Tech 4 Text
Technical Textile Conclave Punjab: Amritsar
"Opportunities & Way Forward**"**

28th February, 2023

Overview:

Punjab is a hub to the textile sector industry and holds a prominent position among the leading states in the Country. The contribution of textile industry of Punjab is about 21% of the total State exports with first in production of yarn, fourth in spinning capacity and leading in manufacturing of woolen knitwear, sports goods and hosiery. Punjab contributes to 75% of India's sports goods production with 35% of share from Jalandhar alone. Punjab's textile industry is estimated at 30,000 crores and provides employment to around 2.5 lakh people. The major industrial players in textile sector are clustered around Amritsar, Ludhiana, Jalandhar and Mohali.

Technical Textiles are textile materials and products used for their technical performance and functional properties. Technical textiles have varied applications in several vital industries including aerospace, packaging, hazard protection, shipping, sports, agriculture, defence, healthcare, construction, etc. Technical textiles are an important part of the textile industry and its potential is still largely untapped in India. The Government of India has set up National Technical Textiles Mission that aims at an average growth rate of 15-20% to increase the domestic market size of technical textiles to $ 40-50 Billion by the year 2024; through market development, market promotion, International technical collaborations, Investment promotions and Make in India initiative. Punjab offers ample raw material (Polyester, natural fibres), skilled manpower, required technology and access to National & Global markets for manufacturing technical textiles.

This conclave was organized by Punjab State Council for Science & Technology (PSCST) Chandigarh, Technology Enabling Centre (DST-TEC) of Panjab University Chandigarh, Guru Nanak Dev University Amritsar, Confederation of Indian Industry (CII) Punjab, Amritsar Group of Colleges and Textile Industry Associations of Punjab. About 120 delegates including researchers, faculty members, textile industry representatives, policy makers, officials of central & state government departments, startups and other stakeholders across the state participated in the event.

Opening Session:

Dr. Dapinder Kaur Bakshi, Joint Director (PSCST) emphasized "Technical Textile" as a sunrise sector. She shared that Government of Punjab is keen to support the Textile Industries of the state to graduate towards Technical Textiles through supporting Research and Technological interventions.

Dr. Anup Rakshit, Executive Director, Indian Technical Textile Association shared insights about National Technical Textile Mission (NTTM) and other government initiatives (Production Linked Incentive Scheme for Textile Sector and PM Mega Integrated Textile & Apparel). He briefed the 13 segments of Technical textiles, i.e. Agrotech (Agro Textiles), Buildtech (Construction Textiles), Clothtech (Clothing Textiles), Geotech (Geo Textiles), Hometech (Home Textiles), Hometech (Home Textiles), Indutech (Industrial Textiles), Meditech (Medical Textiles), Mobiltech (Automotive Textiles),

Oekotech (Environmental Textiles), Packtech (Packaging Textiles), Protech (Protective Textiles), Sporttech (Sports Textiles). He also discussed the Global versus Indian Market scenario and urged the growth strategy to achieve USD 40 Billion (13% Global share and become 3rd largest player) by 2024-25.

Dr. P J Singh, Vice Chairman of CII Panjab applauded government initiatives and urged the industry to come forward to adopt the emerging technologies and committed support from CII.

Dr. Jatinder Kaur Arora, Executive Director, PSCST during her special online address appraised that under *Mission Innovate Punjab* consolidation of state's research, innovation and entrepreneurship is being carried out. She also appraised that 'Translation Research Cohorts' are being set up in key priority areas, Technical Textile being one, to promote synergies between Academia and Industry to understand sectoral challenges and their addressal.

Dr. Pratap Kumar Pati, Coordinator, Golden Jubilee Centre for Entrepreneurship and Innovation (GJCEI, GNDU) presented the vote of thanks.

Glimpse of Opening Session: Technical Textile Conclave, Punjab

Technical Session:

The technical session was chaired by Dr. P J Singh, Vice Chairman (CII-Punjab) and Prof. Manu Sharma, Coordinator (DST-TEC) Panjab University wherein eminent speakers/experts from textile industry and research institutions deliberated on the existing technologies and the future needs.

