Drum Dryers

Background

Radioactive waste shall be without free liquid for storage or disposal to avoid chemical reactions and corrosion. A drum dryer removes moisture from solid waste, such as sludges. The drum dryer was especially developed for the conditioning of waste contained in drums, but also other special containers.

Description

Westinghouse has designed drum dryers that can be delivered as standard 1-, 2-, 12- and 32-drum dryers. Each dryer consists of a drying chamber, air circulation system, condensation system, internal drum-handling system and safety devices, such as a gas-measuring system and an inertization system. By default, the solid waste is dried inside 160-liter or 200-liter drums, but other geometries are also possible. The 1, 2, 12 or 32 drums are loaded into the drying chamber using a manual or automatically operated handling device. The drums are heated by hot air that is provided by an air recirculation system. The airflow inside the drying chamber is optimized with regard to uniform air distribution and heating of the drums and their waste content.

During the drying process, the humidity is condensed inside the condensation system. The end of the drying process is determined automatically by a condensate measuring system. Besides solid waste, sludge and other wet solid waste can be dried. Because of the high tightness of the drying chamber and sub-pressure, no aerosols can exhaust to the environment. The gas-measuring and inertization systems prevent the accumulation of flammable gases. The drum dryer can be connected to a drum-handling system (drum conveyors, automated capping stations), if remote drum handling is required.

The dryer is operated from a separate control panel. System control is provided by a user-programmable logic controller. The entire drying process is permanently controlled and monitored in fully automatic operation. The floating contacts for process signals and centralized fault indications are available on a terminal strip in the control cubicle. A multi-channel recorder automatically records process variables.

Multi-drum dryer

Benefits

Westinghouse drum dryers offer the following benefits:

- Drying of waste in 160-liter or 200-liter drums with hot air (100 - 160 C)
- End of drying determined by condensation rate with condensate collection tank
- Sub-pressure inside drying chamber to prevent leakage
- Skid unit and drying chamber unit
- Gas measuring and inertization system
- Optional roller conveyor to load drums

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Experience

Westinghouse recently delivered a 32-drum dryer as an independent system in Austria, and all other dryer models to six different locations in China as a part of larger waste treatment centers.

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