WE ARE
ULTRASONICS.

ULTRASONIC TECHNOLOGY GROUP

Innovative.

Motivated.

ARION
simply smile

Together.

A user report of a success story with ARION

MAIN SITE MS
MS Ultrasonic Technology Group
Karlstraße 8 – 20
78549 Spaichingen
Germany

MS Competence Center
Ferdinand-Porsche-Straße 17a
76275 Ettlingen
Germany

Telephone +49 7243 561 795-00
E-mail nonwovens@ms-ultrasonic.de
Internet **www.ms-ultrasonic.com**

MAIN SITE ARION
Arion Nederland B.V.
Rutherford 11
6422 RE Heerlen
Netherlands
Telephone +31 45 209 4000

Arion Deutschland GmbH
Rutherford 10
52072 Aachen
Germany
Telephone +49 241 95 50 9350

Internet **www.arion-group.com**

USER REPORT WITH ARION

Manufacturing bathing gloves quickly and safely

Products for professional care are becoming increasingly important due to the rising demand for them. A typical example is wet bathing gloves, which facilitate the washing of persons who need care. Ultrasonic welding technology, from MS Ultraschall Technologie GmbH, is used to manufacture the gloves, which are made of a relatively thick nonwoven fabric.

The need for care is increasing, and with it, the demand for professional products used in both inpatient and outpatient care. These include, for example, the products of the Swash series, which make washing possible without water. The nonwoven bathing gloves, impregnated with a cleaning lotion, facilitate the washing of bedridden persons and relieve both the staff and the persons in need of care. These are manufactured by the company Arion, whose headquarters are located near the Dutch-German border. Innovative healthcare solutions have been developed there for over 25 years. The products are developed in order to simplify life for those in need of care, patients, nursing home residents, but also for caregivers or other helpers.

Ultrasonic welding

The bathing gloves are made of a continuous web of nonwoven material. This is first folded once lengthwise and then welded at regular intervals using ultrasonic, with a transverse weld rounded on both sides to create the contours of the gloves. The next step is to cut the web of material so that individual gloves are created. In the following production steps, the gloves are then impregnated with the appropriate amount of hypoallergenic lotion and packaged. The overall system comes from the Italian machine manufacturer Teknoweb Converting S.r.l. The ultrasonic welding process, in which the two layers of the nonwoven fabric are joined together, is one of the central steps in production. This is supplied by an ultrasonic joining specialist.

Last year, the production facilities were to undergo an upgrade. In particular, the ultrasonic units used to weld the nonwoven material, were to be replaced. "Our product is very well received on the market and therefore, we want to expand our production capacity," says Carl Joosten, CFO and COO at Arion: "By replacing the ultrasonic units, we aim to produce 30 – 50% more gloves on the existing machines."

At the Index 2021 trade show in Geneva, Arion's managers looked around for appropriate suppliers. There, the company MS Ultraschall from Spaichingen presented its new product line MS sonxSYS COMBINE, which is ideally suited for processing in the nonwovens sector, for the first time. "We were very pleasantly surprised to encounter so much industry expertise at this supplier, which was new to us – and in some cases, familiar faces" says Henry van Gerven, who is responsible for production at Arion. "We raised the curtain on our new ultrasonic units for the first time at the Index trade show in Geneva," says Konrad Beretitsch, Head of Sales Systems and Components at MS Ultraschall: "Of course, this was preceded by preliminary development, which we were able to implement very quickly thanks to our team's experience in the industry. This is rounded out by expertise in control and drive technology"

When selecting the supplier for the ultrasonic welding units, a total of three suppliers were invited to participate in a benchmark test. Tests were to be carried out in the technical center of the respective companies with the rather demanding nonwoven material. The comparatively high proportion of natural fibers is a particular challenge. The material is also relatively thick, to provide high moisture absorption and a pleasant feel during washing.

Competence Center Ettlingen

In order to test such customer solutions, MS Ultraschall operates its Competence Center, for the nonwovens and packaging sectors, in Ettlingen. Modernly equipped laboratories, offices and a production hall are available on 1,800 square meters. The centerpiece of the technical center is an ultrasonic calender that enables web speeds of up to 850 m/min. In the laboratories, customer applications can be tested in detail to optimize ultrasonic welding results.

MS ultrasonic welding units are supplied by fully digital generators with intelligent control and high performance. The rectangular and trapezoidal sonotrodes are available in standardized widths from 85 mm to 320 mm. Unlike other systems on the market, the feed units are servo-electrically driven. This ensures high precision and, above all, very fast distance and force control. The engraving rollers, which MS Ultraschall custom manufactures in-house for each individual application, determine where the material is welded. Each elevation represents a weld point. MS Ultraschall is thus the only supplier in the world that can offer a complete solution from a single source with unit, roller, consoles, etc.

Control adapted to the process

For this demanding application, the data capturing must work at least in real time and, in addition, a calculation must be made from the collected information. The goal behind this high-speed control is to optimally balance the fast and high load fluctuations. "With the selectable option – MS Rotary Encoder – it is now possible to detect the load fluctuations within a few microseconds and to optimally control the dynamic high-speed process" explains Armin Geiger, Head of Nonwovens Application Engineering. This makes it possible, for the first time, to define the transverse weld in individual areas, such as inlet, middle area, outlet, etc., and to parameterize the ultrasonic for each area. As the ultrasonic unit is equipped with the latest maintenance-free servo technology, the drive is controlled in milliseconds. This permanent control in real time enables the required high quality of the bathing gloves to be achieved.

MS Ultraschall was able to optimize the process so quickly, primarily because the company has a great deal of expertise in drive and control technology. As a custom machine manufacturer, MS Ultraschall also offers extensive expertise in integrating its units into existing systems. "We were particularly impressed by the commitment of the experts at the Competence Center in Ettlingen," says Carl Joosten about the MS Competence Center team. And Henry van Gerven goes on to say: "The people there did a great job." The user-friendliness and visualization of the systems were also impressive. "Most importantly, we are confident that with MS Ultraschall we have selected a supplier that can provide us with the best possible service in the future."

Also for future production lines

After the trials at the MS Competence Center, Arion ordered the welding units for the upgrade of the existing machines from Teknoweb at MS Ultraschall. The processing speed of the system is about 70 m/min, which allows the production of up to 500 gloves per minute. After retrofitting the two existing systems, the company plans to purchase an additional production line. Here again, the ultrasonic welding technology will come from MS Ultraschall.

ULTRASONIC WELDING OF NONWOVENS

In continuous ultrasonic welding, mechanical vibrations are transmitted to nonwovens under pressure. Friction of the molecular and boundary surfaces generates heat, which increases the damping coefficient of the material. The nonwoven fabric begins to melt in spots. When processing continuous web products, the main focus is on reproducibility and welding quality. Continuous welding in endless mode also enables continuous weld seams without interruption. Ultrasonic technology is a very good alternative to other joining and separating processes, with high efficiency and further forward-looking possibilities. In contrast to other processes, the tools do not heat up. As a result, the product is not damaged.

ABOUT MS ULTRASONIC

By scanning the QR code you will learn more about the innovative products of MS Ultrasonic.

ABOUT ARION

By scanning the QR code you will learn more about the innovative products of the Arion Group.