

Latest developments in paper machine dryer fabrics

Widely known expert on paper drying discusses dryer felts, open-mesh fabrics and pocket ventilation.

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Although fabrics of very high permeability receive most publicity nowadays, and although the time may come when such fabrics become standard clothing, it is worth remembering that well over 80 per cent of all drying sections throughout the world are still clothed with conventional dryer felts of low permeability. Therefore, the dryer felt manufacturer must continue to develop and improve conventional felts as well as open-mesh fabrics.

Not only is there a trend towards the use of higher dryer surface temperatures, but also, as more machines are totally enclosed, there is a tendency for conditions of higher humidity in the dryer part. If, because of hooding a machine or for any other reason, the temperature of a dryer felt in service is increased 18°F. and its moisture content is increased only one per cent, the rate of degradation of the cotton of the felt will be increased five-fold.

When a dramatic reduction in dryer felt life occurs and the machine atmospheric conditions causing it cannot be corrected, then a dryer felt of different composition is required. Scapa Dryers, Ltd., has recently marketed a series of felts, made from a non-hydrolysable synthetic fiber, for use on positions of high humidity.

Dryer surface temperatures of 360°F. are now being employed. It cannot be expected that dryer felts made predominantly of cotton, or even of the usual type of synthetic fiber, will last for long at such high temperatures. One fiber that will withstand such severe conditions of service is the new Du Pont Nomex nylon. In addition to high strength, toughness, abrasion-resistance and hydrolysis-resistance, Nomex has outstanding resistance to very high temperatures. Scapa has supplied dryer felts made partly of Nomex and partly of high quality asbestos for operation on the most destructive dryer positions in the world. They are running satisfactorily, and some of them have already proved themselves economically worthwhile, even though the initial cost is high.

Other felt improvements

An examination of thousands of

used predominantly cotton dryer felts reveals about one-third of them have been degraded by traces of acid accumulating in the felts during service. Scapa has developed an anti-acid treatment which is proving successful in protecting the felt against the destructive effect of this acid. There is some evidence, too, that the same treatment gives a measure of protection to cotton against heat.

Scapa's twin roller clipper seam is now becoming well known. It has been developed to overcome the abrasive effect of the metal clips on the hinge cable when the clipper seam bends round the felt rolls. In the twin roller seam, the clips are of a special size and shape to take two hinge cables which lie side-by-side. These two cables are kept in rolling contact, and each set of clips is stationary with respect to one hinge wire. The Scapa twin roller seam is capable of outlasting the lives of the longest-running dryer felts and fabrics.

Eighteen years ago, Scapa Dryers introduced cotton dryer felts with synthetic edges to protect against oil damage. They have now developed a treatment, applicable to the edges of all types of dryer felts, which confers oil resistance to the edges.

According to tests carried out in a Finnish paper mill, this same treatment applied to an entire Scaperm open-mesh fabric keeps the fabric much cleaner than an untreated fabric when they are run on an after-coating position.

Open mesh fabrics

Open mesh dryer fabrics are now well-established. Scapa Dryers has supplied more than 1,800 of them from its Blackburn plant alone, and they are running on machines making all types of paper from condenser tissue to newsprint and sack kraft. The expected advantages obtainable from the use of open-mesh fabrics are: an economic service life; an increase in machine speed; a decrease in steam consumption; and an improved cross-machine moisture profile.

There are a few cases in which all of these advantages are claimed, yet more in which two advantages are ob-

tained. But there are numerous instances in which open-mesh fabrics are being run solely because of the extremely long life obtainable from them. It is becoming not uncommon to hear of Scaperm fabrics running on machines for 400 or 500 days and even longer.

Why it is that on some machines open-mesh fabrics give the advantages for which they were designed, and on others the sole advantage (albeit an important one) is a low cost per ton of paper?

In some cases it may be merely that the clothing of one or two positions out of a total of four, six or eight dryer positions on the machine is not sufficient to have a quantitatively noticeable effect. But if all or most of the positions being clothed with fabrics do not produce a potential increase in machine speed or a better moisture profile, then we must ask why.

