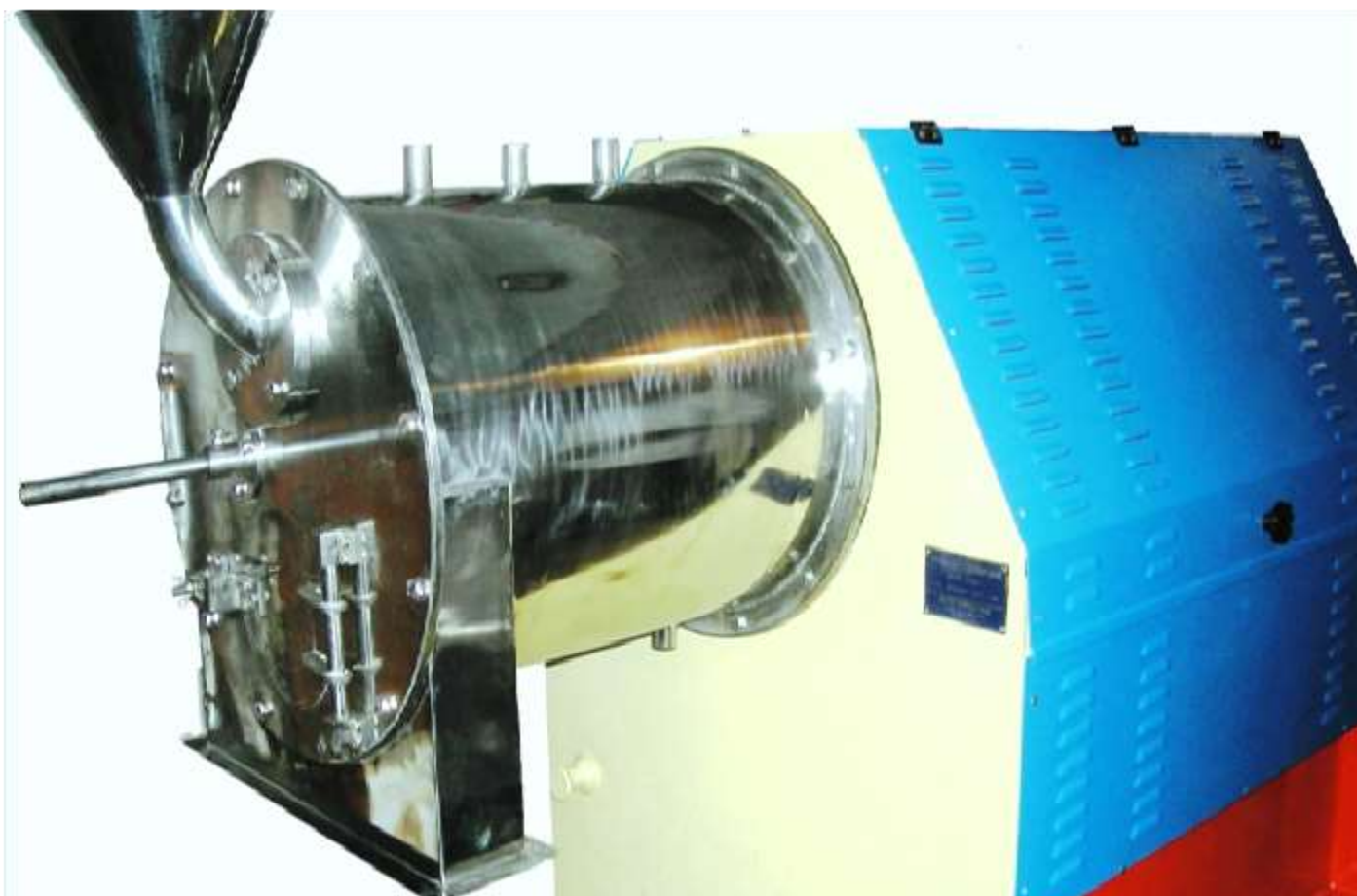




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CONTINUOUS PUSHER CENTRIFUGE

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INTRODUCTION

A **pusher centrifuge** is a type of filtration technique that offers continuous operation to de-water and wash materials such as relatively in-compressible feed solids, free-draining crystalline, polymers and fibrous substances.

ADVANTAGES OF CONTINUOUS CENTRIFUGE

- ❖ **Minimum Floor Space Required**
- ❖ **Very Low Residual Moisture in product**
- ❖ **Very Good Solids Recovery**
- ❖ **Unmatched Wash Efficiency**
- ❖ **Energy Consumption Very Low**
- ❖ **Low Maintenance Costs**

APPLICATIONS

The pusher centrifuge has proved to be an excellent choice to dewater concentrated slurry of free draining particles. Pushers, in particular, offer high throughput in a continuous fashion. Low moisture and high purity in discharged cake has made the pusher centrifuge an excellent choice for solid-liquid separation. The average particle size of the solids must be at least 0.1mm

TYPICAL PRODUCTS

- **Inorganics Like**
 - ✓ Ammonium sulfate
 - ✓ Soda ash
 - ✓ Potash
 - ✓ Sodium bicarbonate
 - ✓ Sulfates and sulfides
 - ✓ Borax
 - ✓ Borates
 - ✓ Chlorates and
 - ✓ Chromates.

