PRICE HANNA
CONSULTANTS

COVID 19 IMPACTS ON THE GLOBAL POLYPROPYLENE NONWOVEN FABRICS INDUSTRY

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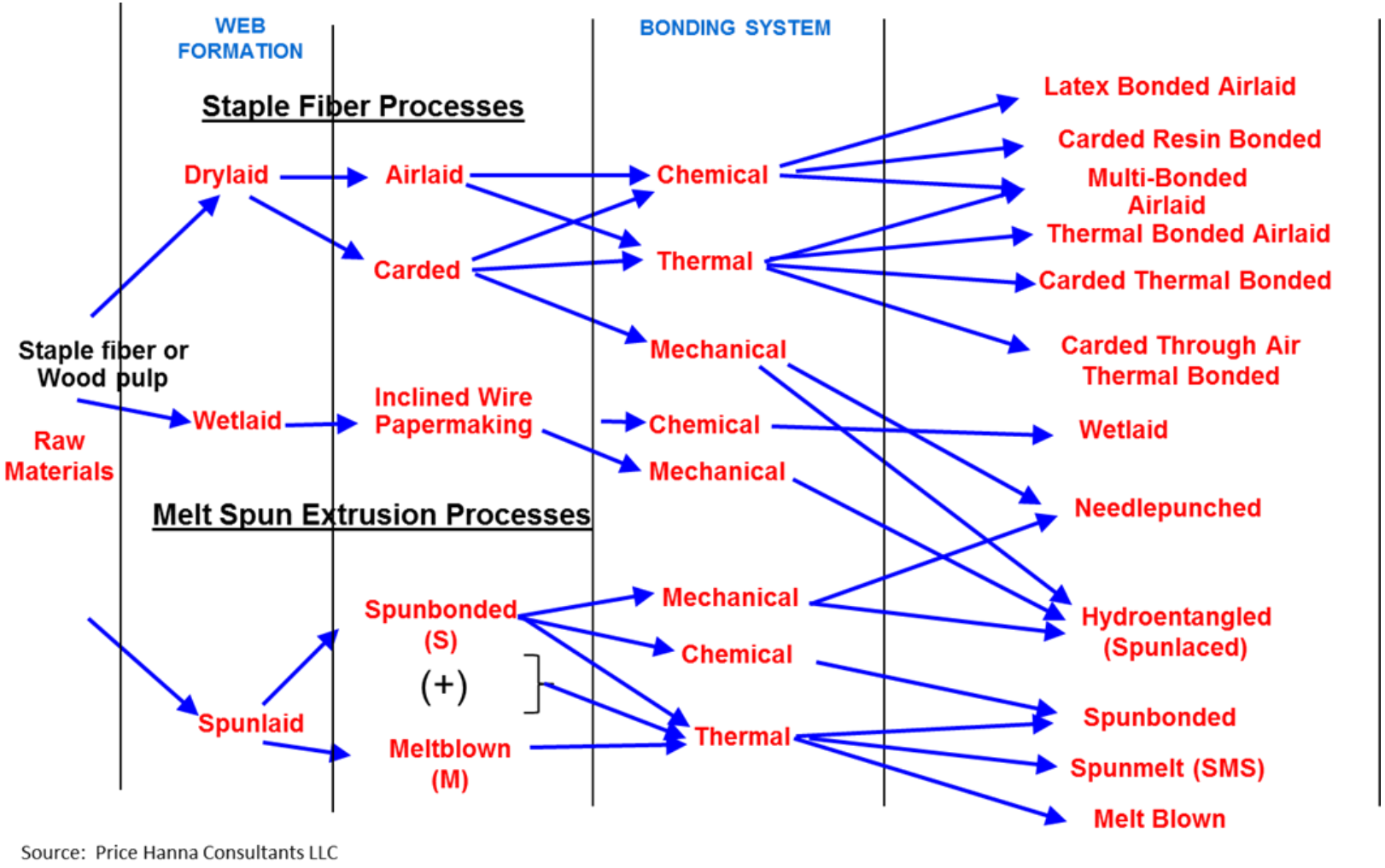
INTRODUCTION – PRICE HANNA CONSULTANTS

Price Hanna Consultants is a global management consulting firm that specializes in nonwoven technologies and their markets. The principals of Price Hanna Consultants have more than 35 years of combined consulting experience with leading companies in nonwoven fabrics, fibers and raw materials. We work with investors, raw material and technology providers, nonwoven producers and finished good converters in proprietary projects and publish periodic multi-client reports on nonwoven technologies, products, supply, demand, market trends and developments.