Pocket ventilation

From the many paper-machine surveys carried out by Scapa engineers, it would appear that the atmospheric conditions in and around the paper machine are often not conducive to the production of the highest efficiency from the open-mesh fabrics. Open-mesh fabrics such as Scaperm of themselves pump air into and out of the dryer pockets, and if the air entering the pocket has a lower absolute humidity than that in the pocket, drying of the sheet in the draws is assisted. Similarly, if the air above the boundary layer accompanying the fabric as it contacts the sheet over the cylinder is unsaturated, a greater drying rate is achieved with a fabric than with a felt. But if these conditions are not met, the maximum advantages to be gained by using an open-mesh fabric will not be achieved.

Actually, a simple form of pocket ventilation system, such as that manufactured by Scapa Engineering, Ltd., which presents dry, warm air to the fabric passing from cylinder to felt roll will ensure that the air passing into the pocket will lower the humidity in the pocket and increase the evaporation rate.

The sheet flutter that has occurred when open-mesh fabrics are used appears to be confined mainly to first sections of machines making paper of newsprint or lighter weight at speeds in excess of 1,500 f.p.m. when the fabrics on the first sections have a

permeability in excess of 285 c.f.m./sq.ft. at one-half inch water gauge. Measurements have shown that the air turbulence which causes the sheet flutter is a function of the permeability of the fabric and not of the surface roughness of the fabric. In order to combat sheet flutter, Scapa makes a range of Scaperm fabrics of permeabilities ranging from more than 700 c.f.m. to less than 150 c.f.m. Again, measurements have shown that the air carrying capacities of felts or fabrics of permeabilities less than 150 c.f.m. are all equal. Hence, there is nothing to be gained in the production of fabrics of permeability less

than 150 c.f.m.

Why did Scapa choose to make their open-mesh Scaperms of multifilament yarns, resin-treated? Initially, Scapa made both monofilament and multifilament fabrics. Better results and greater versatility were obtained from the multifilament fabrics.

One important reason why multifilaments were chosen is the range of raw materials which can be used. A good illustration is the recent production of a Scaperm made wholly of Nomex multifilament yarns, treated with a resin capable of withstanding the most severe paper machine dryer section conditions.

Adjustable speed drives catalog

A new eight-page catalog covering the complete line of Ajosto-Spede eddy-current, air cooled adjustable speed drives and control systems—products of the Dynamatic division, Eaton Yale and Towne, Inc., is now available. Ajosto-Spede drives are available in three different configurations based on horsepower and speed capacities: models ACM-902-905 (1/2 through 15 hp), models ACM-906-914 (3 through 100 hp), models ACM-9155-9166 (75 through 300 hp). Each size is presented separately in the new literature with detailed dimensions and application data. Completing the catalog are cutaway illustrations of the drives, application stories plus details on Dynamic controllers, including the microelectronic controllers for Models ACM-902 through 905. Copies of the new catalog are available in response to company letterhead requests only. Write to Eaton Yale and Towne, Inc., 100 Erieview Plaza, Cleveland, Ohio 44114.

Infilco pressure filters

A new bulletin from Fuller Co., a subsidiary of General American Transportation Corp., describes the company's Infilco pressure filters for water filtration in industry, municipalities, and institutions. The four-page bulletin contains information on the factors that necessitate the filtering of water and the numerous applications for the pressure filters. Other sections of the bulletin describe the construction and operation of the filters, including detailed information on backwash procedures. Information is also given on the various tank sizes, underdrains, and filter media that are available. For a copy of bulletin N-460, write Fuller Co., P. O. Box 5033, Tucson, Ariz.

