

Technical Textiles: Quo Vadis?

Seshadri Ramkumar

Nonwovens and Advanced Materials Laboratory, Texas Tech University, USA

Email: s.ramkumar@ttu.edu

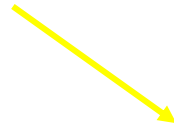
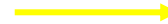
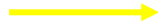
Invited Presentation at 75 Years of Indian Independence Celebrations Online Event
North India Section of The Textile Institute Manchester (NISTI regd.)
August 7, 2022, 5 PM IST

Contoured Needleboard Technology



Width: 1.2 mts.

Needlepunching Technology



Nonwoven Laboratory at Texas Tech University



Technical Textiles: Rhetoric or Reality

Textile industry is in need of diversification.

Is there money in technical textiles?

How to grow the industry and make money?



Where is the Industry Now?

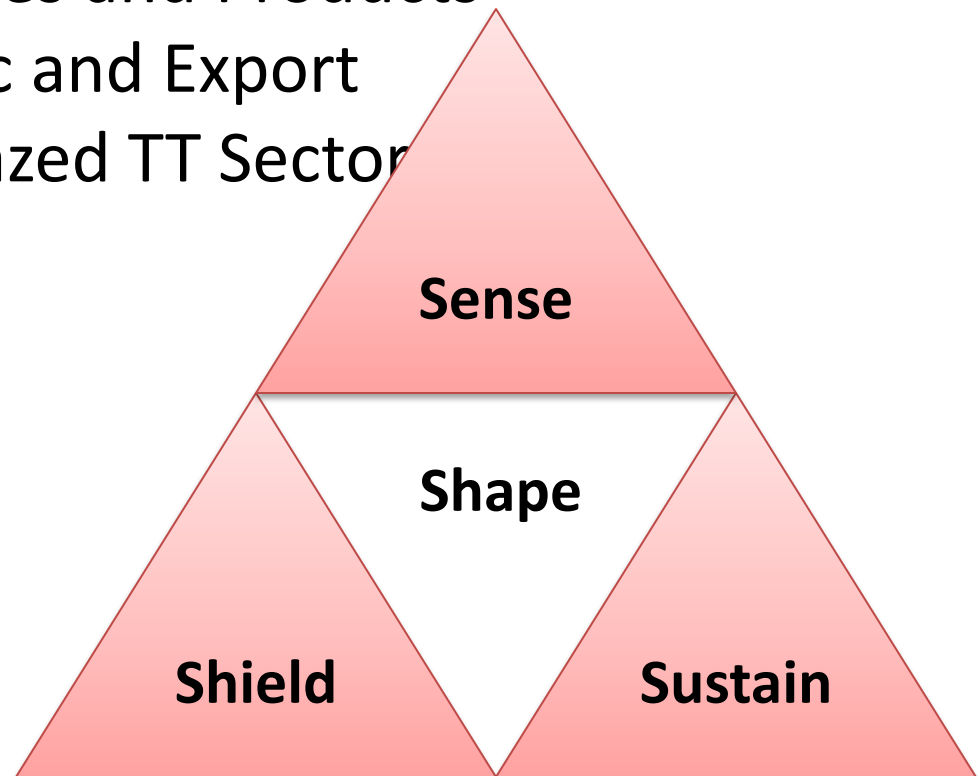
Awareness Phase is Over

Initial Growth Phase

Market Share has to Grow

Growing the TT Sector: Defense Model

- Sense- Current Situation Analysis
- Shape- Planning: Processes and Products
- Shield- Cater to Domestic and Export
- Sustain- Protect Specialiazed TT Sector



What are Technical Textiles ?

- Technical Textiles are value-added textile products that provide added functionality and applications other than regular *fiber-to-fashion* supply chain products.
- These technical textiles encompass high performance fibers, yarns, woven, knitted, nonwoven, braided and composite structures.

Technical Textiles Categorization

Product Based Category

Agrotech

Buildtech

Clothtech

Geotech

Hometech

Indutech

Medtech

Mobiltech

Oekotech

Packtech

Protech

Sporttech

Technical Textiles: Growth How ?

- Global technical textiles sector is in a way established for about 50 years.
- Germany has led the growth and product based categorization grew as the industry started moving away from infancy.
- Indian sector needs to focus on market categorization. Product based categorization is also good for Indian market, but some categories may not be application.
- Among many bottlenecks, knowledge on the need and how to develop end-user based technical textiles.