Technologies of the Nonwovens Industry

Carded Thermal Bonded, Through-Air Bonded, Resin Bonded Staple Fiber	Fabrics formed by processing textile staple fibers over a card and bonding by resin or thermal means…one of the older processes growing modestly in tonnage but losing share.
Needlepunched Staple Fiber	Fabrics formed by processing staple fibers over a card or other web forming device and entangling the fibers by penetrating the fabric with multiple barbed needles…an older process that continues to grow at close to the industry average.
Airlaid	Fabrics formed by air laying and bonding pulp and/or staple fibers… growing steadily but slowly driven by fem care hygiene demand.
Wet Laid	A fabric forming process similar to papermaking which is able to process a diverse range of fibers including cellulosic, synthetic, glass and carbon…durable end use demand (wallpaper, glass fiber reinforcements) is growing twice that of disposables end uses (hygiene, and wipes).
Spunbonded/Spunmelt	Fabrics formed by in-line melt extrusion spinning of filaments of conventional textile denier…a process that continues to grow faster than the industry. Spunmelt or SMS refers to lines with melt blown beams positioned between spunbonded beams.
Melt Blown	Similar to the spunbonded/spunmelt process but extrusion of much finer fibers typically measured in microns.…many new technology advances to adopt the technology to the use of a wide variety of polymers, fiber shapes and bi-component structures. Good growth but modest volume in tonnes.
Spunlaced or Hydroentangled	Fabrics formed by carding, air laying or other web forming techniques; consolidated by hydraulic entanglement…continues to grow.
Laminates	Combinations of nonwovens, scrims, fibers, films, foams or tissue…the use of composites continues to grow.

Summary of Nonwoven Process Technologies



Source: Price Hanna Consultants LLC

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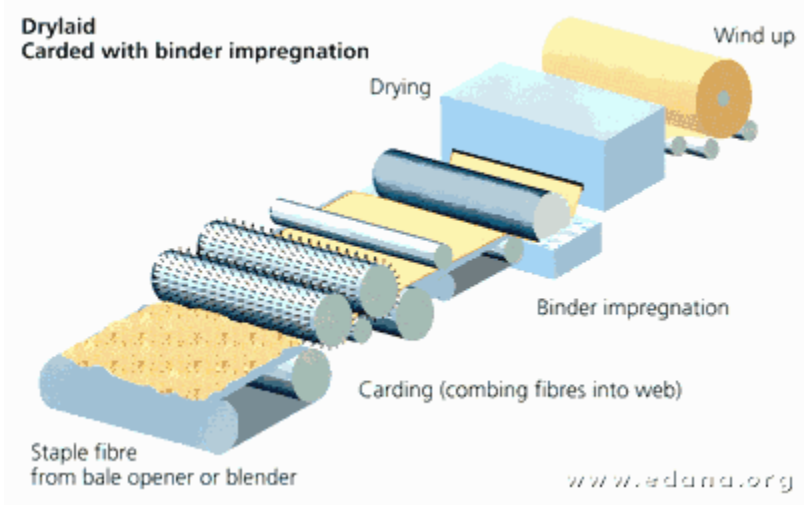
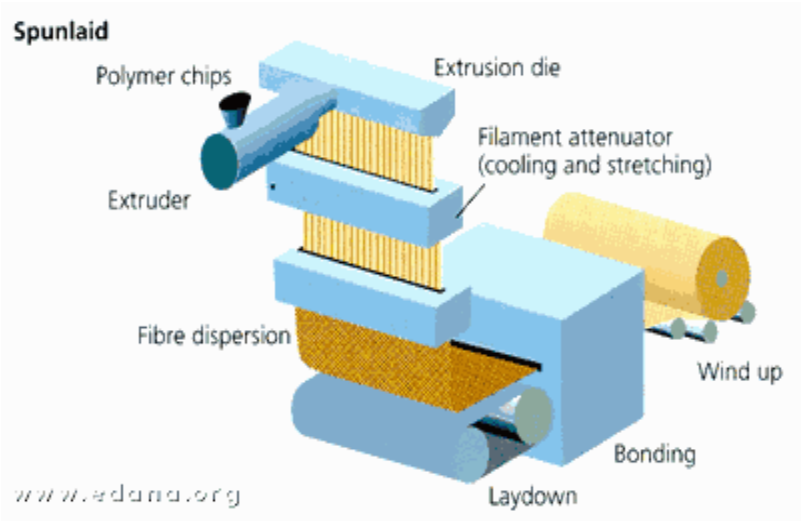
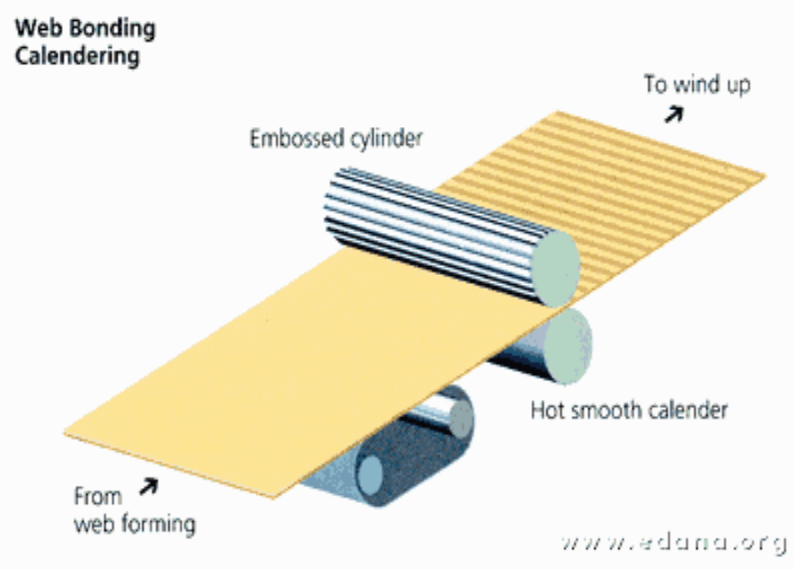
Process layouts for various Nonwoven Technologies







