

# *Business Incubation Facility to Textile Entrepreneurs*

CIRCOT leaflet:

74/BPD/2013

## **Computerised Fabric Sample Preparation Machines**



**ZTM-BPD**  
**CIRCOT**  
INNOVATE INCUBATE



Central Institute for Research on Cotton Technology, Adenwala Road, Matunga, Mumbai 400 019



## ***I**ntroduction*

*The Indian textiles, renowned for their fineness and captivating colours for ages have attracted connoisseurs, from all parts of the world. The textiles of India bear the imprint of the fine craftsmanship of the Indian weaver. The skill of weaving with deft fingers, drawing patterns and creating designs, is an art which has been handed down through generations from father to son, from time immemorial. These finest fabrics woven from yarns of superior finish are now being manufactured more and more on powerlooms and with the help of Computer Aided Designs.*

*Textile designing is a technical process of making designs in surface and structure of textiles. The textile designing process involves following basic activities.*

- Conceptualizing new and innovative designs*
- Making sets of design samples*
- Carrying on experiments with colour, fabric & texture*
- Designing fabrics according to the emerging fashion trends*

*Traditionally design samples are made using handlooms and it involves lot of time and labour. However today computerised sample preparation machines are available which does the work very fast and gives freedom to textile designer to experiment with various designs in a short time.*



## **Business incubation facility to textile entrepreneurs**

Business Incubation is an enterprise development and protective system against unpredictable and irregular shocks from the economic environment with facilities for factory and office spaces, secretariat, fund sourcing mechanism, production plant/machine/equipment, utilities and storage/warehouse provided at a subsidized rate for weak and vulnerable potential and existing entrepreneurs for a specific period of time in order to attain maturity to stand on their own in a competitive business environment.

Business Planning and Development Unit, a business incubator at CIRCOT offers various incubation facilities to budding entrepreneurs and one among that facility is the computerised fabric sample preparation machines. Computerised fabric sample preparation machines consist of single end sizing machine, warping machine and sample weaving machine. It is used in our research for making demonstration and test samples of fabrics.

Woven fabric from small quantities of cotton yarn, of sufficient length permits the measurement of physical properties in addition to providing a sample to allow the cloth to be examined for imperfections before and after dyeing, as well as measurements of colour. The weaving system is the final part of an integrated system to provide yarn and fabric for testing. For all types of fibres even for cotton varieties/hybrids under development sample fabrics can be made and tested for their suitability before release. This facility will also be useful in varietal development programmes of private and public research institutions.

The computerised sample loom facilitates easy creation of virtually all types of fabric weave and design, helps simulate the created weave/design into the virtual fabric in different colour combinations long before the actual fabric is manufactured. If the designer is satisfied with his virtual creation then the software again provides the required parameters in various formats as per his need to weave the created design into actual fabric form. The fabric produced from this loom is of 1.5 sq. metre (length 3.0 metre and width 0.5 metre) is sufficient enough to visualize the design and to carryout physical and chemical testing.



BPD has installed the Computerised sample weaving machine in Mumbai, which will speed up the production of small scale fabric samples, using up to 30 times less material than a conventional loom. The loom is customised to work with all types of fibres not typically possible in conventional weaving machines, operating at a tenth of the speed of a conventional loom, it also has a slow beating action to reduce friction on the yarn. Use of these machines will reduce the quantity of raw material required for



sample production and can produce samples of 20 inches wide by three metres long, with low wastage of expensive yarns.

Sample weaving practiced on conventional loom takes about 20 to 40 kg. of yarn to produce fabric. In the present loom this can be achieved with as little as half kg. of yarn depending on the yarn type and the weave and its constructions. The loom can be customised to work with all type of fibres that are not made for weaving. We are currently weaving Banana pseudostem fibre fabrics suitable for table linen and curtains. The machine operates slowly at 40 picks per minute, a tenth of the speed of a conventional loom and also has a slow beating action. A single rapier is used for yarn transfer and it is timed to pass through the shed opening at its widest point, thereby reducing friction on the yarn.



### Single end sizing machine:

Single end sizing machine is a convenient and easy to operate and can carry out sizing with one bobbin, providing sized warps for the sampling loom. The temperature and speed of sizing is electrically controlled.

