

## **3<sup>RD</sup> DEFENCE-ITTA JOINT SEMINAR & EXHIBITION ON TECHNICAL TEXTILE held on 22<sup>nd</sup> & 23<sup>rd</sup> May 2017 at DELHI**

The Indian Technical Textile Association (ITTA) in association with Indian Defence organized a two day Seminar& Exhibition on Technical Textile held on 22<sup>nd</sup> and 23<sup>rd</sup> May 2017 at Ashoka Convention Hall, Manekshaw Center, Delhi. This is the third edition of the Defence-ITTA joint Exhibition cum Seminar which was attended by more than 250 delegates from both the Indian Army and the Technical Textiles and footwear Industry.

The two days Seminar on 22<sup>nd</sup> & 23<sup>rd</sup> May 2017 included various topics related to innovations in protective clothing and uniforms along with medical, building, geo textiles, tentage and load carrying fabrics. Extreme cold weather clothing, light weight sleeping bags, special snow socks, snow goggles, thermal insoles and rucksacks that are used at Siachen Glacier and other super high altitude areas were also covered. Industry showcased these products manufactured in India at a much cheaper price without affecting the quality.

### **SEMINAR**

#### **Session 1 – INAUGURAL SESSION**

The 3<sup>rd</sup> Defence-ITTA Joint Seminar & exhibition was inaugurated by Smt. Smriti Zubin Irani, Hon'ble Minister of Textiles, Govt of India, on May 22 at Manekshaw Centre. General Bipin Rawat, the Army Chief and senior officials from the Defence Services, MoD, MOT and technical textile Industry were present at the function.



The Hon'ble Minister of Textiles talked about the need to explore the advanced R&D facilities for improving the existing inventory of the Army. She assured assistance from the Ministry, while reiterated the need for the industry to explore various business models and joint ventures. She further talked about the distinction between 'supplying' and 'serving' and how the industry should strive to 'serve our defence forces'. She also told that the NTC (National Textile Cooperation) will develop specialised



product range for the armed forces using high performance fibres & filaments.



General Bipin Rawat shared that the joint initiatives between the Textile Ministry, MoD and industry that will assume great significance if the principal items of Ordnance Equipment Factory (OEF) will be offered to the Trade on a permanent basis over the next 3 to 5 years. He said, "There is huge budget with the Army that has been spent on textiles. It is high time that we look for the indigenous solutions".

Lt Gen R.R. Nimbhorkar, Master General of Ordnance (MGO) apprised the delegates of specific areas where improvements were needed. He urged the industry for early indigenization of the three layered special suits, sleeping bags, boots, multi-purpose and modular gloves that are being used in the super high altitude areas besides products improvement for Extreme Cold Clothing (ECC), mattress kapok, face mask, etc. The MGO reiterated that the industry has a lot of scope for participating in the Rs. 3000 Cr. general stores and clothing requirements.



Mr. Pramod Khosla, Chairman, ITTA, welcomed the delegates and highlighted that the 1<sup>st</sup> & 2<sup>nd</sup> Defence ITTA Seminar had been highly successful resulting in close cooperation and indigenation of large number of products. He also narrated the ITTA's contributions during the

last couple of years to the growth of various segments of Indian Technical Textile Industry and the objective of this seminar.

Dr. S. K. Sundararaman, Vice Chairman, ITTA, spoke about



Defence-ITTA relationship. He assured the Army officials of their constant support. He also talked about ITTA has the capability to provide the required solutions to the Defence Sector. The Joint Seminar cum Exhibition provided the necessary for a successful partnership between the Defence forces and the Technical Textile Industry.



## Session 2 – “REQUIREMENTS OF CLOTHING & GENERAL STORES FOR ARMY”

The Second technical session was chaired by Maj Gen BV Rao, Additional Director General, Equipment Management. The following presentations were made during this session.



**1. Outsourcing of OFB Products: Scope for Participation of Trade** by Brig GS Shan, Deputy Director General OS (GS&C) highlighted the budget for GS & C (Trade) is 647.06 Cr and GS & C (DGOF) is 2573.97 Cr. But a large proportion of the cloth and accessories are purchased by DGOF from the industry. He briefed about the objective, types of procurement i.e. Revenue procurement and Capital procurement, procurement setup, sources of supply, DGQA, revenue procurement, manner of depositing bids and payment terms for sellers. He also spoke about the Purchase procedure of OFB and registration procedures.

