1. General Information / Notes .................................................................................................................... 4
   1.1 Explanation of symbols / labeling .................................................................................................. 4
   1.2 Safety information ...................................................................................................................... 5
   1.3 Non-compliant use ..................................................................................................................... 8
2. Compliant application ............................................................................................................................... 8
   2.1 Operating staff qualifications ...................................................................................................... 8
   2.2 Installation .................................................................................................................................. 9
   2.3 Operation .................................................................................................................................... 9
   2.4 Ambient conditions / site ......................................................................................................... 9
   2.5 Warranty declaration / conformity ......................................................................................... 10
   2.6 Transport damage ................................................................................................................... 10
3. DGS Generators ....................................................................................................................................... 11
   3.1 Technical data ............................................................................................................................ 11
   3.2 Installation data .......................................................................................................................... 11
   3.3 Start up ....................................................................................................................................... 11
      3.3.1 Preparatory work .............................................................................................................. 11
      3.3.2 Activation ........................................................................................................................ 12
      3.3.3 Remote control ................................................................................................................ 12
   3.4 Operating the DGS generator ..................................................................................................... 13
      3.4.1 Main power switch .......................................................................................................... 13
      3.4.2 Operating modes ............................................................................................................. 13
      3.4.3 Setting the amplitude ..................................................................................................... 14
      3.4.4 Display elements ............................................................................................................. 14
   3.5 Individual settings ...................................................................................................................... 15
      3.5.1 Remote control with laptop / desktop ........................................................................... 15
   3.6 SweepParam software .............................................................................................................. 15
   3.7 Remote PLC control .................................................................................................................. 19
   3.8 Deactivation ................................................................................................................................ 22
4. PNS Generator ........................................................................................................................................ 22
   4.1 Technical data ............................................................................................................................. 22
   4.2 Installation data .......................................................................................................................... 22
   4.3 Start up ....................................................................................................................................... 22
      4.3.1 Preparation ......................................................................................................................... 22
      4.3.2 Activation .......................................................................................................................... 23
      4.3.3 Deactivation ..................................................................................................................... 23
5. Troubleshooting and service .................................................................................................................... 24
6. Servicing / Cleaning / Inspections ........................................................................................................... 25
7. Ultrasonic sieves ..................................................................................................................................... 26
   7.1 Product data .................................................................................................................................. 26
   7.2 Sieving systems .......................................................................................................................... 26
      7.2.1 LSS sieving system ......................................................................................................... 26
      7.2.2 SSS sieving system.......................................................................................................... 27
      7.2.3 Sound conductor .............................................................................................................. 27
      7.2.4 Sieve frames .................................................................................................................... 27
      7.2.5 HF connection ................................................................................................................. 27
      7.2.6 Sieve tensioning ............................................................................................................... 29

Note: The information provided in this manual reflects our present state of knowledge. It is not to be considered as a confirmation of particular properties or of suitability for any particular purpose. Our General Terms and Conditions apply. The information contained in this manual does not accord any protective/copy or licensing rights whatsoever to the user. The requisite agreements must be met for this purpose. The suitability of the products for certain applications must be verified exclusively in consultation with the product specialists of Artech Ultrasonic Systems AG. The German language version of this manual is authoritative for the correctness of the information provided.

Note: The information in this manual is based on our present knowledge. It can’t be considered as a guarantee of properties or suitability for a particular purpose. Our general terms and conditions are valid. Any information in this manual no rights are granted to the user and also made no promises for a license. Ensure appropriate agreements must be reached. For certain applications, the suitability of products is exclusively agreed with our product specialists. For the accuracy of the German version of this document shall prevail.
7.2.7 Adhesives .......................................................................................................................................... 29
7.2.8 Preparation ...................................................................................................................................... 29
7.2.9 Sieve tensioning ................................................................................................................................. 30
7.2.10 Sieve machine settings ...................................................................................................................... 30
8. Ultrasonic cutting blades ............................................................................................................................ 32
  8.1 Non-compliant use ................................................................................................................................. 32
  8.2 Warranty statement ................................................................................................................................. 32
  8.3 Ultrasonic cutting systems ..................................................................................................................... 33
  8.4 HF connection ....................................................................................................................................... 33
  8.5 Service / Inspections / Cleaning ........................................................................................................... 34
9. Converters ................................................................................................................................................... 35
  9.1 Technical data ....................................................................................................................................... 35
  9.2 Technical data ....................................................................................................................................... 35
  9.3 C32-HP1 technical data ........................................................................................................................ 36
  9.4 C35-SK1 technical data ........................................................................................................................ 37
Contact data: ............................................................................................................................................... 38
Notes: ............................................................................................................................................................ 38
1. General Information / Notes

Thank you for purchasing an ARTECH ULTRASONIC SYSTEMS AG component. We are confident that these products will allow you to achieve the highest operating efficiency and product quality possible. The purpose of this manual is to provide you with all the information required for handling, installing, operating and servicing the generator.

Please check that the scope of delivery is complete upon receipt and that the contents are faultless. Our order acknowledgment or bill of delivery serve as the basis for checking that delivery is complete. In case of doubt, please contact Artech Ultrasonic Systems AG directly or advise your distribution partner.

For inquiries in regard to delivered components, we would ask you to please provide the exact model designation and serial number. These can be found on the rating plate / label on the housing of the generator or converter.

At the time of delivery, the design of the ultrasonic components is of state-of-the-art standard. The mechanical structure may only be operated exclusively with the original Artech Ultrasonic Systems AG generators, converters and components/accessories.

Component design and dimensioning are subject to further development and improvement in accordance with the current state of the art.

1.1 Explanation of symbols / labeling

The CE mark is our statement that the product meets the applicable requirements of the respective regulations. Details are provided in the declaration of conformity.

The CE mark and the four-digit number of our Notified Body (DEKRA exam) confirm that the requisite type examination certificates have been granted in accordance with Directive 94/9/EC.

This symbol is a warning / command sign. The points listed under this sign must be read and observed with particular care.

This symbol indicates that the Operating Manual / Product Information must be referred to and observed!

This symbol means that the system must urgently be disconnected from the electrical power supply (plug must be pulled out of socket).

This symbol stands for ATEX. ATEX comes from the French and is the abbreviation for ATMosphère EXplosive.

The main purpose of the ATEX 94/9/EC Directive is to protect persons working in potentially explosive atmospheres and/or persons who could be affected by explosions.

The ATEX 1999/92/EC workplace directive sets down minimum requirements for improving the safety and health protection of workers at risk or potentially at risk from explosive atmospheres. It contains fundamental safety requirements that the operator must implement.

This symbol warns of explosive atmospheres. Special protective measures must be taken. Personal protective equipment is mandatory.
### 1.2 Safety information

The generators are suitable for the excitation of mechanical structures. They may only be used exclusively with the C35-LP1, C35-SD8, C35-SK1 and C32-HP1 converters. The manufacturer does not accept liability for damage caused by incorrect, non-compliant use of the components. The user bears the risk exclusively.

These components are intended for industrial use!
The service intervals depend on the ambient conditions and the hazard assessment performed by the operator. The ultrasonic components and generators may only be used in faultless condition in adherence to the operating instructions and must not be modified in any way.

---

Ensure that the environment is compatible for electric devices. Place the generator on a firm and level non-slip surface or bolt it onto a vibration-free base; as described in this operating manual, by means of a wall bracket. Avoid installing it on unstable tables, trolleys or similar objects. The generator can be severely damaged by a fall.

To ensure that the device remains in good working order, you must protect it against extreme cold and also against overheating. Avoid ambient temperatures lower than +10° C and higher than +40° C.

