

# Loss in Weight Feeding

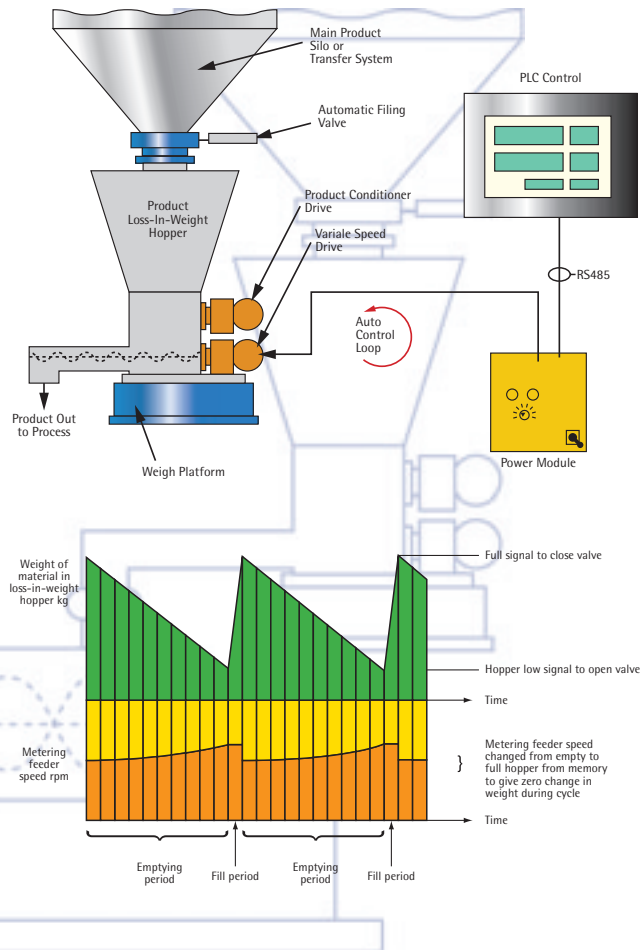
Balancing innovation with precision

# CONSTANT RATE FEEDING

The Rospen loss-in-weight feed system has been designed to weigh and control the output of variable products continuously to weight accuracies of  $\pm 0.25\%$  to  $\pm 1\%$ .

## The general principle of operation is as follows:-

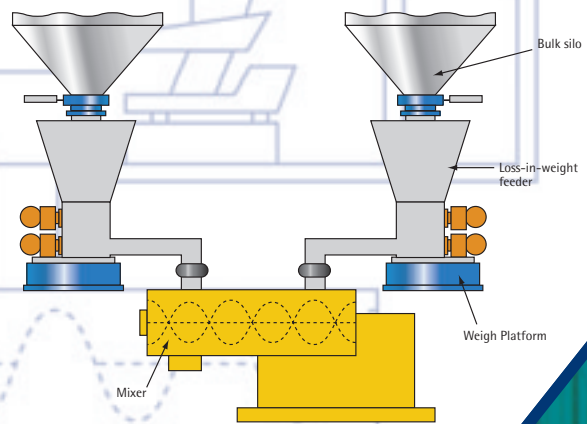
- The loss-in-weight hopper is rapidly filled via an automatic filling valve. At a hopper-full weight, pre-set within the microprocessor, the filling valve will close.
- The metering feeder starts (or is already running from the last cycle) and feeds product into the process; thus the weight in its product hopper gradually falls.
- The falling weight is measured every few milli-seconds and this information is averaged and stored by the microprocessor as a falling weight per unit time (Kg per min). This weight per unit time is compared to a weight per unit time already pre-set by the operator via the microprocessor key pad and stored in memory.
- Any difference in the characteristic slope of the falling weight per unit time and the slope of the pre-set weight against time, is fed to a process controller and used to speed up or slow down the product feeder in order to make the two slopes identical.
- At a pre-set hopper low weight, the metering feeder will be locked onto its last averaged filling valve again signalled to open, so rapidly filling the hopper.
- When the hopper is again filled, the metering feeder will be brought back onto automatic control at the original correct speed that was memorised by the microprocessor during the previous cycle.
- Thus the cycle will repeat, with the microprocessor going through a continuous learning curve which will get more accurate with each cycle.
- The cycle time will be approx 10:1 running to filling e.g. 10 mins run to 1 min fill, or 5 mins to 30 seconds fill.