Answers

The answer lies in the THREE major product categories:

1. Consumer tech products.

2. Institutional tech products.

(infrastructure, hospital or major bulk procurement items)

3. Government procurement products.

Thrust Going Forward

Thrust will be to grow the sector that produces products that are close to end-users or where the value is!!

What India Can Do Best: Focus on the Confectionary Sector of TT

Why this is Important: Take North America

North America: Only 210 Companies

Only 900 Lines

NA Data Source: Brad Kalil, INDA, USA

Are Nonwovens Technical Textiles?

- Most of the nonwovens are technical textiles as they have not yet penetrated into the apparel sector.
- Nonwovens are predominantly disposable and semi durable goods.
- ***All nonwovens are technical textiles but all technical textiles are not nonwovens.***

Technical Textiles –Simple Understanding

- Technical textiles can be any fibrous material and their combination with other items which have NON-APPAREL applications, excluding paper.

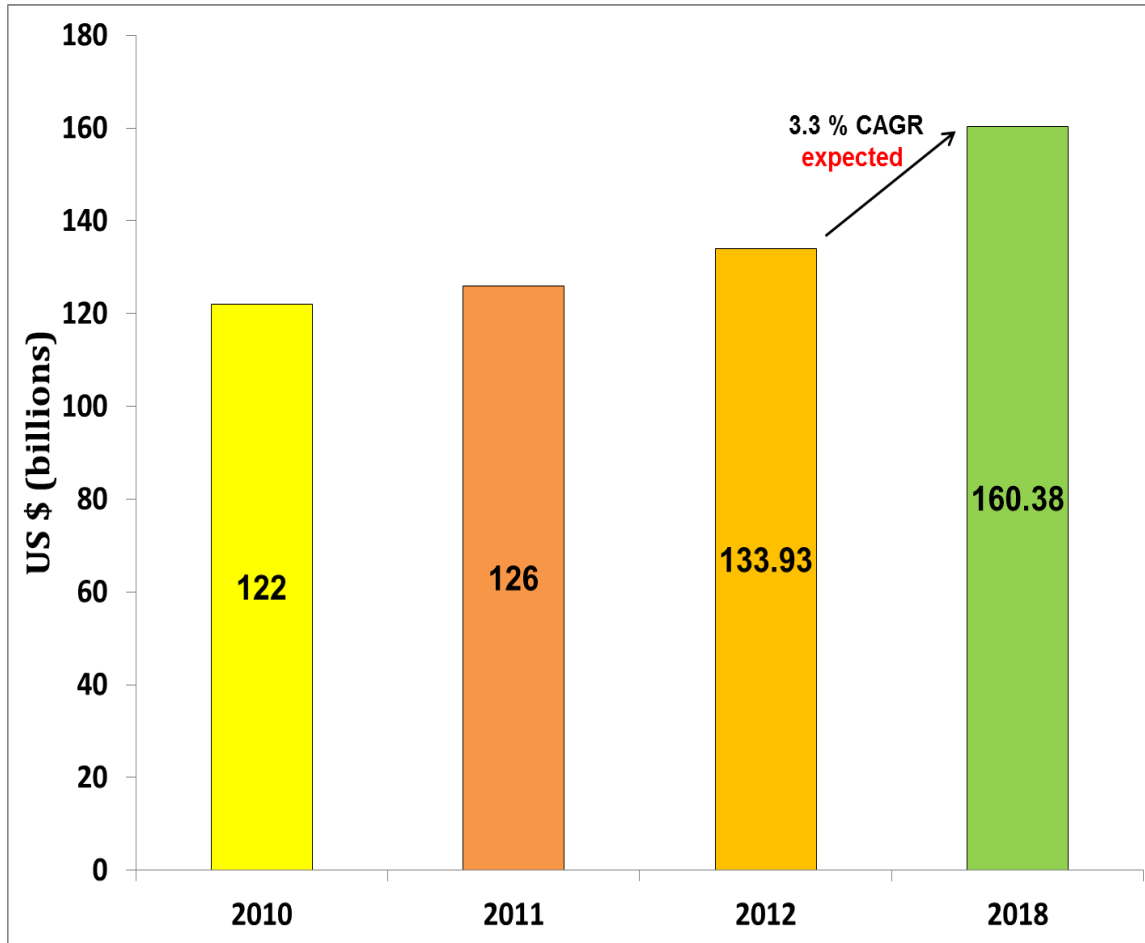
Amazing Reality

- Raw cotton with bark, seed coats and trash is a TECHNICAL TEXTILE!
- Situations create new technical textile products.
- Generally, margins are high.