1. *Sh. Rajiv Sajdeh, Indo German Yarn and Fibres LLP*
   He described Technical Textiles as engineered products for a defined functionality and urges immediate involvement of Academia from Engineering and Textiles together. He described the importance of Amritsar for producing woolen fabrics and even the fire resistant fabrics. Some industries are doing the business of fire resistant fabrics from a long time, but these are treated as

only fabrics (like they can be washed for 30-40 cycles only). The inherent resistant fiber can last for a much longer time. As long as the fiber is there in the product, the product is fire resistant. He described Asia-Pacific as emerging market for Technical Textiles where the consumption pattern is developing and is far behind Europe and US. The raw material for Technical Textiles is being produced by MNCs worldwide and Japan, US, Europe are the leading raw material manufacturers and suppliers. So, India can come up with alternate products to them, but it will take time.

He added, India should concentrate on how to use the materials and to add value to them; whether we produce yarns, fabrics, woven and non-woven, knits, composites. With even a small product, one can identify its own niche market. Also focus to get the Academic expertise and skill which are required at any stage. He briefed that those who wish to enter this market should start doing smaller things first to get the knowledge about the product and then put own innovations into it. Don't Produce Just in India; also produce what is required for India. Technical textiles are not much scalable quantities, and one must have to change its mindset accordingly. Also, Academia can upgrade their laboratories for doing testing for the industries. Universities must be involved to strengthen this Industry-Academia collaborative ecosystem.

2. *Sh. Rajesh Kumar, Assistant Director, Office of Textile Commissioner (Amritsar)*

He said, "it is interesting to see so many people from Industry and Academia in this conclave which shows the interest of people in Technical Textiles. The technical textiles are futuristic and niche segment of textiles, which are used for applications ranging from Agriculture, Roads, Railway Tracks, Sportswear, Health, Defense products (bullet/fire proof jackets, high altitude combat gear) and Space Applications. Technical Textiles are textiles materials and products manufactured primarily for technical performance and functional properties rather than aesthetic characteristics".

He added, the Government of India has made a very big attempt to develop the Technical textiles in which one of the major schemes is the *National Technical Textile Mission*. Through this mission, the objective is to position India as a global leader in Technical Textiles. Mission has been approved for creation at an outlay of Rs. 1480 Crores. The mission has four components: **a)** Research, Innovation & Development; **b)** Promotion & Market Development, **c)** Export promotion, and **d)** Education, Training and Skill Development. This scheme enables R&D Projects for Academics, Research Associations. Also, it leads to the creation of eight Centre of Excellence for different products related to Technical Textile. He stated that under the mission, over 150 research proposals worth 800 crores have been received by the ministry in different segments of technical Textile. 31 research projects have been already approved by MSG. Pilot project on skilling of design/commissioning technical person in the field of geo synthetics is being conducted through IISc Bangalore, IIT Madras and IIT Roorkee.

3. *Dr. Sarang Gumfekar, Vice Chairperson, Industry and Corporate Relations (IIT Ropar)*
and *Sh. Amit Jain, CEO Shingora Textiles*

Sh. Jain described Technical Textile as the future of Punjab textiles and employment opportunities. He briefed that we had spent too much time and money on low-cost, low-innovation manufacturing and now, we have to move away from them. The government is ready to give money for research projects and they wish to see a proof of concept. Also, there are enough machines available in the country to start with Technical Textiles and there is a great scope for developing a Textile Park in Punjab and we have to submit a proposal to the Government.

Dr. Sarang emphasized on NTTM Funding: *Opportunities, Success Story* and he briefly elaborated *IIT Ropar – Industry Collaboration*. He said, "Anyone can pick its idea from basic/laboratory level to a pilot scale and then to a commercial scale. Government has also realized that if we have to get engineers for technical textile, we have to generate courses/curriculum related to technical textile". He added, if one needs skilled manpower in near future then there is Grant of Internship Support in Technical Textiles (GIST). The industry first needs to register and then can offer/pay stipend to the internee. The institutes can also develop/start UG/PG/Ph.D/Specialized courses on Technical Textiles. The technological gaps can be identified by organizing technical workshops.