To avoid compromising faultless working order, a total cable length of 20 m must not be exceeded when connecting several short HF cables together! Please note that, where possible, a long cable should always be used instead of several short lengths of connected cable.

All the connecting cables and plugs must be subjected to periodical inspection. In the event that insulation damage is detected, these parts must be replaced immediately. All the retaining screws on the generator and the housing lid must be drawn on tightly.

If an extension cable is used, ensure that the total power input does not exceed the capacity of the extension cable. Please be advised that we cannot accept liability for any accessories that are not included in the scope of delivery. This applies also for possible resulting damage.

Avoid the following:

- Touching contact pins with sharp and / or metal objects;
- The presence of water or other fluids in the direct vicinity of the device;
- The presence of unattended children / adolescents at the device;
- Touching the mains plug with wet and / or moist hands.

Do not attempt to perform repairs yourself as this will void your warranty. The generators, converters and components do not have any replaceable spare parts. Please contact authorized qualified technicians in the case of repairs. For inquiries, please contact Artech Ultrasonic Systems AG Ultrasonic Systems AG.

As a result of the hazard assessment performed, it has been brought to our attention that (electro)-magnetic fields can lead to disruptions. For this reason, switch off all generators and devices (cell phones, WiFi connections, etc.) which generate or could generate such fields while the generator is in use.
Do not use the device under the following circumstances and contact a qualified technician:
- If the power supply cable / insulation is damaged;
- If the device is / has been exposed to moisture and / or wetness.
- If the device has fallen and / or the housing is damaged.

The device can be damaged by lightening and / or overvoltage. Install an overvoltage arrestor. During electrical storms and / or after a longer period of downtime, pull the plug out of the power supply socket to protect the device against overvoltage.

Work with the components and generators may only be performed by trained and instructed members of staff. The scope of staff responsibilities for operation, assembly, servicing and repair must be clearly defined by the operator!
The operator must ensure that components and generators are operated only by members of staff who have been instructed to do so. Work on electrical parts of the generator may only be performed by an authorized electrician in accordance with the recognized rules of electrical engineering!

The device must be completely disconnected from the power supply before cleaning is performed. Use a moist cloth to clean the device. Do not use any cleaning agents.

The power connection must be grounded.

If a device connector comes into contact with fluids or is soiled, it must be cleaned and dried without fail before being inserted into a socket (for example with compressed air).

Compliance with national statutory safety measures is mandatory.

In the event of non-compliance with this operating manual, Artech Ultrasonic Systems AG Ultrasonic Systems AG refuses to accept any liability whatsoever for damage to persons or materials.

Prior to start-up, it must be ensured that the generators and components are closed and in a safe condition.

Under no circumstances may generators or components be opened during operation. The interior of the components and generators carries high voltage.

Unsafe work practices are categorically prohibited.

Prior to switching on the generator, it must be ensured that no one can be harmed by the device or components while it is starting up.

Use only the Artech Ultrasonic Systems AG data cable, as the RS-232 interface can otherwise be destroyed. A standard RS232 cable must not be used as it has a different kind of wiring.
Cleaning and servicing work must only be performed by members of staff who have been trained for this work. Prior to commencing servicing work, it must be ensured that all energy sources such as the electrical power supply have been disconnected.

The sieving systems are designed exclusively for ultrasonic-supported sieving of suitable materials. Any other type of use or any other further use shall be deemed as non-compliant. Artech Ultrasonic Systems AG Ultrasonic Systems AG does not accept liability for damage ensuing from non-compliant use. The user bears the risk exclusively. This system is intended for industrial use. The sieving system may only be used in faultless condition using the original Artech Ultrasonic Systems AG Ultrasonic Systems AG components in accordance with the operating instructions.

The LSS-35 and SSS-35 sieving systems must only be used in combination with the generators, converters and components of the Artech Ultrasonic Systems AG Ultrasonic Systems AG Company.

Prior to starting up the generators, converters and components, this operating manual must be read carefully and its contents implemented. The operating manual must be kept ready to hand at the site where the generator is used!

Connection work may only be performed on the device when the power cable / connector has been disconnected!
1.3 Non-compliant use

Operating the generators, converters and components despite insufficient knowledge of operation, servicing and maintenance of the system.

Performing modifications, rebuilds or retrofits on the generators, components and converters which could compromise safety without the express written approval of Artech Ultrasonic Systems AG Ultrasonic Systems AG.

Making changes to the control software.

Using unsuitable production materials.

Opening the generators, converters and components during operation.

Touching energized live areas while the device is switched on.

Operating the sieving system despite insufficient knowledge of operation, servicing and maintenance of the system.

2. Compliant application

The generators are designed for the excitation of mechanical structures. They must only be used exclusively in combination with the C35-LP1, C35-SD8, C35-SK1 and C32-HP1 converters. The manufacturer does not accept liability for damage caused by incorrect use of the components. The user bears the risk exclusively.

The components are intended for industrial use! The servicing intervals defined by the individual ambient conditions and the hazard assessment must be observed. The ultrasonic generators, converters and components must only be used in faultless condition and in accordance with the operating manual.

Prior to starting up the generators, converters and components, this operating manual must be read carefully and its contents implemented. The operating manual must be kept ready to hand at the site where the device is used!

2.1 Operating staff qualifications

Work may only be performed with the components and generators by trained and instructed members of staff. The scope of staff responsibilities for operation, assembly, servicing and repair must be clearly defined by the operator!

The operator must ensure that generators, converters and components are operated only by members of staff who have been instructed to do so. Work on electrical equipment and interfaces may only be performed by an authorized electrician in accordance with the recognized rules of electrical engineering!
2.2 Installation

Connection work may only be performed on the device if the power cable / connector has been disconnected! The power supply must be cut off completely.

Prior to every start-up, it must be ensured that the generators, converters and components are in a closed and safe condition.

National statutory safety measures must be observed.

The power connection must be grounded.

If the connecting plug of a device has come into contact with fluids or is soiled, it must be cleaned and dried completely before being inserted into the socket / started up (for example with compressed air).

In the event of non-compliance with the regulations, Artech Ultrasonic Systems AG Ultrasonic Systems AG refuses to accept any liability whatsoever for damage to persons or materials.

2.3 Operation

Generators, converters and components must not under any circumstances be opened during operation.

A high-voltage charge is present in the interior of the generators, converters and components. This poses a grave health risk.

Unsafe work practices are categorically prohibited.

Prior to switching on the generators, converters and components, it must be ensured that no one could be endangered as a result.

Correct operation, careful handling of generators, converters, components and tools during operation keeps the devices in good working order, increases their service lifetime and reduces downtimes.

2.4 Ambient conditions / site

The device must not be installed above a maximum elevation of 2000 m asl to ensure full protection against electrical voltage disturbances.

The generators and converters comply with the IP65 rating (no ingress of dust at 20m bar negative pressure in the housing and protection against strong jets of water from all angles in accordance with the code definition).

To guarantee a long service life, the generators must be operated in a clean environment. It must be ensured that the generators are stored / installed in a vibration-free location and not in the proximity of a heat source. The manufacturer settings are carried out at 20°C – 22°C.

Air humidity and ambient temperature during operation / use must range from 20% – 80% and 0°– 45°C.
2.5 Warranty declaration / conformity

In delivering the generators, converters and components, Artech Ultrasonic Systems AG Ultrasonic Systems AG enters into a warranty obligation as per VSM (Swiss Association of Machinery Manufacturers) specifications.

