Canadians plot Textile Revolution

When man first took up fibre spinning he based his efforts on the utilization of surface cohesion properties inherent in natural staple fibres. The fibres cling together when brought into close contact, first in the form of a continuous staple fibre strand. This is formed thereafter into a spun yarn by subjecting the strand to torque to impart and retain a true twist. This prevents interfibre slippage and provides the needed strength to the yarn to be suitable for subsequent weaving or knitting into a fabric.

Despite considerable technological improvements of spinning techniques, the basic principle of all conventional staple fibre systems has remained unchanged during the last 3,000 years. Ring spinning, the primary means in use today, is restricted by rotational speed limitations and has about reached the stage where further meaningful technological improvements are impossible.

With a modern spinning and weaving mill now involving an estimated $250,000 of capital investment per employed worker, conventional ring spinning has been described as too complex and too labor and capital intensive. Similarly in the case of synthetic fibres the cost of conversion of a polymer resin into man-made staple fibres and subsequent conversion of the latter by conventional processes into spun yarns far exceeds the basic raw material cost. This feature is even more pronounced in the manufacture of fine man-made multifilaments and their conversion into texturized yarns to incorporate the most desirable characteristics of spun yarns.

The world textile industry is thus seen to be ripe for the introduction of new principles in spun yarn technology. A Montreal-based company, whose research has been supported since mid-1964 to the tune of $700,000 in funds from the National Research Council of Canada's Industrial Research Assistance Program (IRAP), confidently proclaims to have done just that after more than 15 years of research and development.

The Bobtex Corporation of Montreal is the developer of the Bobtex Integrated Composite Spinning (ICS) process. The ICS process is based primarily upon the adhesion principle. The Bobtex machine directs two continuous feeds of loose fibre (natural or man-made) alongside of a thin stream of a melted polymer resin. The fibres are continuously superimposed and condensed by a novel highspeed twist-imparting technique into a composite staple fibre-polymer resin spun yarn. This yarn, which in appearance and performance resembles conventional spun yarns, has been christened "Bobyarn".

The great economic and technological advantages of the Bobtex process is that it is capable of operating within a linear output speed of 500 to 1,000 feet per minute whereas conventional ring spinning speeds are in the range of 20 to 40 feet per minute. The Bobtex process, according to the company, also saves an estimated 50% or more on factory floor space since it eliminates the drawing, roving and ring spinning operations, and possibly even carding. Additionally, 50 per cent of a Bobtex yarn comprises a polymer resin in its lowest cost form, a substantial raw material and direct labor cost saving.

Bobtex developers claim that staple fibres of all kinds and sizes, including asbestos and the newer fine fibres which cannot generally be spun by normal methods, can be successfully processed on ICS machines. Although work so far has been with fibres in the cotton staple range, it is claimed that fibres of all lengths can be handled successfully. Also usable are the thermoplastic synthetic polymers of all types now available, including particularly the nylons, polyesters and the polyolefins.

Main emphasis to date has been on the production of yarns for industrial fabrics, household textiles, furnishings and carpet backings since at this early stage, the yarns produced are not within the finer count ranges normally used in wearing apparel, and are generally somewhat less flexible than conventional spun yarns. Future development of process techniques and of more refined machinery is expected to remedy this situation.

The Bobkowicz family is shown with the first model of the Bobtex Spinomat. It was built and operated for a short time in the basement of the Emilian Bobkowicz home in Westmount, Quebec. From left, Emilian Bobkowicz; his wife, Stephania; daughter Margaret and son, Andrew. ● La famille Bobkowicz et la première machine Spinomat de Bobtex. Cette machine a été construite et essayée dans le sous-sol de la maison de Emilian Bobkowicz à Westmount, au Québec. De gauche à droite: Emilian Bobkowicz, son épouse Stephania, sa fille Margaret et son fils Andrew.