Chemicals for the Paper Industry

The latest edition of an annual bulletin, "Chemicals for the Paper Industry," is now available from Rohm and Haas Co., Philadelphia, Pa. Manufacture of plastics and chemicals. The four-page bulletin—which is illustrated with both color and black and white photographs—describes the properties and applications of a series of Rohm and Haas paper chemicals. These include Rhoplex acrylic emulsion paper coating binders, Acrycol, thickeners, Ultracel wet strength resins, Tamol dispersing agents, Lufax beater, deinking and drainage aid, Triton surfactants and Hyamine germicides. Copies of this latest edition of 1967 may be obtained from the textile and paper chemicals department, Rohm and Haas Co., Independence Mall West, Philadelphia, Pa. 19103.

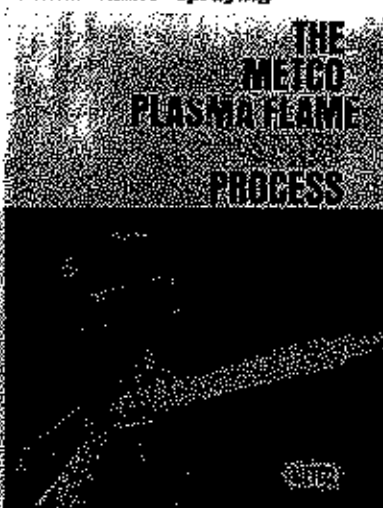
Beloit-Jones Vertiflex

The Jones division of the Beloit Corp. offers a two-page, two-color sales bulletin, SB-35-002, describing the Beloit-Jones Vertiflex, a vertical disk mill designed for size reduction and refining of dry or slurry fed material. The mill is gravity fed to simplify conveying equipment. There is handwheel adjustment of clearance between disks. Power ranges from 300 to 1000 hp. Disk is available in a variety of tooth and bar patterns. Features are described, together with dimensions and a cutaway drawing showing internal construction. Copies are available from: Beloit Corp., Jones division, product information department, Pittsfield, Mass. 01201.

NEW

LITERATURE

Plasma flame spraying



A new eight-page bulletin, available from Metco, Inc., describes plasma flame spraying and tells how the process applies coatings that increase wear resistance, stop heat oxidation and chemical attack, provide thermal barriers, and either insulate or conduct electricity. Plasma flame sprayed coatings are now being applied in original manufacture of over 500 critical jet engine parts. A chart in the new bulletin, 142F, shows eleven Metco coatings currently being used and describes their functions. Another chart outlines 23 typical parts on which plasma flame sprayed coatings are being applied. The why and how of plasma flame coatings, the means by which they're applied, and their further potential applications are discussed in the new Metco bulletin. The basic process itself is tersely and clearly outlined. A section describes how coating properties are precisely con-

trolled by the plasma flame spray system. Bulletin 142F also covers the fabrication of parts by spraying a refractory material on a mandrel, and lists several kinds of parts successfully produced by this technique. Copies of the bulletin "The Metco Plasma Flame Spray Process," are available from Metco, Inc., 1101 Prospect Avenue, Westbury, N. Y. 11590.

Eaton hydraulic desurger

A bulletin has been published on the recently introduced Eaton Hydraulic Desurger, a product of the Cleveland Worm and Gear division of Eaton Yale and Towne, Inc. The desurger is designed to reduce pulsation, vibration, noise, and hydraulic shock in fluid systems. The desurger bulletin describes construction and operation of this new product and illustrates with charts the performance of the desurger in reducing repetitive pumping pulsations. A series of nomographs are included to aid in determining proper desurger size for a variety of applications. Bulletin D-100 concludes with outline drawings and detailed specifications of all types of desurgers. Write to R. N. Butler, Cleveland Worm and Gear division, 3249 East 88th Street, Cleveland, Ohio 44104.

Switchboard instrumentation

General Electric has a new 36-page bulletin describing its precision-built line of switchboard instrumentation. Included in the bulletin are price tables, descriptions of optional features, ratings and calibrations, construction features, dimensions, specifications, a section on operation and special designs, technical information including wiring diagrams, and general application information. This bulletin is GEC-1507B. For free copies write: General Electric Co., Distribution Services, Building 6-205, 1 River Road, Schenectady, N. Y. 12305.