The conditions for fulfilling warranty obligations on the part of Artech Ultrasonic Systems AG Ultrasonic Systems AG include the following:

- The user must be aware of the contents of this operating manual.
- The instructions and warnings in this operating manual must be verifiably adhered to.
- Unauthorized modifications or changes to parts of the generators, converters and components or mechanical components included in the delivery are categorically excluded.

Our generators, converters and components meet the requirements of the applicable safety regulations. We confirm adherence to the following regulations:

- Directive 2006/95/EC - low voltage
- Directive 94/9/EG - ATEX (where clearly indicated on the label)

For further details on conformity, please refer to the conformity statement for the respective product.

2.6 Transport damage

The freight company is responsible for any damage caused during transport. A complete report describing the exact extent of the damage must be submitted to the freight company and serves as the basis for damage claims. Damage to or loss of goods delivered by Artech Ultrasonic Systems AG Ultrasonic Systems AG must be reported to us immediately and confirmed by a copy of the above-mentioned report. Where carriage-free or CIF (Cost, Insurance, Freight – basis for calculation of customs value) delivery has been performed by Artech Ultrasonic Systems AG Ultrasonic Systems AG, the damaged delivery will, where required, be replaced and claims submitted to the respective transport insurance company.
3. DGS Generators

3.1 Technical data

Generator types: Single (1 HF connection)  
Twin (2 HF connections)
Max. ultrasonic output: 50 / 100 / 200 Watt
Output voltage: 600 V (limited)
Max. output current: 0.5 A (limited)
Generator circuit breaker: FI: 4A slow blow / F2 4A slow blow  
F3: 800mA slow blow
Output frequency: 30 – 38 kHz
(Frequency variation)
Operating modes: "Automatic Mode"  
"Manual Mode"
Enclosure: IP 65
Overvoltage category: II

3.2 Installation data

Weight: 3.6 kg
Dimensions (W x H x D): 280 x 170 x 125 mm
Electrical connection: 90 – 250 V / 2A type
Frequency: 50 / 60 Hz
Ambient temperature: 0° - 45° C
Max. rel. humidity: 80% at 30°C
Installation location: Closed room at a max. elevation of 2000 m asl

3.3 Start up

3.3.1 Preparatory work

The DGS generators can be mounted onto a horizontal wall by means of four screws. Four screw holes are available for this purpose. To access the four mounting screw holes, the lid of the housing must be removed by drawing out the four retaining screws (see illustration).

In wall-mounted installations, the connecting cables and ports are situated on the bottom of the housing as is customary in control cabinet technology.
3.3.1 Preparatory work

- Ensure that the generator is switched off (POWER at 0).
- The remote control connector must **not** be plugged in yet.
- Connect the HF cable for the ultrasonic converter. Connect the end of the cable to the ultrasonic converter.
- The power cable must only be connected to a mains socket that has been grounded. The voltage rating indicated on the label must be observed.
- The default settings on the generators are set so that ultrasonic operation runs in multi-frequency mode. On the DGS generator, the desired oscillation amplitude is set with the right-hand button to between 50% and 100% of the nominal amplitude.
- The DGS generator offers the option of adjusting the settings to other operating modes. For this purpose, the generator must be connected to a PC or desktop via the RS232 interface (using original Artech Ultrasonic Systems AG accessories). The optional "SweepParam" software must be installed.

3.3.2 Activation

- Turn the main power switch from Position "0" to Position "I".
- The main power switch must light up. The alarm LED and the «No Converter» LED must **not** light up.
- Press the "US" key; the sieve is subjected to ultrasonic excitation.
- Set the oscillation amplitude (50% to 100%) with the right-hand button.

3.3.3 Remote control

- Switch the DGS generator off.
- Connect the remote control cable.
- Turn the generator on using the main power switch.
- Check all the functions.
3.4 Operating the DGS generator

The generator must have been correctly installed, mounted and connected before it is switched on. The operator must also be familiar with the contents of the operating manual.

The DGS generator is characterized by its intuitive operation:

- The device is activated by means of the main power switch (POWER).
- The standard device features a status display and an amplitude setting panel which allows confirmation or adjustment at all times during operation.
- The status display shows the operating mode in which the generator is running. The default setting is "Automatic Mode".

The operating modes are described in more detail in the section titled "Operating modes".

The generator offers two options for setting the operating mode:

- Digital and analog I/O interfaces
- Serial interfaces

The oscillation amplitude is the only parameter that can be preselected on the front plate.

3.4.1 Main power switch

The generator is turned on by setting the main power switch (POWER) to Position 1.

The main power switch lights up in green.

Ultrasonic operation is activated by pressing the US key.

To switch off the ultrasonic function, press the US key. To switch off the generator completely, turn the main power switch (POWER) back to Position 0.

3.4.2 Operating modes

The DGS generator is designed for application to mechanical metal structures. For this purpose, the DGS generator offers two operating modes that can be set with the "SweepParam" software:

**Automatic Mode**

The generator searches for the optimum working point, aligns itself accordingly and varies the frequency depending on the bandwidth of up to 4000 Hz.

"Automatic Mode" is the default operating mode and is applied during operation with one or more mechanical structures and one or more converters. It generates ultrasound of varying frequency and oscillation amplitude according to the oscillation amplitude set on the front plate.

The software for the generator finds the optimum working point by maximizing the output power. A standard Sweep bandwidth of 500 Hz is defined around this point for the single generators and 2000 Hz for the twin generators. In this range, the generator varies the frequency with an adjustable speed (Sweep frequency). The minimum and maximum frequency limits of the Sweep range allow undesired resonance to be blocked out.

**Manual Mode**

The generator varies within the set frequency limits (maximum 8000 Hz) without resonance recognition and alignment.
"Manual Mode" is used for the excitation of mechanical structures that have a lot of resonances and where one or more resonances are to be activated over a larger range of up to 8000 Hz at the most. The resonances to be generated are defined by setting the Sweep range (Frequency Limits) and the Sweep speed.

**Power Limit (PL) Mode**

The output power of the generator can be limited in PL mode. This setting can be selected as a supplement to "Automatic Mode" or "Manual Mode". The generator does not override the value set in this case, so that the temperature of the ultrasonic converter or mechanical structure does not become too high.

### 3.4.3 Setting the amplitude

The Amplitude button is not active if a remote control is connected as the remote control has higher priority.

The oscillation amplitude or ultrasonic intensity can be set by means of a button on the front plate (amplitude in %). It allows the oscillation amplitude on the sieve to be set in the range of 50 to 100%. As the output is proportional to the squared amplitude, this results in an output change of 25% to 100%. Settings can be adjusted at all times.

### 3.4.4 Display elements

**Operating LED (On/Off switch (1))**

When the device is switched on, the operating display lights up.

**Remote** LED (2)

The Remote LED lights up whenever a remote control device is connected. This disables the operating elements on the front plate.

**No Converter** LED (3)

If the converter is not connected or the cable to the converter is interrupted, the «No Converter» lamp lights up. Particularly in systems in which the converter must frequently be replaced, this function facilitates fault analysis.

**Alarm** LED (4)

In the event of faults such as a defect cable or ultrasonic converter, the Alarm LED lights up.

**S-Mode** LED (5)

When the "Manual Sweep Mode" is set for multiple structures, the S-Mode LED lights up.

**PL-Mode** LED (6)

If the output power of the generator has been limited, the PL-Mode lamp lights up.

