Chemical Processing Technologies



J-Tec Material Handling creates solutions for storing, handling, dosing and processing dry and liquid ingredients.

Solutions can extend from optimizing components, to plant upgrades... to turnkey processing lines.



Key challenges in chemical processing

CHALLENGES

PNEUMATIC CONVEYING

The transportation of solids can be realized by using either **dilute** or **dense phase** conveying principles, depending on process requirements and layout or economical considerations.

Dense Phase Conveying

Dense phase conveying takes place at low velocities and higher mass load ratios compared to dilute phase. Dense phase conveyors can be designed to operate as pressurized as well as vacuum systems.

Dilute Phase Conveying

Depending on the technique and the components used, we can distinguish two types of dilute phase pneumatic conveying:

- Continuous dilute phase conveying
- Discontinuous dilute phase conveying

Both over- and underpressure techniques can be applied in continuous and discontinuous conveying systems.

LIQUIDS & POWDERS

The dissolving of solids into liquids can be a critical process step.

Often problems arise due to the nature of certain products. It is for example possible that toxic gasses appear when liquids are mixed with solids, or powders need to be grinded before it is even possible dissolving or emulsifying them.

Our engineers have tackled many challenges and were therefore able to concentrate a lot of knowledge within the organization of J-Tec.

Types of mixing:

- Mixing in a vessel
- Mixing in circulation loop
- Vacuum mixing
- Inline mixing



SOLUTIONS



Conveying



Overflow systems



Product receivers



Pressure vessel



Inline mixing



Mixing tank



Vacuum mixing



Toxic substances

CHALLENGES

AUTOMATION

J-Tec has invested seriously in a team of highly qualified in-house IT engineers in order to strengthen its position in the materials and process business.

Return on experience is maximized and maintained. Clients benefit from proven solutions in recipe management, in tracking and traceability, and maybe above all, in continuity for smooth integration of future plant modifications to maintain that lean and modular concept.

SCOPE:

- Electronic hardware components
- Software for different brands of PLC
- Man-machine interfaces and supervisory control applications configured in different SCADA systems
- Communication with the plant control systems

ATEX - NFPA

Explosions can occur in case of a simultaneous presence of oxygen, combustible material in the right concentration and a sufficient strong ignition source. The approach of avoiding explosions is based on the elimination of one of these three legs of the explosion triangle.

- The best practice is avoiding that an explosive atmosphere is created. Amongst other strategies, the elimination of oxygen is the most preferred. An example of this is a transport under inert conditions with a closed loop nitrogen recycling.
- When explosive atmospheres are inevitable, preventing ignition sources is the recommended approach. A judicious selection of materials, process equipment and procedures is very important.

If after applying the above, there still is an explosion risk, protective systems must be used in order to limit the effect of an explosion. For example rupture disks, suppression systems, J-Tec Material Handing can help employers to classify areas where hazardous explosive atmospheres may occur into zones. On the right an example of ATEX zoning.

SOLUTIONS









Control - panel

Electrical - panel

ICT applications



Close loop nitrogen







ATEX zoning (a typical dust application)



J-Tec testing facilities











TEST ROOM

The characteristics of bulk materials are often dependent on a large number of parameters. Because it can be difficult to predict how a certain product will behave, it is often necessary to support the theory by running tests or doing research in the lab. J-Tec's test facilities offer a multitude of research possibilities for your products. The main goal of these facilities is to offer you the opportunity to simulate real-life situations to make sure that new installations and new processes will function as planned. Our R&D facilities, which are located at our headquarters in Kapellen, are at your disposal in order to find the most appropriate solutions to your requirements. With J-Tec you can be sure that your product will be handled in the best way possible, and that your investment will pay off.

TESTING POSSIBILITIES



PNEUMATIC CONVEYING

Can be tested over a distance of up to 450 meters. To achieve this we have at your disposal a compressor group consisting of a compressor, an adsorption dryer, and a pressure vessel. In case of underpressure conveying we are able to offer vacuum pumps.





Other possibilities

- Dosing
- Dedusting
- Extraction
- Discharging
- Storage
- Mixing (liquids & solids)
- Sieving



J-TEC MATERIAL HANDLING

A global solution for the Chemical industry



J-Tec Material Handling, the Process Technology business unit of Katoen Natie, offers almost 50 years of experience in dosing, feeding, processing and storage of liquid and solid ingredients, around the globe.

MATERIAL HANDLING

Specialist consulting and advice on key processes like granulation, blending, sieving or upgrading your existing plant by integrating new techniques into it: our people know how to find the most effective solution.

Whether your project is building a new greenfield site, turnkey, or an extension or the upgrade of your current facility: J-Tec Material Handling has the competence and experience to be your trusted partner.

Contact

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