

## R & D PROJECTS – 2015-16

### 1. GOVERNMENT SPONSORED PROJECTS

#### 1.1 Completed projects

(i) **Project title** : Designing a compressed air monitoring system to optimize energy consumption in a textile mills (Sponsored by Ministry of Textiles, Govt. of India)

**Objectives** :

- To quantify the losses occurred due to compressed air leakage
- To assess the real-time performance of the compressors
- Development of the software for identification of compressed air losses

**Research outcome:**

- Compressed air monitoring system has been designed and as a pilot trial, it has been installed at NITRA for further studies. Designed system installed at NITRA pilot plant.

#### **Features of Central Compressed Air Monitoring System :**

- Collects data from all the stations, where it is installed.
- The data is logged into a database at regular intervals
- Provision to set alarm limits of each parameter.
- Every alarm event is logged into database.
- Report generation.

#### **Software Features :**

- Datalogging interval – 1 ~ 99mins
- Real time data of all the stations shall be displayed on computer screen.
- Reports can be generated date wise for all the stations or for individual station.
- Reports can be generated in excel data sheet which can be utilized for further analysis.

(ii) **Project title** : Development of specialty embroidery yarn for application in stretchable fabrics, like knitted fabrics (Sponsored by Ministry of Textiles, Govt. of India)

**Objectives** :

- To develop multi-component embroidery thread for stretch fabric.
- To produce multi-component embroidery thread using elastane filament, water soluble PVA fiber and polyester or viscose as sheath fiber on DREF-3 m/c.

- To carry out various types of embroidery with multi-component thread and normal embroidery thread on knitted fabrics.
- To compare how multi-component embroidery thread and normal embroidery thread affects the stretchability of the fabric.

**Research outcome :** • Hand Embroidery and Machine Embroidery was carried out on stretchable knitted fabric using developed stretchable embroidery thread and normal embroidery thread. The embroidery samples were washed and evaluated for their stretch ability at the embroidery area.

- There is a gain of about 16 - 18 % in stretch ability at the portion of embroidery in Wales wise direction and about 13 - 15% in Course wise direction using developed multi-component embroidery thread as compared to normal embroidery thread.
- The performance of the developed embroidery thread at machine embroidery (high speed multi-head embroidery machine) is not very much satisfactory (higher breakages) as compared to normal embroidery thread because of lower strength and higher unevenness and imperfections due to the use of friction spinning technology. The developed embroidery thread was given surface finish with silicon oil, which slightly reduces the breakage rate at embroidery machine.
- In case of hand embroidery the performance of developed embroidery thread given surface finish with silicon oil was satisfactory and almost at par with the normal embroidery thread.
- Therefore, the developed multi-component embroidery thread may be beneficial for embroidering stretchable body-fit garments, especially where the stress and strains are more likely at the embroidery areas.

## 2. IN-HOUSE PROJECTS

### 2.1 Completed projects

(i) **Project title** : Development of suitable work-wear for workers of oil and gas industry.

**Objectives** : • To analyse the suitability of existing work-wear to withstand potential hazard like heat & flame in oil and gas industry.  
• To develop suitable fabric compositions for workers

**Research outcome** : • Various types of fibres including Nylon 66, p-aramid, m-aramid, modacrylic, hollow polyester & FR viscose etc. were collected. These fibres were blended in different proportions and converted into yarn. Fabric samples were manufactured using these yarns. Testing of these fabrics have been completed. Project completed successfully.

**(ii) Project title** : To explore the possibility and application of the corn husk in textiles

**Objectives** : • To extract and compare the composition and physico-chemical properties of cornhusk fibres with other cellulosic fibres.  
• To explore the possibility of development of yarns using any suitable yarn manufacturing technology either using 100% cornhusk or its blends.  
• To optimize the dyeing process of cornhusk fibres using various classes of dyes and evaluating their physical and chemical properties.  
• To finish developed material to impart softness and other required properties.  
• To design and develop a product line using corn husks and their blends

**Research Outcome** : • The corn husk fibres were dyed using various classes of dyes and their physico-chemical properties were evaluated.  
• The blended yarns were woven in to various types of fabrics. These fabric samples were successfully dyed and finished with softener to impart softness and smooth feel.  
• The garments and upholstery product lines were successfully developed.