Also, there is a list of machinery NTTM have actually announced. If one needs such machines at commercial level, they can get support up to pilot level. Academia can help the industry to develop the machinery at pilot/laboratory scale. As, Industry is hesitant to put money for R&D so they can come up with academia to develop some parameters, optimize the product and once industry is confident it can invest to buy commercial-level machinery. He briefed the success story of IIT Ropar – Shingora Textiles, as it was a small scale / basic R&D / feasibility project funded by industry. The project converted an idea from TRL 1 to TRL 4 and they had established end-to-end value chain for **a)** who will manufacture chemicals/polymers on large scale, **b)** who will process the raw material in usable form, **c)** who will handle textile processing, **d)** who will assess the commercial market and their competency.

4. *Sh. Anurag Srivasta, Reliance Industries Limited*

The views on raw material that is required for Technical textiles was presented briefly along with how the industry can actually benefit from different types of fiber available and produced in India. The National Fiber Policy actually had identified 15-16 fibers which are available and are categorized as specialty fibers. Different types of fiber available in Technical Textiles are Nylon, PP yarn, Glass fiber, Polyester, Viscose, and other super performance fibers such as Meta Aramid, Para Aramid, Carbon Fiber, UHMPE, and Ceramic Fiber. The opportunities of using Polyester as Sustainable & Functional Fiber in Technical Textiles were discussed.

The RIL focus on Polyester, Carbon Fiber, UHMPE & Composites. Carbon Fibers and Carbon Fiber Composites are extensively used for light weighting and they have the capability to replace steel and aluminum. They find extensive usage in aerospace, automotive industry and pressure vessels. Polyester is the choice of fiber in apparel and home textile with the global fiber consumption of 61 MMTA. It has good dry & wet tensile strength, superior abrasion resistance, inert & microbial resistance, low creep value, low moisture absorption, good UV resistance, highly engineer-able. Also, Polyester gives optimum price – performance balance for most applications. Polyester IDY applications include Geo Textiles, Geo Grids, Mooring Ropes, Tire Cords, Automotive Seat Belts, Transmission Belts, Conveyor Belt, Cargo Strapping, Lifting Slings, Fire Hose and others. The basic polymer continues to remain the same and we have to do the changes in the process parameters to make the yarn suitable for each of these applications.

The growth rate for polyester IDY is estimated to be 15-20% in next 3-4 years. The key growth drivers are GOI's focus on infrastructure, manufacturing and construction. Also, the global players are looking for an alternate to China for both yarn and downstream applications.

5. *Dr. Arunangshu Mukhopadhyay, Professor, Department of Textile Technology (NIT Jalandhar)*

Leveraging opportunities for Technical textiles: perspectives from Academia Punjab were discussed. Integrated science for design and development of atmospheric air filter was presented. He advocates that Technical Textile differs from the traditional textiles as **a)** the application is quite different, **b)** performance requirement is different, **c)** constituent materials are different, **d)**

manufacturing methods and equipment are different, **e)** testing facilities and life expectancy is different, and **f)** price is also different.

He added, Technical textile material can offer several advantages simultaneously in the same product that no other industrial product can provide. They can be combined with other materials/products for enhanced performance. They provide numerous variables at the disposal of designer which theoretically offer an infinite number of design possibility. He shared his research highlights of Technical textile as: **a)** Easy Breathe Face Mask, **b)** 3-layer jacket for sports, **c)** Value addition of pashmina guard hair, **d)** automotive filter and gas adsorption filter, **e)** bed-sheet cum patient shifting device.

6. *Dr. Bharat Bajaj, Panjab University Chandigarh*

Dr. Bharat described the potential of carbon nano-fiber composites in technical Textiles. He described nano-technology as a science of making small and possesses anonymous applications. He informed that his team fabricates carbon nano-fiber for technical textiles. The important property of Carbon, i.e. to make bonds with itself to form a chain of Carbon atoms, applied to form nano-fibers. Such carbon nano-fiber have continuous in size and possess high surface to volume ratio, he added.