**US On** LED (7)

The US ON LED lights up when ultrasonic operation is activated. This is either performed manually or by means of the US button on the front plate, or externally by means of a connected control device.
3.5 Individual settings

The DGS generator is designed to allow individual selection of the following options:

- Setting adjustment via the RS232 interface
- Setting adjustment via the digital and analog inputs

3.5.1 Remote control with laptop / desktop

Use the Artech Ultrasonic Systems AG data cable only for this connection, as the use of a standard RS232 will destroy the RS-232 interface (background: different wiring).

You are provided with the above-mentioned custom-made Artech Ultrasonic Systems AG data cable for the connection of a laptop or desktop. This cable connects the 25-pin socket of the generator with the 9-pin RS-232 interface of the laptops or desktop.

If an RS-232 interface is not available, a standard commercial adapter cable can be used to connect the Artech Ultrasonic Systems AG data cable and the USB interface of the laptop or desktop.

The wiring of the 1:1 Artech Ultrasonic Systems AG data cable for the 25-pin plug connector of the DGS generator is as follows:

- Pin 3: RS232-TXD
- Pin 4: RS232-RXD
- Pin 24: GND24_OUT (Ground)

The Artech Ultrasonic Systems AG control software "SweepParam" is available for operation via a laptop or desktop.

3.6 SweepParam software

The SweepParam software runs on standard commercial Window PCs / operating systems.

Connect:

When the SweepParam software starts up, it first requests the port over which the connection is to be provided. In the case of Windows PCs, the port numbers can vary. It may prove necessary to try out several different ports. The connection is set up by pushing the "Connect" key.

Please note that the generator must be switched on for this purpose, otherwise you will receive a "Time Out" error.

When the connection has been set up, the menu is displayed on the right-hand side and contains information on the status of the SweepParam software and the generator.
The following functions can be selected:

**Disconnect:**
Disconnect the connection

**Read Status:**
Multiple activation of the "Read Status" button displays the maximum and current output, frequency and amplitude values. The output and frequency values are permanently altered due to the frequency variations.

The following Sweep parameters are set under "Options":

**Automatic Mode:**
In "Automatic Mode", the generator is automatically set to the optimum working point and then continuously aligned. The requisite parameters can be entered to the right.

**Amplitude:**
The value can range between 50% and 100%. The minimum increment is 1 %.

**Sweep Bandwidth:**
The bandwidth of the frequency variations (Sweep) in Hz can range between 200 Hz and 2000 Hz for the 100 and 200 W generators and up to 4000 Hz for the 50 W generator. The minimum increment is 1 Hz.

**Sweep Frequency:**
The speed at which the frequency varies. It can range between 50 and 100 Hz in minimum increments of 1 Hz.

**FrequencyLimitMin:**
The lower threshold of the possible variation range in Hz. The lowest value is 30000 Hz.

**FrequencyLimitMax:**
The upper threshold of the possible variation range in Hz. The highest value is 38000 Hz.

**Automatic Frequency Control Disabled:**
If this function is activated, the generator stops "tuning"; in other words it automatically stops searching for the optimum working point.
This function must only be switched off for ultrasonic cutting. During ultrasonic sieving, the “Tuning” function must always be activated.

**Autostart On/Off:**
If the DGS generator should start up when the power supply voltage is switched on rather than when the US button on the front plate is pushed, then "On" must be activated. However, for this purpose the main generator switch on the front plate must also be set to "On".

**Power Limit:**
Threshold values can be entered here in increments of 1 W for the maximum output of the generator in the range of 5 W to 30 W (DGS50) and up to 60W (DGS100) or 120 W (DGS200). This output limitation is required for temperature critical applications or for output reduction in the case of light powders and small sieves.

**Ext Analog:**
This function must be activated for remote amplitude control.

**Reset Options:**
Clicking this function resets the standard parameters.

When the “SweepParam” parameters have been entered, the data are delivered to the generator by clicking the "Transmit and Store Parameter" button. The data are then saved in the generator so that they are not lost when it is switched off.
Manual Mode
The working point is not optimized in "Manual Mode". The generator varies its frequency in the set range independently of whether resonances are present or not. The variation parameters can be set as described under "Automatic Mode".

Analyzer:
An analyzer is available for analysis of the oscillation system. It allows frequency analysis. Frequency analysis allows the frequency limits to be set so that they can block out undesired resonances. The Analyzer only works when the generator is switched on and the ultrasonic function is not active.
3.7 Remote PLC control

The generator can be switched on and monitored using a standard commercial PLC.

It can be connected via one analog and two digital input pins provided on the 25-pin socket on the back of the device:

- **Pin 7:** REMOTE_IN
- **Pin 10:** US_ON_IN
- **Pin 12:** AMPL_AIN (0–10 V)

**REMOTE_IN**

This input is required to inform the generator that a remote control device has been connected. If this input is selected (24V), the generator can only be switched on via the digital US_ON_IN input. Both buttons on the front plate are then blocked.

**US_ON_IN**

This input is used to start and stop the ultrasonic function. To enable operation, the REMOTE_IN input must be activated. Activation of the US_ON_IN input (24V) starts ultrasonic operation. If 0V is present on the US_ON_IN input, ultrasonic operation is switched off.

**AMPL_AIN**

10V on the input result in 100% amplitude, 5V in 50% amplitude accordingly. If less than 5V is applied to the AMPL_AIN input, ultrasonic operation is automatically carried out at an amplitude of 50%.

Three further digital inputs and one analog input are available for monitoring the generator:

- **Pin 14:** ERROR_OUT
- **Pin 15:** NO_CONV_OUT
- **Pin 16:** US_ACTIVE_OUT
- **Pin 23:** POWER_AOUT (0–10 V)

**ERROR_OUT** output signalizes an error condition. A voltage of 24V indicates an active error. If the voltage delivered at ERROR_OUT is 0V there is no error.

**NO_CONVERTER_OUT**

The generator monitors whether a converter is connected or not. An unconnected converter or a defect HF cable is indicated by a voltage of 24V on the NO_CONVERTER_OUT.
Activated ultrasonic operation generates a voltage of 24V on US_ACTIVE_OUT. If ultrasonic operation is switched off, the voltage is 0V.

The output power of the DGS generator is indicated by an analog signal on the POWER_AOUT pin. 10V indicates an output of 120%, for example 240W in a DGS35-200. 5V therefore indicates 60% of the output power.

The following pins provide the user with 24 V DC and the ground potential for the analog and digital inputs:

- Pin 1: 24VDC_OUT
- Pin 2: 24VDC_OUT
- Pin 24: GND24_OUT
- Pin 25: GND24_OUT

24VDC_OUT 24V supply voltage, maximum 100mA output current.

GND24_OUT Ground potential for the 24VDC_OUT supply and the digital and analog inputs and outputs.
The DGS generator is connected according to the following diagram:

Wiring diagram

- Mains Plug
  - L
  - N
  - PE

- Converter Plug
  - 1 HF
  - 2 CONVERTER_IN
  - 3 GROUND
  - 4 GROUND

Inputs/Outputs/RS232 plug
1 24VDC_OUT
2 24VDC_OUT
3 RS232_TXD
4 RS232_RXD
7 REMOTE_IN
10 RS_ON_IN
12 AMP2_AIN
14 ERROR_OUT
15 NO_CONVERTER_OUT
16 RS_ACTIVE_OUT
23 POWER_AOUT
24 GND24_OUT
25 GND24_OUT
3.8 Deactivation

- To turn off the main power switch (POWER), reset the switch to Position 0.
- The main power switch must no longer be lit up.