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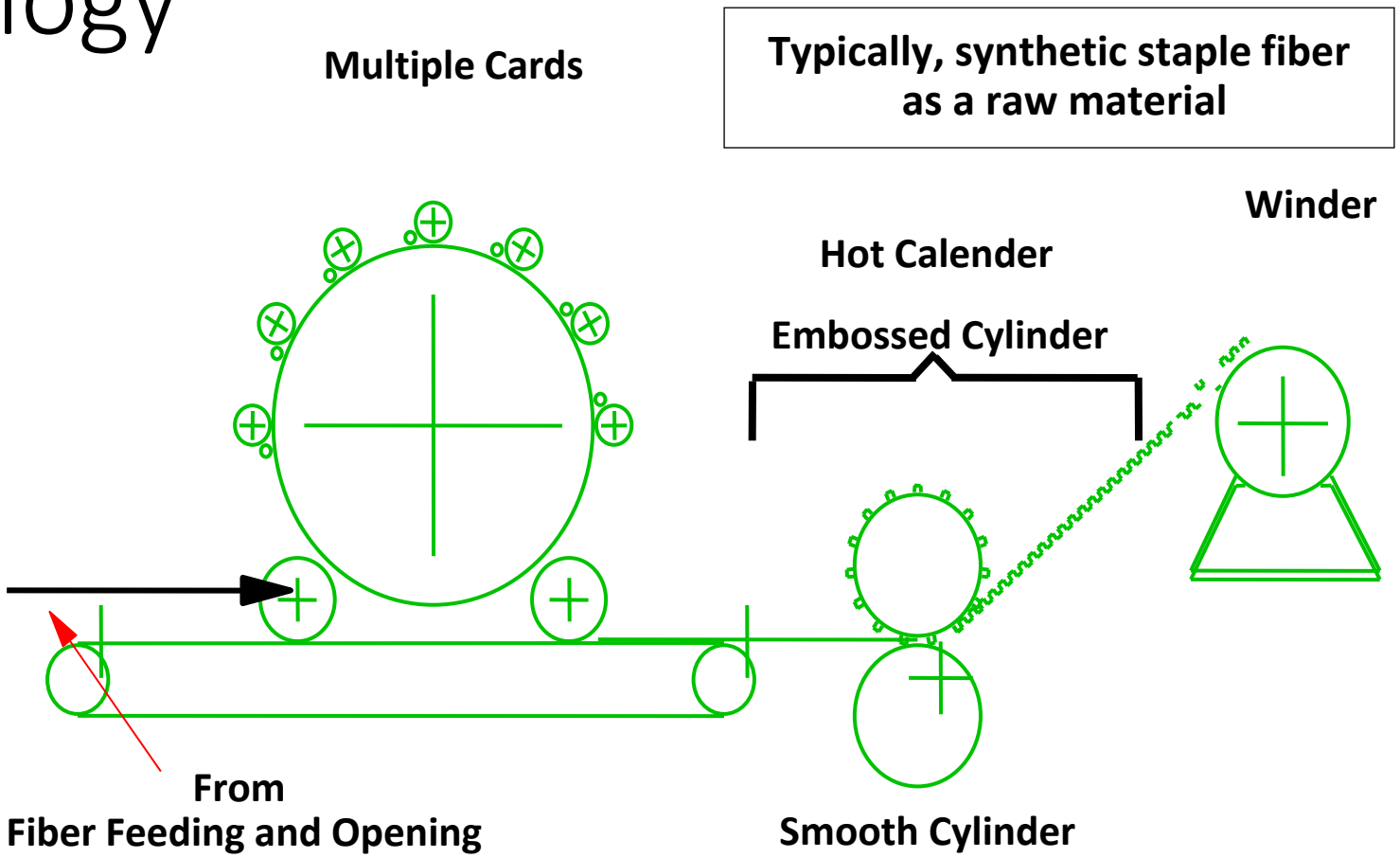
Carded Thermal Bonded Nonwoven Process Technology