He stated that he had developed industrial grade super fibers which can withstand up to 700 kg. His team successfully fabricated short nano-fiber also, that can be used as sustainable composite. The electro-spinning, solvent-spinning and melt-spinning techniques were employed to obtain high surface area for energy applications. His team primarily focuses on Environment Protection, Meditech and Clothtech, Sensors, Energy Devices, Drug Delivery and application of Carbon nano-fibers for air filtration devices. He also shared that their available technologies on flexible sensor, nano-material based energy-harvesting devices, wearable fabrics and electronics, effective gas absorption membrane, fiber from agricultural waste etc. could be of much use for Technical Textile industry.

7. *Sh. Rajiv Maheshwari, Multispin Textiles, Zirakpur*

8. *Dr. Varinder Kaur, Department of Apparel & Textile Technology (GNDU Amritsar)*

Dr. Kaur honored all the guests, expert speakers, academicians, industrialists and encouraged the textile industry to adopt the Technical Textiles production in Punjab.

Open House Discussion

The technical discussion was followed by an Open House Discussion. Following were the pointers for discussion:

a) Technological challenges of technical textile industry
b) Strategies to shift Conventional Textile Industry to Technical Textiles
c) Research Prioritization/Dedicated Programs by Research Institutions
d) Synergies between multi-stakeholders to strengthen Technical Textile Sector

Conclusions:

- **National Technical Textile Mission (NTTM)**
  - 89 research projects have been approved in Specialty Fibers, Sustainable Textiles, High Performance Textiles, Smart Textiles, Meditech, Agrotech, Geotech, Protech, Mobiltech, Buildtech and Sportech worth Rs. 263.25 Crores.
  - 64 applications have been approved for technical textile sector with a total investment of Rs. 19798 crores. **(PLI – 1 Scheme)**

- PLI – 2 is under consideration. **(PLI – 2 Scheme)**
- Currently 52 new HSN Codes are added to Technical Textiles item list in Customs Tariff of India 2022 (effective from 01.05.2022) which takes the total items to 259. More are being added. **(Notification of HSN Codes)**
- List of 107 Technical Textile items having Indian standards of Agro-textiles, Medical Textiles, Protective Textiles and Geo-textiles products are brought under Quality Control Order. 34 items are under review. **(Quality Control Order)**
    - There is lot of resistance on QCO of Viscous Fiber from the South Indian Industries; when such items are not even produced in India. Government had postponed it for two months. We must be vigilant and must take advice from the experts.
    - In case of medical devices, there must not be two regulations for a single product. The industry will suffer a lot. The Medical Textiles are covered under Medical Devices Act and there will not be any QCO for them.
- 500 Indian Standards on Technical Textiles already exist & approx 100+ are under development. **(Indian Standards)**
- Courses on various Technical Textile Segments in Universities / Colleges / Institutions to be added. These courses should be inter-disciplinary and both private and public institutes can apply for grant for internship support. **(Skill Development)**

- **R&D Project Funding under DST (TDB) of DST – GoI**
    - Project Funding opportunity under Technology Development Board (TDB) of Department of Science and Technology (DST, GoI).
    - To promote development and commercialization of Indigenous technology & adaptation of imported technology for wider application.
    - TDB provides equity capital, loans and grants to industrial concerns, financial assistance to research & development institutions. www.tdb.gov.in
    - Submit application in prescribed format given in guidelines (on Page 13). http://www.e-techcom.tdb.gov.in

- **Recent Changes in NTTM Policy on R&D Scheme**
    - General Guidelines for Enabling of Academic Institutes on Technical Textile for Private & Public Institutes. **(4th Jan, 2023)**
    - General Guidelines for Grant of Internship Support in Technical Textiles (GIST). **(4th Jan, 2023)**
    - General Guidelines for Grant of Indigenous Manufacturing of Machinery/Tools/ Equipment / Testing Instruments for Technical Textiles. **(28th Dec, 2023)**
    - Online Applications were invited and open for submission up to 2nd March, 2023 on NTTM Website. https://nttm.texmin.gov.in/

- **Development of Mega Park**

  While answering to the query of Mr. Rajiv Sajdeh, Mr. Rakshit mentioned that there are seven mega parks in textile. Punjab can apply for one such mega park, as the list is yet not finalized. He added that he can assist the Punjab Government in developing such mega park.

