Get yourself a time and competitive advantage:

**Extremely effective Removal of wax-based Support materials**

**Automatic | Fast | Clean | Safe | Economical**

Rapid Prototyping – the fast availability of 3D prototypes is a highly topical subject. The fast production of 3D prints is in fact impressive – the availability of the final and cleaned print version instead is often delayed due to the time-consuming and often manual removal of the support material. Especially the wax based materials caused some headaches.

The far better alternative is a fast, efficient and economical support structure removal using our **Wax-Clean system** which we developed especially for the removal of wax support structures.

**Finished in just a view minutes !**

After extensive tests with different support materials regarding the ideal calibration and matching of frequency, amplitude, cleaning solution, interval and temperature, we can now offer a solution, helping you to remove the wax based support structure of your 3D prints in a cost- and time efficient way.

**Ease of use !**

The parts are placed in a stainless special steel basket, which is then hooked into the right cleaning basin, where the wax particles are removed using our intervall controlled ultrasonic sound and turbulent flow technology. The dissolved wax floats upwards and concentrates for easy removal in the separation basin.
**The Removal Process**

Our **Wax-Clean** systems are designed to clean multiple objects simultaneously. The objects are placed into a metal basket which is hooked into the system. The combined **Ultrasonic/Turbulent Flow** system is controlled by an electronic interval program: The ultrasonic sequence loosens the particles of the support structure; the **Turbulent Flow sequence** dissolves the particles and washes them off. The temperature of the cleaning liquid is adjustable – where in our systems a temperature of 65°C is absolutely adequate and minimises the evaporation of the cleaning liquid. **Depending on the kind of support material, its thickness and complexity, the removal might take just a fraction of the time needed by a conventional system. After the removal the objects solely need to be shortly flushed with clean water. Depending on the kind of support material, its thickness and complexity, the removal will be faster than before – normally a complete removal just takes a few minutes!**

![Image of ultrasonic tank with basket]

**Solo-, Duo- and Trio-Systems**

Our solutions are available as **Solo-systems** (support removal), **Duo-systems** (support removal and rinsing) and **Trio-systems** (support removal, rinsing, drying). The rollable Caddies (Drip Trays) for our cleaning systems are completely made of 2mm special stainless steel. They are amply dimensioned to (in case of an unlikely leakage) hold the complete content of a cleaning basin.
Basic Principle of Ultrasonic Cleaning

Ultrasonic stands for oscillations with frequencies above 16 kHz. A highly energetic ultrasonic checking stimulates liquids to oscillate. The continuous compression and decompression results in intense pressure variation (up to 1.000 bar), which leads to strong currents in the micro level and therefore to a brush-effect, which removes particles from the top of the support structure.

Our ultrasonic based systems for removing 3D print support structures utilise frequencies and amplitude modulations which we specially developed for the support structure removal. Once these frequencies are applied to a cleaning liquid they produce millions of small continuously imploding bubbles. This process is known as cavitation. The cavitation (electronic brushing) allows to dissolve support structure parts even in areas, which are difficult to access without damaging the construction material.

Our Turbulent Flow and Ultrasonic based systems outperform conventional removal methods regarding effectivity and speed and can even be used without a manual mechanical pre-removal of supporting parts.

Strictly Solid Components

All metal parts of our systems are manufactured from high quality special stainless steel – this applies to the basins as well as to the pipes, cover plates and frames.

Efficient pumps produce an effective turbulent flow as part of the electronically controlled interval with the ultrasonic sound.

In-House Production

The production of the systems including the ultrasonic devices and controllers takes place in our own facilities. Therefore Schmitt Ultraschalltechnik has full control on the quality of all installed components.

Variable Zoning Grids (Optional)

The variable clampable zoning grids allow to hold down parts in the liquid as well as a vertical zoning of the basket for a targeted positioning of parts in front of (or apart from) the flushing openings (e.g. to protect fragile parts).

FAQs

1. How long does the cleaning liquid last?
   - Depending on the volume and load of the support material probably several weeks. – We are still gathering work experience.
   - Corresponding tests at customers will bring more binding information.

2. Which liquids should be used?
   - The cleaning liquid is SUT-Clean 2 – Mixing ratio 1:20 (5 %) in combination of our special Wax-Additiv SUT-Add1 – Mixing ratio 1:100 (1 %)

3. Should 3D prints be manually pre-cleaned or can they be placed untreated directly in the liquid?

On the strength of past experience a manual pre-removal of the support structure was not required

4. How much time does the cleaning take?

This is also depending on the volume, load and accessibility of the support material.

The average time needed is approx. 3 to 10 minutes at 65° C
# SÜT Systems for support structure removal:

**FDM-CLEAN 3D** for the removal of support material on FDM 3D prints.

**Poly-CLEAN 3D** for the removal of support material on Polyjet 3D prints.

**SL-CLEAN 3D** for cleaning of Stereolithographic 3D prints (Removal of remaining resin material).

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## About the manufacturer

*Schmitt Ultraschalltechnik GmbH* serves several industry markets with special solutions for ultrasonic cleaning of miscellaneous materials and products. Besides the industrial cleaning solutions Schmitt also offers solutions for the leisure and sports markets (*specialised on cleaning plastic products – see web site for further information*).

## Customised manufacturing

We offer to manufacture our systems to your specific needs. Tell us the required size and performance and we will send you a corresponding quotation. We can also help you to dimension the required system.