[For further query contact: Dir, ADG OEF Gp HQ Kanpur

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2. Overview of Special Clothing & Mountaineering Equipment by Col AS Chonker, VSM. He highlighted that the requirement of special clothing and mountaineering equipments (SCME) will increase to 38,229 sets for Indian army and SCME's entitled areas are Northern command, Western command and Eastern command. He said that SCME items- Each sets comprises of 55 items and those items are divided into two categories i.e. Cat I- personal use (20 items) and Cat II- general purpose items (35 items). Cat I consist of Jacket and trousers down, ECWCS (TLSS / Goretex suit), Gloves- inner & outer, sleeping bag, snow goggles, rucksack, etc. Cat II consist of Hyperbaric Chamber, Rope climbing, Combination harness, Cord avalanche, Survival blanket, Oxygen cylinder, Avalanche rod, Ladder ice wall, etc. He spoke on the procurement procedure for SCME EX Import and added some indigenized items like Hyperbaric Chamber, Thermal Insole, Socks Woollen Spl (two layer) & Rucksack 70 L. He highlighted some products improvement, introduction of new products i.e. Avalanche airbag with airsafe, Tugger shoes, etc. The ECC & E comprises of two items i.e. Cat I- 13 items and Cat II- 17 items.

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2. Col Soumit Pattnaik, Dir GS&C

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3. Technical Textile Requirements for Defence Forces by Mr. Munish Hinduja, Director, Gokaldas Images Pvt. Ltd. emphasized about the current technology trends worldwide in SCME products. SCME products should have attributes such as lighter, enhanced breathability, fibre based technologies, dry comfort, soft shell fabric and insulation. He spoke about the SCME product focus 2018 viz. ECWCS3 Layer System, Sleeping Bag, Modular Gloves and Combat Boots. The technology i.e. Single Layer, Breathable Textile replacing Weatherproof Shells with Wicking & Waterproofing by remaining Thin & Light, Nano Technology and zero-loft aerogel replacement for down fibres.

4. Latest Trends in Footwear applicable for Defence Forces by Mr. S. K. Neogi, Mayur Leather Products spoke on the global trends in footwear construction such as upper, bottom, insole

made from different materials i.e. leather, textile/ fabrics & synthetics. He emphasized about the parameters for selecting appropriate soling materials for upper & bottom of footwear and roadmap for achieving a greater match of the products and their requirements.

### **Session 3 - "COLLECTIVE PROTECTION, TENTAGE, LOAD CARRYING FABRICS & INTRODUCTION OF PRODUCTS INTO CSD"**

The third session was chaired by Maj Gen Dalip Singh, ADG OS (CN & A) and four papers were presented.



**1. Requirements of Collective Protection & Load Carrying Fabrics for the Army** by Col Sanjay Sinha, Director OS (GS&C) highlighted about the different types of stores such as Armament, Fire Fighting Vehicles & Equipments, Ammunition, Aviation Stores, Mechanical Transport Stores viz Tyres, Tubes, Batteries and Spares, General Stores & Clothing, etc. which maintains an inventory of 4.5 lakh items. The General stores consist of Tentage, Tarpaulins, Equipment Camouflage (EC) Nets, Synthetic & Multi Spectral Camouflage Nets, Protective Clothing, Parachutes, etc. He also spoke on the tent extendable frame supported (TEFS) in the Army viz. TEFS 2M & TEFS 4M and important features of Tarpaulins, protective clothing, etc.

**2. Recommendation for Collective Protection & Load Carrying Fabrics for use by Defence Forces** by Mr. S. J. Rao, Sr. VP, Garware Wall Ropes spoke about the fabric used for covering a set of object/people to ensure their protection without affecting their respective functional characteristics are called as collective protection. The fabrics used for collective protection & load carrying are woven and knitted. Their desired properties are breaking and tear strength,



breathability, fire retardant, etc. and its criteria for selection are type of item /object to be protected/ carried, prevailing working condition, ease of operation, flexibility, weight, etc. Different types of material are used such as Jute, nylon, polyester, aramid, HDPE and its different application like Under Slung Cargo Nets, Helimat, Camouflage Nets, Shelters (Blast resistant), Inflatable Structures, Ultra-light weight fabrics, Synthetic Tarpaulin/Truck Covers, etc. for Indian Army.

**3. Procedure for introduction Products into the CSD** by AVM M Baladitya, VSM, CSD Adelphi, Mumbai briefed about the CSD (Canteen Services Directorate) which was formed in 1948 and CSD consist of following items such as Toilet Requisites, Household Requisites, General Use Items, Food & Medicine, etc. He told that the registration procedure is transparent and it's available online on the CSD website. 97% of their clients are Soldiers and 26 firms are register with CSD for 100 items such as bed sheets, garment, underwear for men & women, kidswear, sportswear- track suits, etc.

