Batch scale

Akrivis

For continuous weighing & dosing of powdery and granular products

Innovations for a **better world.**

BÜHLER

Make the difference in weighing & dosing

Akrivis – Batch scale for powdery and granular products

Control and define process streams

Weighing and dosing applications are extremely important in all food and feed processing lines. Scales and dosers are technically taking over these functions and are installed during process steps which are critical for process and quality. The Akrivis is designed to thrive with these requirements and provides operational modes for weighing and dosing.

Weighing – Provides transparency on the most relevant process streams, ensuring maximum yield on raw materials and controlling incoming and outgoing product flows.

Dosing – Defines product streams for downstream processes by running them under the most effective conditions as well as blending requirements, thereby achieving the desired product composition.

Sustainability

Proven energy cost reduction of up to 99% thanks to the designed-for purpose **DriveX** module with an integrated **power management system**.

Quality

Uniquely high and repeatable accuracy down to ±0.1% thanks to a perfect combination of **process logic**, a super-efficient **differential pressure compensation** and high-precision load cells.

Availability

Maximized up-time thanks to the powerful and extremely easy to operate **bUnify control system**, with a modern and intuitive user interface.

Safety and ease of use

Easy and safe to operate and maintain thanks to its uniquely ergonomic, robust and hygienic design.

Digitalization

Unlimited connectivity with Bühler Insights and any plant control system ensures full transparency and utilization of the **Scales Monitoring System.**

Key elements
Designed for purpose

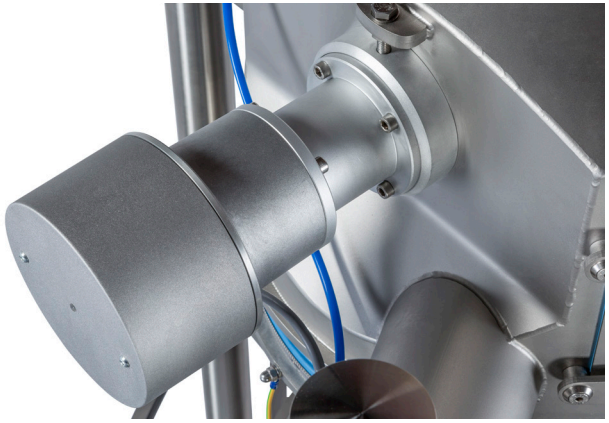
1. Pre-hopper
2. Inlet housing with incorporated inlet segment gate, actuated by DriveX module
3. Flexible connection to decouple weighing hopper
4. Weighing hopper, with integrated air ducting
5. High-precision load cells
6. DriveX module actuating discharge flap
7. Outlet hopper
8. bUnify machine controller with web panel
9. Installation structure

Commodities:

- Wheat
- Flour
- Bran
- Feed pellets
- Rice
- Coffee beans
- Crystal sugar
- Malt husks
- Other powdery & granular products

Akrivis at a glance

Turning leadership in innovation into benefits for operation & maintenance



DriveX saves energy of up to 99%

- Designed-to-purpose servo drive and gearbox ensure not only significantly reduced energy requirements but also increased life-time of the drive system
- Power management system buffer restores energy and ensures safety of the machine in case of a power cut

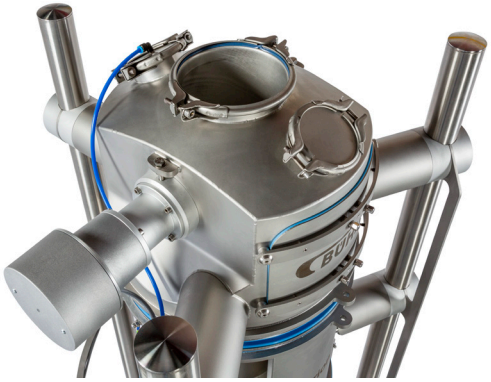
Best accuracy of down to ±0.1%*

- Self-learning process algorithm continuously optimizes the weighing process
- Smart differential pressure measurement system actively compensates and monitors internal pressure differences
- Separately connected high-precision load cells allow individual analysis of the measuring signals

Maximized up-time thanks to bUnify control system

- Intuitive and modern user interface enables fast and high-quality interaction when required
- Full transparency on process and machine parameters thanks to trending charts and event management
- Support wizards ensure the most effective root cause analysis and user guidance e.g. calibrations
- Highly flexible integration into the processing line thanks to various interface options

*Mentioned accuracy to be understood as best-case scenario and depending on operation point, product properties, environmental influences, line integration, maintenance quality, etc.



