

Loss in weight

Reliable accuracy



Advanced weighing and dosing systems for static, dynamic, and continuous weighing.

jesma[®]
weighing solutions



Loss in weight feeder

Continuous gravimetric feeding and dosing of additives

The Jesma loss in weight feeder is a fully electronic weighing system, which is specially designed for continuous dosing of additives with a high dynamic accuracy also at the critical stage of re-filling the weighing bin.

The functional principle for a LIW system is done through repeated static weighing of the product bin to determine and regulate the mass flow. The product bin is slowly emptied, and the relation between the loss in weight and the speed of the discharge system controls the dosing speed to the required amount.

To achieve highest possible dynamic accuracy, the discharge system is mounted with a 2-channel incremental encoder with high signal rate which continuously monitors the speed of the discharge and signals the actual speed to the Jesma weigh controller.

Through careful considerations regarding product characteristics, all Jesma loss in weight feeders are designed for highest possible dynamic accuracy, market leading operational reliability and user friendliness.



The unrivalled Jesma principle makes the loss in weight feeder highly accurate, and the optimum control of the relation between discharge speed and actual dosed amount secures a market leading dynamic accuracy and regulation of the mass flow without process disturbing fluctuations.



Reliable accuracy

Construction

The corner stone of a Jesma loss in weigh feeder is to achieve highest possible operational reliability and accuracy. With this aim all Jesma loss in weight feeders are designed according to the specific product characteristics and project specifications.

The loss in weight system consists of a weigh bin suspended in load cells, a discharge and a feeding device.

The weigh bin is available in many sizes and designs – all of them carefully considered and perfectly designed to avoid product bridging and to keep a steady product flow.

From the weigh bin the product is discharged mechanically or by gravity. Easy flowing and dry products can be discharged by gravity in conical outlets, however difficult flowing material such as vitamins or enzymes are extracted mechanically through a live scraper bottom with an agitator screw.

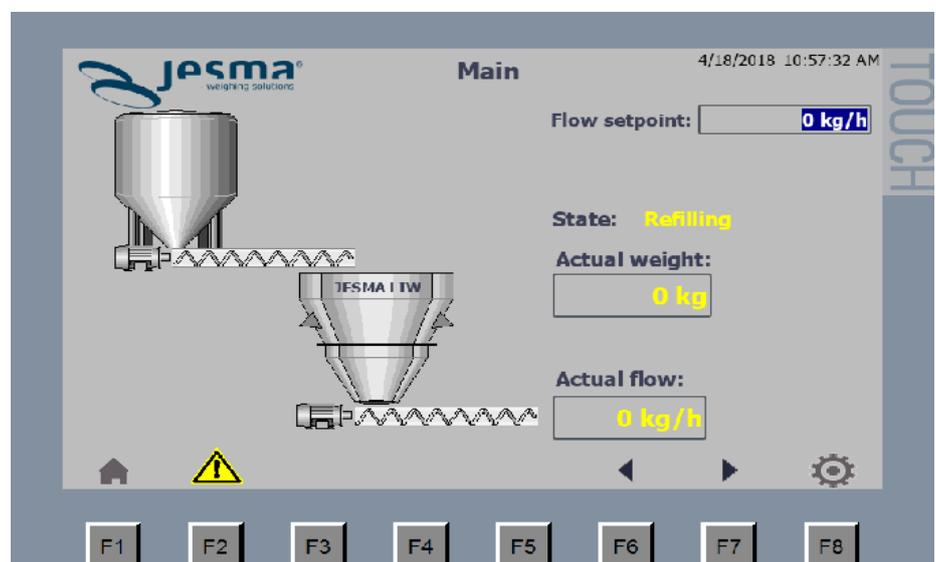
From the bin discharge the material is mechanically dosed through a screw conveyor, rotary valve or belt conveyor – Also the type of feeding device is carefully considered and selected according to the product characteristics.

The speed of the discharge is controlled by a frequency converter and the speed is continuously monitored and regulated through the incremental encoder and the control system.

With unknown products or limited experience in the product characteristics, Jesma offer to perform product tests in our test centre in order to achieve the optimum technical solution.

Depending on the project and product characteristics the loss in weight feeders are, completely or partly, available in the following materials:

- Normal painted steel St.37.2
- Stainless steel AISI 304
- Stainless steel AISI 316
- Hardox
- Combination of above



Weight control

The weight control unit Jesma-LIW controller continuously updates the proportion between the required dosing and the actual dosed amount. This results in a fast transient time, which makes the system well-suited for proportional regulation.

During normal operation the intelligent Jesma-LIW controller continuously acquires the operational data from the bin content in relation to the discharge speed and the actual dosed amount. The data regarding discharge speed, actual dosed amount and the content of the weighing bin are saved as historic values.

