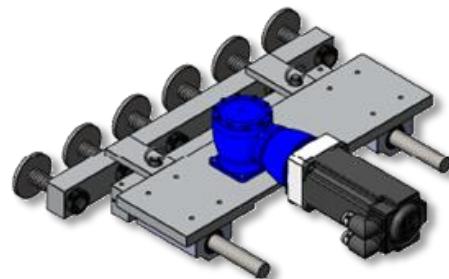
Benefits:

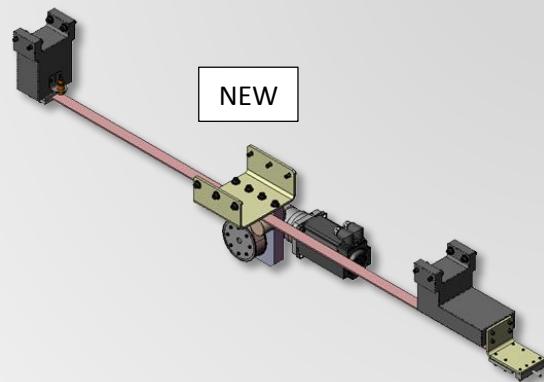
- Faster cycle times
- Less maintenance and preventative measures required
- Improved recovery from jams and early jam detection
- Improved operator safety
- Adjustable speed and motion profiling
- Storage of all servo parameters within a Recipe for each Product SKU
- More energy efficient
- Utilizes standard spare parts and controls hardware

Price: Starts @ \$12,000 per axis

Delivery: 8 Weeks

Installation: 2 Days





Problem: Pneumatic reciprocating dispensers were the standard in the 80's and 90's on all Edson Model 3000, 3100, & 3200 series case packers. These Pneumatic assemblies are extremely expensive to maintain and limit accuracy, speed, and performance.

Solution: ProVantage provides a solution for a custom retrofit assembly to replace the existing pneumatic cylinder with an Omega Servo Belt Drive. This design allows for a more efficient machine operation and directly addresses maintenance and performance issues.

Description: This retrofit kit directly replaces the large pneumatic cylinder while utilizing the existing frame and bearing supports. Removal of the main cylinder, shock absorbers and oil reservoir is performed and disposed of. No modifications are required to the existing pneumatic case pusher paddle assembly. Hardware includes Allen-Bradley servo motor and drive, heavy duty planetary gearbox, Breco-flex timing belt and pulleys and all mounting hardware.

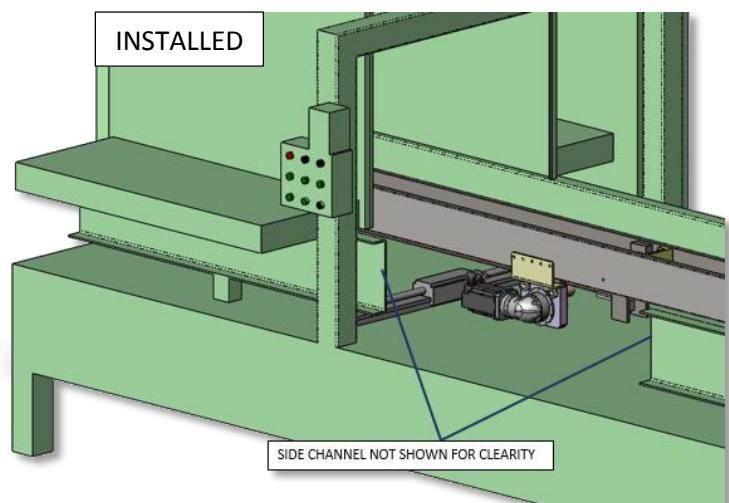
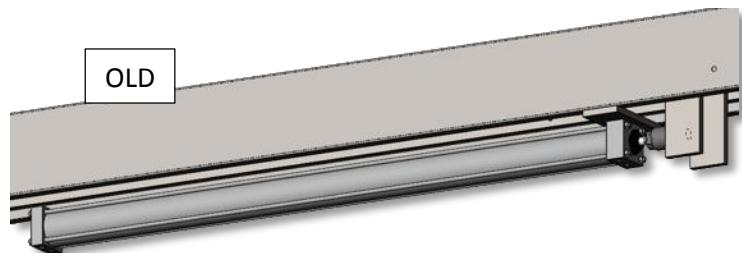
Benefits:

