

Case story

Smoother control of winding profiles **speed up yarn roving** production in Bangladesh

Spinning mills in Bangladesh are now winding 3km of yarn with perfect tension and minimum breakages, having replaced with a smoother Danfoss speed control solution, the unreliable two-step speed solution which saw frequent yarn breakages as the bobbin diameter grew and yarn tension increased.

Textile spinning was one of the first applications which sponsored the development of early ac variable speed drives and yet even today, aspects of the process still can cause problems and subsequent downtime. Particularly problematical in ring-frame roving machines, where raw natural fibre (roving) is spun into a yarn, is the high speed winding of the spun fibre onto bobbins at 20,000 rpm, since the bobbin diameter grows rapidly, leading to fibre breakage if the bobbin speed is poorly controlled.

Problem solved

In India, Danfoss, along with partners Madona Enterprise in Bangladesh, have resolved the problem with the application of VLT® AutomationDrive and the VLT® Motion Control Option MCO 305.

Otto Spinning Mills and Pahartali Textile Mills in Bangladesh have both adopted the new system and are enjoying improved flexibility and production on their machines.

Simple programming

The VLT® Motion Control Option MCO305 can be programmed with 8 speed steps and individual ramp speeds for each step. The bobbin diameter is monitored by a proximity sensor and the bobbin speed controlled to maintain the correct peripheral winding speed right through until the bobbin is full and is removed, or 'doffed'. The front roller diameter can be set for the display of the actual length wound and there is no need to change the MCO305 settings each time the speed profile is changed. The speed profile and other machine parameters are stored within the MCO so that the machine can restart from the correct position in the event there has been a stoppage for some outside reason. Once the bobbins are full, the drive signals for 'auto doffing' and drops to low speed for the full bobbins to be replaced with empty ones.

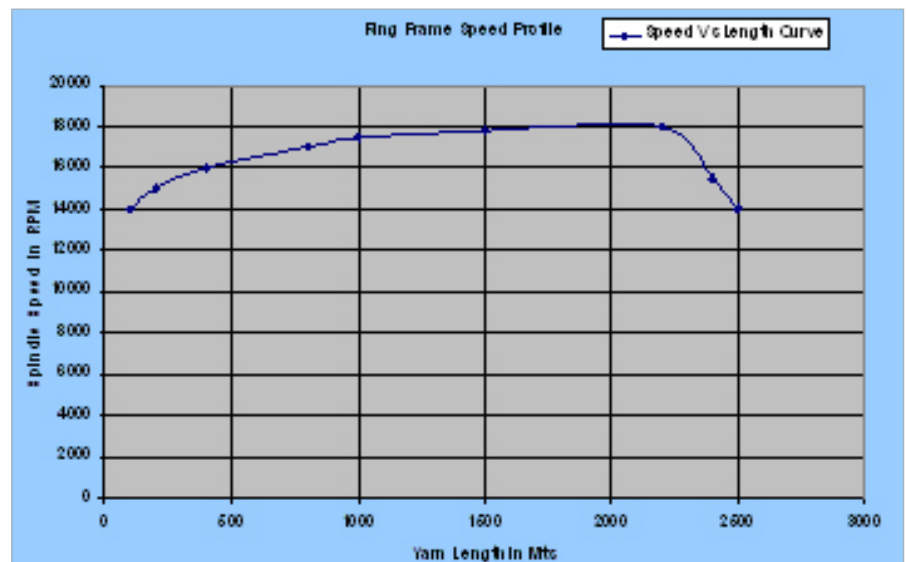
3000m**of yarn****spun at 20,000 rpm
without breakage**

Highly programmable

Using the AutomationDrive's local control panel (LCP) which can also be mounted remotely, the operator can programme and control the speed profiles in terms of speed vs length for each step change in speed. In addition, a substantial amount of valuable production information is available on-screen that wasn't previously available with the older mechanical control system:

- Production (lbs) per hour
- Production per spindle per doff kg/m²
- Total production per spindle
- Production per 8hrs
- Production per day
- Number of doffs
- Traverse / inch
- Actual yarn length
- Cops length in metres per doff
- Delivery speed
- Front roller speed (rpm)
- Number of bobbins
- Bobbins % running
- Running hours
- Stoppage hours
- Running shift

With the new Danfoss control system, Both Otto Spinning Mills and Pahalati Textile Mills are enjoying greater machine flexibility, improved production and are finding the production information invaluable and have adopted the Danfoss MCO solution for additional machines.



A typical length/speed profile

VLT® Motion Control Option MCO 305

The speed/length profile is programmed using the VLT® Motion Control Option MCO 305. This is a free programmable Motion Controller for VLT® AutomationDrive FC301 and 302; that adds functionality and flexibility to applications. The VLT® Motion Control Option MCO 305 is user-friendly, enabling set-up of all parameters via the VLT® AutomationDrive Local Control Panel or via the VLT® set-up software MCT10.

Conformal coating

The VLT® Motion Control Option MCO 305 is available with and without conformal coating.

Option card or built-in

The option can be supplied either as an option card for field installation or as a built-in option in all VLT® AutomationDrives. MCO 305 can be delivered with a pre-installed customer-defined application program.

Technical features of MCO 305

- Covers the entire series of VLT® AutomationDrive
- Built-in option preserves the IP/NEMA rating
- Control and status signals via I/O or fieldbus. Fieldbus requires an additional option card
- Access to VLT® and option parameters via fieldbus or the VLT® AutomationDrive control panel

- Improved encoder resolution thanks to quadrature signals
- Test run, PID optimising
- Restoring of factory settings
- VLT® mode, open loop speed control for emergency VLT® operation



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