Sasco Africa
Accurately Weighing Africa

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Verification Laboratory
LTF0070

AUTOMATIC MIXED GRAIN THROUGHPUT WEIGHER

STREAMING MIXED GRAIN WEIGHING (AGTW)

Sasco Process Automation

AGTW-25-01

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Automatic Grain Throughput Weigher

Sasco's wide range of traditional throughput hoppers, commonly known as automatic hopper scales or batch weighers, operate by managing and weighing materials stored in bins, hoppers, or silos. These systems are widely used in industrial environments to monitor and control the transfer of materials to process plants, packaging facilities, or transport vehicles.

Traditional hoppers typically feature a rectangular or square hopper design, which serves as a storage container for materials during the weighing process.

The operation involves material entering the hopper through an infeed valve or gate. Once the pre-set batch weight is reached, the valve closes, and the system records the gross weight after allowing the contents to stabilize. Subsequently, the discharge gate opens to release the material, and the system resets to a zero weight before repeating the process. While effective, this design is prone to certain limitations, such as potential dust infiltration into pneumatic systems and inefficiencies in material flow due to the square hopper design.

The new **Sasco Automatic Grain Throughput Weigher (AGTW)** introduces a revolutionary upgrade to these traditional systems with several key innovations:

1. **Circular Hopper Design:** Unlike the conventional square hopper, the circular design of the AGTW improves material flow and prevents the buildup of residues in corners, enhancing operational efficiency and reducing maintenance needs.

2. **Sealed Pneumatic Cabinet:** Traditional systems often leave pneumatic components exposed, making them susceptible to dust infiltration, particularly in dusty or hazardous environments. The AGTW addresses this with a fully enclosed pneumatic cabinet, ensuring durability, reducing wear and tear, and maintaining cleaner operations.

3. **Trade Approval:** The AGTW is certified for use with a wide range of products, offering greater flexibility and compliance with trade standards. This feature makes it suitable for diverse industries, from grain handling to food processing.

These advancements mark a significant step forward, addressing the limitations of traditional hopper systems while providing improved reliability, accuracy, and adaptability in harsh industrial environments. The AGTW combines innovation and robust design, making it a next-generation solution for throughput weighing applications.

AGTW Product Overview

The SASCO AGTW is equipped with the following key design components:

- **Separate Dust Free Enclosure:**

The design of a separate, dust-tight enclosure for housing pneumatic components in the hopper system offers several critical benefits. By preventing dust ingress, it ensures accurate readings by protecting load cells and other sensitive components. It minimizes mechanical interference that could disrupt the weighing process and safeguards against equipment damage caused by corrosion or abrasion from dust mixed with moisture. Additionally, it prevents sensor malfunctions caused by short circuits and ensures uninterrupted material flow by avoiding clogged discharge outlets. This sealed design, with weatherproof or IP-rated seals, enhances reliability and longevity, making the system highly efficient in dusty or challenging environments. Furthermore, this feature allows for the unit to operate at a higher tip frequency this increasing capacity per hour without increasing the size of the hopper bin.

- **Dust Collection Systems:**

The Automatic Grain Throughput Weigher (AGTW) is designed with an advanced coupling system that allows seamless integration with dust extraction and recirculation units. This coupling enables the AGTW to connect directly to external dust extraction systems, ensuring efficient removal of dust generated during material handling and weighing operations. By minimizing airborne dust, the system not only maintains a cleaner working environment but also protects sensitive components from potential damage or malfunction caused by dust accumulation. Additionally, the recirculation units further enhance operational efficiency by capturing and reprocessing any displaced dust or material.

- **Cylindrical Hopper Design:**

The cylindrical design of hoppers offers significant advantages over traditional square designs in terms of material flow, efficiency, and structural integrity. By eliminating corners where materials can accumulate, cylindrical hoppers encourage a uniform and consistent flow, reducing the risk of blockages and ensuring smoother discharge. This enhances scale accuracy and minimizes disruptions. Additionally, the rounded walls of cylindrical hoppers prevent material buildup, leaving the hopper cleaner after each discharge and reducing the need for frequent cleaning and maintenance. Structurally, cylindrical designs distribute loads more evenly due to their symmetrical shape, making them inherently stronger and less prone to stress concentrations compared to square hoppers. This not only increases durability but also reduces the need for additional reinforcements, leading to cost savings in construction and maintenance. These features make cylindrical hoppers an efficient and reliable choice for industrial applications.