➤ **Many organic intermediates such as**

- ✓ Paraxylene
- ✓ Adipic acid
- ✓ Oxalic acid
- ✓ Caprolactam
- ✓ Nitrocellulose
- ✓ Carboxymethylcellulose, etc.

➤ **In food processing**

- ✓ Monosodium glutamate
- ✓ Salt
- ✓ Lysine and
- ✓ Saccharin.

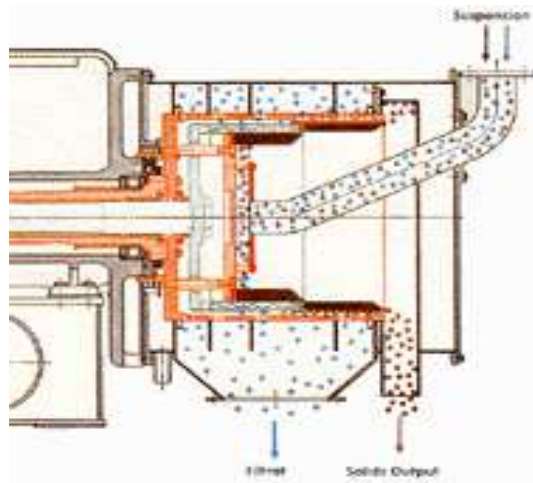
➤ **Plastics applications include**

- ✓ PVC
- ✓ Polyethylene
- ✓ Polypropylene
- ✓ A number of resins classified under various trade names.

➤ **Ore Beneficiation**

- ✓ Rock Phosphate [$\text{Ca}_3(\text{PO}_4)_2$]
- ✓ Gypsum [$\text{CaSO}_4 \cdot 7\text{H}_2\text{O}$]
- ✓ Coal, etc

WORKING OF CONTINUOUS PUSHER CENTRIFUGE



The pusher centrifuge is continuously operating filtration equipment. It consists of two rotating baskets as outer basket and inner basket and which are fitted with axially slotted sieves. Both the baskets together rotate at very high speed in order to induce desired centrifugal force.

The inner stage basket reciprocates axially inside the outer basket while both are rotating at same speed.

The slurry consists of solid and liquid mixture to be separated is fed continuously in to the inner basket through the fixed feed pipe. The rotating feed distributor spreads the slurry evenly on the sieves of the inner basket. The major part of the liquid passes through the sieves because of centrifugal force developed owing to the high speed rotation of the baskets and the solids cake is formed

As the inner basket reciprocates axially, the solids cake thus formed is pushed across the slotted sieves, due to the reciprocating motion of the inner basket, onto the outer stage basket sieves.

The capillary and inter granular moisture are removed due to cake opening during the transition from the inner stage to the larger diameter outer stage. Finally, the partially dried solids leave the centrifuge through a discharge casing.



OUR PUSHER CENTRIFUGES ARE PROVIDED WITH RESISTANCE WELDED WEDGE WIRE SCREENS

Welded Wedge Wire Screens score over screens made under 'loop' system or 'Resistance' Welding on many counts. It has longer operational life. Additionally, continuous slots of welded wedge wire screens give greater screening area resulting in increased fast filtration.

Wedge Wire Screens have the following advantages

- ✓ Free fall opening
- ✓ Continuous slots
- ✓ Maximum flow area
- ✓ Greater strength
- ✓ Longest Operational Life
- ✓ High efficiency in screening operation



MATERIAL OF CONSTRUCTION:

Pusher centrifuges shall be made in a variety of series 300 stainless steels, Alloy 20 stainless steel and Hastelloy

FEATURES AND NEW DEVELOPMENTS:

Our pusher centrifuge has many design features that offer unique processing capabilities for your requirements.

THESE FEATURES AND MODIFICATIONS INCLUDE:

Push Hesitation: Most of the solids loss to filtrate occurs in the swept area. These particles pass through the wedge slots before the gap is bridged. Push hesitation is a modification that holds the pusher plate in the back stroke, allowing the cake to build up on itself. The cake acts as the filtering media and has an increased efficiency of capturing the finer solids.

Although this modification reduces capacity, it improves the solids capture efficiency and makes the pusher applicable to smaller particles.

PROCESS HOUSING:

The process housing is designed to allow the removal of the rotating assembly without disassembling the basket and pusher from the shafting assembly.

INTEGRAL HYDRAULIC SYSTEM:

The hydraulic control is automatic and self-contained. It requires no external timers or mechanical controls.

BEARINGS:

The rotating assembly is supported by two sets of widely spaced bearings, with the basket and screen assembly as a cantilever load.

SEALS:

Options are available to isolate process fluids from atmosphere, using non-contacting inert gas purged labyrinth seal. A variety of pusher shaft seals exist to prevent cross contamination between the hydraulic and process ends.

PRE-DRAIN FUNNEL:

The pre-drain funnel removes a portion of the mother liquor through a perforated surface. This feature helps pre-concentrate the feed, which is especially important in drainage-limited applications.

SCALE-UP:

In general, scale-up is based upon providing the amount of screen area, centrifugal force, and residence time to produce the desired cake throughput and quality. In most cases, it is most reliable to scale-up from pilot equipment because some of the factors influencing performance are difficult to define precisely, such as the effective friction factor of the cake against the screen. Hence, previous experience becomes critical in predicting the performance of pushers.