

Roll Seam Technology

Ultrasonic roll seam systems
for sealing, welding and cutting
in textile and packaging industry



Roll seam technology in textile machining

Continuous ultrasonic cutting and sealing of the highest quality



Ultrasonic roll seam welding of filter fabric on a plastic core



Ultrasonic roll seam welding of OT clothes



Ultrasonic roll seam spot welding of corsetry



Cut & Seal ultrasonic application

Advantages

- Cutting and sealing of elastic and non-elastic textiles
- No fraying in edge cutting
- Minimum seam projection
- Sealing seam width 2-25 mm
- Flexible seam design
- No subsequent taping of the seams
- Rotary sonotrode of titanium (10 or 25 mm wide) or steel (7 or 10 mm wide, Cut & Seal applications)
- Sealing speed of 0.3-20 m/min or 10-80 m/min
- Control of the amplitude proportional to the sealing speed

The ultrasonic roll seam units from SONOTRONIC are suitable not only for continuous sealing but also for the simultaneous cutting and sealing of synthetic textiles.

Continuous sealing seams with high design flexibility

In ultrasonic roll seam sealing, continuous sealing seams are produced by the disc-shaped sonotrode without seam interruptions, for which purpose the roll seam sonotrode has a titanium mounting on one or both sides. At the same time the design of the anvil wheels with different contours and widths allows flexibility in seam design.

Simultaneous cutting and sealing (Cut & Seal)

A further application of the innovative ultrasonic roll seam technology from

SONOTRONIC is the simultaneous cutting and sealing of thermoplastic textiles with extremely wear-resistant steel sonotrodes. This produces not only fixed seams but also minimal seam projections. During ultrasonic edge cutting the edges are already sealed so that they cannot fray.

Possible applications

In the textile industry ultrasonic roll seam units replace conventional sewing machines. Continuous sealing seams and seams with free geometries can be produced. Fabrics from thermoplastic synthetic fibres are then no longer sewn with one thread but are sealed ultrasonically, and because of this no holes are made in the fabric by needle stitches and there is no subsequent taping.

Besides their use at manual workstations, ultrasonic roll seam systems can also be integrated in existing machines.

“Continuous welding seams without fraying.”



Roll seam technology in the field of packaging

Optimum ultrasonic sealing without heat loading of the filling material

An ever expanding application for the continuous ultrasonic sealing method from SONOTRONIC lies in packaging technology.

Applications

Here ultrasonic roll seam technology is applied mainly in horizontal and vertical tubular bag machines. Bags with four sealed edges can also be produced by ultrasonic roll seam sealing.

Economic process

Both the roll seam sonotrode and the anvil are driven in this process so that there is neither slip nor wave formation in the film. No relative movement is generated between the sealing wheel and film by the double drive either.

Newly developed unilaterally mounted roll seam sonotrodes

In addition to the proven roller seam sonotrodes mounted on both sides, SONOTRONIC has now also developed special unilaterally mounted roll seam sonotrodes. In the case of horizontal tubular bag machines the roll seam sonotrode

with unilateral mounting can be assembled directly underneath the filled bag.

No thermal radiation

In addition to the well known advantages of ultrasonic sealing, such as tight sealing of wetted surfaces, optically attractive seams and consistent sealing results, ultrasonic roll seam technology is also characterised by further advantages. In continuous sealing, no thermal radiation is transmitted to

the product, which is particularly advantageous in the case of heat-sensitive products such as chocolate.

New possibilities in the choice of film

Unlike thermal methods, ultrasonic technology also enables mono-films to be used because no heat insensitive outer layer need be laminated onto the film. Furthermore, very thin polymer films (15 µm) of high quality can also be sealed by the continuous ultrasonic method, which has not hitherto been successful with thermal sealing systems.



