



# Tetra Pak® Ingredient Doser 4000 A3



## Application

Tetra Pak® Ingredient Doser 4000 A3 is designed for the continuous and accurate injection of inclusions like fruit pieces, nuts, candies, chocolate pieces, marmalade and other free-flowing or viscous inclusions into ice cream or similar products.

## Highlights

- More accurate dosing, less giveaway
- Uniform distribution (even sticky inclusions)
- Gentle handling (even fragile inclusions)
- Controlled change-overs
- Reduced maintenance cost thanks to less wear
- User-friendly operation with clear guidelines
- Optional dosing of two inclusions simultaneously by use of auxiliary ingredient feeder

## Working principle

### Control system

The Tetra Pak Ingredient Doser 4000 A3 is equipped with an advanced, operator-friendly control system. A large touchscreen panel provides clear and easy-to-understand information. During operation, essential production data are displayed constantly to facilitate supervision by the operator.

Production parameters for up to 100 products can be stored in the product database, which means that the optimum processing conditions can be quickly retrieved for each production start. All the operator has to do is to choose the desired product from the product menu and confirm the pre-set values.

It is therefore no longer necessary to keep manual records, and if changes in processing parameters are made during production, they can be stored in the database – ready for the next production start. The following production parameters can be pre-set and controlled:

- 3 operating modes
  - » constant auger speed
  - » constant flow
  - » dosing controlled by ice cream flow
- Ingredient flow setpoint
- Agitator speed and moving frequency
- Feed pump speed
- Mixer speed

The control system continuously monitors the above parameters, as well as the weight of inclusions in the hopper and the total consumption. Pre-set data are displayed constantly on screen during production and other data can be displayed at the touch of a button. Pre-set values can easily be changed during operation. The ingredient flow setpoint can be expressed as either the weight per hour or the weight per litre of ice cream (or other base product).

An alarm automatically alerts the operator when the hopper requires refilling or if any irregularity occurs, e.g. if the ingredient flow stops. As standard, the Tetra Pak Ingredient Doser 4000 A3 is equipped with either Allen Bradley Compact GuardLogix PLC or Siemens.

#### Communication with continuous freezer

Tetra Pak Ingredient Doser 4000 A3 can be linked to one or more continuous freezers. The ingredient flow setpoint is directly coupled to the speed of the freezer so that the pre-set ingredient-to-ice-cream ratio is automatically maintained. If the freezer goes on hold, the ingredient flow also stops.

#### Automatic weighing system

Accurate dosing of inclusions is extremely important in order to maintain consistent product quality and avoid excess use of expensive inclusions, i.e. ingredient giveaway.

The advanced weighing system continuously registers ingredient weight and automatically adjusts dosing auger speed so that correct flow of inclusions is fed into the product regardless of ingredient level in the hopper.

The loadcells are connected to a PLC which calculates loss of weight over a given period of time and converts these data to ingredient flow expressed in kgs/lbs per hour. Variations between the pre-set flow setpoint and actual flow rate will automatically adjust the speed of the dosing auger until the actual and pre-set flow setpoint are equal.

#### Design

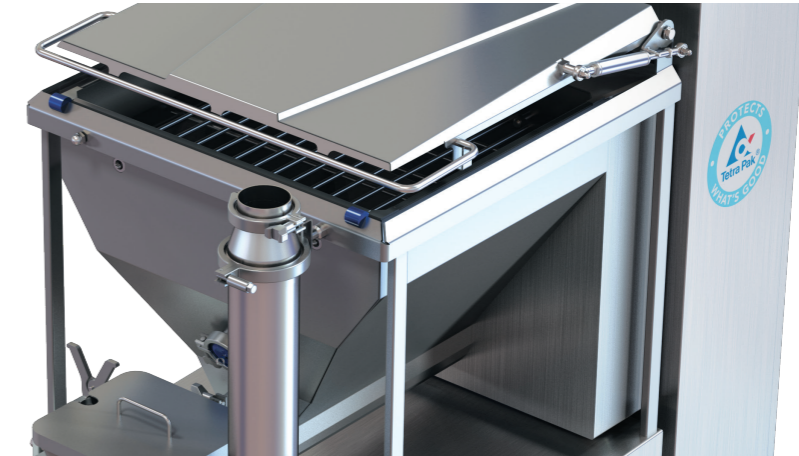
Tetra Pak Ingredient Doser 4000 A3 is designed as a self-contained unit requiring only electrical and pneumatic connections. It consists of three main units each driven separately: the hopper with a dosing auger and agitator, the feed pump and the in-line mixer.