4. PNS Generator

4.1 Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. ultrasonic output:</td>
<td>50 / 100 / 200 Watt</td>
</tr>
<tr>
<td>Output voltage:</td>
<td>600 V (limited)</td>
</tr>
<tr>
<td>Max. output current:</td>
<td>1 A (limited)</td>
</tr>
<tr>
<td>Generator circuit breaker:</td>
<td>FI: 4A slow blow</td>
</tr>
<tr>
<td></td>
<td>F2: 4A slow blow</td>
</tr>
<tr>
<td>Output frequency:</td>
<td>30 – 38 kHz</td>
</tr>
<tr>
<td>(Frequency variation)</td>
<td></td>
</tr>
<tr>
<td>Operating modes:</td>
<td>&quot;Automatic Mode&quot;</td>
</tr>
<tr>
<td>Enclosure:</td>
<td>IP 65</td>
</tr>
<tr>
<td>Overvoltage category:</td>
<td>II</td>
</tr>
</tbody>
</table>

4.2 Installation data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>3.6 kg</td>
</tr>
<tr>
<td>Dimensions (W x H x D):</td>
<td>280 x 170 x 125 mm</td>
</tr>
<tr>
<td>Electrical connection:</td>
<td>90-250 V / 2A</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 / 60 Hz</td>
</tr>
<tr>
<td>Ambient temperature:</td>
<td>0° to 45°C</td>
</tr>
<tr>
<td>Max. rel. humidity:</td>
<td>80° to 30°C</td>
</tr>
<tr>
<td>Installation location:</td>
<td>Closed room at a max. elevation of ≤ 2000 m asl</td>
</tr>
</tbody>
</table>

4.3 Start up

4.3.1 Preparation

The PNS generators are mounted onto a vertical wall by means of four screws that ensure that the generator is held firmly in place. For this purpose, four screw holes are provided which can be accessed by removing both snap-in plastic lids.

For wall-mounted installations, the connecting cables and sockets are situated on the bottom of the housing as is customary in control cabinet technology.
Ensure that the generator is switched off (POWER at 0).

Connect the HF cable for the ultrasonic converter. Connect the end of the cable to the ultrasonic converter.

The power cable must only be connected to a mains socket that has been grounded. The voltage rating indicated on the label must be observed.

The default settings on the generators are set so that ultrasonic operation runs in multi-frequency mode.

### 4.3.2 Activation

- Turn the main power switch from Position "0" to Position "I".
- The main power switch must light up.
- Connect the HF cable to the generator.
- Press the "US" key to start ultrasonic excitation of the sieve.
- The power cable must only be connected to a mains socket that has been grounded. Please observe the voltage data on the rating plate.

### 4.3.3 Deactivation

- To turn off the main power switch (POWER), reset the switch to Position 0.
- The main power switch must no longer be lit up.
5. Troubleshooting and service

Defect generators and cables may under no circumstances be repaired by the user or any other unauthorized person. For repairs, please contact Artech Ultrasonic Systems AG Ultrasonic Systems AG.

<table>
<thead>
<tr>
<th>Error</th>
<th>Cause</th>
<th>Correction</th>
</tr>
</thead>
</table>
| DGS/PNS: Green LED does not light up  
No ultrasound applied to mechanical structure |   - Power plug not inserted in socket  
- Switch set to Position 0  
- No voltage in the socket  
- F1 and F2 fuses defect  
- Generator defect |   - Insert power plug  
- Switch set to Position 1  
- Check socket  
- Replace fuses  
- Send generator back for repair |
| DGS/PNS: Green LED is lit up  
Red ALARM LED is lit up |   - Converter not connected  
- Connected converter defect  
- Interruption or short circuit in cable  
- Generator defect |   - Connect converter  
- Connect substitute converter  
- Connect substitute cable  
- Send generator back for repair |
| DGS/PNS: Green LED is lit up  
Red ALARM LED is lit up  
Red NO CONV LED is lit up |   - Converter not connected  
- Converter defect  
- Interruption in cable |   - Connect converter  
- Connect substitute converter  
- Connect substitute cable |
| DGS/PNS: Converter strongly heated up (over 50°C) |   - Amplitude set too high  
- Dirty or oily interfaces  
- Converter or screw loose |   - Reduce amplitude or increase sweep frequency  
- Clean converter / sound conductor / interfaces  
- Tighten converter and screws |
| Only DGS: SPS connection not working |   - 24V signals on the control not correct  
- Wrong pin configuration on the 25-pin connector  
- SPS connection cable not inserted in socket  
- Connection error |   - Check SPS  
- Check pin configuration  
- Insert cable  
- Send generator back for repair |
| Only DGS: RS232 connection not working |   - Data cable not inserted in socket  
- Incorrect data cable  
- Incorrect interface on PC selected  
- USB-to-RS232 adapter not configured correctly  
- RS-232 interface on the generator defect |   - Use Artech Ultrasonic Systems AG data cables only.  
- Select correct interface on the PC (e.g. COM1)  
- Observe operating manual for the USB-to-RS232 adapter  
- Send generator back for repair |
| Only PNS: Output 1/2 LED’s blinking |   - Converter not connected  
- Converter defect  
- Interruption or short circuit in the cable  
- Generator defect  
- Converter or HF cable removed during ultrasonic operation |   - Connect converter  
- Connect substitute converter  
- Connect substitute cable  
- Send generator back for repair  
- Switch generator off and then on again using the green main power switch to restart ultrasonic operation |
6. Servicing / Cleaning / Inspections

The generator does not require technical servicing. Artech Ultrasonic Systems AG must be contacted for repairs.

All the connecting cables and plugs must be subjected to periodical inspection. In the event that insulation damage is detected, these parts must be replaced immediately. All the fastening screws on the generator and the housing lid must be drawn on tightly.

Cleaning and servicing must only be performed by members of staff who have been trained for this work. Prior to commencing servicing work, it must be ensured that all energy sources, such as the electrical power supply, have been disconnected.

For inquiries regarding your generator or converter, we would ask you to please provide the exact model designation and generator serial number. This number can be found on the rating label (A). In this operating manual, all designs are referred to in short as "sieving system".
7. Ultrasonic sieves

The sieving system design is state-of-the-art technology and in safe working order. The sieving system may only be used together with the original Artech Ultrasonic Systems AG sieve generators and the original Artech Ultrasonic Systems AG converters. The individual components and complete system are inspected continuously by our Quality Assurance department.

7.1 Product data

<table>
<thead>
<tr>
<th>Product name:</th>
<th>Ultrasonic Sieving System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model designation:</td>
<td>LSS and SSS</td>
</tr>
<tr>
<td>LSS:</td>
<td>Large Sieving System</td>
</tr>
<tr>
<td>SSS:</td>
<td>Small Sieving System</td>
</tr>
</tbody>
</table>

7.2 Sieving systems

7.2.1 LSS sieving system

The LSS sieving system comprises the following components:

1. Ultrasonic converter
2. Converter Waveguide
3. Screenmesh Waveguide
4. Support members
5. Stainless steel ring frame
6. Insulated HF cable
7. DGS generator

The sieving system consists of an ultrasonic converter (1) and a sound supply conductor (2) which is firmly connected to the rectangular screen sound conductor (3). The sound conductor is mechanically supported by the support members welded to the stainless steel ring frame (4/5). An insulated HF cable (6) provides the electrical connection from the converter to the generator (7).