Technologies for Technical Textiles

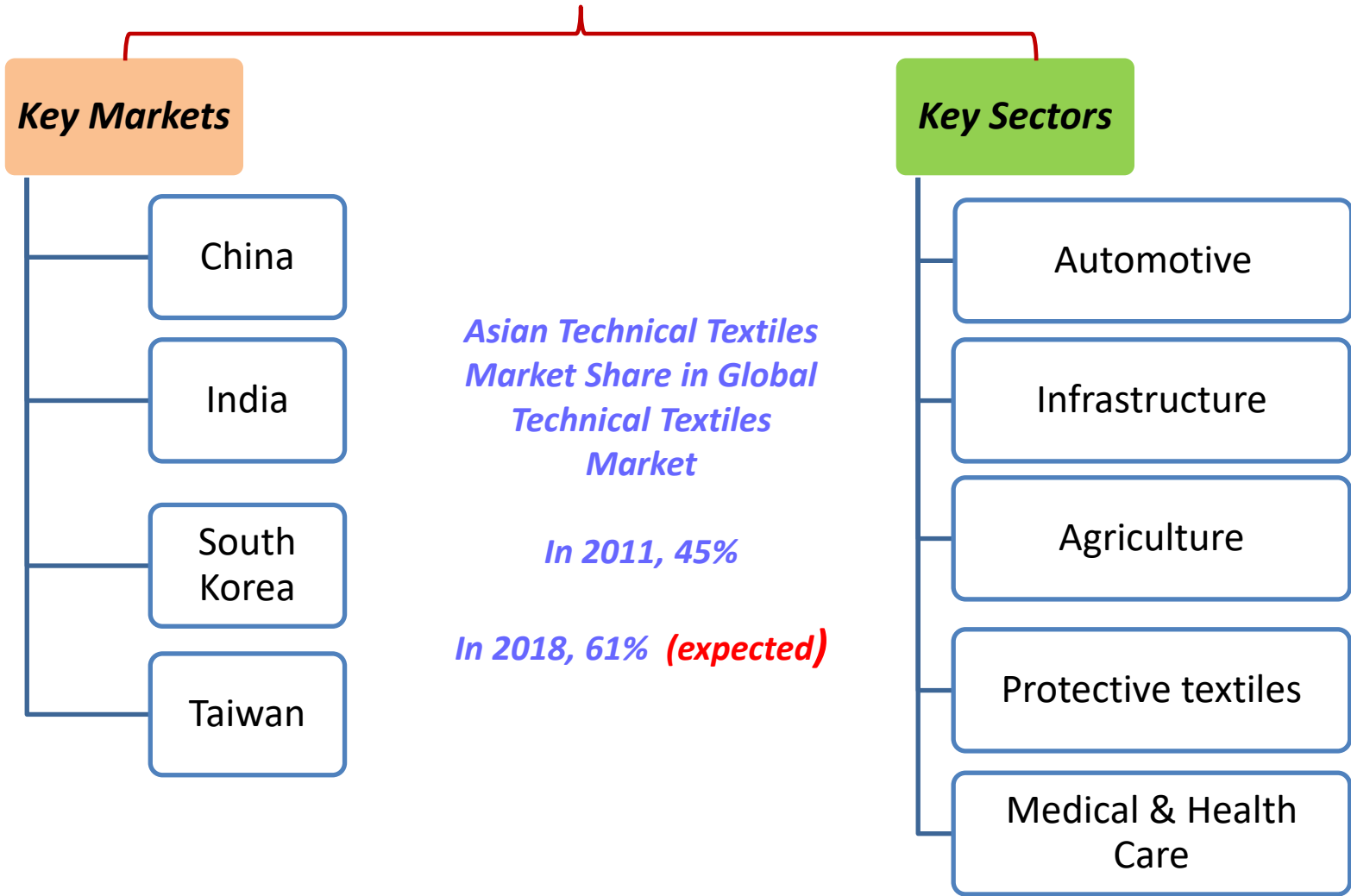
- Technical textiles can be made by variety of methods based on performance requirements.
- So, the 12 product category followed may not be correctly/aptly applicable for India.
- Why? A carded bonded loft can be used for upholstery material or H&V and acoustic insulation material.
- Based on the existing 12 category where will this be grouped: Buildtech or Mobiltech? So, such classification causes confusion and will contradict statistical numbers. However, these are basically converted institutional products-----

