HORIZONTAL BELT FILTERS

It pays to talk to a specialist
DELKOR is an industry specialist in solid/liquid separation and mineral processing applications for the mineral, chemical and industrial markets, offering flotation, sedimentation, filtration, screening, and gravity separation systems. DELKOR’s services range from test work, process optimization and flowsheet design, to installation, commissioning and aftermarket support. DELKOR’s track record in solid/liquid separation and mineral processing applications stretches back to the seventies with more than 3,000 successful installations worldwide.

DELKOR Horizontal Belt Filters make use of most modern design capabilities and materials of construction to make it an efficient, reliable and cost effective solid/liquid separation unit able to withstand operating under the most arduous conditions. DELKOR’s continuous improvement approach has enabled to simplify design for easy operation, yet all the wearing parts remain easily accessible for routine maintenance purposes.

Over the last 40 years, DELKOR has led the way in innovation and implementation of world class technology and remains the supplier of the world’s largest individual machine. More than 950 units have been supplied worldwide for wide range of applications exceeding total filtration area of 37,500 m². Improved design and wealth of experience has helped achieve on-line reliability in excess of 99.8% in many plants.
DELKOR HORIZONTAL BELT FILTER FEATURES

FILTER FRAMES

They are manufactured in standard rolled and pressed metal sections. Materials are selected depending on the operating conditions and include:

- Mild steel, painted or otherwise protected
- A variety of stainless steels

Our large filters are typically site erected, with smaller units fully assembled in the workshop to save on installation time. All major components of the filter are test assembled and dismantled before dispatch to ensure easy assembly at site.

THE TRANSPORTER BELT

This belt supports the filter cloth and provides drainage channels and holes for filtrate removal. All DELKOR transporter belts have a carcass free center zone to ensure long life by preventing contact between the carcass and corrosive filtrates.

BELT WIDTH

All belts are specifically designed in a variety of thickness and grooving configurations depending on the application and filter geometry:

- 500 mm
- 800 mm
- 1200 mm
- 1600 mm
- 2000 mm
- 2400 mm
- 2800 mm
- 3200 mm
- 4200 mm
- 4800 mm

RUBBER GRADES

There are different grades of rubber available for various duties. Depending on the application we select between:

- Natural Rubber
- SBR (HT or LT)
- EPDM
- Chlor-Butyl
- Neoprene

The grade of rubber, filter application and site conditions will normally determine the type of splice required. As a general guide:

- < 70°C - cold bonded
- > 70°C - hot bonded

CURBING

Rubber curbs are bonded or vulcanized to the edges of transporter belt to prevent the inadvertent spillage of feed material cake wash water. They also serve as vacuum seal.

Straight wall curbing was originally utilized on all sizes of filter. The rapid deterioration of this curbing due to stretching led to development of a more cost effective curbing by DELKOR in 1983. This major innovation, DELKOR Ripple curbing, provided superior vacuum sealing and life cycle and is utilized today by all manufacturers of belt filters in recognition of its unique qualities.
VACUUM BOX

DELKOR's vacuum box design ensures that it is suited for both the process conditions as well as the mechanical stresses found in the most extreme applications. Vacuum boxes are available in the following materials:

- A variety of stainless steels
- Glass reinforced plastic
- HDPE / PP

WEAR STRIP AND WEAR BELT

The concept of wear strips and wear belt for vacuum sealing was developed by DELKOR in 1976 and has since adopted by all major belt filter manufacturers around the world. Wear strips are made from highly wear resistant, low friction material and are attached to the vacuum box shoulders to locate loose wear belts.

Wear belts have a typical life of 12 months - but largely dependent on the specific application and maintenance practices employed. Replacement wear belts can be installed in less than one hour by utilizing the simple pneumatic system for lowering and raising the vacuum box in situ.

TRANSPORTER BELT SUPPORT

This can be effected in a variety of ways depending on the application of the filters.

- Heavy duty drying filters typically utilize a system of air boxes which direct a cushion of air to the underside of the belt.
- Light duty washing filters typically utilize a system of wear belt support stations similar to that used for vacuum sealing.
- Another proven system is that of utilizing a support slide manufactured from stainless steel or HDPE with a film of water to provide frictionless belt movement.
CAKE WASHING APPLICATIONS

High extraction efficiencies greater than 99.8% can be achieved when a flooded level of solution is maintained in the wash zone, allowing plug flow displacement. Efficient separation of wash zones from the filter table, sprades in the vacuum box and a patented slope on the filter. By ensuring that no forward leakage occurs, the client is assured of maximum liquor concentration and recovery.

APPLICATIONS

Drying of concentrates and tailings including:

- Iron Ore
- Coal
- Phosphate Rock
- Copper
- Lead
- Zinc
- Pyrite
- Ilmenite
- Zircon
- Rutile
- Silica Sand
- Tin
- Chromite
- Power Station Ash

CO-CURRENT WASHING

Co-current washing in several stages gives excellent washing efficiency when filtrate dilution is not critical and two to three displacement washes are common.

Typical Applications:

- Gold and silver recovers in cyanide processes
- Recovery of metals in solution followed by precipitation
- Washing of phosphate rock
- Recovery of manganese
- Cement copper
- Tailings washing as final stage after CCD

COUNTER-CURRENT WASHING

This method is used when down-stream treatment of filtrates requires minimum dilution such as solvent extraction, evaporation or when limited washwater is available. Both cake filtration and vacuum box zones can be effectively and easily divided to give optimum washing.

Typical Applications:

- Acid leached copper, cobalt and pyrites
- Washing nitrates
- Recovery of alumina from sintered mud
- Uranium recovery after acid or carbonate leaching
- Recovery of yellow cake
- Hemi- and di-hydrate calcium sulphate from phosphoric acid
- Soda ash
- Recovery of brine
- Cellulose pulp washing
- Vanadium and Tungsten recovery
- Sugar cane mud washing