- Smoother operation with servo profiled motion
- Less maintenance
- Improved recovery from jams
- Improved cycle time
- More energy efficient, no air consumption
- Utilizes standard spare parts and controls hardware
- No effect on the machine range
- Improved operator safety

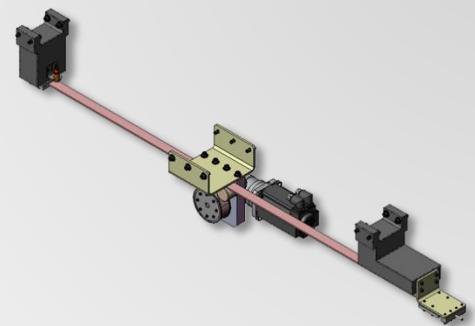
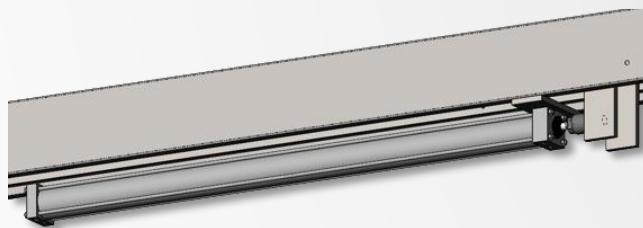
Price: \$23,000 - \$25,000

Delivery: 8 Weeks

Installation: 2 Days



DESIGN - INTEGRATION - SUPPORT



Problem: Pneumatic reciprocating dispensers were the standard in the 80's and 90's on all Edson Model 3000, 3100, & 3200 series case packers. These Pneumatic assemblies are expensive to maintain, have low efficiency, have limited accuracy and speed, have jerky motion, are unsafe due to trapped air, and limit machines range and ability to run alternative product.

Solution: ProVantage Automation provides a solution for a custom retrofit assembly to replace the existing pneumatic cylinder with an Omega Servo Belt Drive.

OLD

SAFETY	Closed center air valve used to maintain cylinder position. Safe practice to remove air from lines and cylinder during maintenance or jam to remove potential energy. Usually non-monitored ball valves used to release air from lines/cylinder. Operators responsibility to release air prior to entering machine	No stored or potential energy is left in the system and position of dispenser is maintained and can be monitored
SPEED	The dispenser stroke is large gaining machine through put with the pneumatic cylinder comes with consequence (pre mature failure of cylinder and shocks). Medium to high production machine generally has the following dispenser cycle: 2.00 second advance 0.25 second dwell 1.00 second retract 2.00 second dwell 5.25 seconds Total	1.25 second advance 0.25 second dwell 1.00 second retract 0.50 second dwell 3.00 seconds Total
MAINTENANCE	Rebuild of replacement of cylinders and shock absorbers once per year for low production machines, twice for high. Maintenance Cost: Cylinder \$500.00 Shock \$500.00 Down Time 4 hours	Virtually no maintenance required. Allen Bradley Servo, Apex Gearbox, Brecoflex Drive Belt.
EFFICIENCY	Typical Caser with 2.5" bore X 54" stroke dispenser cylinder at 60psi runs 10 cases/min, requiring 15.5 CFM or 440L/min of air consumption	Estimate dollar value for power consumption
ACCURACY	Accuracy and consistency of pneumatic cylinder only as good as mechanical set-up of physical end stops. Also accurate and consistent mid position stops are almost impossible with a pneumatic cylinder	Accuracy and consistency of 0.01" with unlimited position stopping
MOTION	Air is released during maintenance or jams, this causes cylinder to be jerky or slam hard for first couple motions. This is due to not having air in lines to create back pressure and allow flow control valves to operate	Smooth profiled motion during production and or restart of machine
RANGE	Not cost effective to modify machine if new range of product is required. Pneumatic cylinder retract and extend stop positions can only be accurately and consistently set by physical hard stops	Virtually unlimited stop positions that can be fully monitored and adjusted leaving no limitations for future or alternative products