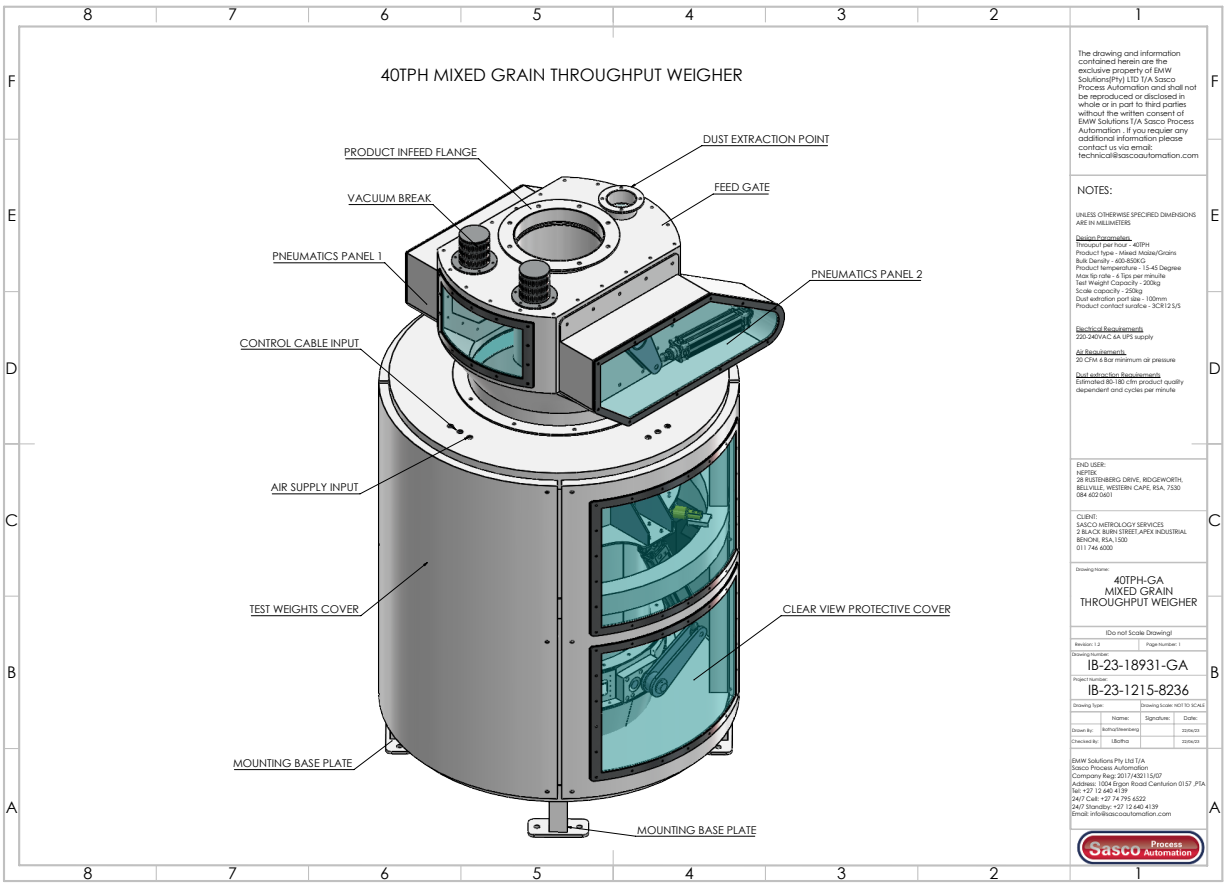
AGTW Product Overview

- **Teflon Coating Option:**

The AGTW offers the option of a Teflon coating, which is particularly beneficial in applications where materials are prone to sticking or causing build-up on the hopper surfaces. This non-stick coating is ideal for handling sticky, wet, or fine-grained materials that could otherwise adhere to the hopper, leading to blockages, inconsistent flow, and frequent cleaning. By reducing friction and preventing material adherence, the Teflon coating enhances the efficiency of material discharge and ensures accurate weighing. Additionally, it minimizes maintenance downtime and prolongs the lifespan of the hopper by reducing wear caused by abrasive or corrosive materials. This option is especially useful in industries such as food processing, pharmaceuticals, and chemicals, where maintaining cleanliness and smooth operations is critical.

