

R & D ACTIVITIES 2018-19

1. GOVERNMENT SPONSORED PROJECTS

1.1 Completed projects

- (i) **Project title** : Development of protective work wear for cement porters (Sponsored by Ministry of Textiles, Govt. of India)
- Objectives** :
- To determine the magnitude of occupational health hazards among cement porters.
 - To design and standardize dustproof and comfortable material such as gloves, socks and workwear for cement porters which can suit the climatic and working conditions.
 - To evaluate effectiveness of the developed material in actual practice and standardization of test methods.
- Research Outcome** :
- Fabric samples were developed after intensive survey of cement user/ manufacturers.
 - Fabric dust proof property analyzer has been fabricated and a patent has been filed.
 - Cement work wear is developed and commercialized.
 - Project completed and technology transferred to M/s. Arvind Ltd., Ahmedabad.
- (ii) **Project title** : Development of multi layered flame & thermal resistant fabric for fire-fighter clothing (Sponsored by Ministry of Textiles, Govt. of India)
- Objectives** :
- To study existing fire fighter clothing/suit being used in India for their suitability related to safety and other physiochemical properties.
 - To study fire fighter/clothing suit used in developed country for their safety and physiochemical properties.
 - To identify gaps in the existing fire fighter suits being used in Indian fire fighters in comparison to fire fighter suits of developed country.
 - Development of multilayered fabrics using various weaves structure, fibres composition and finishing applications in the manufacturing of fibre fighter suit.
 - To evaluate multilayered fabrics for its performance for safety and other physiochemical properties as per standard.
 - Development of fire fighter clothing/suit.
- Research Outcome** :
- Fire fighter suits were procured and their physiochemical properties were evaluated.

- Gaps were identified.
- Multilayered fabric for fire fighter suit is developed.
- Evaluation of developed material is carried out.
- Provisional patent has been filed for thermal layer.
- Fire fighter suit is fabricated
- Commercialization is under progress.
- Provisional patent has been filed for thermal layer.
- Project completed.

1.2 Ongoing projects

(i) Project title : New Approaches to Reduce Water Consumption in Textile Wet Processing (Sponsored by Ministry of Textiles, Govt. of India)

Objectives :

- To conduct preliminary trials to test suitability for various dyes, used for textile material.
- Designing and fabrication of equipment for dyeing and standardization
- Conducting dyeing trial on various types of textile materials
- To compare dyed material out of new approach and conventional dyeing method in terms of quality and consumption of water.

Progress of work :

- Preliminary trials in various units are in progress.
- Designing work of equipment for dyeing is in progress.
- Various approaches of dyeing are being tested to conserve water.

(ii) Project title : Development of value added product from different Fibres in Himalayan Region (Sponsored by Ministry of Textiles, Govt. of India)

Objectives :

- To standardize a method for extraction of fibers from Pine Needles, Indian Flax, Nettle etc.
- Development of machines for extraction of fibres.
- To produce yarn with pure fibres and blends by optimizing mechanical parameters
- To develop various kinds of fabric utilizing those yarns
- To develop final value added products / home textile using these fabrics

Progress of work :

- Cultivation of flax fibres has been done.
- Extraction of fibre from Pine leaves has been standardized.
- Analysis of extracted fibres is completed.
- Machines have been procured.
- Training of NITRA employees completed.

- A patent has been filed regarding extraction of textile grade fibre from pine needles.

(iii) Project title : Development of air cleaner home textiles to reduce indoor air pollution (Sponsored by Ministry of Textiles, Govt. of India)

- Objectives** :
- Understanding nature of air pollutions in the indoor places using primary and secondary data and preparing research design
 - To evaluate various finishing chemicals/materials having characteristics to absorb/reduce air pollution
 - To select suitable fabrics and apply selected finishing chemicals using various techniques
 - To evaluate finished fabrics for various physico-chemical and performance properties
 - To take field trial of developed fabric in actual practice and modify, if required

Progress of work :

- Collecting details of air pollutants present in indoor air using primary and secondary data was done
- Identification of finishing chemicals required to reduce indoor pollution are going on through available sources was done
- Procurement of some finishing chemicals has been done
- Preliminary trial of application of finishing chemicals was done

(iv) Project title : Setting up of Common Effluent Treatment Plant (CETP) -150 KLD at Ajrakhpur, Bhuj (Sponsored by Ministry of Textiles, Govt. of India)

- Objectives** :
- Environment protection
 - Ground water saving
 - Energy conservation through reduction in ground water lifting
 - To increase investment opportunity
 - Creation of employment opportunities through overall business growth

Scope of work:

- Preparation of DPR with detailed BOQ.
- Preparation of drawings, tendering & tender evaluation
- Supply, construction, installation of all civil units as per the design and drawing.

- Supply & installation of electro-mechanical equipments as per the design and specification.
- Piping work and Hydraulic testing
- Setting-up of testing lab.
- Commissioning of CETP & performance analysis.
- Training of manpower
- 6 months hand holding

The foundation stone of the Common Effluent Treatment Plant (CETP) was laid on March 18, 2017 by Union Textile Minister Smt. Smriti Zubin Irani.

