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

**CONSTANT RATE FEEDING**

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.

**BATCH WEIGHING**

Weigh Platform

Product Loss-In-Weight Hopper

Product Out to Process

PLC Control

Power Module

Auto Control Loop

RS485

Variable Speed Drive

Product Conditioner Drive

Automatic Filling Valve

Main Product, Mix or Transfer System

Weight of material in loss-in-weight hopper Kg

Metering feeder speed rpm

Emptying period

Fill period

Emptying period

Fill period

Time

Metering feeder speed changed from empty to full hopper from memory is zero change in weight during cycle

Bulk silo

Loss-in-weight feeder

Mixer

Weigh Platform

Bath silica

Empty loss-in-weight feeder

www.rospen.com
**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 notable 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.
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.

Liquids can also be weighed to accuracies of ±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.

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

Mitsubishi PLC
Cost effective and widely distributed with excellent hardware standard.

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

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**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

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**CLIENT LIST**

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