Worldwide: Demand for Technical Textiles



*“Asia Pacific Region
Real Power Engine for Global
Technical Textiles Market ”*

Asia's Influence on the Global Technical Textiles Market





Nonwovens

(Vital Functional Textiles)

**Case in Point: Nonwoven Growth
Pattern and India Statistics**

Nonwovens Growth Prospects

(Current & Historical Review)

Markets that recorded growth include baby diaper, medical, personal care wipes, civil engineering, automobiles and agriculture applications.

Nonwovens Growth (30 Y CAGR): 4.4%

USA GDP (30 Y CAGR): 2.3%

Nonwovens Sector Status

(North American Market-Process Wise)

Nonwovens Rollgoods: US\$17.7 Billion
262 Product categories (end-user level)

Current: 5.553 Million MT

1990: 1.536 Million MT

(TT sector normally has double the growth of GDP—it is an optimistic signal).

Drylaid (44%) has the maximum capacity, followed by spunlaid (30%), wetlaid (22%) and airlaid (4%)

Nonwovens Sector Status

(North American Market-Process Wise)

Drylaid web formation has three major bonding:

Needlepunching/Stitchbonding: 22%

Thermal/Resin: 18%

Spunlace: 4%

Spunbond: 18%

Meltblown: 4%

Nonwovens dominated by single use (51%) vs.
durables (49%)

Nonwovens Sector Status

(North American Market-Product Wise)

Absorbent Hygiene:	14%
Filters:	14%
Wipes:	11%
Medical:	6%
Geotextiles:	4%
Transportation:	14%
Infrastructure:	12%

Nonwovens Sector Status

Where are Growths?

Projects Needs to be Analyzed Based on Growth Statistics.

NA Growth Statistics: A Glimpse

Wipes: 4.5%

Filters: 4%

Medical PPE: 3%

Geo Structures: 1-2%

Will these apply to India?

Nonwovens Sector Status

Where are Growths-Investments in Lines in India

- Grow the converting sector, particularly high end medical and hygiene.
 - In terms nonwoven fabrics, focus needs to be on high quality machinery and high productivity.
 - International brands need to certify product, hence investments in quality processes and rollgoods are needed.
 - Case in Point: Global Nonwovens (Spunmelt Lines)
-

Quality Lines and Demand

North American Capacity Utilization

- **2016: 79%**
- **2019: 85%**
- **2020: 86%**
- **2021: 88%**

(Quality raw materials fiber to rollgoods from India at competitive price will win opportunities in EU and USA. Competition from Middle East, Turkey and Malaysia to start with)

