

# Air Knives for Drying Potato

The market for pre-washed potatoes has grown and many on-farm packers as well as the larger wholesale suppliers, are installing washing equipment.

After washing, the potatoes must be dried before packing. Drying is most commonly carried out using a system of sponge rollers. The rollers are configured to form a table across which potatoes are taken immediately after the washing process.

There are problems with this type of drying which can be summarised as follows.

- Drying efficiency is low as the rollers soon become saturated.
- Sponge rollers are prone to wear and have to be replaced regularly.
- As the rollers remain wet and open to the air, there is a risk of bacterial build-up on their surface. This can be passed to the potatoes causing a potential health risk.

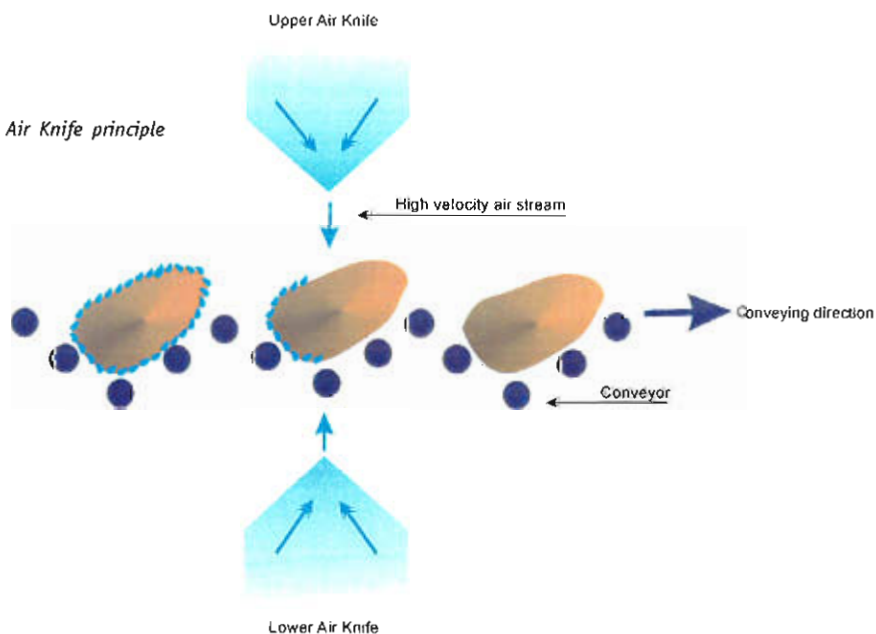
## Air Knife Drying

Air knife drying is a new alternative to the sponge roller which overcomes many of its problems.

The air knife produces a high velocity jet of air which strips water droplets from the surface of the potato. It is a technique widely used in industry to dry a whole range of products. It should not be confused with the 'hand drier' principle which evaporates water using a combination of heat and air movement. There is no added heat with the air knife. It relies purely on the action of the jet of high velocity air.

The components of the air knife are simple. Air is ducted from a specially designed fan which can operate at very high pressures. The knives themselves are made from cast or pressed material to form a narrow slit through which the air is forced.

Illustration showing Air Knife principle



The knives have to be positioned carefully having regard to the conveyor handling the potatoes. The most effective configuration has been to use a conveyor with an open matrix with single air knives above and below. In this way moisture is "nipped" off the product as it passes between the two jets. Other matters which have to be taken into consideration are the effect of water spray from the knife area and control of noise. Obviously with so many things to consider design and application has to be carried out carefully if success is to be achieved.

Successful air knife installations have a number of important benefits which overcome many of the disadvantages of sponge rollers. These are:

- High drying efficiency
- Minimal routine maintenance requirement
- No problems with bacteria carry-over to potatoes

However they are more expensive to buy than sponge rollers and use more electricity. (At least £0.80 per hour for two 1m knives)

Air knives can be supplied as separate units for existing installations, or they can be bought purpose-made to include all ancillary equipment.