Unmatched safety thanks to outstanding design

- Operational – no product build-ups in the process zone thanks to the avoidance of complex and inaccessible areas
- Maintenance – sufficient openings for cleaning and maintenance to comfortably reach all relevant parts and sections
- Equipment – product zone free of screws and bolts protects downstream equipment
- Food – minimal accumulations of product and dust thanks to first-class hygienic design

Scales Monitoring System provides solid ground for various improvements

- Improved performance and process stability thanks to full transparency on critical machine and process parameters
- Long-term monitoring of the incoming product flow leads to maximized and uniform overall processing line efficiency
- Smart Bühler Insights dashboards ensure transparency across all organizational levels

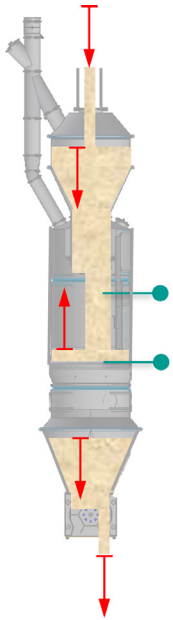
Use case: Continuous weighing
Go for transparency and increased yield on raw material

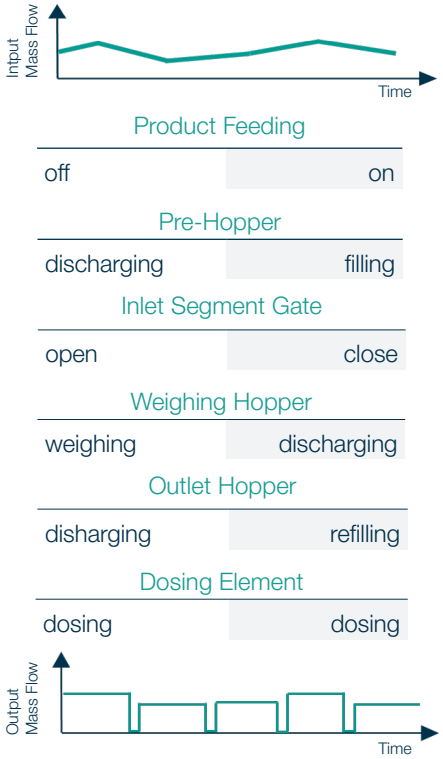
In the operation mode FlowMeter, the Akrivis is measuring the mass flow of a process stream with a given throughput. Key performance parameters, such as ‘highest weight accuracy’ due to the weighing of all product passing through the Akrivis, are given throughout the operation. The current mass flow rate is calculated and available at any time. As an additional process analysis feature, the batches measured over a certain period of time are provided.

Insights into the Akrivis process

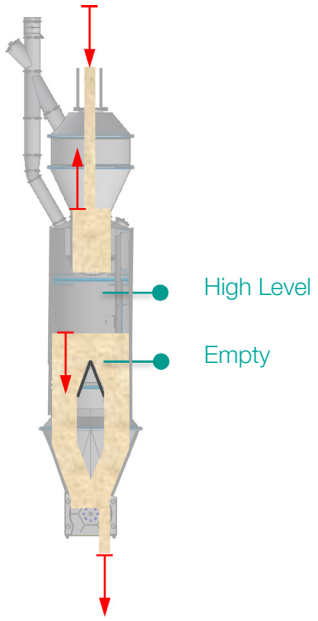
Continuous weighing is provided by two sub-process steps: weighing and discharging. To avoid overfilling of the outlet hopper the output mass flow has to be slightly higher than the input mass flow.

