MELT BLOWN NONWOVENS :

EMERGENCE OF A RISING STAR IN INDIAN TECHNICAL TEXTILES

A Paper presented at Non Woven Textiles Asia,June 2015 by**, MUNISH TYAGI**

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MELT BLOWN NONWOVENS the GLOBAL SCENARIO

- Globally, the main segments of MB nonwovens include the three basic application types: Filtration (liquid and air) media, insulation (thermal or sound) media and sorbent (absorption) media. Filteration end uses remain the biggest market for MB nonwoven fabrics,with current market size of $4 Bln,and CAGR growth of 7.5% projected over 2015-2020 period.
- This makes it more than 10% in global NW market of $47Bln,by 2018.
- Asia has registered the highest annual growth for Filteration media,at 19% p.a over the period 2009-2014. Surprisingly, India led the Asia growth in demand followed by China and Japan. With India s GDP expected to avg 7.5-7% over next 5 years, use of Filteration media to mitigate and control water and air pollution will be key driver for demand for MB nonwovens. Also, the consumption of MB filter media will keep increasing with steady replacement of traditional textile and paper filter media.Filter bags for hot air filteration would continue under the scope of Needle felt NWs.

SUMMARY INTRODUCTION TO MELT BLOWNS

- Much of the Meltblown produced globally is consumed internally for production of water and air filteration media and kits. At approx. 33% of all meltblown produced, `stand alone` Meltblown has sustained capacity increases of approximate 12% per year for the last 10 years .Also, there is increasing consumption of light weight MB fabrics in composite structures like SMS, SMMS etc for producing barrier inducing `medical` use fabrics of 15 to 30 GSM.

- MB for filter media end sues is mostly PP based,and capable of providing very high BFE [Barrier filteration efficiency] index of 95-99%.
- Global MNC Co s like Freudenberg and Ahlstrom are global leaders in Filter media markets. However, their key challenge is to reduce `Bio` burden.With trend for hydrophilic,Bio degradation will be improving.

Polymers used in production of Melt blown fabrics.

- PP MFR 400 to 2000 range (i.e. Exxon, Basel, Borealis)
- PET IV 0.36 to 0.53 (i.e. Eastman)
- PBT MVR 180 (i.e. Tycona Celanex 2008)
- PA RV 2.6 (i.e. BASF)
- PC (i.e. Makrolon)

Essentials of 2 types of Meltblown technologies

- Meltblown process and are utilized in two distinctly different Meltblown product lines. The technology itself is based on core technology,below:
- Insertion of Mono and Bi-component Melt Blowing equipment for a variety of medical and hygiene applications. In this case, Melt blown is inserted between an upstream and downstream spinning system (typically Spunbond) for the purpose of creating a barrier layer,eg creating SMS.
- Monolithic or Standalone Mono and Bi-component Meltblown equipment for a variety of filtration, insulation and sorbents applications. In this case, melt blown is created independently, then is utilized alone or combined with additional media for the purpose of creating filtration, insulation or sorbent layers.

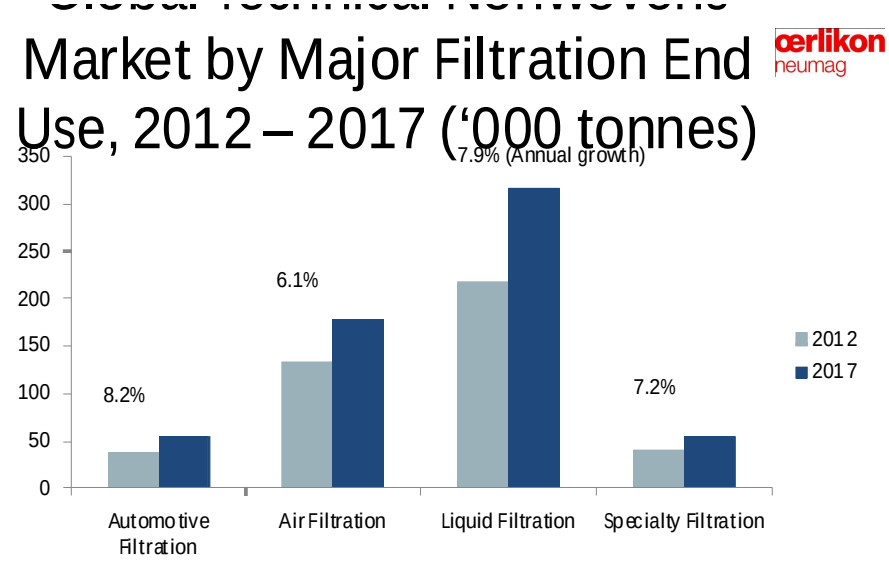
Process and Technology Overview

- Melt blowing is a single step process (see Layout on next slide) in which polymer is:

- Conveyed and metered
- Extruded and filtered
- Metered and distributed over an prescribed width
- Extruded through a linear row of orifices
- Attenuated via impinged high velocity, heated air
- Cooled via entrained ambient or managed conditioned air
- Formed into a flat web like porous structure via vacuum

Inline slit or jumbo wound for end user converting

GLOBAL MARKET SCENERIO



In 2017 the value of technical Filtration nonwovens consumed will total $4.37 billion

Source: Smithers Apex 2013

Source: Neumag Oerlikon

QUALITY CRTIERION FOR MB NON WOVENS

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- A quality Meltblown web is generally agreed to provide the following consistent structural characteristics:
- Random fiber orientation.
- Lower to moderate web strength, deriving strength from mechanical entanglement and frictional forces.
- Generally high opacity (high coverage).
- Fiber diameter ranges from 0.5 to 30 µm, but typically from 1-5 µm.
- Basis weight ranges from 8-400 g/m2, but typically 20-200 g/m2.
- Micro fibers provide a high surface area for good insulation and filtration characteristics.
- Fibers have a smooth surface texture and are circular in cross-section.
- Most melt-blown webs are layered or shingled in structure, the number of layers increases with basis weight.

Drivers for future demand for MB Nonwovens,in India

- The key drivers of consumption and growth are,
- India s availability of synthetic polymers base for R M,
- India s exp. GDP growth of avg 7-7.25% till 2020, and increasing share of young well employed population [consumers]
- India s acute and emergent need to address our serious problem of water and air Filteration ,for both household and industrial use ,and also for industrial and Medical masks.
- China s maturing up into Tech Tex markets [with 40% world share],will give a `spill over` of global demand to India,and
- Saturation in other NW technology like Needle punched,and Spun bond,will make MB the new `Rising star` on our technical-tex horizon.
- Finally, opening of Dom markets and economy is the Key….