Progress of work:

- Detailed project report(DPR) has been prepared, contract awarded through tendering
- Prepared environmental impact assessment report
- Environmental clearance (EC) obtained
- Consent to Establish (CTE) has been granted by the Gujarat Pollution Control Board.
- Fabrication of MS tanks is partly completed.
- Civil work is underway.

2. IN-HOUSE PROJECTS

2.1 Ongoing Projects:

- (i) **Project title** : Investigation on process variables on functional properties of cotton/corn blended fabric.
- Objectives** :
- To have critical study of the properties of corn fibres.
 - To produce yarn samples using corn fibres with different manufacturing process variables
 - To produce fabric using yarn samples produced from corn fibres using different parameters
 - To have detailed investigation on the behavior of the process variables on the functional characteristics of the fabric
 - To apply statistical tools and prepare mathematical models for predicting the functional behavior of corn blended material.
- Progress of work** :
- To process the corn / cotton blends rotor spinning system has been taken for the experiments.
 - Following variables have been chosen for the experiments during yarn manufacturing:
 - Rotor speed
 - Blend proportion
 - Rotor diameter
 - Opening roller speed

- Yarn evenness, imperfection and tensile properties were measured and the impact was assessed with the change in the process variables.
- Preparation of fabric with the produced yarn is under progress.
- Assessment of fabric performance will be done in terms of functional characteristics such as flammability, abrasion resistance, air-permeability, antimicrobial properties etc.

(ii) Project title : Development of an Android-based Mobile Application for Garment Industry for Instant Information Access and Quick Decision Making

Objectives :

- Indian Garment Industry, especially exports, mainly comprises of small and medium size manufacturing units. Most of SME's do not have any MIS such as ERP due to reasons such as very high cost, customization and maintenance issues due to which the top management is unable to access correct information at the right time. Keeping these factors in mind, NITRA started working on development of a Mobile App that would address most of these issues. The project is started in Dec. 2018. Following modules shall be developed in the app.
 1. Daily Cutting Status
 2. Daily Sewing Status
 3. Daily Finishing Status
 4. Daily Packing Report
 5. Daily Production Report

Progress of work : • Survey of garment units has completed.

3. INDUSTRY SPONSORED PROJECTS

3.1 Ongoing Projects:

- (i) Development of Improved version of body protector used for riots control.
- (ii) Development of coat combat disruptive.

4. PROPOSED PROJECTS

4.1 Proposed to Government:

(i) Project title : Development of Improved Body Protector for Defence Forces

Sponsoring Agency : Ministry of Textiles, Govt. of India

Objectives :

- To study existing body protectors being used by Indian defence forces with respect to its suitability to protect them from various hazard like stabbing, impact and puncture.
- To evaluate the material to be used for various parts of body protector as per the requirement of para-military forces and Indian Climatic conditions
- To design and develop body protector for men and women paramilitary personnel.
- To evaluate body protector for its performance, for safety and other physiochemical properties as per existing defence standard
- To take field trial of developed body protector in actual practice and modified, if required.

(ii) Project title : Development of stab, impact and puncture testing instrument for body protector

Sponsoring Agency : Department of Science & Technology, Govt. of India

Objectives :

- To design the instrument as per the requirement
- To develop/fabricate the instrument as per design
- To take preliminary trials on the developed/fabricated apparatus to verify/optimize the suitability of design and if require to modify accordingly
- To analyse body protector samples for stab and impact resistant properties using newly developed/fabricated apparatus and verify the tested results with the same samples tested in the international laboratory.

(iii) Project title : Development of chemical and pesticides protective clothing for industrial workers and farmers

Sponsoring Agency : Ministry of Textiles, Govt. of India

Objectives :

- To determine the magnitude of occupational health hazards among chemical industry workers and farmers and to analyze the suitability of present personnel protective
- To standardize chemicals & pesticides resistant, comfortable and durable work wear material keeping in mind Indian climatic and working conditions.

- To design work wear for chemical industry workers and farmers.
- To evaluate effectiveness of the developed protective work wear in actual practice and standardization.

(iv) Project title : Setting up of Common Facility Centre (CFC) for washing & finishing of Chikankari material at Asian Village Khadi Marketing Association, Lucknow

Sponsoring Agency : Ministry of Textiles, Govt. of India

Objectives :

- Replacement of traditional facilities by the state art of modern technology
- Improvement in the quality of final product
- Increase in investment opportunity
- Design innovations
- Provide adequate training and developing appropriate market linkages
- Environment protection by facilitating them with the effluent treatment plant (ETP)

Scope of work:

- Review of Present status of cluster and their activities
- Assessment of existing facilities
- Preparation of DPR with needed facilities
- Preparation of Tender Documents with specification of Machines, equipments etc.
- Tendering & tender evaluation
- Installation/commissioning of machines
- Providing training to personnel on CFC functioning