The ultrasonic generator generates high-frequency electrical oscillations in the 30 kHz - 38 kHz range which are converted by the ultrasonic converter into sinusoidal, mechanical longitudinal or transverse oscillations. These oscillations are transferred by the sound conductor to the mesh screen which is then forced to vibrate with the same frequency and amplitude as the sound conductor. The special type of generator excitation allows the sound conductor to align itself to the system. As the mesh screen on which the sieving material is placed is a poor sound conductor, the ultrasonic intensity on the mesh screen grows weaker as the distance to the sound conductor increases. The ultrasonic oscillations are additionally dampened by the sieving material on the screen. The shape and size of the sound conductor can be selected to ensure even distribution of the ultrasonic oscillations across the screen. The entire surface of the screen becomes an active ultrasonic sieve in this way.
7.2.2 SSS sieving system

The SSS sieving system comprises the following components:

1. Ultrasonic converter
2. Converter Waveguide
3. Screenmesh Waveguide
4. Insulated cable
5. PNS generator
6. Screen frame

In the SSS system, the converter (1) transfers the ultrasonic oscillations to the Converter Waveguide (2) which is firmly connected to the Screenmesh Waveguide (3). The oscillating Screenmesh Waveguide transfers the high-frequency oscillation to the mesh screen which is connected to the sieve ring frame (6). An insulated cable (4) connects the converter to the PNS generator (5).

The double-frame concept prevents the ultrasonic oscillations from being dampened by contact pressure of the frame seals. This ensures a high level of process reliability.

7.2.3 Sound conductor

The converters and the waveguides have the purpose of conducting the sound and must not be modified or damaged.

7.2.4 Sieve frames

Standard sieve frames made of steel or stainless steel can be used on the sieving systems. Standard sieve frame diameters range between 500 mm and 2650 mm.

For use in EX protection zones, the generator output must be tuned to the size of the sieve surface area. The energy density must not exceed 0.1 W/cm².

Permissible sizes for 50, 100 and 200 W generators are listed in the table below:

<table>
<thead>
<tr>
<th>Sieve surface area</th>
<th>Maximum generator output</th>
</tr>
</thead>
<tbody>
<tr>
<td>500 cm²</td>
<td>50 W</td>
</tr>
<tr>
<td>1000 cm²</td>
<td>100 W</td>
</tr>
<tr>
<td>2000 cm²</td>
<td>200 W</td>
</tr>
</tbody>
</table>

7.2.5 HF connection

A special HF cable ensures ATEX-compliant connection of the ultrasonic converter with the generator.

The standard cable lengths are 5 m, 10m and 15m. A collar with a retaining screw allows the plug to be fastened to the converter port. This ensures stable connection even during oscillation and also compliance of plug connection with the ATEX standard.

To avoid compromising faultless working order, a total cable length of 20 m must not be exceeded when connecting several short HF cables together! It is recommended to always use a long cable instead of connecting several short lengths of cable.
The electrical connection of the C35-HP1 and C35-SD8 converters is dimensioned to be dust-ex-compliant for Zone 22 (see label on product). The plug is delivered with a special lock in accordance with DIN 60079-14 and can only be opened with a tool (M3 Alan key).

The plug connection must be cleansed of dust and dirt with a vacuum cleaner prior to connection.

The plug is removed by turning the collar to the left and pulling it from the socket. Before doing this, the retaining screw must be loosened.

To prevent potential differences between the sieve mesh and the sieving machine (electrostatic charges), the sieve frame must be electro-conductively connected to the sieve machine. For this purpose, a cable cross-section of 2.5 to 4 mm² is recommended. Although the screen sound conductor and the sieve ring are grounded via the converter and the generator connected to the mains, the converter or the sieve frame must be additionally grounded by a separate grounding cable attached to the sieving machine. To ensure that the sieve mesh also has the same electrical potential, the contact resistance between sieve mesh and frame must not be higher than 0.3 Ohm.

Generators that do not carry the designation A on the rating label must not be used in EX zones.
7.2.6 Sieve tensioning

Steel wire mesh should preferentially be used. As plastic mesh is a poorer sound conductor, it can only be used to a limited extent.
As the sound conductor is dampened by the sieve mesh, arbitrary quantities of mass cannot be adhered to the sound conductor.
A sieve mesh that is too large dampens the sound conductor so strongly that only a low ultrasonic level is present.
This mesh must therefore be tested beforehand. The sieve mesh is attached in the customary method and firmly bonded to the frame and sound conductor. It can be removed at any time and replaced with a new one.

The use of plastic mesh is prohibited in potentially explosive areas.

7.2.7 Adhesives

As not all adhesives have equally good mechanical features for ultrasonic applications, adhesives with very strong hardening qualities must be used for ultrasonic sieves.
The following two-component adhesives, for example, are commonly used and recommended:
- Kiwobond 930 or 933 stencil adhesive up to a maximum mesh aperture size of 120 μm
- Araldit AW136+HY991 or AY105+HY991 or AW106+HY953

When using the stencil adhesive for bonding, it must be ensured that the sieve mesh is applied to the bonding surfaces firmly and without gaps.

7.2.8 Preparation

If adhesive residues remain on the screen sound conductor after bonding, they must be removed without causing damage to the sound conductor. Scotch-Brite™Hookit™Discs from 3M, for example, are suitable for this purpose.
The Fine Line Tape from 3M allows precise application of adhesive contours. The bonding surfaces must be degreased to ensure an optimum bond between the sieve frame or sound conductor and the sieve mesh.

The sieve mesh is stretched over the sieve frame with the customary sieve tensioning strength of 10–30 N/cm.
Experience has shown that too strong a sieve tension has a negative influence on the throughput.
Plain weave sieve meshes generally achieve better results than twilled weaves.

To connect the sieve mesh and the sieve frame, other methods such as soldering, clamping or point welding can also be used. However, the sieve mesh and sound conductor may only be bonded together by soldering or adhesive bonding.
In ATEX zones, the converter and sound conductor must be checked for excessive heating subsequent to every new mesh replacement in accordance with the inspection instructions.
As Zone 20 conditions prevail in the interior of the sieve machine, a maximum surface temperature of 135°C (T4) must not be exceeded.
If the temperature is higher than this value, the system must not be used for applications in potentially explosive areas.
The ATEX type examination stipulates that the temperature must be checked in accordance with the inspection instructions. Only when this check is guaranteed can the sieves be deployed in Zone 20 ATEX areas.
The inspection instructions and logs must be kept in safe custody by the sieve manufacturer and be available for viewing at all times by Artech Ultrasonic Systems AG. In the event of non-compliance with this procedure, Artech Ultrasonic Systems AG accepts no responsibility for operation in ATEX areas.
### 7.2.9 Sieve tensioning

<table>
<thead>
<tr>
<th></th>
<th>Mesh aperture size</th>
<th>Wire thickness</th>
<th>Special sieve tension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mw</td>
<td>20 0.020 14</td>
<td>25 0.025 17</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>26 0.020 17</td>
<td>27 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>30 0.020 17</td>
<td>31 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>34 0.020 17</td>
<td>35 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>38 0.020 17</td>
<td>39 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>42 0.020 17</td>
<td>43 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>46 0.020 17</td>
<td>47 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>50 0.020 17</td>
<td>51 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>54 0.020 17</td>
<td>55 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>58 0.020 17</td>
<td>59 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>62 0.020 17</td>
<td>63 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>66 0.020 17</td>
<td>67 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>70 0.020 17</td>
<td>71 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>74 0.020 17</td>
<td>75 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>78 0.020 17</td>
<td>79 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>82 0.020 17</td>
<td>83 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>86 0.020 17</td>
<td>87 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>89 0.020 17</td>
<td>90 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>92 0.020 17</td>
<td>93 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>95 0.020 17</td>
<td>96 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>98 0.020 17</td>
<td>99 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>101 0.020 17</td>
<td>102 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>104 0.020 17</td>
<td>105 0.025 14</td>
<td>30 0.020 18</td>
</tr>
<tr>
<td></td>
<td>107 0.020 17</td>
<td>108 0.025 14</td>
<td>30 0.020 18</td>
</tr>
</tbody>
</table>

Larger mesh aperture sizes and wire thicknesses on request subsequent to testing. The recommended sieve tension must be applied evenly across the entire mesh surface. A tension measuring device is used to check the tension.

