

Aptech precision micro feeding applications

Case Study – Volumetric feeding, Batch Weighing

ATEX compliant, double headed weighing system with course & fine vibratory feeders.



Innovation in bulk materials handling

Customer:

An established manufacturer of hazardous components who we have built a good relationship with and continue to work with on further bespoke projects.

Challenge:

A system to deliver high accuracy weighments of a hazardous free flowing granular / pellet material to receptacles positioned underneath an automated assembly line.

A statistical confidence measurement determined that each weighment of up to 172g had to be less than $\pm 0.1\text{mg}$. This amounted to approx. ± 5 particles of the most frequently used material.

Required rate of weighment was 1 every 8 seconds with a fully automated control system monitoring the equipment.

ATEX requirements were for equipment that was Zone 21 compliant throughout.

Solution:

With the relatively rapid weighment cycle a double weighing system was developed.

Sartorius 'forced balance' type scales were used. These had an accuracy of 10mg. Such was the sensitivity of these scales that air currents and anything other than a freely suspended weigh hopper affected the stability of the signal.

The automation system used an algorithm of self learning in-flight correction so that the feeders were continually 'tuned' to subtle differences in the behaviour of the material.

Results:

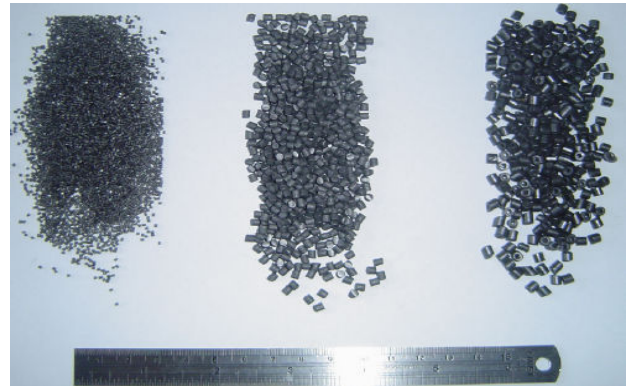
A fully automated weighing system integrated into complex conveying and assembly equipment.

ATEX compliant to exacting and scrutinised standards, and standard deviations of $\pm 0.004\text{g}$ for extended runs.

Gain in weight batch weighing up to 170g $\pm 0.2\text{g}$ with divisional accuracy of 0.01g and standard deviations of 0.004g.

Achieved Cpk >1.5

Batch times <15 seconds.



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Who we are:

- An **innovative and technically advanced** solutions provider for the materials handling industries, with a portfolio of successful projects gained over 35 years.
- A team of engineers and designers with a strong experience base on both user and supplier side.
- Our solutions are designed, selected and sourced to suit the specific requirements of our customers.
- We have a wealth of knowledge of the behavioural characteristics of a large portfolio of materials from powders to pellets, fibres to flakes, chips to beans and many more.

What we do:

- Design and manage fully integrated specific turnkey packages or partnership projects accurately & cost effectively.
- Integrate proprietary and tailored equipment, bespoke fabrications and automation.
- Whilst specialising in materials handling, we also undertake integration of liquids processing and load handling applications.
- Provide commissioning, start up support & training.
- In-house automation & software capability.

Examples of specialist & bespoke projects. Call or visit our website today for more info



We provide solutions in:

- Pressure & vacuum lean phase pneumatic conveying
- FIBC's, sacks, boxes, tubs, drums, load handling & manipulation
- Turnkey project management & regulatory compliance
- Storage, discharge, weighing & feeding
- In-house testing facilities
- Wet processing, automation & control

Industries served include:

Food & Drink. Pharma. Chemical. Adhesives. Construction. Plastics. Power Generation. Defence.

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