PACKAGING LINE BUFFER SYSTEMS

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OVERVIEW

It’s not unusual to encounter a packaging line that exhibits poor performance. We often see systems, even those equipped with sophisticated, state-of-the-art filling, labeling and case packing machinery, which simply cannot achieve high outputs on a consistent basis. While there are a multitude of potential root causes for this malady, one that warrants close scrutiny is the presence of appropriate buffer systems on the line.

Buffers have always been an important packaging line component, but even more so with today’s high-speed packaging lines. Buffers provide balance allowing critical equipment to operate in virtually independent modes, unaffected by stoppages of downstream equipment, for limited periods of time. The addition of appropriate buffering systems can dramatically improve packaging line performance, and add significantly to profitability, especially if shipments are being shorted when production goals are not met. Buffers improve efficiency and also reduce equipment starts and stops, mechanical wear, and component damage.

There are a number of reasons that buffer systems are sometimes neglected. At times, the project payback may be on the line and buffers are deleted to reduce the initial capital investment (normally buffers add 5-10% to the project equipment costs). On other occasions, new systems must be installed in existing facilities and there is no space available in which to install the needed buffer. A third reason may be that at the time, there was simply no system available that could adequately accommodate the required production rate or package form efficiently or without damage. Still another issue could be the need to process packages on a first-in, first-out basis, as is the case with a number of food products, such as juices or dairy products.

OUR EXPERIENCE

Working as a member of our client’s Project Team, Hixson recently completed a line modification design project adding buffer systems to an existing high-speed aseptic packaging line in an existing facility. The result of this project was an increase of line performance by 4% that provided a one-year payback. In this role, we were able to complement our client’s manufacturing and product expertise with our expertise in food industry packaging engineering and equipment.
This line processes single-serve semi-rigid containers at a rate of 1,200 containers per minute. Leading this effort, Hixson’s role was to research available buffer and conveying systems, evaluate system and supplier options and to present the findings and recommendations to the team. This activity included the preparation and documentation of production and plant specific requirements, detailed equipment specifications and performance warranties. The equipment specification was of paramount importance, as the system will be routinely exposed to hot water cleaning and chemical sterilization procedures common in the food industry. Also, the buffer system selected had to process the irregular shaped containers in a very low-pressure, first-in, first out system to prevent damage to the filled package. Hixson’s documents included the project schedule and protocol for both shop and in-plant qualification testing. After developing the equipment documents, Hixson obtained and evaluated a number of proposals from manufacturers for systems to do the job.

A number of line layout options were then developed by Hixson and reviewed by the project team. The layouts insured the equipment was arranged to allow easy access for operation and maintenance, enhance the flow of materials to and from the line, and also verified equipment and conveyor elevations under the existing ceiling.

After selection of the equipment vendor and preferred layout by the project team, Hixson prepared the scope of work documents that our client will submit to their corporate management for formal funds approval for the purchase and installation of new systems.

So take a close look at your packaging lines, a carefully selected and strategically placed product buffer may be able to enhance the performance and contribute significantly to your bottom line.