### 7.2.10 Sieve machine settings

The oscillations of the machine during ultrasonic sieving must be permanently monitored and, where required, re-adjusted. Good sieving performance can also be achieved at lower oscillation rates in the sieving machine. Excessive amounts of sieving material on the mesh dampen the oscillation strength and consequently reduce the ultrasonic effect. The best result is achieved by setting the following parameters:

- Sieving material supply dosage – sieving material load
- Machine adjustment – oscillation movement and oscillation intensity
- Ultrasonic amplitude
- Frequency bandwidth
- Frequency variation speed and output limitation

Sieve idle time can be optimized by the selection of a suitable frequency bandwidth setting.

To prevent overloading of the sieving machine with sieving material, the following settings must be ensured:

The DGS generator must be configured with the "SweepParam" to start up ultrasonic operation automatically whenever the power supply is turned on. Ultrasonic operation can be separately switched on or off for service purposes without shutting down the power supply by pushing the "US On/OFF" button on the front plate.

The mechanical construction of the sieve illustrated is suitable for acceleration rates of up to 5g.

At higher acceleration rates, additional measures are required to stabilize the screen sound conductor and the sound supply conductor.
The following formula can be used for an approximate calculation of the acceleration rate:

\[ a (\text{m/s}^2) = \frac{S_{s-s} (\text{mm}) \times n^2 (\text{1/min})}{1,800,000} \]

*a (m/s²)* Max. acceleration of the sieving machine in g  
*S_{s-s} (mm)* Peak-peak oscillation range on the sieving machine  
*RPM (r/min)* Sieve machine motor speed

**Example:**  
Oscillation range \(O = 5\) mm  
Motor speed = 1450/min

\[ a = 5 \text{ mm} \times (1450/\text{min})^2 /1800000 \]

= 5.84 g

If the acceleration value is greater than 5 g, the oscillation range or sieve machine speed must be reduced.
8. Ultrasonic cutting blades

The ultrasonic cutting blade is of state-of-the-art standard and is in safe working order. The cutting blade may only be used together with the original Artech Ultrasonic Systems AG sieve generators and the original Artech Ultrasonic Systems AG converters.

The ultrasonic cutting blade is designed exclusively for ultrasonic supported cutting of suitable materials. Any other type of use or any other further use shall be deemed as non-compliant. The manufacturer is not liable for damage resulting from non-compliant use. The user bears the risk exclusively. This system is intended for industrial use. Adherence to the service and inspection conditions is mandatory. The cutting blade may only be used in faultless condition using the original Artech Ultrasonic Systems AG Ultrasonic Systems AG components in accordance with the operating instructions.

8.1 Non-compliant use

- Operation of the sieving system despite insufficient knowledge of operation, servicing and maintenance of the system.
- Modifications, rebuilds or retrofits of the cutting system that could compromise safety without the approval of Artech Ultrasonic Systems AG Ultrasonic Systems AG.
- No modifications may be made to the sound conductor without the approval of Artech Ultrasonic Systems AG Ultrasonic Systems AG.
- It is prohibited to make changes to the control software.
- The use of unsuitable production materials.
- Opening the generator during operation.
- Touching energized live areas while the device is switched on.
- Unsafe work practices are categorically prohibited.
- Prior to switching on the generator, it must be ensured that no one can be harmed by contact with oscillating sound conductors or cutting blades.

Correct operation, careful handling of generators and the related tools during operation

- keeps the devices in good working order,
- increases their service lifetime,
- keeps downtimes to a minimum.

The cutting blades must only be used in combination with the generators of the Artech Ultrasonic Systems AG Ultrasonic Systems AG Company.

Attention must be paid to the sub-harmonic, i.e. audible, oscillations which, depending on use, can fluctuate strongly and have a disturbing effect. In this respect, the energy-equivalent continuous sound level, Leq, related to a representative work period (min. 8 hrs/day, max. 2000 hrs/year) of 85-87 dB(A) is decisive as the limit range. Only low levels of ultrasonic energy can be transmitted through the air so that direct physical injury can consequently be excluded.

8.2 Warranty statement

Warranty obligations lose their validity for cutting blades manufactured by the client. For generators and converters, the warranty only remains valid on the condition of compliant use and application. Downtimes caused by converters on which the screws have not been tightly drawn on or damaged bolts are not covered by the warranty.
8.3 Ultrasonic cutting systems

The cutting system comprises the following components:

- DGS generator
- SK1 ultrasonic converter
- Sound supply conductor with cutting blade
- Insulated HF cable

The ultrasonic converter (1) must be screwed firmly to the sound conductor (2). The sound conductor is screwed or welded to the cutting blade (3). An insulated HF cable (4) provides the electrical connection from the converter to the generator (5).

The ultrasonic generator generates high-frequency electrical oscillations in the 30 kHz - 38 kHz range which are converted by the ultrasonic converter into sinusoidal, mechanical longitudinal or transverse vibrations. These oscillations are transferred by the sound conductor to the ultrasonic cutting blade which is then forced to vibrate with the same frequency and amplitude as the sound conductor.

8.4 HF connection

A special HF cable ensures the connection of the ultrasonic conductor to the generator. The standard cable lengths are 5 m, 10 m and 15 m. Other lengths are available on request.

To avoid compromising faultless working order, a total cable length of 20 m must not be exceeded when connecting several short HF cables together!

The ex-work default cutting parameters set in the generator must not be changed as the ultrasonic cutting blade or converter will otherwise be damaged.

In the case of standard generator parameters that have been changed at the production plant, it must be ensured that the same settings are saved in the generator in the case of a replacement. Generators with changed cutting parameters may only be operated with the assigned cutting blade. The changed parameter settings must be kept in safe custody and be available for inspection at all times.
8.5 Service / Inspections / Cleaning

The cutting system does not require technical servicing. For repairs, please contact Artech Ultrasonic Systems AG Ultrasonic Systems AG.

All the connecting cables and plugs must be subjected to periodical inspection. In the event that insulation damage is detected, these parts must be replaced immediately.

Cleaning and servicing must only be performed by members of staff who have been trained for this work. Prior to commencing servicing work, it must be ensured that all energy sources, such as the electrical power supply, have been shut off. Never clean the keyboard or the display with caustic cleaning agents.

Clean the sound supply conductors and cutting blades regularly as follows:

- Switch off the generator.
- Dip the ultrasonic cutting blade into a water bath and switch on the ultrasonic generator.
- Pay attention that no cleaning agents penetrate into the cable duct of the ultrasonic converter.
- Dry the sound conductors and cutting blades with compressed air.

When work is being performed with a high-pressure cleaning device, do not direct the air jets directly onto the ultrasonic converter.
A soft brush is always suitable for cleaning purposes.

The cutting system components should be inspected thoroughly after six months at least and then every three months at least. The individual inspection rhythm is ideally determined within the framework of the hazard analysis.

The sound supply conductor and the cutting blade must be checked for signs of wear, tears or other damage prior to use.