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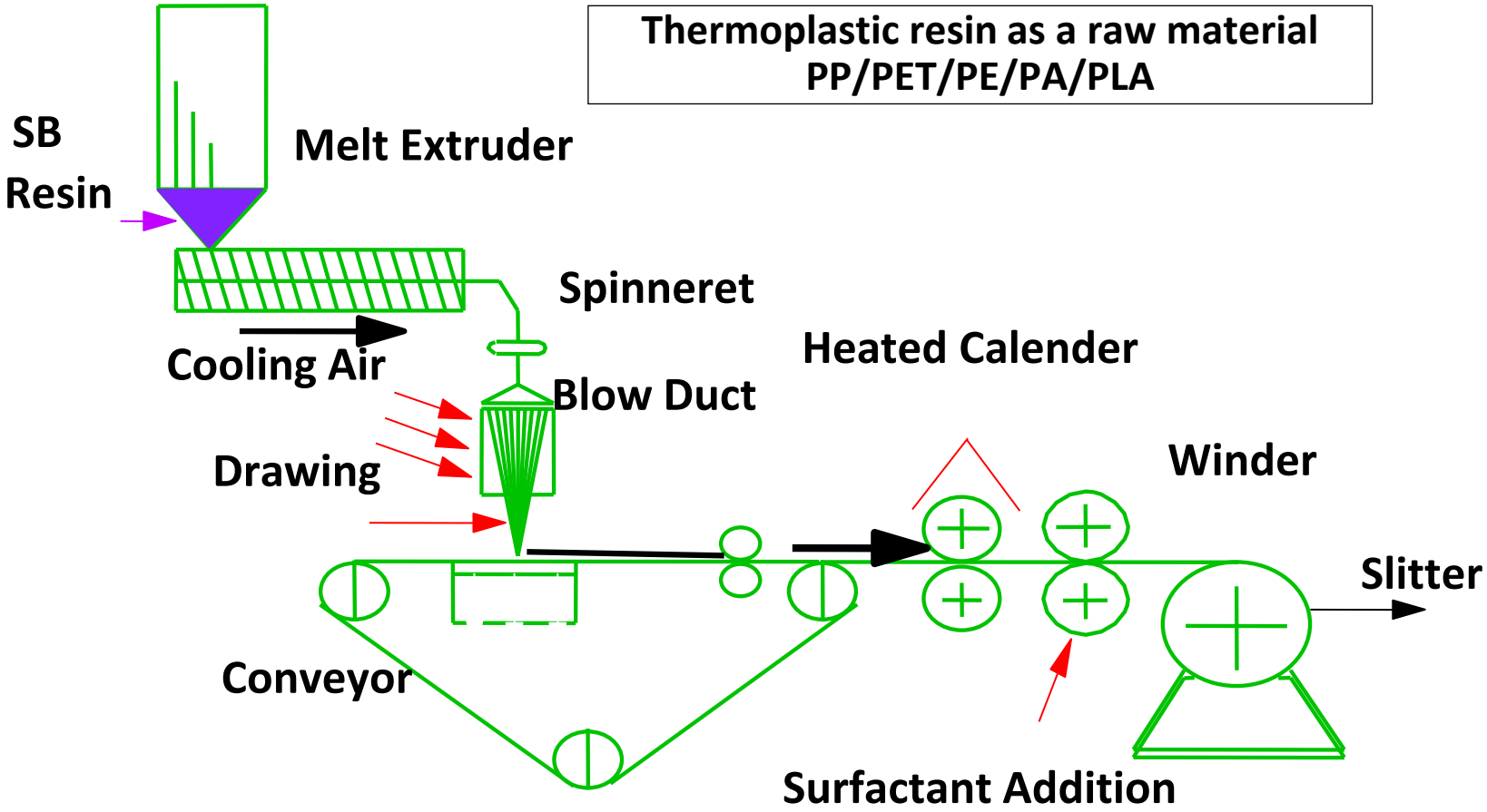
Spunbonded Nonwoven Process Technology