Problem: It's expensive and inefficient to have operators manually load case packers and cartoners on high – medium speed converting lines. Also conventional KDF handling automation typically uses a scissor lift that is unsafe by exposing operators and maintenance staff to suspended loads and crush hazards

Benefits:

- Improved safety for operations staff
- Improved cycle time, capable of feeding 40+ KDF/min
- Minimal controls interface with existing case packer/cartoner
- 10+ flexible layout options
- Re-locatable to other future lines or machines
- Less maintenance improved recovery from jams

Price: \$200,000

Delivery: 14 Weeks

Installation: 3 Days

Solution: ProVantage provides an answer that automates this repetitious motion and eliminates human exposure to unsafe suspended loads. This design allows for a more efficient machine operation and directly addresses maintenance and performance issues.

Description: This handling system consists of a 6 axis Fanuc robot complete with a servo/pneumatic EOAT that inspects, justifies and loads KDF's and 4 stack accumulation stations using Interroll MDLR technology. Standard system supplied with adjustable back wall at drop-off station and automatic dunnage eject. Safety Circuit consists of locking guard door switches, estop, light curtain and designed for CAT 3 level. Guarding package designed to minimize full body access using skin guarding and minimum reach distances.





Problem: Too many production facilities have older machinery and systems with limited guarding and no monitored safety devices in place to protect operators and technicians from the hazards.

Solution: ProVantage designs and installs upgrades that incorporate safety controls as well as physical guarding to help prevent personnel injury. ProV will design, program, manufacture, and install a custom solution suitable for the environment and application without affecting the manufacturing process. ProV utilizes Pilz and Allen-Bradley safety PLCs for complex system upgrades

Description: Depending on the application and risk assessment, ProVantage can provide proven solutions including the following:

- Physical guarding complete with locking monitored door switches
- Trap keys for full body access locations
- Safety PLC's or monitored safety relays
- Safe-stop or safe-off monitored servo drives and VFD's
- Monitored safety dump valves for pneumatics and hydraulics
- Local and remote lock-out stations for convenient Lock-Out-Tag-Out

Benefits:

- Safer operation of process
- Improved safety diagnostics
- Reduced exposure to liability
- Training for all operators/personnel included
- Standard controls hardware

Price: Starting at \$20,000

Delivery: 6 Weeks

Installation: Starting at 2 Days





Problem: Electrical components and controls systems are forever changing to keep pace with safety requirements and maintain peak performance. Failure to replace these obsolete components can result in costly unplanned downtime. In many cases the software used to program legacy components becomes unsupported and unfamiliar to technicians servicing the equipment. Diagnostics tend to be limited due to the age of the equipment.

Solution: ProVantage provides upgrades to existing controls systems providing the customer with the latest standard components including PLC, Safety, HMI, Drives and Enclosures. Turn-key solutions include all controls designs, standard and safety programming, testing, training and all documentation ready for install and start-up.

Description: ProVantage supports a wide array of applications ranging from a simple PLC upgrade to complex multi-axis servo systems. We have the staff and experience to properly perform servo sizing, program conversions and network optimization. The overall design will provide a connected solution improving communication between machines and improved performance capabilities. We support all major software and hardware platforms. NFPA 70E Arc Flash compliant hardware and CSA/ESA approvals available.