Ultrasonic sealing of fin seams with the one side mounted roll seam module

Advantages

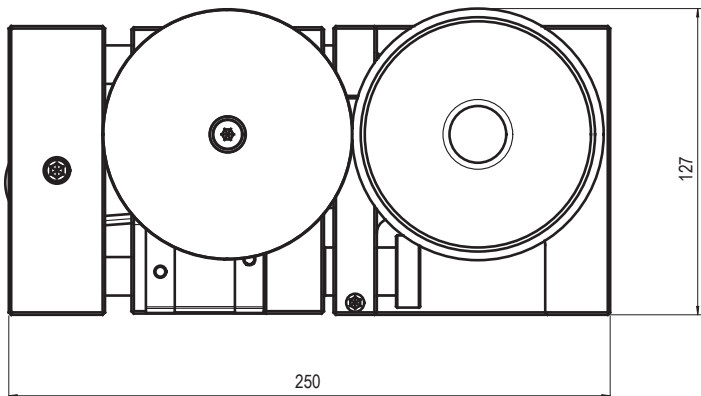
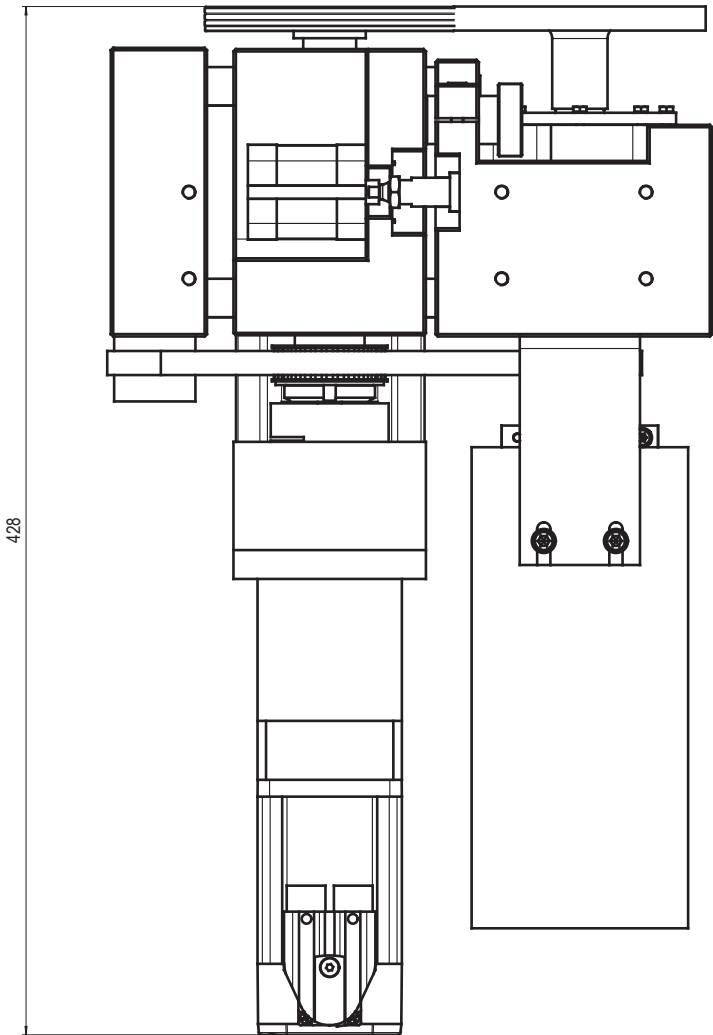
- Continuous sealing seams
- Tight sealing seams even on product wetted surfaces
- No thermal radiation to damage the product or film
- Assembly directly underneath the bag
- Sealing of mono-films and very thin films (15 µm) possible
- No slip or saving of the film
- Use in VFFS and HFFS machines and for bags with four sealed edges
- Environmentally friendly and energy-saving

“New sealing possibilities with unilaterally mounted roll seam sonotrodes.”

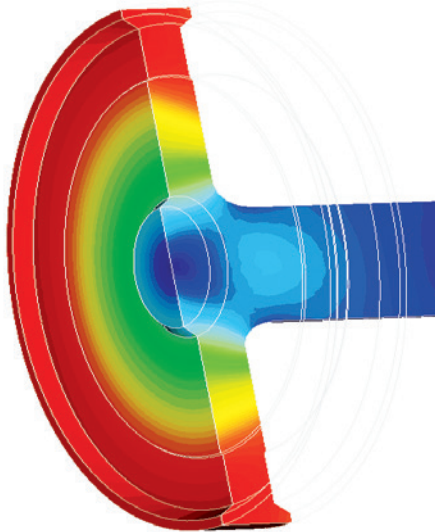


Ultrasonic roll seam module with cantilevered sonotrode

Simple integration in existing or new machine concepts



The cantilevered SONOTRONIC roll seam module is particularly suitable for continuous sealing and weld separation without interfering contours in the packaging industry. The roll seam module can also be integrated in existing or new machine concepts.