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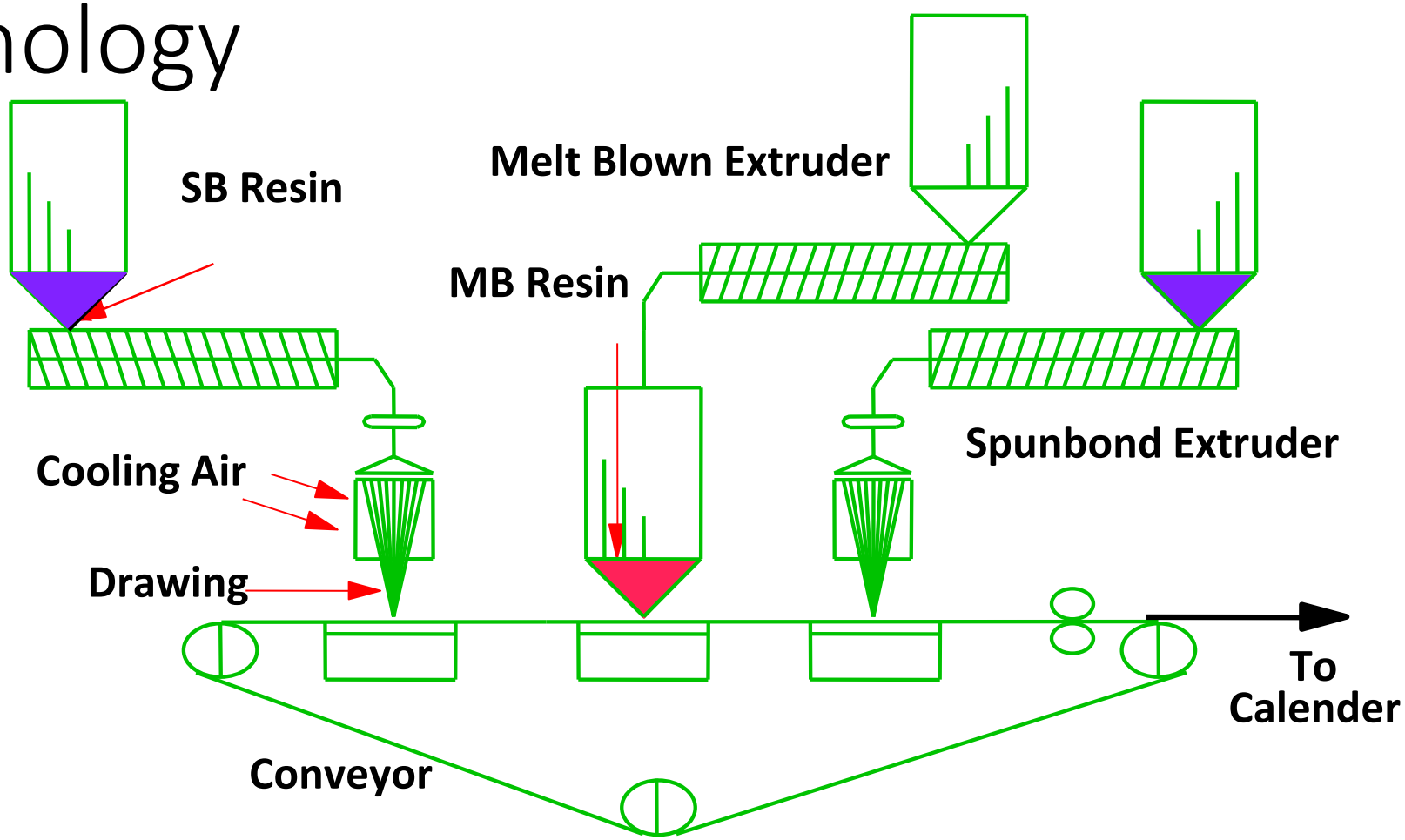
Spunbonded/Meltblown Nonwoven Process technology