#### **Technical features:**



**Sizing Tank:** Electrical-heating with electronic controls and tank is detachable for cleaning

**Yarn Breaks:** Equipped with yarn-break detecting device, machine stops when yarn breaks

**Drying:** Electronically controlled. Electrically-heated drying through hot air

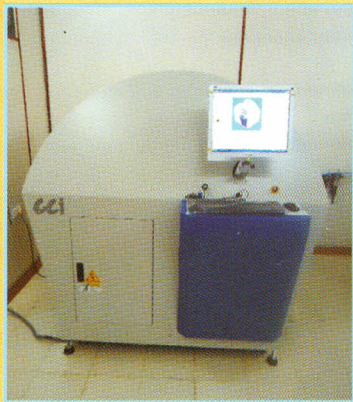
**Speed:** Speed could be adjusted through electronic controls

**Working range:** All type of yarn can be sized

### Sample warping machine:

Sample warping machine is specially designed for the sampling loom and can produce warp beams for short run with fixed length and different colours to work with loom. It is again computerized using an independent PC based controller with built-in designs editing software which allows ease of operation. The yarn guiding device is controlled by computer. It places the warp precisely across the width of the warper to ensure it is wound correctly on its position on the drum. The warper stops and gives notification for colour change once each colour of warp on the beam is finished. This avoids unnecessary mistakes. The tension and speed during warping are adjustable so as to give the best quality warp beams.





**Technical features:**

**Working Width:** 20 inches maximum

**Warping Length:** 3.6m

**Colour Change:** Shifting movements controlled by computer. Colour changed manually through alerts from computer

**Yarn Breaks:** Equipped with yarn-break detecting device, machine stops when yarn breaks

**Designing:** Built-in design and editing software for design works

**Sample weaving machine:**

Sample weaving machine is a sampling tool for developing innovative products and has been proven through the actual working experiences of weavers. It is easy to operate and gives high efficiency. This machine produces high quality samples at low cost. Most importantly, with this machine sample preparation has been easier, this allows more trials which lead to the improvement in creativity.

Sample loom utilises additional separate motor controlled modules. The co-ordination of all movements are computerized, thus allowing the user to control easily all the operations through the user-friendly interface of the computer. This gives simpler and more accurate control. Higher flexibility is one of the main features of the sampling loom. There are more possibilities available for both the length and width of the fabric samples.

Based on the design files stored in the controller, all Dobby sheddings are achieved through the up and down movements of the heald frames which are driven by air cylinders and are computer controlled. Constant warp tension during weaving is achieved through the precise electronic let-off device. This is critical in obtaining a good quality sample. Digital display of warp tension is also available which provides valuable reference for weaving conditions.

The unique weft insertion system is specially designed for the sampling loom. It utilizes the single rapier weft insertion and



scissor-less mechanism making it simpler and requiring less adjustment. It is also equipped with automatic multi-colour pneumatic weft selection device.

Electronic take-up device is the main factor in achieving precise weft density; it also allows different weft densities to co-exist in the same weave. The beat-up device is driven independently by servo-motor giving strong and powerful beat-up to satisfy the requirements of heavy or special fabrics. Speed and time could be adjusted directly through the computer. The loom has a built-in design editing software. Editing can be done on loom and provides better management of designs.



**Technical features:**

**Weaving Width:** 20 inches maximum

**Speed:** 45 ppm maximum

**Weft Selector:** 6 colours electronic weft selection device

**Fabric Take-up:** Electronically controlled. Weft density can be changed freely within the same weave

**Warp Let-off:** Positive electronically controlled and Digital display of warp tension

**Shedding:** Computer controlled, maximum 20 heald frames driven pneumatically by air cylinders

**Draw-in:** Heald frames can be separated from the loom for healds and reeds draw-in

**Weft Insertion:** Single rapier weft insertion driven by servo-motor

**Beat-up:** Computer controlled, driven independently by servo-motor Suitable for heavy fabrics

**Weft Breaks:** Mechanical weft-break detecting device. Loom stops when weft breaks

**Designing:** Built-in design and editing software

**"The incubation facility is now available to potential entrepreneurs, textile traders, industry and MSMEs. The cost of sample making will be decided on case to case basis depending upon the requirement of incubatees."**



### Who can utilise the facility ?

Those who want try out new or different sizing agents and those who want to see physically how different weaves, colour combinations and designs will actually look like with some idea on physico-mechanical properties of the fabric.

Contact us



### **Central Institute for Research on Cotton Technology (CIRCOT)**

**ZTM BPD Unit  
ORL Block, Room No. 012  
Adenwala Road, Matunga,  
Mumbai 400 019 (MS) India**

**Telephone : 022- 24143718  
Fax: 022- 24143718 / 24130835 / 24157239**

**[www.bpdcircot.com](http://www.bpdcircot.com)  
Email : [bpd.circot@gmail.com](mailto:bpd.circot@gmail.com)**