- **Small Survey of Knitwear and textile Club, Ludhiana**

  The General Secretary of Knitwear and Textile Club offer the eminent researchers, scientists and industrialists to visit Ludhiana to make a small survey for looking up chances of value-addition to their existing products, addition of new machinery, and the chances for adding technical aspects to their textiles.
    - WRA and ETA had together made visits to Jalandhar, Ludhiana, Amritsar focused on Sports Textile. Sports Textile Conclave is being organized on 21st April, 2023 with the support of NTTM and Ministry of Textiles.

- **List of Technical Textile Experts and Testing Facilities**
    - Dr. Anup Rakshit confirms that he will share the list of Experts/Academicians.
    - NIT Jalandhar offers courses on ***Technical Textiles*** and ***Textile Technology.***

- NIT Jalandhar had applied for funds under NTTM for establishing laboratories.
- Textile Industry Service Centre (TISC, GNDU) provides services since 1996.

- **National Textile Policy, 2016**
  - There is no National Textile Policy, since 2016.
  - There is no Independent Minister for Textile
  - What is the future of textile sector?

  A) Bring the Textile Policy first; and make a road map for Technical Textile Sector.

  B) There is need to reduce the GST from 18% to 5%.
  - Man-made fibers, cotton, silk are the major focus/growth areas for textile in India. There are several Policies and roadmap for them.
  - In case of National Textile, there is no documented policy

- **Discussion on Sportech**
  - Setting up cost / Investment required for Hockey sticks, Tennis & badminton Racket business?
    - Source the carbon/glass Fiber, filament fabric,
    - Get knowledge of engineering plastic polymers
    - Use Pultrusion Process for Hockey Sticks, Tennis & Badminton Rackets
  - Next conclave is proposed for Sports Tech at Jalandhar

- **Library of Technical Textiles Sample**
  - Dr. Sucharita Arora will create such library for Technical Textiles with their key properties and specifications
  - Industry will visit to understand the unique know how

- **To Locate the Technical Textile Manufacturers**
  - Contact the Office of The Textile Commissioner, Amritsar (Ministry of Textiles) for any requirement related to Technical Textile, such as who are the manufacturers? What is the location of manufacturer? How to approach the manufacturer?
  - Sh. Rajesh Kumar can be contacted at 94613-75440

- **Establishing A Centre of Excellence in Punjab**
  - There is no Centre of Excellence in Punjab.
  - During initial of the scheme, the institutes of Panjab hadn't applied. NIT Jalandhar had also tried.
  - There are Incubation Centers at IIT Ropar (02 No.), NIT Jalandhar, GNDU, Panjab University and some other institutes of Punjab.

- **Development of Indigenous Machines under NTTM**
  - Some testing machines were developed at SITRA, CoE.
  - Educational Institutes had also developed some of the testing machines.
  - One of the India's largest textile machinery manufacturers, LMW refuses to develop machinery of Technical Textile, as there are not many takers/purchasers of these machines.
  - The Technical Textile machines are currently imported
  - Under NTTM, one can develop an indigenous machine.

- **Textile Up gradation Fund**
  - Scheme was lapsed from 01st April, 2022.
  - Kindly renew it from Ministry of Textiles or through CII.
  - Help the existing units to expand, and for startups to set-up a new plant.

- **List of Industry in Areas of Technical Textile**
  - Those who augmented their current capabilities.
  - Those who are willing to invest a quantum of money, manpower.

- **Developing an Non-Woven Base Fabric**
  - Industry is willing for processing Pashmina waste (value addition)

- Blend pashmina fiber with other materials for developing insulations
- The industry has Woolen spinning facility available
- NIT Jalandhar has an industrial partner Supreme India Limited

- **Availability of Thermal Bonding Technology at NIT Jalandhar**
  - The technology is not available at NIT Jalandhar
  - Technology is available at Ludhiana, Panipat and other Indian studies

- **Light Weight Insulation / Personal Protection Manufacturing**
  - PTFE Membrane to reduce the bulk
  - PTFE Membrane's demand is high (jacket, filter, etc.)
  - India import it from abroad and have no Indian Manufacturer
  - Any Indian manufacturer can have its start-up in this field

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Industrial Issues Identified

Following Industrial issues/pain points were identified, for which the industry requires external R&D:

1. To reduce MLR in Yarn Dyeing HTHP package dyeing machines from 1.6 to 1.45 in the Existing Setup - Manjul Khanna (Resultant Innovations Pvt. Ltd.)

