Blower Powered Air Knives

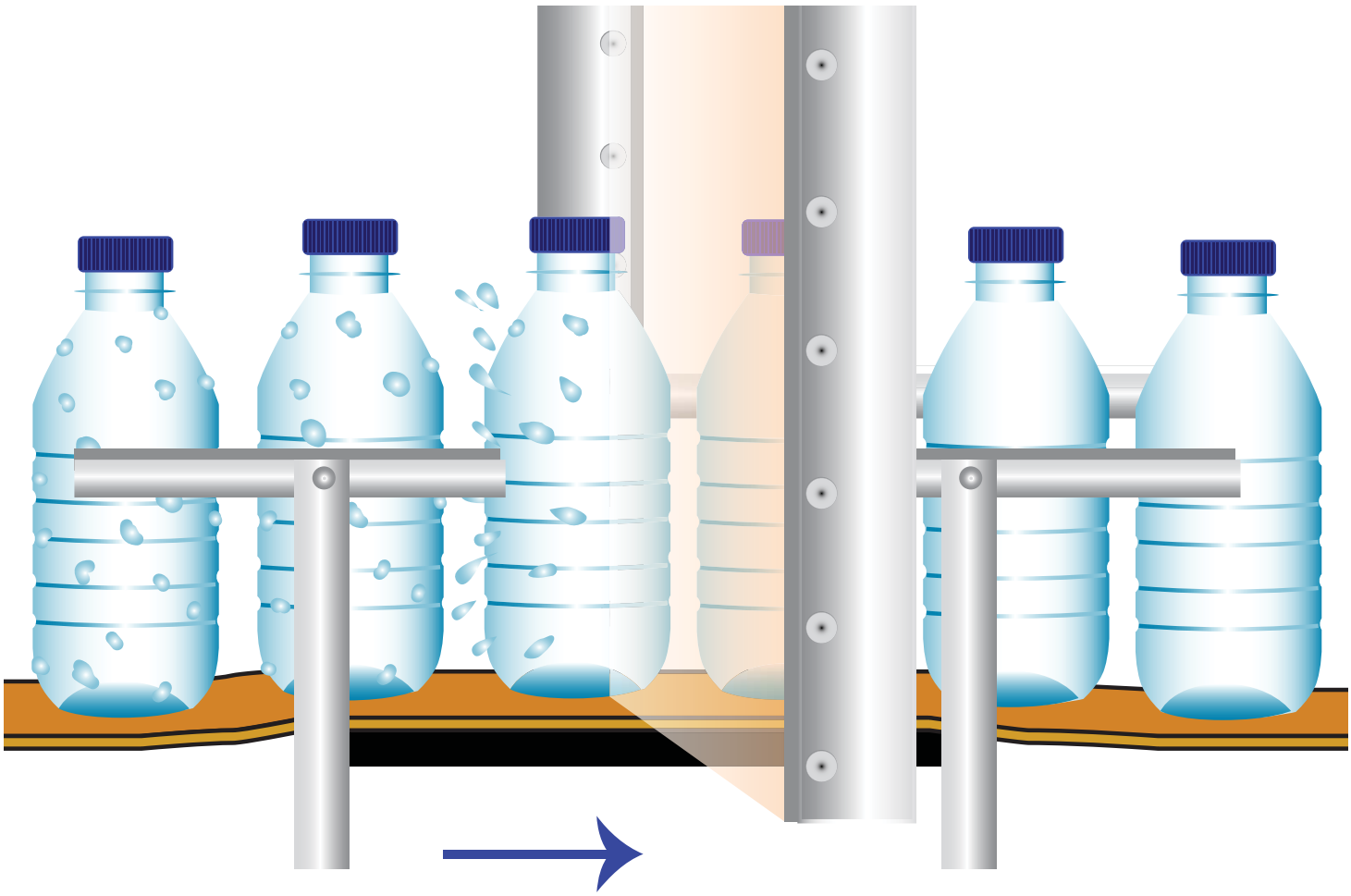
HOFFMAN LAMSON

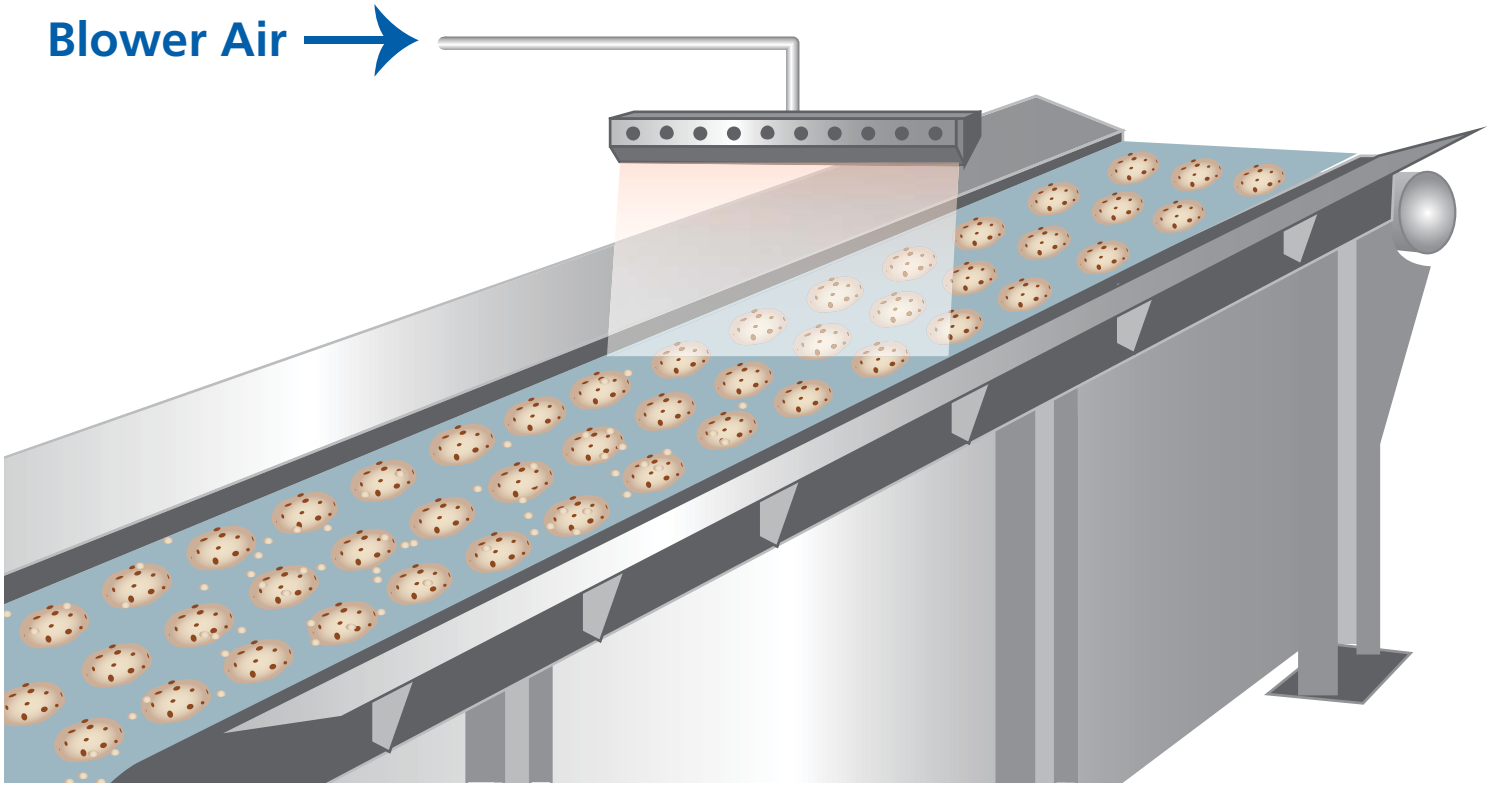
An air knife is a tool used to blow off liquid or debris from products as they travel on conveyors. The knife consists of a high intensity, uniform sheet of laminar airflow (streamline flow).

Although air knives powered by compressed plant air are used in a wide variety of applications, **blower powered air knives have proven to reduce the energy usage, versus compressed air knives, by 50-75% for most applications.**

In the 1950s and 60s, the term air doctor was first used to refer to the non-contact method of debris blow-off using compressed air. The printing and textile industries were some of the largest users as they often needed them to control the thickness of liquids on a surface or to blow debris off the material's surface prior to the next process. Other terms used were air bar, air squeegee, air curtain, air jet, air blast, air blow off, air nozzle, air comb, air blade and air doctor blade. Today the most commonly used term is simply air knife.

An industrial air knife is a pressurized air plenum containing a series of holes or continuous slots through which pressurized air exits onto the surface of whatever object the air is aimed at. The impact air velocity can range from a gentle breeze to greater than Mach 0.6 (40,000 ft/min). In the majority of manufacturing applications for air knives, the air knives are stationary while the product passes through the air velocity air stream.





Air knives are used to:

- **dry products after processing** (e.g. steel strip drying; rubber stock/extrusions drying)
- **dry parts after washing** (e.g. removing cleaning solutions and/or water after cleaning)
- **remove foreign particles** (e.g. remove solder paste and flux from printed circuit boards; remove crumbs from bakery products)
- **remove liquids** (e.g. drying bottles and cans after filling and rinsing; remove water from continuous stip materials like wire mesh; remove excess paint)
- **control the thickness** of liquids
- **dry liquid coatings** (e.g. for powder coating)
- **cool product surfaces**
- **heat product surfaces**
- **assist in the mechanical bonding** of materials to a surface
- **create an invisible air barrier** to separate heated or cooled environments (e.g. continuous metal heat treating ovens, cold process or storage areas in food processing or dust containment for the entrance to clean rooms)

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