2010 Nonwoven Production Region Wise (million tonnes)

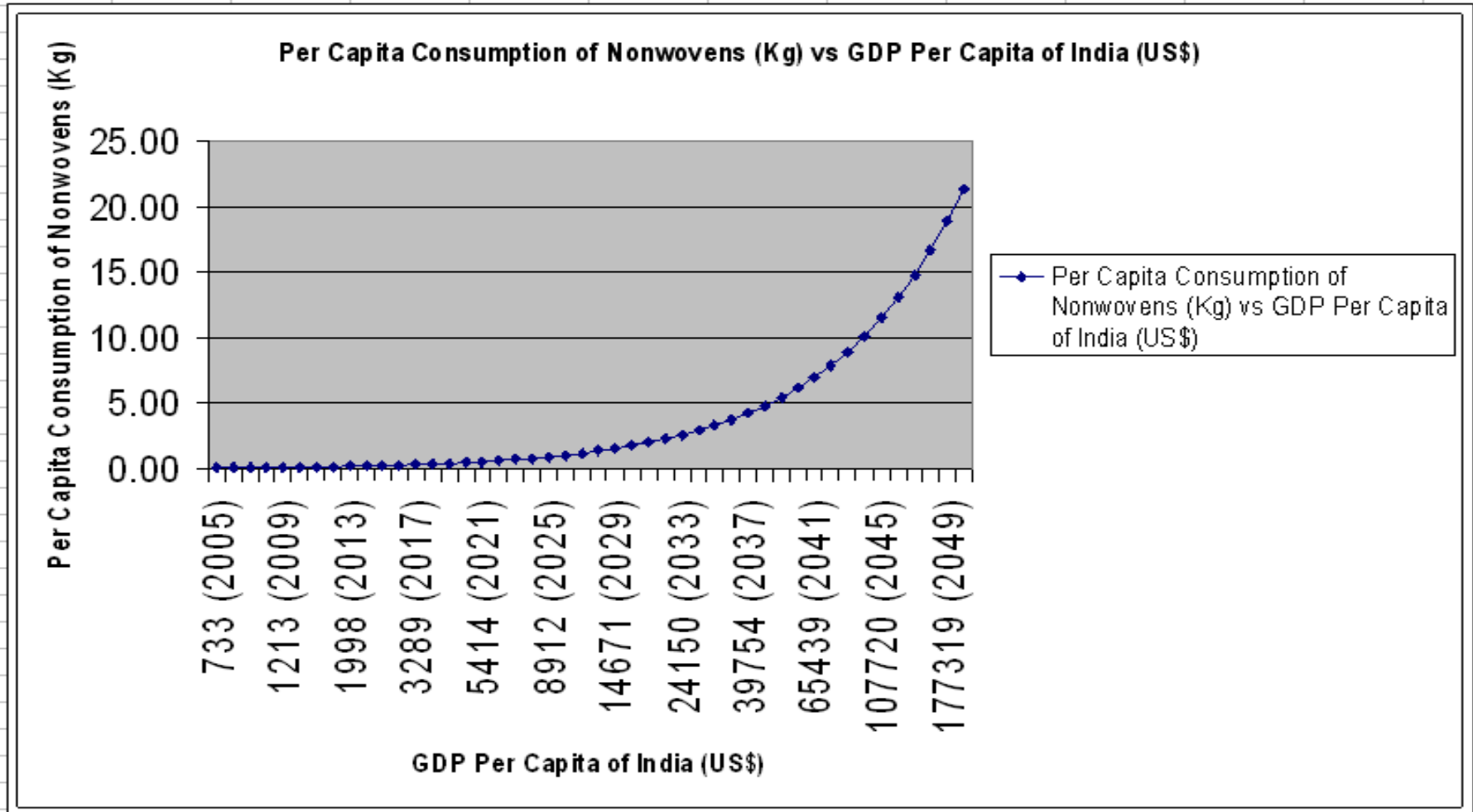
North America:	1.520
South America	0.340
Europe (2009)	1.615
China	1.400
Other Asia Pacific	0.680
Middle East	0.240
Japan	0.330
Rest of World	0.230
Total	6.355



Model for Technical Textiles

(Case Study: India)

India's Per Capita Consumption vs. Income Levels (2005-2050)



Why Then the Indian Technical Textiles Industry has not Grown Yet?

Requirements for the growth of technical textiles sector in India

- 1) Lack of awareness on how to make finished or converted technical textile products.
- 2) Marketing know-how to sell and trade technical textile products.
- 3) 1-0-1 basic marketing class on technical textiles.
- 4) Technical textiles sector in India should know where and how technical textiles are used on a daily basis.