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**4. Developments in Tents, Tarpaulin and Canvas** by Mr. Manish Khedkar, Asia Pasific Product Engineer Lead, Owens Corning. He emphasized about the Synergy with Make In India Initiative i.e. Zero Defect & Zero Effect and capability & in-process quality control- Tape Extrusion, Scrim Manufacturing, Extrusion Coating. He highlighted the product portfolio for tents & tarpaulins which are coated woven scrim design upto 3X stronger than blownfilm XF products. These product performs in -40 °C to as hot as 100+ °C. Suitable for desert & terrain conditions and can make fabric from 40 GSM to 800GSM+. Future trends are working on making Ultra-Light Fabric with a combination woven and non-woven substrates and structural fabric which can be used as water proofing membranes as well as temporary shelters for 7 to 10 years exposure warrantee.

#### **Session 4 – “MEDICAL TEXTILES AND PROTECTIVE CLOTHING”**

The fourth session was chaired by Brig SD Mulgund, Dy DGAFMS (Standardisation) and six papers were presented.



**1. Requirements of Medical Textiles in the Defence Forces** by Cdr. Vinay Kumar Gaur, Jt. Director AFMS highlighted the First Tri Service Organisation of the Armed Forces i.e. Armed Forces Medical Services (AFMS) which provides comprehensive healthcare service to all 03 Services of the Armed Forces. There is an increasing consideration for use and throw items which can be managed better in urban areas and Bio-Medical Waste disposal arrangements needs to be made. AFMS provides services to the Patrols-Insurgency, Disaster Response-National & International. The AFMS products are classified under Section 4 (Anaesthesia & Surgical Items), Section 9 (Gynae & Obstetrics), Section 12 (Bandages & Dressings), Section 13 (Sutures), Section 22 (Specialised Surgical Items) and Section 28 (Rehabilitation Eqpt). He talked about the Yearly Purchase Data at one institution are Drugs- 60%, Cotton & Bandages- 10%, Sutures- 5%, and Spl Surgical- 5%. He explained the procurement procedure in AFMS and importance of BIS Standards in Medical Textiles.

**2. Recommended Medical Textiles for Defence Forces** by Cdr. Manoj Kumar, Hitex HealthCare emphasized about the importance of woven & non-woven medical textiles (with Chemical, Mechanical & Thermal treatment). Applications are infection control, hygiene, Compression bandage, wound dressings, etc. He spoke about the advantages of non-woven disposables and customized procedure packs which reduce the turnaround time and thereby more number of surgeries can be conducted. He highlighted the following recommendations- standard two bid system across all hospitals / AFMSD, Standardisation, Allocation of PVMS (Price Vocabulary of the Medical Stores ) Code, Centralised Vendor Registration and Regular campaigns for healthcare service provider to improve Awareness.

**3. Latest Developments in Protective Clothing** by Dr. Vikas B Thakare, Scientist F & Joint Director, DRDO, Gwalior. He presented the products developed by DRDE i.e. NBC & Bio Personal Protective Equipments, Gas Mask, Canister, Multifunctional NBC boots, NG NBC Haversack, Bio-Protective face mask & suits, long lasting insect repellent fabric, etc. He highlighted the future technology development for NBC products i.e. Activated Carbon Fabric (ACF) Technology for Next Generation NBC Products- Target Products are NBC Suits, Socks, Shoes, Wound Dressings, Face Mask, NBC Wipes & Other filters (Mass- 2.25 Kg & Comfort-Water vapor resistance- 8.0 m<sup>2</sup>Pa/W), Nano fibrous Web (NFW)- Needleless Electro Spinning, Elastomeric Selectively Permeable Membrane and Self Cleaning & Detoxifying Concepts.

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**4. Latest Developments in Protective Clothing** by Dr. K. K. Gupta, Sc E, DMSRDE (DRDO) emphasized about the products developed by DMSRDE i.e. NBC Protective Textile Equipment- Recently developed are NBC Suit Mk-V, NBC Gloves Mk-II, NBC Haversack Mk-II, NBC Overboot Mk-II, High-Altitude/ Glacier Clothing Items, Special Tents, Shelters And Covers, Textile Based Camouflage Systems & Mountaineering & Life Saving Textile Equipments. He also talked about the Mobile Camouflage System (MCS) for T-90 Tank and its specifications are Visual (0.38-0.71  $\mu$ m): Tank fitted with MCS not to be detected by naked eye beyond 1000 m and high resolution binocular beyond 2000 m, NIR (0.71-2.4  $\mu$ m): Not to be detected by infrared (IR) devices both active and passive beyond 500 m, Thermal IR (3-5  $\mu$ m & 8-12  $\mu$ m): Not to be detected by thermal Imaging devices beyond 2000 m, Radar (2-18 GHz, 35 GHz & 94 GHz): RCS reduction: Desired: -10 dB, Min: -7 dB. He also highlighted the Synthetic Camouflage Net for Snow Bound Area, Radar Scattering Camouflage Net, Textile Items for Glacier Region (Total Production Value (DMSRDE) ~ Rs 100 core), Poncho Glacier, Splint inflatable, Mattress Glacier, Rope Climbing, Cord Avalanche, etc.