The unit is built on a stainless steel frame and fitted with stainless covers. All parts in direct contact with the product are made from stainless, sanitary materials or other food-grade materials.

#### Hopper unit

The hopper has a capacity of 100 litres (26 US gal) and can be filled from three sides for greater flexibility. It is equipped with an agitator unit, ensuring a constant supply to the dosing auger, which meters the inclusions into the inlet of the lamella pump. The speed of the dosing auger is variable and controlled by the loss in weight, as calculated by the automatic weighing system.

The hopper unit is suspended on load cells connected to a PLC for automatic control of the ingredient flow rate.



#### Lamella pump

The lamella pump consists of a rotor fitted with retractable lamellas. Inclusions are fed by the dosing auger into the cavities between the lamellas. As the rotor spins and the lamellas reach the base product, the lamellas retract and the inclusions are evenly distributed into the base product. The speed of the pump is variable. The design of the lamella pump enables:

- Gentle handling of inclusions
- Easy and efficient cleaning
- Quick and simple assembly/disassembly
- Long lifetime of lamellas

#### In-line mixer

To achieve an effective blending of the inclusion and base product, there is an in-line mixer at the outlet of the ingredient doser. The mixer features a rotating blender that ensures thorough mixing, and it comes in two variants to suit different application needs. The speed of the mixer is steplessly adjustable, and various mixer designs are available to optimize performance based on specific requirements.

#### CIP

The operator activates the automatic CIP program via the control panel, starting the lamella pump and mixer at pre-set intervals. The front cover of the lamella pump moves to the CIP position. The agitator and dosing auger are easy to dismantle for manual cleaning. *(For some inclusions, manual cleaning of the lamella pump and in-line mixer may be necessary.)*

#### Optional equipment

To meet a wide variety of special needs, inclusions and capacity requirements, we offer a selection of optional equipment, including:

- Dosing augers designs
- Outlet pipes
- Special blender for inline-mixer
- Magnetic grid for hopper
- Transparent dust cover for hopper
- Communication and datalog kits
- Spare part sets for 1 000/3 000 and 6 000 production hours
- Bridge breaker
- Customizable Dust Cover Opening

#### Capacities

Pipe dimensions 3" or 4". Maximum throughput capacity 5 000 L/h (1 320 US gal/h) (3") or 10 000 L/h (2 640 US gal/h) (4") of base product\*.

The capacity of the ingredient addition is in the range of 15-1 200 liters per hour (4-320 US gal/h) depending on the type of inclusions and the auger selected. Optimal dosing accuracy can be achieved by using dosing augers with different core diameters and pitches.

\* Ice cream or base product capacities are indicative and show the optimal range. Tetra Pak Ingredient Doser 4000 A3 can be installed in production lines with bigger and smaller capacities, depending on the viscosity of the base product.

## Technical data

Power connection, standard	3 x 400 V 50 Hz (cps)
Current	16 A
Main breaker	30 A

### Power consumption, total

Lamella pump	2.2 kW (3 HP)
Inline-mixer	1.1 kW (1.5 HP)
Agitator	0.37 kW (0.5 HP)
Dosing auger	0.37 kW (0.5 HP)

Inlet pipe diameter	102 mm (4")
Outlet pipe diameters	76 mm (3") 102 mm (4")

Compressed air required

## Shipping data

Net weight	611 kg (1347 lbs)
Gross weight	750 kg (1653 lbs)
Volume	3,95 m <sup>3</sup> (139,5 cu.ft.)

## Dimensions

Measurements in mm (inches)