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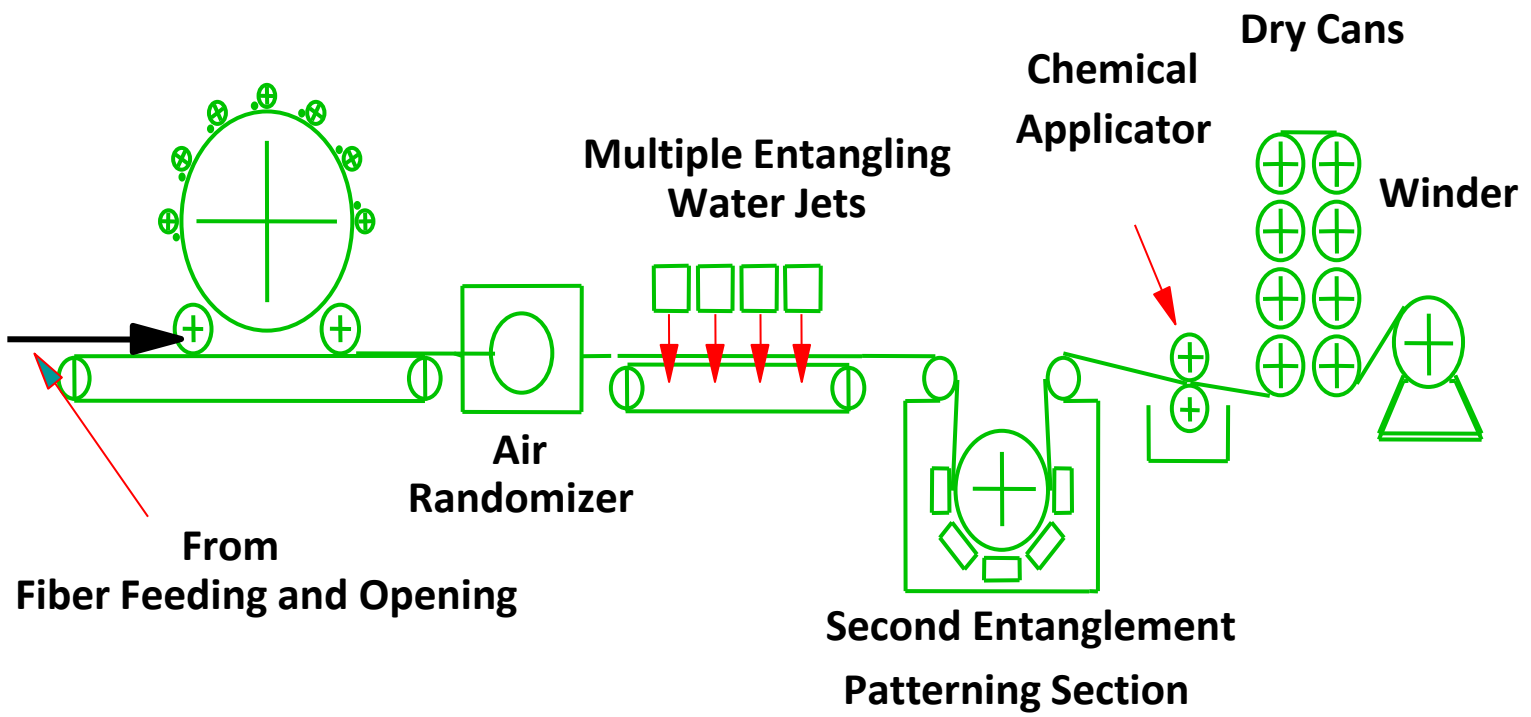
Spunlaced (hydroentangled) Nonwoven Process technology

Usually blends of synthetic and natural staple fiber as a raw material



Source: Price Hanna Consultants LLC

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NONWOVEN RAW MATERIALS

Polypropylene – The predominant raw material used in the manufacture of nonwoven materials. Used in the extrusion of fibers using spunbonded, melt blown and staple fiber technologies.

Polyester – Used in the extrusion of spunbonded and staple fiber technologies.

Polyethylene – Used in the extrusion of spunbonded and melt blown fiber technologies.

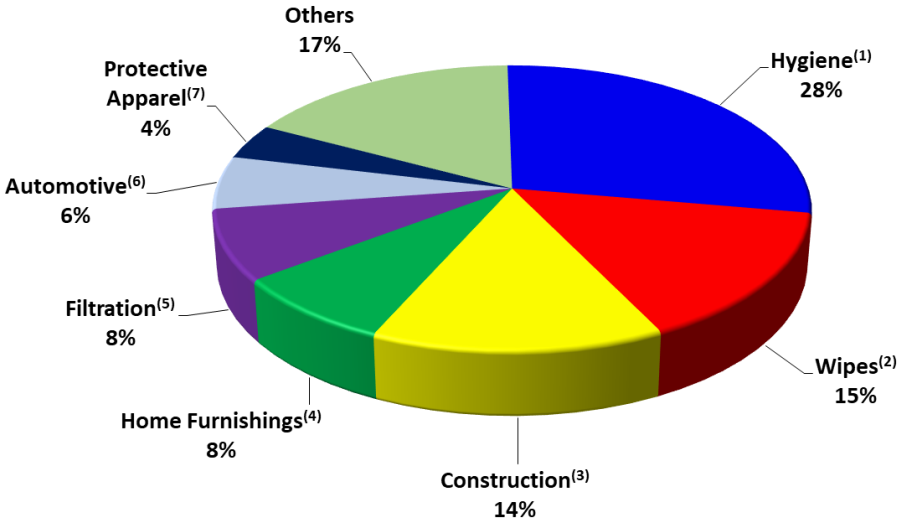
Natural & Synthetic Staple Fibers – Pulp, Tissue, Rayon, Texcel, Cotton

GLOBAL NONWOVEN MARKETS

There are three primary markets for nonwovens which together account for 57% of all demand.

- The Hygiene market is the largest of all markets for nonwovens accounting for about 28% of all demand in 2020. In the hygiene market, nonwovens are used as a key raw material in the manufacture of baby diapers, training pants, adult incontinence and feminine care products.
- The Wipes market is the second largest market for nonwovens accounting for about 15% of global nonwoven demand. There are many uses for wet and dry wipes. The largest market for wipes is for baby care followed by home and personal care and industrial end uses.
- The Construction market is the third largest market for nonwovens accounting for about 14% of all global demand. The largest end uses segments for nonwovens in this market are for geotextiles, roofing mats, waterproofing substrates and weatherization wall wrap.