In the case of defect components, please contact Artech Ultrasonic Systems AG Ultrasonic Systems AG.
9. Converters

9.1 Technical data

<table>
<thead>
<tr>
<th>Application area:</th>
<th>50 W DGS / PNS generators only for small sieves without oscillation (SSS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. ultrasonic output:</td>
<td>50 Watt</td>
</tr>
<tr>
<td>Tightening torque (min.):</td>
<td>15 Nm</td>
</tr>
<tr>
<td>Tightening torque (max.):</td>
<td>20 Nm</td>
</tr>
<tr>
<td>Output frequency:</td>
<td>30kHz – 38kHz</td>
</tr>
<tr>
<td>Enclosure:</td>
<td>IP 65</td>
</tr>
<tr>
<td>Ambient temperature:</td>
<td>0 – 45 °C</td>
</tr>
<tr>
<td>ATEX:</td>
<td>Zone 22 (if labeled with Zone 20 effect in the interior of the machine)</td>
</tr>
</tbody>
</table>

**Area of C35-LP1 converter application / handling**

**Area of application:**

- Static sieve container without oscillation and Ø <600 mm for pigment powder sieving
- Oscillation at low amplitude and Ø <600 mm for pigment powder sieving

**Handling:**

Only titan bolts from Artech Ultrasonic Systems AG may be used.

In the case of bolts manufactured by the user, the operating permit and warranty rights lose validity.

Prior to connection of the sound supply conductor and the converter, the thread and the mating surfaces must neither be damaged nor soiled by dust, fluids, oil or similar substances.

If during connection, the mating surfaces and the thread are soiled with powder residues, there is a risk of the thread being damaged.

In this case, the converter bolts or the sound supply converter must be replaced.

It must be ensured that the converter holder does not exert lateral pressure on the converter as this could otherwise lead to damage to the bolt or the interior thread of the sound conductor.

For use in ATEX areas, it is essential that the converter is drawn on with a calibrated torque wrench. The torque must lie in the range of 15 Nm to 20 Nm.

If the converter is not drawn on, this can lead to the bolt being damaged or broken.

9.2 Technical data

<table>
<thead>
<tr>
<th>Application area:</th>
<th>100 / 200 W DGS / PNS generators only for sieves with &gt;0.3 m² surface area (LSS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. ultrasonic output in continuous operation:</td>
<td>120 Watt</td>
</tr>
<tr>
<td>Tightening torque (min.):</td>
<td>15 Nm</td>
</tr>
<tr>
<td>Tightening torque (max.):</td>
<td>20 Nm</td>
</tr>
<tr>
<td>Output frequency:</td>
<td>30kHz – 38kHz</td>
</tr>
<tr>
<td>Enclosure:</td>
<td>IP 65</td>
</tr>
<tr>
<td>Ambient temperature:</td>
<td>0 – 45 °C</td>
</tr>
<tr>
<td>ATEX:</td>
<td>Zone 22 (if labeled with Zone 20 effect in the interior of the machine)</td>
</tr>
</tbody>
</table>
### Area of C35-SD8 converter application / handling

**Area of application:**

- Container sieving machines in single and twin operation with a \( \varnothing >600 \text{ mm} \) for loose goods.
- In the case of oscillation sieving machines, operation only together with converter holder and M10 bolts.
- The converter must sit firmly in the holder. A soft rubber support pad is not suitable as it causes damage to the converter, sound conductor and sieve mesh due to the oscillatory forces.
- Excitation of plates and tanks or other complex mechanical structures is possible.

**Handling:**

Only titanium bolts from Artech Ultrasonic Systems AG may be used. In the case of bolts manufactured by the user, the warranty loses validity.

Prior to connection of the sound supply conductor and the converter, the thread and the mating surfaces must neither be damaged nor soiled by dust, fluids, oil or similar substances.

If the mating surfaces and the thread are soiled with powder residues during connection, there is a risk of the thread being damaged.

In this case, the converter bolts or the sound supply converter must be replaced.

It must be ensured that the converter holder does not exert lateral pressure on the converter as this could otherwise damage the bolt or the interior thread of the sound conductor.

For use in ATEX areas it is essential that the converter is drawn on with a calibrated torque wrench. The torque must lie in the range of 15 Nm to 20 Nm.

If the converter is not drawn on firmly, this can lead to the bolt being damaged or broken.

### 9.3 C32-HP1 technical data

| Application area: | 100 / 200 W DGS / PNS generators only for sieves with >0.3 m² surface area (LSS) |
| Max. ultrasonic output in continuous operation: | 120 Watt |
| Tightening torque (min.): | 15 Nm |
| Tightening torque (max.): | 20 Nm |
| Output frequency: | 30kHz – 38kHz |
| Enclosure: | IP 65 |
| Ambient temperature: | 0 – 45 °C |
| ATEX: | Zone 22 (if labeled with ) |
### Area of C32-HP1 converter application / handling

**Area of application:**
- Container sieving machines in single and twin operation with a Ø > 600 mm for loose goods.
- Cylinder sieve baskets for centrifugal sieving machines in single and twin operation
- Only with converter holder and M10 bolts for oscillation sieving machines
- The converter must sit firmly in the holder. A soft rubber support pad is not suitable as it causes damage to the converter, sound conductor and sieve mesh due to the oscillatory forces.
- Excitation of plates and tanks or other complex mechanical structures is possible.

**Handling:**
Only titanium bolts from Artech Ultrasonic Systems AG may be used. In the case of bolts manufactured by the user, the warranty loses validity.

Prior to connection of the sound supply conductor and the converter, the thread and the mating surfaces must neither be damaged nor soiled by dust, fluids, oil or similar substances.

If the mating surfaces and the thread are soiled with powder residues during connection, there is a risk of the thread being damaged. In this case, the converter bolts or the sound supply converter must be replaced.

It must be ensured that the converter holder does not exert pressure on the converter as the bolts or interior thread of the sound conductor could otherwise be damaged. If the converter is not drawn on firmly, this will lead to the bolt being damaged or broken.

### 9.4 C35-SK1 technical data

<table>
<thead>
<tr>
<th>Application area:</th>
<th>100 / 200 W DGS / PNS generators / ultrasonic cutters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. ultrasonic output in continuous operation:</td>
<td>120 Watt</td>
</tr>
<tr>
<td>Tightening torque (min.):</td>
<td>15 Nm</td>
</tr>
<tr>
<td>Tightening torque (max.):</td>
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<tr>
<td>Enclosure:</td>
<td>IP 65</td>
</tr>
<tr>
<td>Ambient temperature:</td>
<td>0 – 45 °C</td>
</tr>
</tbody>
</table>

### Area of C35-SK1 converter application / handling

**Area of application:**
- Ultrasonic cutting - also in cutting systems that are cleaned chemically
- In the case of oscillation sieving machines, operation only together with converter holder and M10 bolts
- The converter must sit firmly in the holder. A soft rubber support pad is not suitable and results in damage to the converter and sound conductor due to the oscillatory forces.

**Handling:**
Only titanium bolts from Artech Ultrasonic Systems AG may be used. In the case of bolts manufactured by the user, the warranty loses validity.

Prior to connection of the sound supply conductor and the converter, the thread and the mating surfaces must neither be damaged nor soiled by dust, fluids, oil or similar substances.

If the mating surfaces and the thread are soiled with powder residues during connection, there is a risk of the thread being damaged. In this case, the converter bolts or the sound supply converter must be replaced.

It must be ensured that the converter holder does not exert pressure on the converter as the bolts or interior thread of the sound conductor could otherwise be damaged.

If the converter is not drawn on firmly, this will lead to the bolt being damaged or broken.
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Notes: