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SPIN MOULDED FILTERS -
A LATERAL FILTER MANUFACTURING TECHNIQUE

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This report deals with a new design/manufacturing technique which recognises and satisfies the demanding and conflicting aims presented above. Cellulose acetate is a thermoplastic and it follows that conventional filter rods can be modified by the application of heat and pressure even when fully hardened. The novel technique termed SPIN MOULDED FILTERS has been evolved to apply the concept to filter manufacture. Essentially it provides a realistic basis for moulding or re-shaping filter rods to give product advantages.

The technique is highly versatile and should offer competitively priced filters. From the outset it has been envisaged as a multi-role system which will allow the introduction of a variety of sophisticated filter designs into production even where individual applications are limited by small volume requirements.

The direction of further work is open to choice and should concentrate on design concepts which have been identified as having the maximum chance of commercial success.

It is recommended that Associates should be actively encouraged to investigate the possible application of Spin Moulded Filter (S.M.F.) designs in their own products and participate in the development of specific S.M.F. machine designs to allow these to be produced. Manufacturing licensing arrangements with a machinery supplier should be pursued as quickly as possible to allow Associates identifying a specific need to move quickly into production.

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INTRODUCTION

Interest in this technique arose from work on two projected filter designs which proved extremely difficult to manufacture by conventional longitudinal-flow rod making processes. The filters were the H.E.X. or High-efficiency cross-flow filter and the carbon off-taste reduction filter (3). The former consisted of a filter-paper tube closed at one end and suspended in a hollow tube with an annulus between them which was sealed at the opposite end to the tube seal. The latter filter required that the particulate phase smoke was diverted past an active carbon bed without direct physical contact, thus reducing or preventing deterioration of the adsorption efficiency of the bed whilst allowing diffusion of the vapour phase components into the bed. In both cases the projected filter designs were elaborate and complicated and proved to be disadvantageous from the point of view of successful commercialisation.

The evolution of the Spin Moulded Filter technique arose from certain features of the H.E.X. prototype process. Once conceived the far wider potential application became apparent and during the course of investigations into the possibility of producing the specific designs for the above filters, a number of other design possibilities were identified and evaluated already. Two of these are the Dumbell Filter (4) and the Grooved Filter, which will be the subject of a forthcoming report. These filter designs and machinery for their manufacture are being moved towards early commercial application. In addition to the more complicated filter designs being considered certain types of end patterns can be produced on filters to give visual attractiveness and impact to the filters.

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