

extend the application of the LW-380D in China's alcohol industry, where there has been a great need for energy-saving centrifuges which are not very expensive.

The total output of alcohol in the provinces of Jiangsu, Henan, Anhui and

Shandong accounts for 70% of that in the whole of China. Suzhou No. 2 Chemical Equipment Plant, which makes the LW-380D, has a good transport service to all these areas. It is said that the capacity in terms of cake or centrate of the

efficient LW-380D is equal to that of the WL-450 decanter centrifuge made by Jiangbei Machinery Plant in Sichuan - the firm which exhibited at the first AchemAsia in Beijing in October, 1989.

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LETTER FROM THE USSR

Developing knitted fabric filter media for liquid filtration

by Alex Yelshin

With a growing need for more effective filter media, knitted fabrics are showing great promise. Our correspondent reports.

The extension of filtration applications in industry in the USSR has led to an increase in the need for effective filter media for industry as well as for environmental protection.

Most regular filter cloths are manufactured by somewhat crude technology without taking into account the specific character of a slurry. Many filter cloths have been manufactured for more than 10 years and now they fail to satisfy the increasing demands of filtration processes.

Fibrous filter media, which have been used lately in liquid filtration cannot stand numerous regeneration cycles. However, knitted fabric filter media (FKF) are attracting increased attention nowadays. These filter media can be manufactured in different forms, for instance, in the form of cloth, hose or bag, and they may be cone-shaped or half-spherical etc. Cylindrical filter elements are produced without seams which makes them more durable and reliable.

The FKF media can be manufactured from synthetic materials, carbon, glass, metal and other fibres. The composition of different types of fibres may also vary.

It should be noted that there is experience of using the FKF media for gas filtration. Their application gives a high efficiency with good regeneration and low-hydraulic resistance.

We can give as an example the filter medium Beane Bag™ by Chatanooga Sewing and Sales Co, Inc. (CS and S Co.) (USA). The Beane Bag™ can be manufactured with a smooth surface or its fabric may be knitted with a pile surface on one side of the fabric which allows both improved control of particle size passing through the filter and resistance to 'blinding' and excessive caking.

In the USSR the Polytechnic Institute (Novopolotsk City) and Technological Institute of Light Industry (Vitebsk City) have been carrying out joint investigations into working out and manufacturing knitted fabric filter media for liquids. The filter media has been given the name VTILP.

The VTILP filter media are made from polyester fibre and in special cases from glass fibre, independently from CS and S Co. two types of VTILP filter media (with smooth surface and with pile surface on

one side) were developed and have been patented in the USSR.

The VTILP filter media knitted with a pile surface on one side of the fabric have the surface density 300-600g/m²; hydraulic resistance from 6 × 10⁷ to 1 × 10⁸ l/m and micron rating from 17 to 12.

However, more acceptable is FKF with a smooth surface. The VTILP filter media with smooth surface are manufactured with thicknesses from 0.4 to 4mm, hydraulic resistance for different types of



Fig 1. The VTILP filter medium structure.

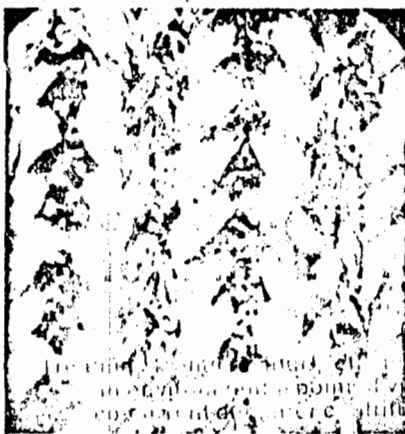


Fig 2. The initial deposition of cake particles on VTILP filter medium surface.

materials from 7 × 10⁷ to 3 × 10⁸ l/m and micron rating from 5 to 18.

The structure of the VTILP filter medium with smooth surface is shown in Fig 1, where a laser beam was used to illuminate from beneath.

The initial disposition of cake particles on the filter medium during filtration is shown in Fig 2.

The VTILP filter media give good data for filtration of biosuspensions, waste water and other slurries.

A comparison of some properties of the filter media VTILP with regular filter cloths 'Filterbelting' and 'Filterdiagonal' are shown below.

Soaking the filter media in water during four days gave the following hydraulic resistance, l/m:

VTILP medium before soaking 7.52 × 10⁷,
after - 7.46 × 10⁷;
'Filterbelting' before soaking 38.1 × 10⁷,
after - 40.5 × 10⁷.

Data on clogging of the filter media after multicycle filtration of slurry with average particles size of 5 micron, are given in Fig 3. Cake was removed from the medium surface after each filtration cycle with the help of a knife.

The experimental data show good properties of FKF filter media for liquids. In the current programme of investigation the recommendations for mass production of VTILP media and development of the construction of filters for liquid are to be given. The filters will be providing more effective application of the FKF filter medium.

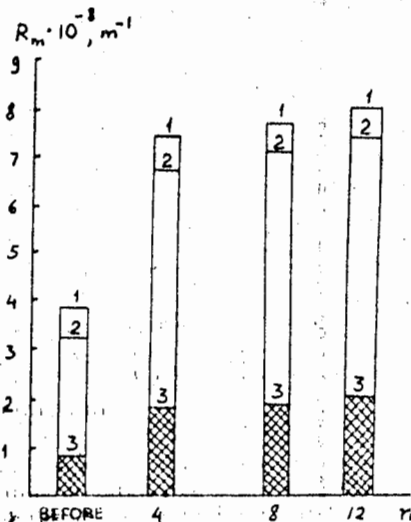


Fig 3. Nomogram of hydraulic resistance R_m l/m vs number of filtration cycles (n) for 1. 'Filterbelting'; 2. 'Filterdiagonal'; 3. VTILP.