

INTERNATIONAL

# FILTRATION NEWS

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*Chase Machine & Engineering*  
**Rise of Nonwovens  
Fosters Innovative  
Assembly Processes**

- The “DNA” of Your Filter and Filter Media
- Frontiers in Membrane Fouling



# Rise of Nonwovens Fosters Innovative Assembly Processes

By Guy Gil, Sales Manager, Chase Machine & Engineering



*Chase Machine and Engineering's 3-head ultrasonic ring welder provides customers the ability to attach filter bags to plastic rings without the use of needle and thread.*

**T**he shift from conventional glass and cellulose filtration media to synthetic nonwoven meltblown, spunbond, and needlepunch fabrics has opened the door for the introduction of new and exciting assembly methods. Technologies such as ultrasonics, hot air, band sealing, RF and impulse welding are becoming common practices within the industry. Engineers now select media not only based on filtration performance criteria, but also on assembly preference. Needle and threads combined with adhesives are slowly being phased out – why incorporate another component (and expense) into the final product, es-

pecially when there are safer and more environmentally friendly alternatives?

### **SYNTHETIC NONWOVENS**

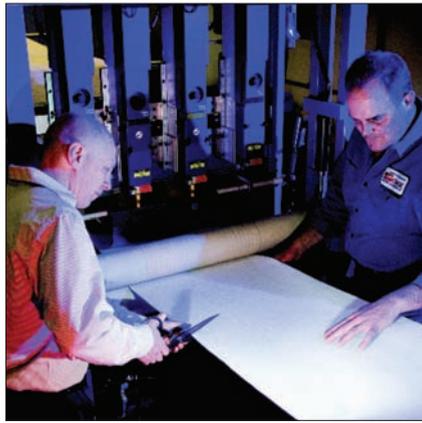
Chase Machine & Engineering have embraced the move from conventional filtration media to synthetic nonwovens. Heat sealing technologies, when incorporated into a continuous process, can reduce labor and maintenance expenses since consumables such as adhesives or sewing supplies like needles and thread are no longer required. While it is understood that some filter requirements call for the use of cellulose and glass fibers that require adhesives and/or

sewing, applications that lend themselves to the use of synthetic media have generated exciting new assembly alternatives.

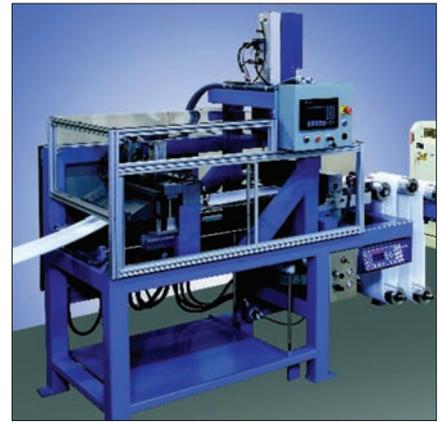
Ultrasonics is now commonly used in the synthetic HVAC filtration market. Chase Machine was instrumental in this transition with the development of the extended HVAC pocket filter machine, which was designed, built, and patented incorporating ultrasonic technology into the continuous assembly process. Nonwovens manufacturers realized the importance of designing media for use with ultrasonics. In the early years of development, consistency and unifor-



*HVAC Pocket Filter manufactured on Chase Machine's Ultrasonic Pocket Filter Machine*



*Chase Machine's Materials Applications Lab allows customers to test materials and assembly methods.*



*Liquid Filtration Bag Machine combines hot air and ultrasonic technology to create tubes as well as seal-and-cut needlepunch or spunbond/meltblown filter media.*

imity across wide meltblown and spunbond lines was a challenge. The finished product, while suitable for the filtration application, varied in its distribution of fiber. Although this never became an issue when sewing, ultrasonic welding required greater uniformity and consistency.

#### **SEPARATE LAB**

In response to this need, Chase Machine established a Materials Applications Lab, which enables companies to test materials and assembly methods before committing to full production. Working with some of the largest filtration media manufacturers in the world, Chase Machine have run thousands of feet of media to verify process improvements. Many of these improvements have gone on to benefit the marketplace.

The liquid filter bag market presents an excellent example of multiple technologies combining within the

same process to improve manufacturing performance. Employing hot air welding, Chase Machine joined the two edges of a needlepunch fabric to create a tube on a continuous basis. At the same time, the company integrated ultrasonics to cut and seal the bottom of the filter, freeing the end product of loose fibers and contaminants. The process gave the end user complete control while cutting labor expenses by more than 50% and eliminating the need for ancillary consumables. What's more, the finished bag could be joined to a plastic ring using ultrasonic plunge welders and eliminating the conventional sewing method for attachment.

In the membrane market, nonwovens are chosen for their strength as a backer substrate. The synthetic component of the nonwovens affords the end user the ability to splice membranes together or even attach multiple layers to improve filtration

characteristics. Ultrasonics, impulse welding, or even simple bar sealing technologies may be incorporated into a process line. Chase Machine's experience with membrane casting and hollow fiber process lines helps customers decide which technology suits their specific application best. Then they substantiate their conclusions in the Chase Materials Applications Lab.

#### **CONCLUSION**

Today's filtration industry is constantly evolving. Ongoing improvements to chemistry and manufacturing processes offer infinite possibilities for new product development. By partnering with companies like Chase Machine, which offers testing, prototyping and full-scale process solutions, the transition from concept to final product is faster now than ever before. 

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