Benefits:

- Safer operation of process
- Improved safety diagnostics
- Reduced exposure to liability
- Training for all operators/personnel included
- Standard controls hardware

Price:

Starting at \$20,000

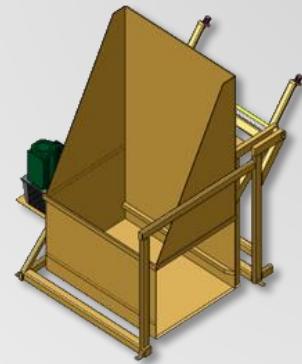
Delivery:

6 Weeks

Installation:

Starting at 2 Days





Problem: It's inefficient to have operators manually load waste on high – medium volume baler lines. Also it is a safer means of lifting and tilting buggies, boxes and crates by isolating operators from the suspended load.

Solution: ProVantage provides an answer that semi-automates this repetitive process and provides a more efficient operation. This design removes human exposure to unsafe suspended loads as buggy, boxes or crates are loaded into tipper at a ground level.

Benefits:

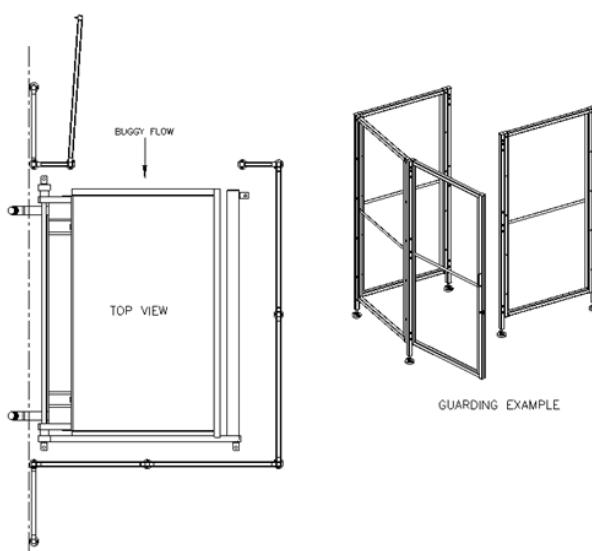
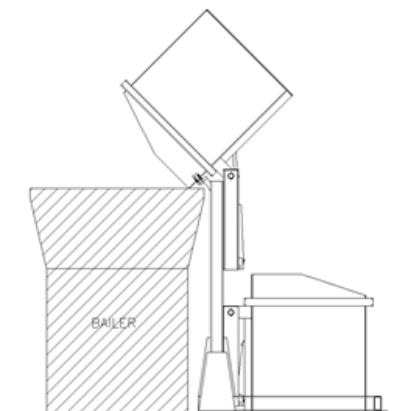
- Improved safety for operations staff
- Allows removal of fork truck traffic
- Minimal controls interface with existing equipment or completely isolated controls
- Flexible layout options
- Re-locatable to other future lines or machines

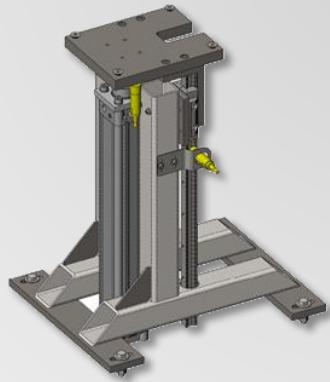
Price: Starting at \$45,000 w/ safety guards

Delivery: 8 Weeks

Installation: 3 Days

Description: This system includes a heavy duty frame including a hydraulic powered tipper assembly complete with perimeter guarding and an interlocked access door for install and removal of buggy/crate. Tipper will be custom designed to suit existing baler line whether operation requires dumping into an infeed conveyor or directly into baler.





Problem: Most Edson Case packers built in the 80's and 90's came standard with a non-locking pneumatic lifter. The operation of the lifter relied on trapping air in the valve and cylinder to maintain position. This trapped energy is inherently dangerous to operators and technicians when entering the machine for jam removal and maintenance.

