Precision flow control for efficient, accurate pneumatic conveying systems

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Pneumatic conveying provides an effective, enclosed transport system for manufacturing, handling and processing applications where small particles, grains, pellets and powders are required. These flexible transport systems offer a number of handling advantages over more conventional mechanical systems as well as being able to deliver precision flow control.

Modern environmental control standards can be difficult to maintain when working with powders and small particles as part of a manufacturing process. One of the most effective solutions is to use pneumatic conveying, which also offers a number of benefits when compared to more traditional methods.

- Reduced maintenance, due to the lack of moving parts
- Improved operational environment with no dust thanks to the fully enclosed design
- System flexibility that allows for multiple drop points and considerable transfer distances
- The possibility to carry out physical mixing or chemical reactions during the conveying process
- The ability to convey air-sensitive materials using an inert gas, such as nitrogen, to prevent oxidation

Pneumatic conveying is used by a wide range of industries including food and beverage, pharmaceutical, chemical and power generation. The main challenges for those operating a pneumatic conveying system are keeping the consistency of the product and maintaining a precise controllable flow of the product.

However, the modern manufacturing enterprise must also operate as efficiently as possible and this means reducing costs and improving productivity. Effective and precise process control can have a major influence on manufacturing efficiency but in the past this could provide a significant challenge to those with pneumatic conveying systems.

One recent innovation from Bürkert uses a closed loop controller, pressure sensors and a control valve, all combined into a single unit. The Type 8750 flow rate controller provides an automated air flow control solution that can reduce operating costs and improve productivity through better flow control and management of the compressors.

The flow rate control system is supplied as a complete assembly that negates the requirement for a separate flow meter. Using the pressure difference across the valve and the given density and temperature of the medium, a nominal flow can be calculated, providing the flow characteristics of the valve to the process controller.

One example of this system delivering benefits to a production process involved a company that manufactures tyres and uses carbon black, a fine powder, as part of the process. The powder is conveyed from a storage tank to a mixer using a dense phase pneumatic system.

The tyre manufacturer selected the Type 8750 flow control because it is able to maintain a consistent dense phase transport method, while using compressor energy efficiently. Furthermore, when the pipes needed to be emptied, a very high flow rate was required and the Type 8750 was also able to achieve this.

Due to the compact nature of the Bürkert flow rate controller it is simple to install in-line and can be easily integrated into the existing process control infrastructure. From both a mechanical and an electrical perspective this innovative product is designed for simplicity, accuracy and reliability.

A video has been produced which features Thomas Sattler, Team Coach Application Management Gas, a product expert describing how the Type 8750 offers end-users a cost effective solution that will minimise damage to the process materials and increase productivity by providing better flow control and management of the pneumatic compressors. It also highlights how it improves the energy efficiency of the manufacturing process and helps system integrators to provide an effective solution that is straightforward to install and reliably delivers reduced operating and maintenance costs.

Image Captions:

Image 1: Pneumatic conveying provides an effective, enclosed transport system for manufacturing, handling and processing applications where small particles are required.

Image 2: The Type 8750 flow rate controller from Bürkert delivers a closed loop control, using pressure sensors and a control valve, all combined into a single unit.

About BÜRKERT

Bürkert Fluid Control Systems is one of the leading manufacturers of control and measuring systems for fluids and gases. The products have a wide variety of applications and are used by breweries and laboratories as well as in medical engineering and space technology. The company employs over 2,500 people and has a comprehensive network of branches in 36 countries world-wide.

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