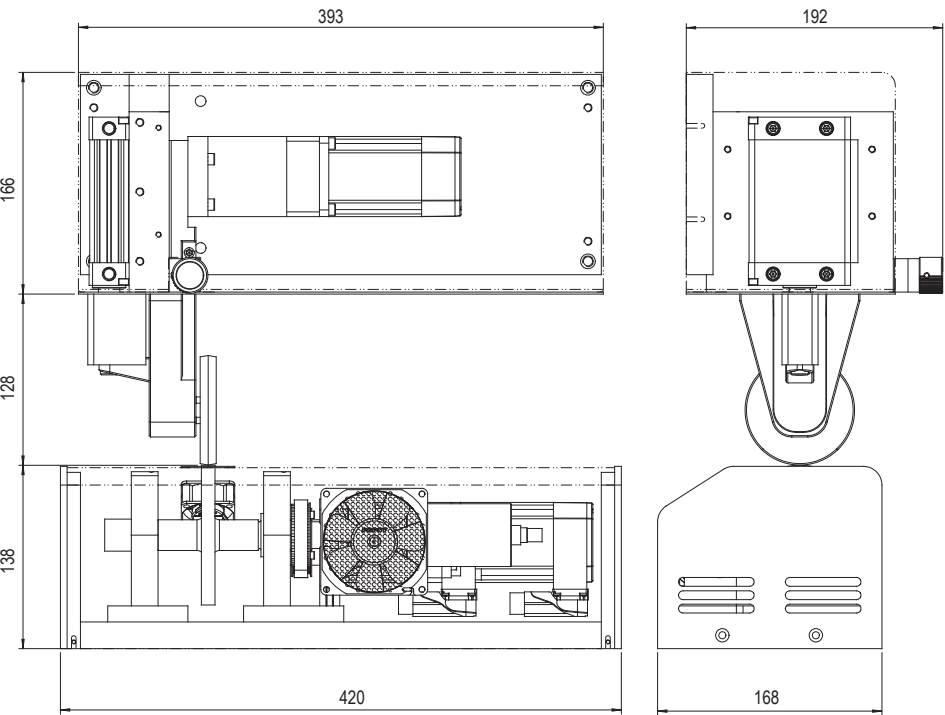
FEM representation of a unilaterally mounted roll seam sonotrode

Technical data

Welding width [mm]	2 - 9
Max. welding force [N]	250
Max. speed [m/min]	80
Frequency [kHz]	35
Power of the generator [W]	400
Max. air pressure [bars]	6
Electrical connected loads of the drive [V] / [A]	230 / 4
Dimensions of the module W x H x T [mm]	250 x 428 x 127

Ultrasonic roll seam module supported at both ends

Simple integration in existing or new machine concepts



The SONOTRONIC roll seam module, supported at both ends, is used for continuous welding and for Cut&Seal in textile processing, in various industrial sectors. It can easily be incorporated in existing and new machine concepts and is made up of three components:

- Roll seam sonotrode module (with roll seam sonotrode supported at both ends)
- Anvil module (exchange anvil)
- Control module

Technical data

Weld width [mm]	2 - 25
Max. [N] welding force or application force of the anvil	400
Max. speed [m/min]	80
Frequency [kHz]	35
Generator power [W]	400
Max. compressed air [bar]	6
Connected loads of drive [V] / [A]	230 / 4
Dimensions of sonotrode module W x H x D [mm]	420 x 138 x 168
Dimensions of anvil module W x H x D [mm]	393 x 294 x 192
Dimensions of control module W x H x D [mm]	600 x 600 x 350

Advantages

- The application force can be adjusted by electro-pneumatic pressure control valve
- Circumferential speed of the sonotrode and anvil unit is regulated by a master-slave coupling
- Fan-cooled roll seam sonotrode and ultrasonic converter



Your partner for roll seam solutions with ultrasound

Technology and system integration in one unit

As your partner for roll seam solutions and system integration with ultrasound we assist you from product development to product introduction.

One technology – many possible applications

One major advantage of ultrasonic technology is its environmental friendliness and energy efficiency. An increasing number of applications and products can be achieved and improved with ultrasonic roll seam technology. SONOTRONIC is the market leader as a system supplier of ultrasonic components for roll seam sealing, particularly in the textile industry. The technology is also being used increasingly in packaging technology. Moreover, we are also integrating the technology in special machines for different industries, e.g. in the automotive industry, according to the application.

Individually adapted and specially designed ultrasonic systems

For the various requirements and customer requests, we individually adapt our innovative ultrasonic systems or produce special one-off designs. We develop and manufacture our systems to be fitted both into new installations and into existing ones.

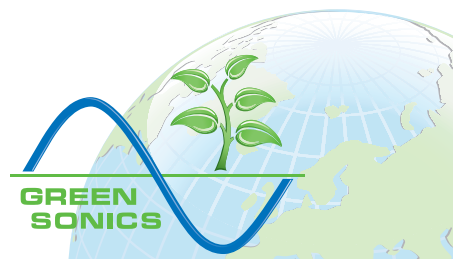
Tested quality

All our ultrasonic systems are perfectly matched to one another and in packaging industry comply with safety classes up to IP68. We satisfy customer requirements by continuous quality and environmental management in our company, according to the tried and tested standards DIN EN ISO 9001 and DIN EN ISO 14001.

“SONOTRONIC: Partner for ultrasonic solutions and system integration.”



Ultrasonic roll seam sealing pattern



Green ultrasonic technology by SONOTRONIC



Company headquarters in Karlsbad, Germany

SONOTRONIC

Linked with success.

SONOTRONIC Nagel GmbH develops and produces high-tech ultrasonic systems and components for the packaging and food industries, as well as for medical engineering and textiles. We are the market leader in building special ultrasonic machines for

the car industry and in ultrasonic systems for environmental applications. We are a traditional company and employ 240 members at our headquarters in Karlsbad (Germany) and at our branches in Spain and the USA.



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