2. Our industry wants to Convert high tensile fibers into powder form (Technical Details will be shared later) - Rajiv Sajdeh (Indo German Yarns and Fibers LPP)

3. To develop coated yarns to enhance the thermal resistance of the woolen fibers.
   - Deepak Khanna (Khanna yarns and Textiles Pvt Ltd)

4. What type of technical textiles can be made through existing machines? (To produce technical textiles with width rapier looms)
   The industry needs modifications in the existing machines to produce technical textiles.
   - Rachit Seth (R J Woolens Private Limited)

5. The firm provides services in value chain management, Inventory management. They provide online stores and their bulk stock for selling online through a single application. They also provide BNPL solutions to reduce the intention-action gap in the B2B trade.
   - Ashish Trikha (Busineswise)

6. Academia wants machine that can convert bamboo poles into bamboo fibers.
   - Dr Varinder Kaur (GNDU)

7. Coating of imported yarns.
   - Gaurav Seth (Aratex LLP)

8. The industry needs a detail of Yarn Suppliers & Testing Labs for Technical Textiles
   - Kamal Dalmia (Focal Point United Industries Association)

9. Recycle wool fibers into the geotextiles/fibers and use of machines for weaving and finishing.
   - Sachin Khanna (Amritsar Swadeshi Textile Corporation Pvt Ltd)

10. The industry needs a list of technical fibers that can be made in India. They need information regarding funding for technical textiles.
    - Sanjiv Khanna (Paul Textile Mills)

Participants

Following participants from Industry and Academia participated in the open-house discussion:

Academia		Industry	
Achitanand Dubey	PEC, Chandigarh	Anuj Dilawari	International Woolen Mills ASR
Arjun Mehra	GNDU Amritsar	Anuj Seth	Versatile Enterprises (P) Ltd. LDH
Arpan Gupta	IIT Mandi	Atul Aggarwal	Fine Knit Fab, ASR
Inderdeep Singh	IIT Roorkee	Charanjiv Singh	Knitwear & Textile Club, LDH
Naresh Kumar	Punjab Institute of Textile Technology, Amritsar	Deepak Khanna	Khanna Yarns & Textiles (P) Ltd. ASR
		Gaurav Jhawar	
Pinki Kumari	IIT Roorkee	Gaurav Seth	Aratex LLP
Ramanpreet Kaur	NIT Jalandhar	Kamal Dalmia	Focal Point United Industries Assoc.
Sheetal	GNDU Amritsar	Kapil Khanna	TEX & TWIST Indo-German Yarn & Fibres
Sombir	GNDU Amritsar	Karan Verma	Aar Vee Commodities
Sucharita Arora	GNDU Amritsar	L B Maurya	Maurya Exports
Suresh Gandhi	Punjab Institute of Textile Technology, Amritsar	Manjul Khanna	Resultant Innovations (P) Limited
		Nitin Sharma	Shingora Textile Limited, LDH
Bharat Bajaj	Panjab University	Nitin Shinghari	Jintex Corporation Limited
Manu Sharma	Panjab University	Piara Lal Seth	Apollo Shawls
Rupinder Tewari	Panjab University	Rachit Seth	R J Woolens
Vinay Midha	NIT Jalandhar	Rajesh Seth	Seth Industries
A Mukhopadhyay	NIT Jalandhar	Rajiv Khanna	Textile Manufacturers Association
Ankush Gawri	DST-TEC	Sachin Khanna	Amritsar Swadeshi Textile
S Vaibhav	DST-TEC	Sanjeev Kandhari	Kaytex Fabrics (P) Limited
Ajay Sharma	DST-TEC	Sanjiv Khanna	Paul Textile Mills
Pankaj	DST-TEC	Sumit Kumar	PHD Chamber of Commerce & Industry
Manpreet Singh	PSCST	Vikran Mehra	N V Woolen Mills
		Virinder Sharma	MSME Ludhiana
		Rajiv Maheshwari	Multispin Textiles
		Ashish Trikha	Busineswise