Combi ErgopackÔ
Ergonomic Product Evaluation

Combi Production Facility
Canton, Ohio

By Daniel P Gottesman CPE
Auburn Engineers Inc.
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An ergonomic evaluation of the Combi Ergopack™ Handpacking System was conducted. The Ergopack™ Systems were observed at the Combi Production Facility in Canton, Ohio. A meeting was held with Peter Ballos, President and creator of the Ergopack™ System.

Ergonomics were an important consideration, and in fact a driving force in the design and development of this Ergopack™ System. The system is designed to facilitate handpacking with minimal lifting of the product; the packer need only "drag, guide, and drop" the product into place.

This report contains two sections: I) A listing of the ergonomic advantages of the system as observed. II) A listing of further ergonomic advantages that can be gained with optional system content.

I) Ergonomic Advantages Of The Combi Ergopack™.

The Combi Ergopack handpacking system reduces or eliminates many physical or ergonomic stressors often associated with handpacking cases. The prescribed method of use "drag, guide, & drop" used with the Ergopack™ System allows significant reduction in ergonomic stresses including lifting, reaching, bending, twisting, griping and others. I would expect the effect of this reduction of stresses to be a reduction in the number and severity of claims for Cumulative Trauma Disorders (such as Carpal Tunnel Syndrome) as compared to packers using less well-designed packing stations. Specific examples of these ergonomic benefits of the Combi Ergopack™ System are detailed below:

- ✓ **Good Product Height For Picking:** The height of product in feed conveyor is usually set at 39 inches which is good height for this type of task. This allows a large percent of the working population to perform the task without extreme shoulder flexion or forward bending. (Height can be set differently to accommodate special product handling or workforce requirements.)

- ✓ **Forward Bending Reduced:** Bending forward to reach product is reduced, by providing abundant toe clearance at the packing station.

- ✓ **Lifting Product Greatly Reduced: Height** of case conveyor is set to eliminate the need to lift the product up to clear the top of the case or the flaps.

- ✓ **Manual Case Erection Eliminated:** Stressful postures often used in case erections are eliminated by using a mechanical case-erecting machine.

- ✓ **Manual Case Transfer & Taping Eliminated:** Stressful postures and forces, often involved in case transfer and taping, are eliminated with case conveyor and sealer.

- ✓ **Easier To Get Product:** Handgrip forces and lifting requirements are reduced by the low friction conveyor surface to allow easy sliding of product without lifting.

- ✓ **Product Brought Close to Packer:** By using the adjustable rear rail on the product conveyor to guide the product closer to packers, reaching out to product can be minimized.

- ✓ **Product Directly In Front Of Packer:** By having both product and box directly in front of operator, twisting is eliminated.

- ✓ **Work Pace Adjustable:** Work pace can be easily adjusted using product conveyor speed control and the display can be located at the pack station allowing packers to control conveyor speed form their packing station.

- ✓ **Convenient Controls:** Controls are easy to reach and in close proximity to the work zone, walking and reaching are minimized and adopting awkward postures to see the work zone while operating the controls is eliminated.

- ✓ **Lifting Of Corrugated Is Optimized:** Lifting stress for handling corrugated is reduced by the walk-in box magazine, which allows bundles to held vertically and close to the body at a good height for lifting. It also allows the removal of the bundle strap before or after placing the bundle.

II) Optional Features That Provide Ergonomic Advantages Or Enhancements.

- ✓ **Pusher Unit:** Reduces shoulder and back stress reaching for and controlling product. This unit brings the product forward to packer for easier and closer grasping, especially useful for larger and heavier products and those that tend to bind against each other on a crowded product conveyor.

- ✓ **Height Adjustable Case Conveyor:** Minimizes bending when packing smaller cases and for situations where a large range of box sizes is used.

- ✓ **Motor Drive Adjustment System:** Eliminates most bending in machine set-up especially useful when many box size changes are made during a single day.

- ✓ **Supplemental Height/Inclination Adjustable Conveyor:** Reduces lifting stress when manual palletizing is used. Brings the discharged cases up to the proper height for manual palletizing. (Strongly recommended, if manual palletizing is to be used!)

- ✓ **Elevated Unit Height:** Allows use of platforms (adjustable height, wooden, or padded). Platforms can serve two ergonomic benefits. 1) Optimally accommodate workers of different statures; 2) Reduce back and leg stress associated with standing for long durations. Wood platforms are much more comfortable to stand on, than is cement, for long durations. (The entire unit can be setup at an increase height for this purpose.)