Solution: ProVantage provides an engineered solution to replace the existing pneumatic cylinder with a modern locking style of the same bore and stroke. This new design eliminates any trapped air and relies on the locking mechanism to maintain position for safer and more reliable operation.

Description: This retrofit kit replaces the existing cylinder and mounts in the same location utilizing the existing change parts. A 2 position solenoid valve is supplied and existing ball valves and bleed lines are removed and disposed of. The cylinder has a locking collar that maintains its position when an operator enters the machine and includes a manual override push button to retract the cylinder for ease of jam removal and maintenance. This upgrade is available either as a new assembly complete with a powder coated frame, precision bearings and rails or simply as a stand-alone cylinder replacement. ProVantage supplies and installs all hardware that is tested and documented with accurate installation instructions.

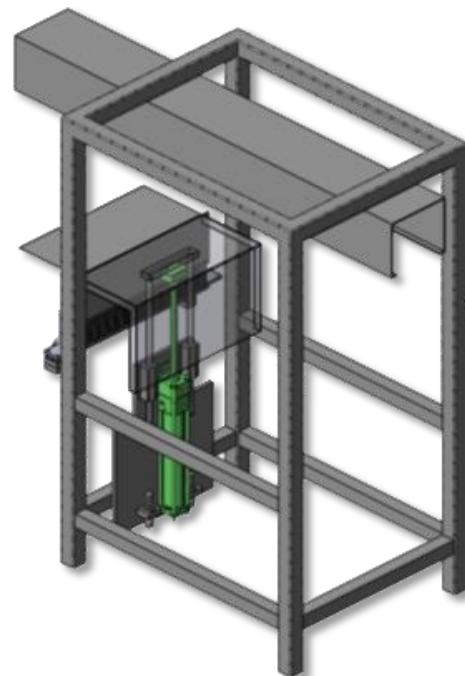
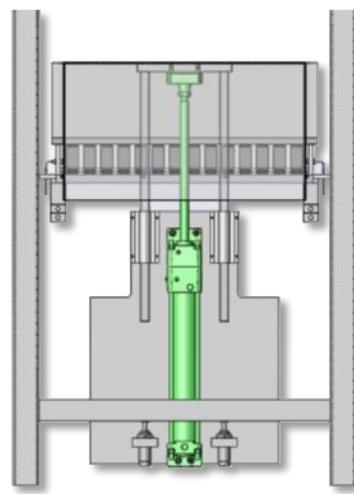
Benefits:

- Smoother operation with servo profiled motion
- Less maintenance
- Improved recovery from jams
- Improved cycle time
- More energy efficient, no air consumption
- Utilizes standard spare parts and controls hardware
- No effect on the machine range
- Improved operator safety

Price: \$4,000 - \$6,500

Delivery: 5 Weeks

Installation: 2 Days



DESIGN - INTEGRATION - SUPPORT



Problem: Packaging processes can be found to fail quality tests when not properly identifying foreign material or product defects. Failing to detect debris or defects at quality control will result in failed product passing successfully on to the consumer or end user.

Solution: ProVantage designs and supplies quality inspection stations to be installed on customer's lines to detect foreign material and quality defects. Common solutions include Vision systems, Load cells/Check Weighing, Metal Detection, and RFID for inventory tracking. After thorough evaluation, ProV is able to assess the specific hardware required and appropriate setup and orientation for installation.

Description: Each system is designed custom and specific to the application which will include all programming, data collection, circuit updates, mechanical hardware and commissioning support. Samples are required for proper evaluation testing at ProV office and for onsite testing. The installation should not affect the cycle time and typically includes a reject station to permit continuous operation.

Benefits:

- Identify quality issues in process
- Improve processes with Data
- Reduce manual labour
- Track defects with accurate Data Collection to support OEE
- Cycle times unchanged
- Non-intrusive installation



Price: Starting at \$15,000

Delivery: 6 Weeks

Installation: 2 Days