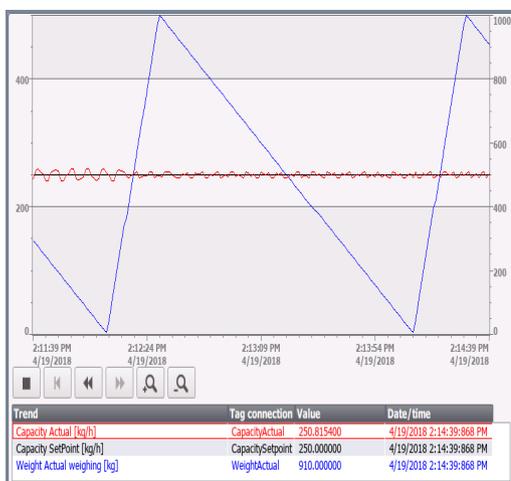
The product bin is slowly emptied and at a pre-set value re-filling of the bin is necessary. The controller switches either automatically or the operator manually switches the system to re-filling mode. In re-filling mode the control system utilizes the historic values for the correct relation between discharge speed, required dosed amount and content in the bin. Based on the acquired historic data the correct discharge speed is determined in relation to the required dosed amount and content of the bin. When the weigh bin once again is filled, the system switches back to normal operation.

This control principle secures a high dynamic accuracy and regulation of the mass flow – also during the critical re-filling of the product bin.



The Jesma-LIW is supplied with modern filtration technology which secures high operational reliability under influence from vibrations or external objects. Furthermore, the Jesma-LIW activates alarm outputs in case of any irregularity in the operation of the scale, i.e. by product bridging.

The required mass flow can be selected as a batch size, an absolute flow in kg or t, or as a percentage addition in relation to a main flow through a 4-20 mA signal.



- Jesma machinery controlled on standard PLC SIEMENS S-12xx.
- SIEMENS touch HMI for operator information and diagnostic 9".
- Communication interface to standards: ProfiBus, ProfiNet Modbus TCP.
- Standard analog interface I/O if requested (0-10V, 0-20mA).
- Online service and support module (VPN – based) if requested.



Reliable accuracy

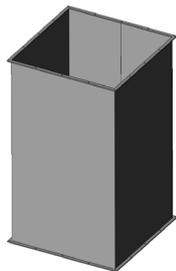
System design

The Jesma loss in weight feeders are designed and manufactured to comply to our customer's individual requirements. Based on careful considerations regarding the product characteristics and the project specifications, Jesma only supply project designed equipment.

The design is based on building bricks which are combined into a designated system.

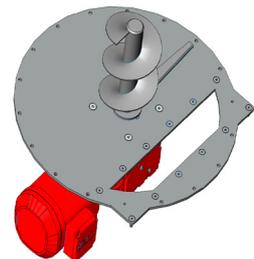
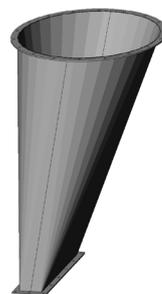
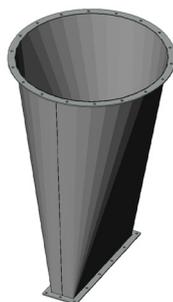
Hopper designs