GLOBAL NONWOVEN DEMAND BY MARKET
2020
(Percent of Total Tonnes)



(1)Diapers, Pants, Feminine Care
(2)Baby, Personal & Home Care, Industrial
(3)Geotextiles, Roofing Mats, Wall Wrap, Other
(4)Carpet Backings, Furniture & Bedding, Wall Coverings, Other
(5)Medical, Industrial, Automotive, Commerical/Residential Air, Other
(6)Interior Trim, Insulation, Carpet Backing
(7)Medical Surgical Barrier and Other
Source: Price Hanna Consultants LLC estimates

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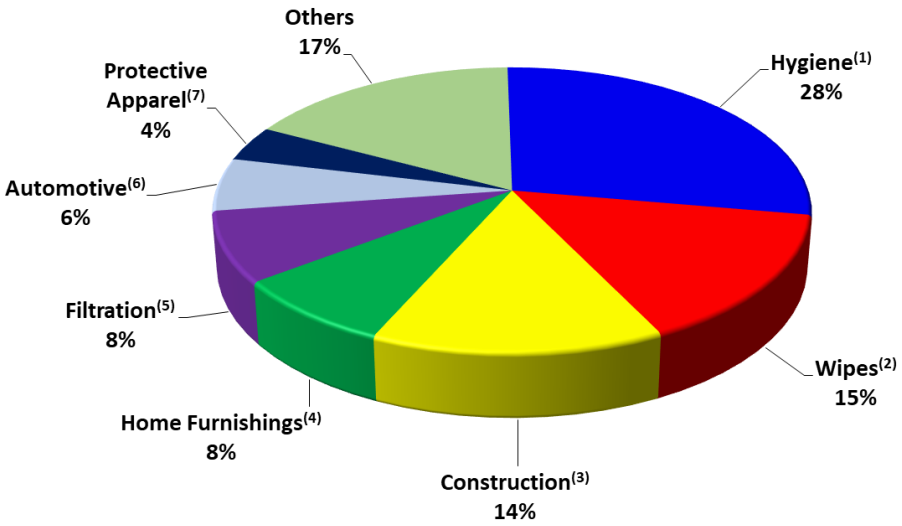
GLOBAL NONWOVEN MARKETS

- In the Filtration market, nonwovens are used as media or media support to filter air and liquids in a wide variety of end uses across industrial, food, consumer, commercial, automotive and many other sectors. Global demand for nonwovens in this market accounts for about 8% of total global demand in 2020
- In the Home Furnishing market, nonwovens are used as carpet backings, in furniture and bedding manufacture, in wall coverings and other end uses. Global demand in this market accounts for about 8% of total demand in 2020.
- In the Automotive market, nonwovens are used as acoustical insulation, interior trim, trunk liners and carpet backing for flooring. The amount of nonwovens used per vehicle is increasing. We estimate global demand in this market accounts for about 6% of all demand in 2020.

GLOBAL NONWOVEN DEMAND BY MARKET
2020
(Percent of Total Tonnes)



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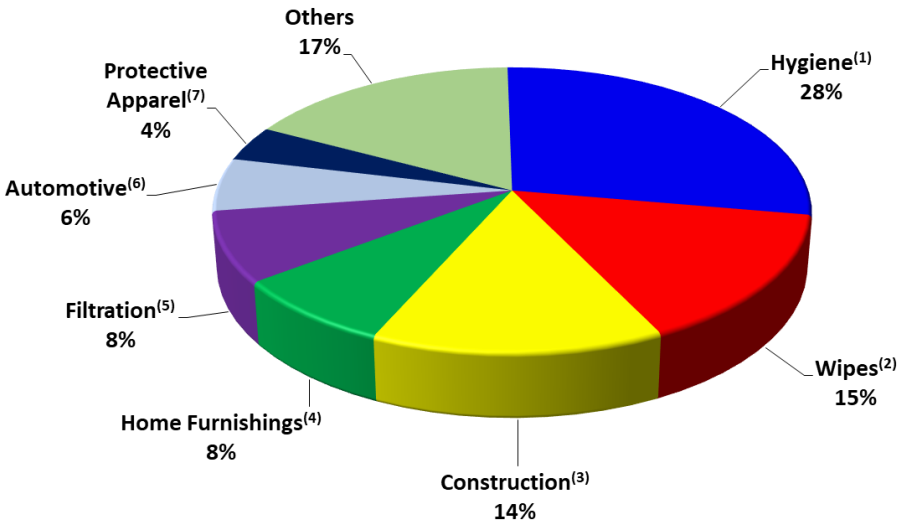
GLOBAL NONWOVEN MARKETS

- In the Protective Apparel market, nonwovens are used as the primary material in disposable non-sterile garments to protect the wearer from dust, dirt and other soiling elements. In surgical medical environments, nonwovens are specifically designed for use as the facing material in disposable surgical gowns, patient drapes and instrument sterilization wrap to prevent infection.
- Global demand in the Protective Apparel segment grew about 10% in 2020. Demand for nonwovens in the medical surgical or barrier market grew about 9% in 2020 due to the onset of Covid 19 and more than 12% in 2020 for nonwovens used in protective apparel.