**5. Advance Materials for Protection Solutions** by Mr. Manoj Jhaver, E.I. Dupont India briefed about the Dupont Protection Solutions Business and its leading brands are Kevlar®, Nomex®, Tyvek® & Corian®. He emphasized the Military needs for Modernized Uniforms, Advance Material Solution for Military Uniform and Roadmap for Military Uniform Modernization. New



Offerings for Military Uniform Application are Nomex® MTP (Multi Threat Protection), Nomex® Multi-Hazard Protection (MHP), ThermoMan™ instrumented mannequin, PUG (Protective Undergarment) and Flyers Jacket Outer Shell Replacement.

**6. Protective Textiles recommended for Army** by Mr. Basant Lohia, Tarasafe International. He briefed about the needs of Indian Army in Protective Clothing and how industry can meet their requirement of Protective clothing. Tarasafe has 2 modern production facilities supplying to International customers of Protective workwear/Clothing. Focus Areas for Protective Clothing are Standardisation of Products and requirements, Finalisation of norms for Protective Clothing, Enforcement of Standards, Material Testing facilities as per International standards & Role of Center of Excellence (COE) – bridge between the Indian Armed Forces and the Industry. He highlighted about the Mosquito repellent garments, Garment ventilation system (Enhanced mobility & comfort, Proper fit & coverall size).

### **Session 5 – “GEOTEXTILES, BUILDING TEXTILES AND QA PROCEDURES”**

The fifth technical session was chaired by Maj Gen S. P. S. Kohli, ADGW (Army). The following presentations were made during this session.



**1. Geotextile Requirements of Defence forces** by Col Rajeev Kumar, Engineers (BRO). He talked that BRO (Border Roads Organization) has grown with 18 projects till now. BRO is working under Ministry of Defence. The role of BRO is to develop and maintain operational road infrastructure and its tasks are to construct the road, bridges, tunneling, road maintenance, etc. He highlighted technology initiatives in BRO are Proven technology - tested and codified and Unproven technology - yet to be codified. Design and Specification Section at HQ DGBR responsible for introduction of new technology or construction material in BRO. ADGBR (East) Functional at Guwahati to monitor works in North East. ADGBR (North-West) Functional at Chandigarh to monitor works in North Western region of India. He briefed about some of the

geotextile projects such as BRAHMANK, UDAYAK, SEWAK, DEEPAK, VARTAK, PUSHPAK, SHIVALIK.

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3. HQ ADGBR (North-West, Chandigarh

Tel: 0172-2673158, Email ID: [bro-adgnw@nic.in](mailto:bro-adgnw@nic.in)

2. **Geotextiles Recommended for Defence Forces** by Mr. Shahrokh Bagli, Chief Technology Officer, Strata Geosystem. He highlighted the importance of Geosynthetics which are flexible, semi-flexible polymeric materials in two & three dimension form i.e. Geotextiles, Geogrids, Geocells, Geonets, Geomembranes, etc. and its general applications are roads, railways, ports and harbours, rockfall & landslide mitigation, landfills, riverbanks, etc.. He spoke about the case study where geogrids are used i.e. Tracks in Desert Sands of Rajasthan and presented the whole range of products produced by Strata i.e. Geocells and its case study are SEM Drain, Rajasthan & NH Division, NH-44 Assam - Tripura Highway. And other innovative applications of geocells are Camouflage Hangers, Reinforced Soil Walls, Aamby Valley, Hill Road Drains, Canals on Flat Terrain, Front line structures, Blast proof barriers.

3. **Buildtech Requirements of Defence forces** by Maj Gen S. P. S. Kohli, ADGW presented the fabric structure are forms of constructed fibres that provide users a variety of aesthetic free form building designs and Fabrics are laminated with synthetic material for increase of strength durability and environmental resistance & different advantages of Tensile Fabrics Architecture. Some examples where tensile structure are used very efficiently are Interiors, Atriums, Bridges, Auditoriums, Open air theatre, Stadiums, Swimming pool, Exhibitions & Petrol pumps, roof tops, Canopies and covered pathways.