- Square
- Cylindrical
- Conical
- Reverse conical



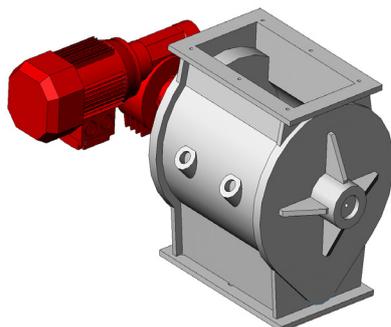
Discharge designs

- Normal cone
- 1-sided cone
- Mechanical scraper bottom



Feed design

- Rotary valve
- Screw conveyor

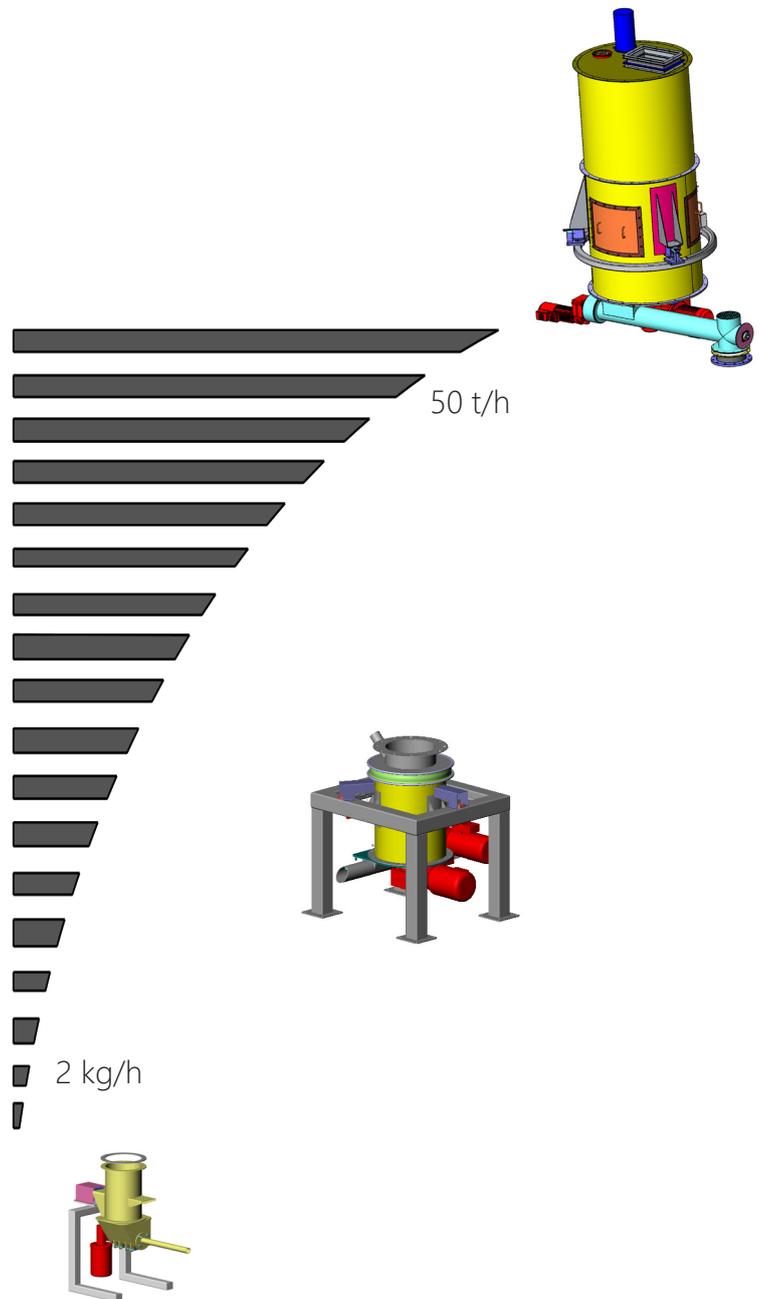




Capacities

The Jesma loss in weight feeders are available for a wide range of industries and applications. For any project the unique combination of building bricks and a wide capacity range allows Jesma to provide a reliable and accurate feeding system to comply with our customer's individual requirements.

Capacity range:



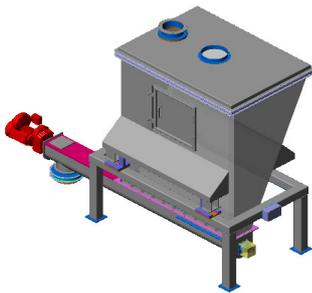


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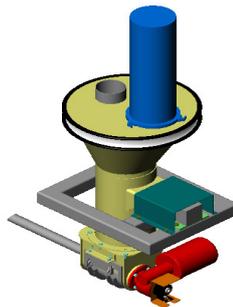
System accessories

Based on the product characteristics and project specifications the loss in weigh feeders can be supplied including a wide range of accessories to accommodate difficult or explosive products.

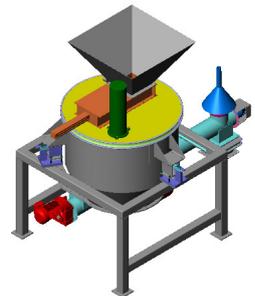
Connection for aspiration



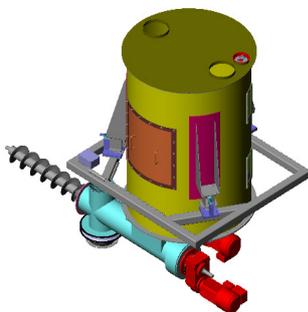
Dust filter



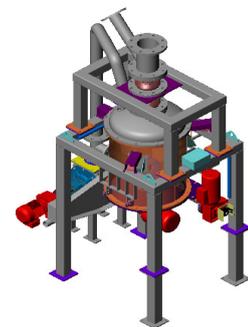
Inlet shot valve



Extractable conveyor for cleaning



Explosion proof according to ATEX directive



Please contact our sales department for further information and discussion about a project designed Jesma solution for your gravimetric dosing requirement.



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