GLOBAL NONWOVEN DEMAND BY MARKET
2020
(Percent of Total Tonnes)



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Covid 19 Impacts on Global Nonwoven Markets 2020

Hygiene – Baby & Adult Diapers/Pants, Fem Care Products

- The outbreak of Covid 19 caused consumers to be concerned about the availability of products as empty store shelves led to “stockpiling” and panic buying. Sales of premium products rose as they were often all that was available on store shelves.
- In 2020, demand for these products rose about 6% or about twice that expected based upon historical demand drivers of demographics (birth rates, aging population) and market penetration.

Covid 19 Impacts on Global Nonwoven Markets 2020

Wipes

- Demand for nonwoven substrates used in disinfectant and hand sanitizing wipes rose 15% or more due to a sharp increase in more frequent cleaning and consumer "stockpiling" driven by the absence of stocks on store shelves.
- Other wipe products designed for personal care, baby care, and household cleaning also rose in the absence of disinfectant wipes on store shelves.

Covid 19 Impacts on Global Nonwoven Markets 2020

Construction

- Demand remained steady and as expected in early 2020 but began to rise with increased housing starts in the 2H.
- Infrastructure projects already funded, moved forward on a somewhat accelerated pace due to a reduction in highway travel which typically interferes with construction progress.
- Future infrastructure spending will be in jeopardy due to massive outlays of personal and business stimulus and unemployment payments. An increase in home buying and housing starts will have a small but positive impact on nonwoven demand in construction for a time.

Covid 19 Impacts on Global Nonwoven Markets 2020

Medical & Protective Apparel (PPE)

Nonwoven demand for PPE rose sharply but unevenly across the product range.

- Demand for surgical (barrier) gowns was up ~9% over 2019 but not as much as low barrier examination and isolation gowns.
- With the onset of Covid 19, elective surgeries declined sharply. This reduced the use of surgical gowns and drapes significantly offsetting demand growth due to Covid 19.

Covid 19 Impacts on Global Nonwoven Markets 2020

Face Masks (PPE)

Face mask demand nearly tripled in 2020 over 2019 but volume in tonnes was rather insignificant when compared to that of total industry demand.

- For example, in North America, there is ~ 61k tonnes of melt blown capacity for manufacture of face masks in 2021. Total spunlaid capacity totals 943k tonnes.
- Melt blown lines are most often narrow and have small nameplate capacity. Average output is ~ 600 TPY which will make 1.3 million masks/year.

Covid 19 Impacts on Global Nonwoven Markets 2020

Automotive

Demand for nonwovens in Automotive end uses fell apart in the first half of 2020 following plant shutdowns.

- By mid year, plants began to reopen equipped with face mask making converting lines to protect workers.
- Inventories of vehicles were depleted by mid year following aggressive promotional pricing in 1H 2020. By early Q3 automotive producers were largely back in production and ordering large quantities of nonwovens.

Covid 19 Impacts on Global Nonwoven Markets 2020

Home Furnishings

Like the automotive market, plant shutdowns in the first half severely reduced nonwoven demand for a time in the 1H 2020.

- Consistent with stay-at-home orders and lockdowns, homeowners began to buy larger houses and decorate existing and new homes. Home furnishing demand soared beginning early in Q3.
- Furniture manufactures are now quoting six month deliveries on new orders.

Covid 19 Impacts on Global Nonwoven Markets 2020

Filtration

Demand for improved air filtration in homes and other buildings drove demand higher for nonwovens used in air filtration systems.

- Melt blown capacity, already stretched to supply face mask demand, tightened further.

Covid 19 Impacts on Global Nonwoven Markets 2020

Summary

Covid 19 was a boom for the nonwoven industry in 2020.

- Demand was up ~13% over 2019 and drove capacity utilization to 100%. Prior to Covid 19, the nonwoven market was oversupplied.
- Machines that had been decommissioned prior to the pandemic were restarted.
- For the nonwoven industry, 2020 was a tale of two halves. Early Q2 was full of uncertainty. The remaining part of 2020 was characterized by high-capacity utilization and record profits.

Covid 19 Impacts on Global Nonwoven Markets 2020

Outlook

We expect nonwoven demand and capacity utilization to remain elevated throughout 2021.

- We expect some Covid shocks during the year but in general a return to normal.
- We expect nonwoven demand to weaken by mid year 2022. Demand will be driven by demographic and economic factors and not disease.
- Capacity utilization will decline. Early generation technology will be decommissioned. We expect rationalization of melt blown capacity beginning in 2023.

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