Sub-process step weighing





Sub-process step discharging



Exemplary use cases:

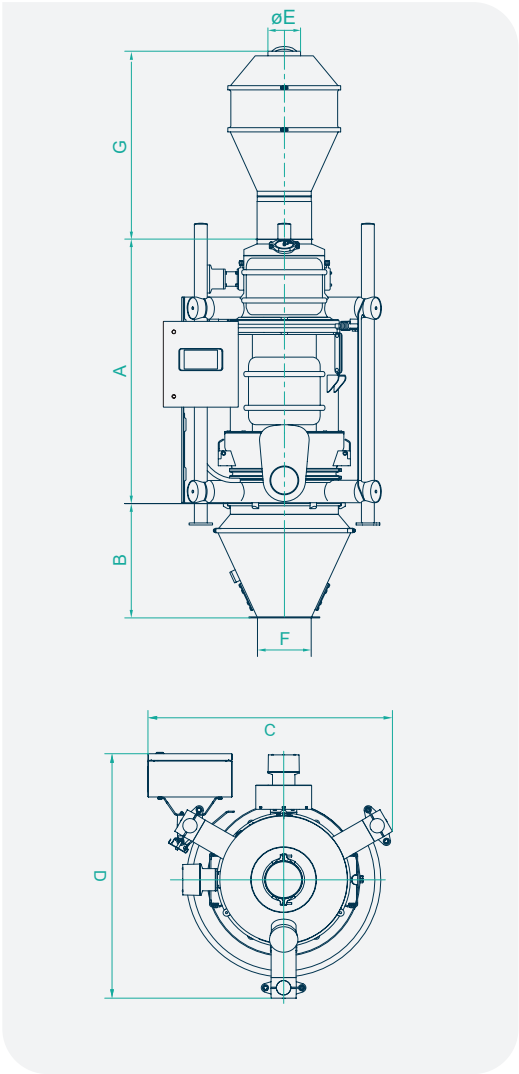
- Measuring a given product flow of incoming raw material and outgoing finished product in order to calculate yield and control overall process
- Measuring product flow before and after critical process sections such as cleaning, dehulling, grinding, etc. to ensure quality and efficiency

Transparency
Transparently measure mass flows on all relevant positions in the factory

Yield management
Accurately measure the incoming and outgoing product stream

Technical specifications and capacities

Use case: Continuous weighing



Dimensions

Model	A	B	C	D	E	F	G
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
25	984	461	845	942	ø150	ø200	644
40	1106	559	845	942	ø150	ø200	746
80	1234	689	1018	1015	ø150	ø200	889
120	1464	869	1018	1015	ø250	ø200	943
160	1484	853	1104	1121	ø250	ø300	1139
240	1799	1083	1104	1121	ø250	ø300	1339
300	2039	1228	1104	1121	ø300	ø300	1539

Dimension may vary for different machine configurations

Volume flow & capacities

Model	Volume Flow	Wheat Rye	Maize Barley	Oat
	[m^3/h]	[t/h]	[t/h]	[t/h]
25	up to 8.3	up to 6.2	up to 5	up to 4.1
40	up to 12	up to 9	up to 7.2	up to 6
80	up to 24	up to 18	up to 14.4	up to 12
120	up to 36	up to 27	up to 21.6	up to 18
160	up to 48	up to 36	up to 28.8	up to 24
240	up to 72	up to 54	up to 43.2	up to 36
300	up to 90	up to 67.5	up to 54	up to 45

Alternatives to weighing granular products:

Loss-in-weight scale
Varion G

Use case: Continuous dosing

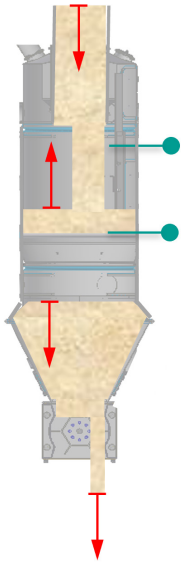
Go for transparency and increased yield on raw material