4. **Buildtech Recommended for Defence forces** by Mr. Sheelam Seth, Sr. VP, SRF Ltd. He explained in detail about the Buildtech products such as Architectural membranes, tarpaulins, Scaffolding nets, Fibre reinforced concrete, Concrete Fabrics, Awning & Canopies, Floor & Wall coverings, Radome Hemispherical Dome, Hoardings & Signages, Tents, Truck covers and different flame retardant fabrics for outdoor applications which are used for Defence purposes.

He briefed about the Cool Coated Fabric, Easy Clean Fabric & Mouse Deterrant Fabric which are both side PVC coated.

5. **QA Procedures** by Brig Sudhindra Itnal, Controller, CQA (T&C), Kanpur briefed about the DGQA where Quality is the must. DGQA Organisation is responsible for Quality Assurance of Defence Stores produced by Ordnance Factories, Public & Private Sector & Ex-Import. He spoke about the QA Tools - Quality Control, Quality Assurance, Quality Audit, Surveillance, Claims, Pre-Dispatch Inspection & Joint Receipt Inspection & Self Certification. He explained about the procedure for tender evaluation & contract negotiation, request for proposal and supply order placement.

[For further query contact: - 1. HQ DQA (S) New Delhi, Tel: 011- 23011422, 23011368, 23012316

2. CQA (T&C) Kanpur, Tel: 0512- 2324529, 2328610, 2328611

3. CQA (GS) Kanpur, Tel: 0512- 2327472, 2326557, 2328607]

## **Session 6 – “CONCLUDING SESSION”**

The seminar ended with summing up the proceedings by Maj Gen BV Rao, Additional Director General, Equipment Management. Dr Anup Rakshit, Executive Director ITTA said that the regular monitoring of the progress will help expediting the process of indigenizing the products for Army. He extended vote of thanks to MGO Branch of Indian Army who jointly worked with ITTA to make the event a grand success. Also to all participants from the Indian technical industry, Speakers and Chairman of the seminar and all exhibitors displaying their innovative products in the exhibition.

## **EXHIBITION**

Exhibition was inaugurated by Smt. Smriti Zubin Irani, Hon'ble Minister of Textiles, Govt. of India and General Bipin Rawat, the Army Chief. Exhibition is to create the awareness on the requirements of the Indian Defence sector of technical textiles, their innovation for product up-gradation and industry will get opportunities to showcase their products and capabilities.

The exhibition showcased the entire technical textile and Footwear products developed by various technical textile manufacturers showing the possible improvements of the different products used by the Indian Army. The list of Exhibitors is given below.

## List of Exhibitors:

COMPANY NAME	
AROO INDUSTRIES	ARRUTH (PVT) LTD.
ARVIND LTD.	AUREOLE INSPECS (INDIA) PVT. LTD.
BARRACUDA CAMOUFLAGE PVT. LTD.	E.I. DUPONT INDIA PVT. LTD.
FRONTIER PROTECTIVE WORKWEAR	GARWARE-WALL ROPES LTD
KAYTENT INDUSTRIES	KHATOR TECHNICAL TEXTILES PVT. LTD.
KUSUMGAR CORPORATES PVT. LTD.	MAHAVIR SPINFAB PVT. LTD.
MAYUR LEATHER PRODUCTS LTD.	NATIONAL TEXTILE CORPORATION LTD.
INTERNATIONAL PACKAGING PRODUCTS PVT. LTD. (OWENS CORNING)	ORIENTAL WEAVING & PROCESSING MILLS PVT. LTD.
NITRA, COE (PROTECH)	RADNIK AUTO EXPORTS
RENFRO INDIA PVT LTD	SHIVA TEXYARN LTD.
SHUBH SWASAN INDIA PVT. LTD.	SSIPL RETAIL LTD.
STRATA GEOSYSTEMS INDIA PVT. LTD.	TEIJIN INDIA PVT. LTD.
UNIFAB INDUSTRIES	VIJAY SABRE SAFETY PVT.LTD.
INDIAN DEFENCE – SCME, LCC/ECC, CBRN, EPROC/GEM	

## EXHIBITION AREA:







## FEEDBACK FROM THE PARTICIPANTS:

The feedback from the participants was very encouraging and most of them mentioned that their experience was overwhelming and the participation in the Exhibition was very useful. The topics covered, speakers present and quality of discussion were very relevant in the context of encouraging Technical Textiles for a major end-user like Defence sector.



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