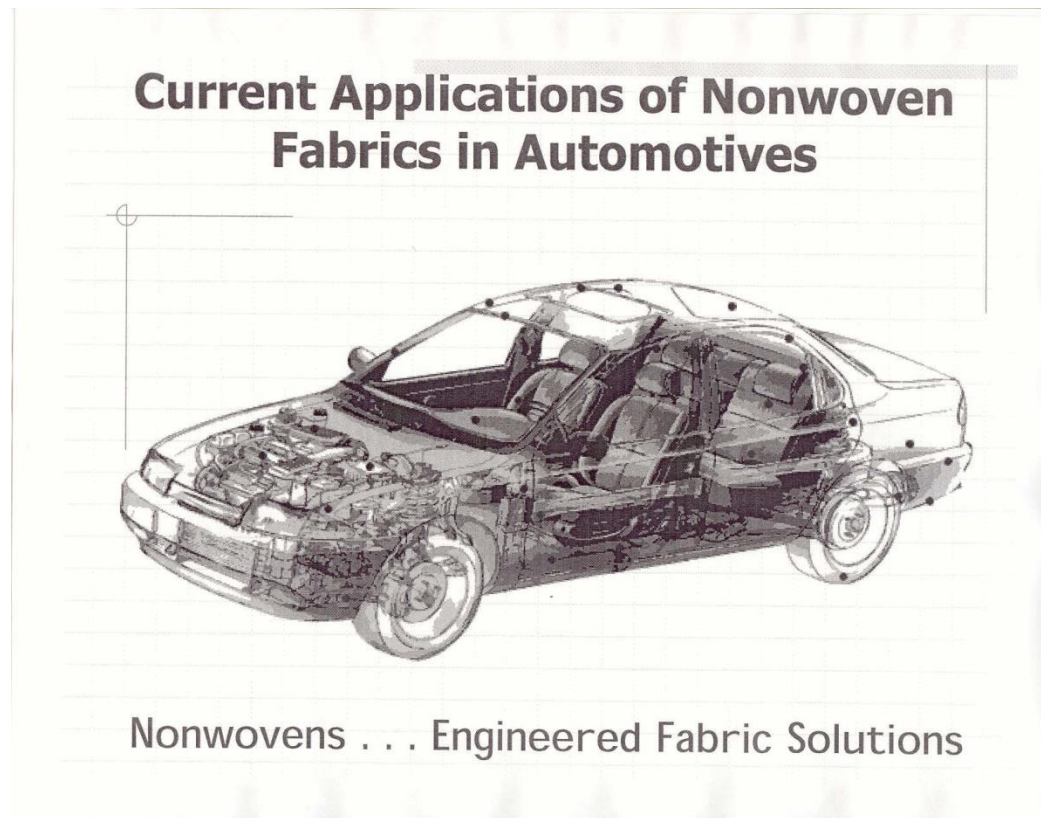
Global Perspective of Technical Textiles in India

- India's specialty fabric and nonwoven industry is fragmented and still in its infancy, with no state-of-the-art technology in place compared to global players.
- Textile industry is also undergoing a major reorientation from apparel to specialty fabric applications.
- Specialty fabrics now accounts for more than half of the total textile production in India.
- The focus of the government is on upgrading infrastructure (geosynthetics) and increasing the use of automotive textiles (nonwovens).
- Other niche areas: Safety and protective (defense), medical textiles, agriculture (nets, shading, mulch) and filtration fabrics.



**Need of the Awareness on
the Technical Textiles
Converted Sector**

Nonwovens in Automobiles: A Glimpse of Value-Added Application





Take Away Points

- Product basket: technical knowhow at end-user level
- Focus of high-end specialized products catering to defense, medical, automotive and sportswear sectors
- Commodity hygiene and medical products-low margin
- Increase market size: Volume vs Margins
This sector should be low priority??
- Functional Chemistries

Take Away Points

- Create more awareness on the scope of the sector at all levels in realistic fashions
- Industry-institute interactions should be priority
- Curriculum development involving technical textiles
- Marketing knowhow is must
- Government intervention at policy level and R & D support should continue

Identify near, mid and long term products and projects



Nonwovens & Advanced Materials Laboratory

TexSnips

By Seshadri Ramkumar - Texas Tech University

TexSnips (Textile Snippets) are brief write-ups on new research & development and market information concerning fiber and related disciplines written and distributed by Dr. Seshadri Ramkumar of the Nonwovens and Advanced Materials Laboratory at Texas Tech University, USA. TexSnips articles are picked-up by media outlets such as Commodity Online, India, WTiN, England, and Cotton24/7.com, USA.

TexSnips was created by Dr. Ramkumar in September 2010 and is distributed to interested parties via e-mail. If you are interested in receiving the free TexSnips e-news, please contact him at: s.ramkumar@ttu.edu

Texas Tech University publishes timely news related to Nonwovens and Technical Textiles called TexSnips. It is distributed free of charge to interested parties. If you are interested, please contact Dr. Ramkumar at: s.ramkumar@ttu.edu