# BATCH WEIGHING

Standard loss-in-weight modules can be supplied eradicating weigh hoppers and in-flight material. This system is particularly useful when the product to be weighed is sticky and does not have good flow properties.

We can design and manufacture batch weigh hoppers and dischargers for every application from a few kgs to tonnes. Our product handling experience is vast covering products such as flour (difficult) to Alusil (low density). Liquids weighing is also common.



# LOSS-IN-WEIGHT FEEDERS

## Screw Feeders

The loss-in-weight system is normally supplied with a standard Rospen metering screw feeder with screw sizes from 12mm to 250mm and output ranges from 1.0 Kg/hr to 110,000 Kg/hr. The Rospen metering feeder is novel in that the front can be removed in seconds via seven knobs for cleaning and the screw can be removed without disturbing any drives or seals. Alternate types of feeder can be used to suit the particular installation and material to be weighed, ranging from vibratory tray feeders to belt feeders.

## Weigh Platform

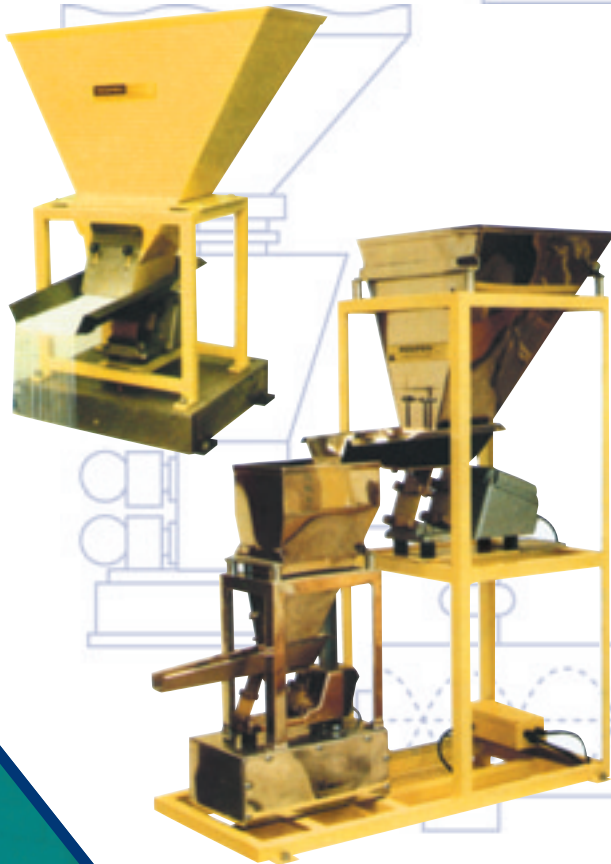
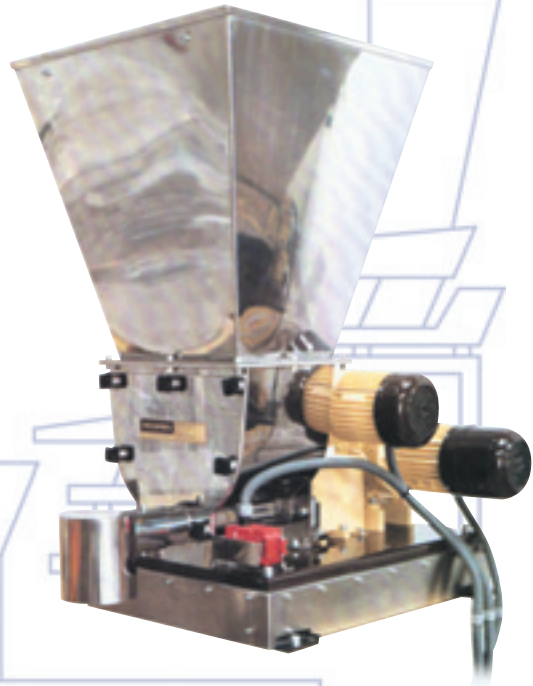
The Rospen standard weigh platform consists of a robust, twin angle frame containing three cantilever type load cells which are summated to automatically compensate for any off-centre loading which may occur during hopper filling and emptying.

The load cells have an automatic self-centralising mechanism which eradicates inaccuracies due to temperature change and unequal loading. The unit is complete with overload stops, side-impact stops and transit locks.

The weigh-platform is enclosed with a stainless steel dust cover with removable side covers. Being solid state, with no pivots etc. no maintenance is required.

## Weigh Hoppers

On larger installations it is normal to suspend the loss-in-weight hopper complete with the metering feeder from 3 or 4 load cells to avoid large turning movements. The outputs of the load cells are summated with the Rospen 16 bit auto-zeroing strain-gauge amplifier.

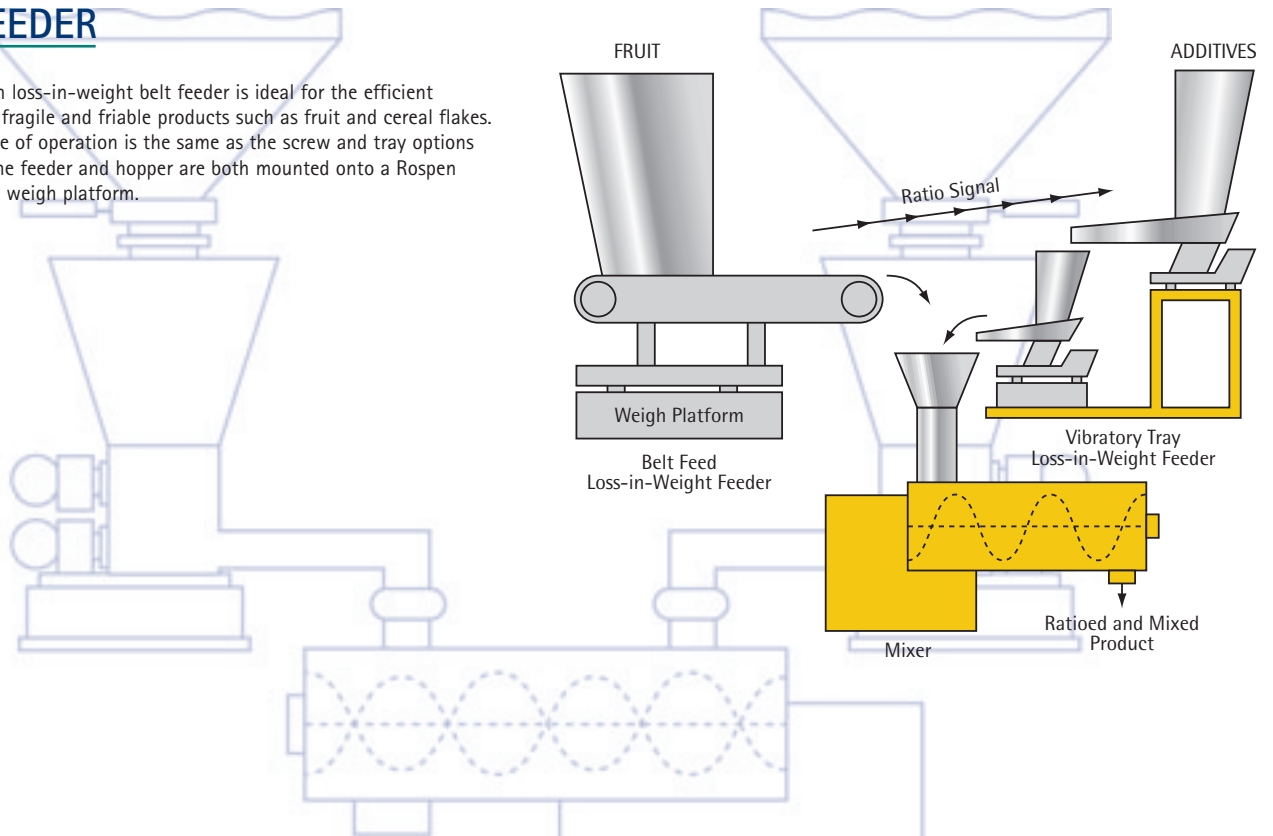


## VIBRATORY TRAY FEEDER

The Rospen vibratory tray loss-in-weight feeder has been designed specifically for the accurate weighing and metering of free-flowing powders, granular products or small piece parts such as plastic pellets. The machine consists of a standard vibratory tray feeder complete with a suitably sized hopper mounted on a standard Rospen low profile loss-in-weight platform, giving throughputs of 1Kg/hr to 30 tonnes/hr.

## BELT FEEDER

The Rospen loss-in-weight belt feeder is ideal for the efficient feeding of fragile and friable products such as fruit and cereal flakes. Its principle of operation is the same as the screw and tray options whereby the feeder and hopper are both mounted onto a Rospen low profile weigh platform.

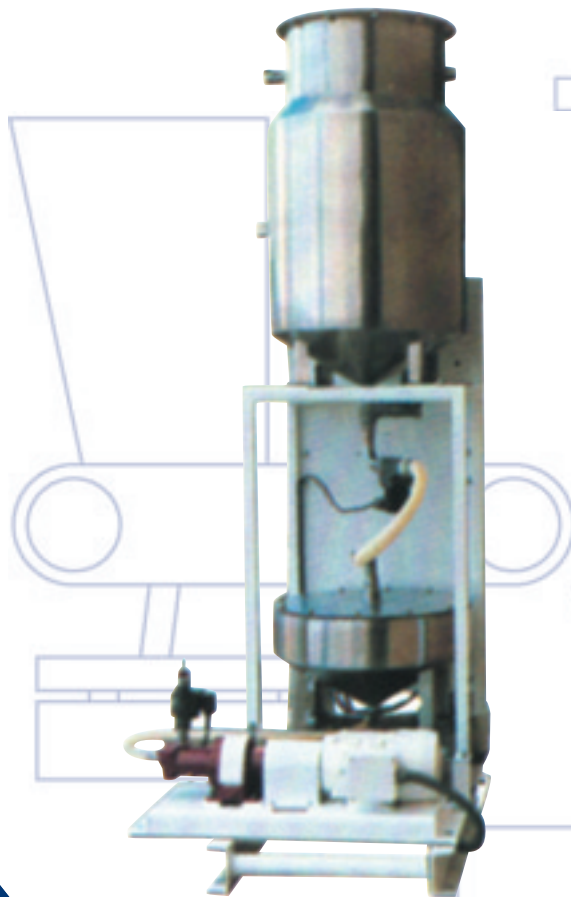


## LIQUID FEEDER

Liquids can also be weighed to accuracies of  $\pm 0.5$  percent using exactly the same principles as described for powders.

A loss-in-weight liquids vessel is mounted upon a Rospen Industries low-profile weigh platform and is connected via flexible pipes to a header tank with dump-valve and a variable speed discharge pump. Again the loss in liquids weight per unit time is measured by the microprocessor and the pump speed modulated to hold the liquids loss-in-weight and thus output constant.

This system eradicates the need for troublesome flowmeters, and it also compensates automatically for varying density, varying viscosity, varying temperature and varying pressure.



## WEIGHT CONTROLLERS Manufactured by Rospen



### Rospen Standard Weight Controllers

Expandable, dedicated gravimetric machine controllers for high resolution continuous weighing application.

## MULTI PURPOSE WEIGHT CONTROLLERS Industrial Packages

### Allen Bradley PLC

Ease of implementation and wide global usage, plus DH+ Comm standard make this our most frequently supplied PLC.



### Mitsubishi PLC

Cost effective and widely distributed with excellent hardware standard.

### Industrial PC

Robust, operator friendly, best for data display and storage. Industrial PCs offer advantages based on data handling and flexibility.



### Siemens PLC

Very popular in Europe, it's Profibus standard and strong support provides a popular option.

## CLIENT LIST

Cadbury  
Intel  
Nestle  
Trebor Bassett  
Spillers  
3M  
Sandvik  
McCains  
Heinz  
UB  
Zeneca  
British Sugar  
Imerys  
GlaxoSmithKline  
Weetabix  
BOC  
Halo Foods

## ROSPEN BENEFITS

Rospen's unrivalled industry experience combines with advanced design and system versatility to provide a range of benefits:-

**Hygiene** – Whatever the application, from pharmaceutical or food to quarry use, our machines are designed with easy strip-down features for hygienic cleaning.

**Maintenance** – Design ingenuity enables quick and easy access for maintenance and low down time.

**Precision** – All systems are designed to perform with precision accuracy under all operating conditions.

**Flexibility** – Standard design features ensure complete flexibility within existing manufacturing processes and enable options for expansion at a later date.

**Reliability** – All our systems are built to ensure long term reliability, maximum up-time and lowest on-going operational costs.

Application experience demonstrates that the combined benefits of our systems can repay the initial capital outlay within months.

## PRODUCT LIST

Metering Screw Feeders  
Loss in Weight Feeders  
Batch Weighers  
Weighbelt Feeders  
Weigh Screw Feeders  
Vacuum Conveyors  
Impact Plate Flowmeters  
Vibratory Tray Flowmeters  
Batch Weigh Flowmeters  
Flexible Screw Conveyors  
Granulation Mills  
Pulseronics Discharge Aids  
Lumpbreakers  
Mixers  
Big Bag Dischargers  
Sifters / Separators