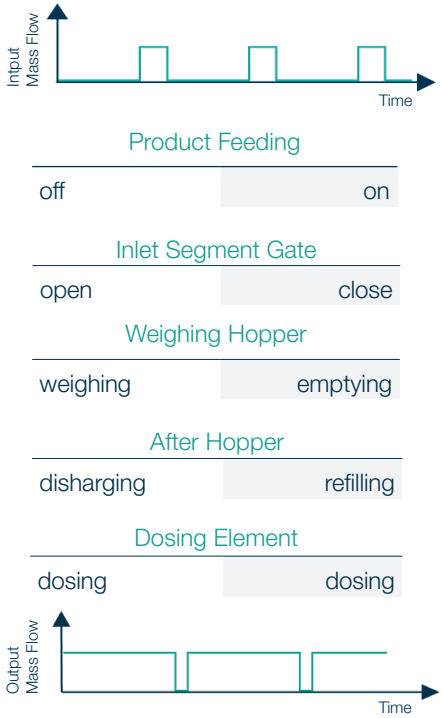
In the operation mode FlowControl, the Akrivis defines the desired process flow rate according to the down stream process steps. Key performance parameters such as highest dosing accuracy and, possibly even more importantly, precise repeatability are given throughout the operation. The desired throughput can be freely selected, optionally in combination with a target weight of a production lot. As an additional feature, the current total weight of a production lot is provided automatically.

Insights into the Akrivis process

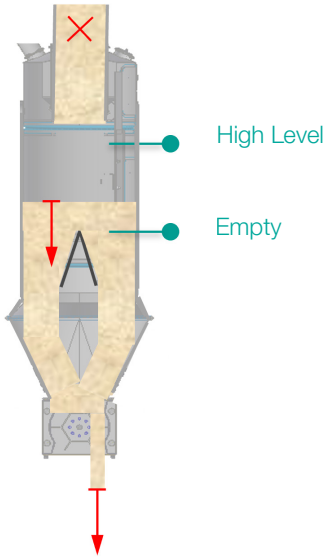
The weighing process is provided by two sub-process steps: weighing and discharging. The dosing happens by the dosing element installed at the after hopper. The after-hopper gets emptied after each batch.

Sub-process step weighing





Sub-process step discharging



Exemplary use cases:

- Dosing product to a continuously operated core machine such as roller mill, flaker, hammer mill, etc, ensuring highest performance in the core process
- Dosing product to a continuously operated blending system such as flour blending, etc, ensuring the desired compositions of products

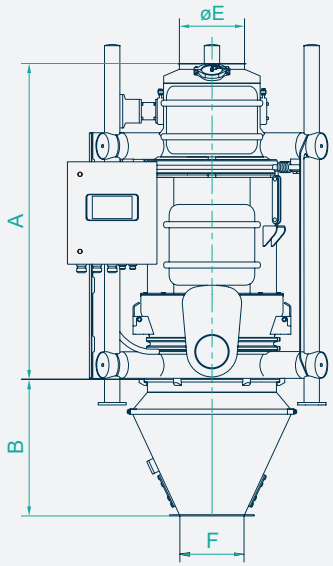
Efficiency
Most accurate feeding of core processes

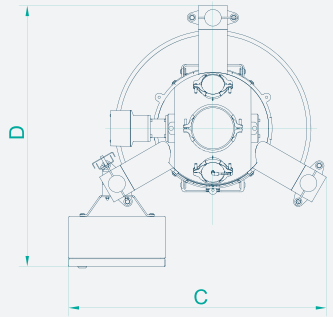
Quality
Transparency in the factory and repeatability in the process

Self optimization
Availability of relevant data as basis for smart process interlocks

Technical specifications and capacities

Use case: Continuous dosing





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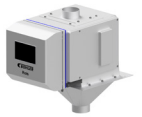

Flow balancer
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