



Freezing Solutions Ltd

A Paradigm shift in automatic case freezing

Background information:

The first automatic freezing systems, for large cartoned product (typically 600 x 400 x 180 mm cartons) was developed in 1968. Since that time several variations and improvements have taken place resulting in both single and multiple retention time freezers and chillers, featuring cross flow and end flow air distribution systems and various versions of sortation systems.

The traditional approach of automatically handling large quantity of cartons while operating within acceptable and safe machine speeds was to collate the product as a 'slug' prior to loading into the machine by using accumulation conveyors. This added mechanical complexity often encroached on valuable floor space. Also, the large cross section of the tunnels ensured a relatively high energy consumption of the air circulation system.

None the less many hundreds of these types of automatic freezers have been sold worldwide over the past years and are regarded as safe and reliable method of freezing.

In recent times a new patented air distribution system was developed. This technology called the Multipass has shown a total energy reduction and CO2 emissions of up to 40% and is further described in a separate document.

At the other end of the spectrum is the freezing of small packages such as ready meals at high production rates of up to 300+ units per minute. To date the technology applied for the larger sized cases was inflexible and costly so in place of this technology the freezing requirement for small high production speeds was dominated in recent year by spirals, plate freezers as well as blast cells which are not energy efficient, expensive to maintain and are limited in capacity once the retention time exceeds 120 minutes or so.

The new "CF" Approach:

Our solution to the above identified shortcomings based on 40+ years of experience both for the ready meal market and larger sized cartons is provided by the evolution of the patented "CF" technology.

The CF (Continuous Flow) technology is a production reactive system, does not require any product accumulation thereby eliminating the need for accumulating conveyors. Further, as several machine functions operate in parallel continuous loading and unloading of product is now possible.

The patented CF1 and CF2 technology addresses:

- Entry price compared to blast cells for larger systems, and spirals for ready meals
- Operating and system simplicity as well as reduced maintenance, reduced number of mechanical components and their controls.
- Reduction in the freezing energy requirements, and as a result a reduction in operating costs.

. The controls are simple requiring only an entry-level PLC to manage the system.

Based on many years of experience and from producing many tunnels, we have simplified the transfers, drives and controls so as we see it there is nothing (or very little) that could be removed to make the system simpler and therefore a lower cost while still maintaining the reliability required for an industrial application.

The refrigerated airflow is a true multi-pass (patented) with minimal air by pass and 2 air changes of direction are designed to provide a minimum air pressure drop resulting in very efficient energy usage from the system.

We can see by the market reaction that this new addition to our family of freezer opens the door to a wide market and is competitive with blast cell applications. When, such items as floor space, labour costs, product integrity, uniform freezing and energy costs are considered in the cost of ownership evaluation.