Littleford Technifax

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LIQUIDS-SOLIDS FILTER SYSTEM

New Filtorr® Advances Single Vessel Processing Technology

Q. What Is It?

A. Littleford Bros., Inc. has developed a totally new concept in processing technology—the incorporation of an effective liquids-solids separator, the "Filtorr®", into their highly efficient FM-FKM Series mixers and DVT Polyphase® reactor-dryers. The "Filtorr" is a liquids-solids filter system consisting of either a leaf, plate, candle, or other filter design plus support equipment, all engineered to handle the particle size and compressibility of the specific filter cake being processed.

Q. What Does It Do?

A. The "Filtorr" system enables the withdrawal of liquids from the mixer/reactor while retaining the soilds within the vessel.

The "Filtorr" device is capable of being mounted within the mixer/reactor in such a manner so as not to interfere with the efficient mix action of the plows and chopper. In fact, this mix action in conjunction with the plow design, the design of the "Filtorr", and the designed clearance between the plows and "Filtorr" serves to present new material to the filter element for exchange with previously presented material.

Q. What Special Advantages Does It Offer?

A. The efficiency of the "Filtorr" is such that only a relatively small filter area is required compared to conventional filtration processes. The internal mounting capability of the "Filtorr" device allows the consecutive processing steps of mixing, reacting, filtering, washing, and drying—all to be carried out in a single process vessel instead of the several process vessels heretofore required.

The "Filtorr" system achieves liquids-solids separation with unexpected efficiency on a wide spectrum of materials such as solvent and water extractions, precipitation reactions, solution polymerization reactions, particulate washings, and concentration of aqueous and non-aqueous suspensions of a mean particle size down to 40 microns. Suspensions of <40 microns can be concentrated (and ultimately dried) by first utilizing the efficient mix action to pre-treat the suspension with a suitable flocculent in order to aggregate the particles.

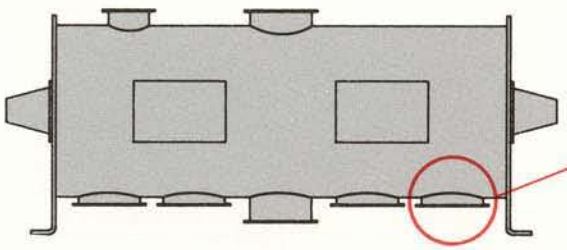
Q. How Does It Function?

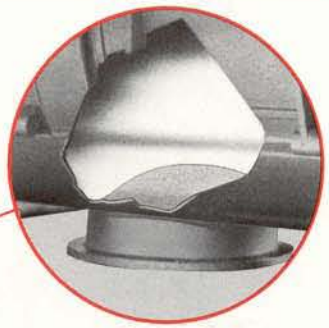
A. The design, construction, and location of the "Filtorr" is specified in view of the particle size and the chemical and physical nature of the material being processed. In applications involving the "Filtorr", the highly efficient Littleford plow designs must be modified to properly service the "Filtorr" device without sacrificing mixing efficiency. Thus, the "Filtorr" plows may be designed to present material to the "Filtorr" media, designed to actually compress material onto the "Filtorr" media, or designed to scrape already concentrated material off the "Filtorr" media while at the same time presenting new material to the media.

In applications where material is actively removed from the "Filtorr" media by design of the plows, the clearance between the plows and the surface of the media must be kept to a minimum. This is critical in order to physically break up and remove the already concentrated filter cake and compressed "skin" from the surface of the media. In such applications, an intermittent overpressure of gas, a "backwash", is used to "pop" off the remaining thin layer of skin not removed by the close clearance scraping action of the plows.

Typical Arrangement of Filtorr* Separators on Batch Mixer

This illustration shows possible locations of Filtorr units. Number of units and locations may vary depending upon mixer capacity and specific customer applications and/or requirements.





Filtorr separator is mounted contour to the shape of the mixer shell allowing minimum clearance between the mixing plows and the Filtorr media.

*Patent pending.

Q. What Variations Does It Offer?

A. The proper location of the "Filtorr" device is critical to achieve efficient filtration and mixing. Therefore, specific application testing is required to determine optimum location. The "Filtorr" can be operated under conditions of internal vessel pressure or under vacuum conditions at the filter depending upon the individual process requirements. The type of "Filtorr" media used for a given application is determined by the physical and chemical nature of the material being processed.

Q. How Is It Serviced?

A. Normally, the only routine service required for the "Filtorr" is cleaning and, if necessary, replacement of the filter media. The "Filtorr" device is currently designed to be removed for servicing from the inside of the process vessel via the access clean out doors.

Q. What Does Littleford Supply?

A. The "Filtorr" system is now available as three separate components:
- —The "Filtorr" device (media available separately)
- —The "Filtorr" backwash pneumatic system and the electric pulse system (electrics either separate or integrated with unit controls)
- —The vacuum pump system (may or may not be integrated with a vacuum system for the mixer/reactor)

Q. What Must The Customer Supply?

A. The customer is only asked to supply the necessary utilities required for the operation of the "Filtorr", i.e.:
1. Electric power to operate a vacuum pump and control center.
2. Clean, dry source of compressed air or suitable inert gas to backwash the "Filtorr".

All other items required for the operation of the "Filtorr" can be supplied by either the customer or Littleford.

Dimensions, weights, production capacities and other specifics cited in this literature are illustrative only and may be subject to many variables. The only warranty applicable is our standard written warranty. We make no other warranty, expressed or implied.

Littleford Day

Where Processing Ideas Become Reality

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