The detailed GA drawing provided below clearly highlights the key features and components of the system.

Product Overview



Controller Features

Sasco's AGTW is highly versatile and is available in two configurations: a trade-approved non-ATEX version and an ATEX-certified version, catering to a wide range of operational and regulatory requirements.

PRODUCT NUMBER	AGTW-100 NON ATEX	AGTW-100A ATEX Version
Country of Manufacture	 L337 Enclosed	
Controller Mounting	 L337 Enclosed	
Trade Status	Trade Approved Number SA 1569AA4	Not Trade Approved
ATEX Version	Not ATEX Approved	ATEX ZONE 20 - 22
Products	Approved for the trade weighing of grain, grain products, sugar or similar free flowing materials	Approved for the trade weighing of grain, grain products, sugar or similar free flowing materials
Capacity	40 TPH	40 TPH

Controller Features Comparison

	IT 1 Controller
Display	12.5cm/5.7” TFT colour screen
Display Type	Colour Graphic LCD
Mounting	Panel, Wall, Desk
Key Pads	30-key Alphanumeric keypad + Ability to plug into a keypad separate from the controller
Built in Web Server	Yes
IP Rating	IP69K
Digital Filter	Motion filter and digital
Input Power	110-240 VAC or 12-30 VDC
Load Cells Operated	16 load cells
Scales Operated	2
Standard Comms	USB, RS232, Ethernet
Communication Options	RS232, RS485, RS422, RS4220, PROFIBUS, Modbus and Ethernet/ WIFI
Ticket Formats	Standard formats with limited used defined fields
Approvals	EN 45501 OIML R 76-1 EN 61000-6-2 EN 61000-6-3 NAMUR NE21 EN 62368-1 OIML R 51 OIML R 61 OIML107

The trade approval of the AGTW for weighing products such as grain, grain products, sugar, and similar free-flowing materials is crucial for industries where accuracy and compliance are essential. This certification ensures that the weighing process meets regulatory standards, providing reliable measurements for commercial transactions.

It guarantees consistency, transparency, and trust in the supply chain, particularly in agriculture and food industries, where precise weighing directly impacts pricing, inventory management, and product quality.

Load Cell Specifications

	SASCO SM11
Load Cells	
Accuracy Class	C3
Trade Status	3
Capacity	250kg
Casing	Stainless Steel
Sealing	Hermetically Sealed
IP Rating	IP68
Approval	OIML

Application Example

THROUGHPUT WEIGHER

Company A is an animal feeds company. **Company A** buys various types of grains which include maize, wheat, sorghum, rye, rice, triticale and millet.

In an animal feeds company, once wheat, maize, and other grains are received, a meticulous cleaning and sorting process ensures the grains meet safety and quality standards before being used in feed production. The process begins with **pre-cleaning,** where large impurities such as stones, leaves, and straw are removed using pre-cleaners equipped with sieves or screens.

Next, **aspirating** eliminates lighter materials like dust, chaff, and husks by passing the grain through an air stream. This is followed by **screening and sieving,** where grading machines with multiple screens separate grains by size, removing smaller impurities like broken kernels and weed seeds. The **de-stoning** phase removes heavy debris, such as stones, using gravity separators that differentiate materials based on density.

Company A found that the weights as determined on the inbound trade approved weigh bridge and the net weight of the grain once it had been pre cleaned, aspirated, screened and sieved was reduced by about 18%. This resulted in a direct financial loss.

Company A therefore wanted a trade approved solution that was capable of weighing a wide range of grains after these grains had been pre cleaned, aspirated, screened and sieved and therefore to pay suppliers for this weight.

The solution was the trade approved AGTW which is capable of weighing all these different grains at a rate of 40 TPH.

Sasco AGTW Installed

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