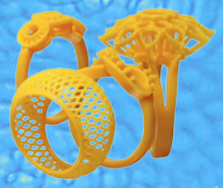
SLA-CLEAN 3D



Get yourself a time and competitive advantage:

EFFECTIVE CLEANING OF SLA 3D PRINT CONSTRUCTIONS

FAST | CLEAN | SAFE | ECONOMICAL

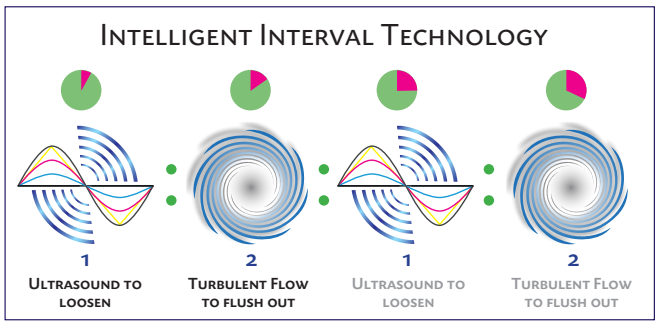
Rapid Prototyping – the fast availability of 3D prototypes is a highly topical subject. The fast production of 3D prints is in fact impressive – the availability of the final and cleaned print version instead is often delayed due to certain post processing procedures like cleaning and the removal of support structures.

Our **SLA-CLEAN 3D** *systems ensure a fast and effective removal of resin residue without the need to involve highly inflamable solutions, which normal demand explosion-protected environments.*

After extensive tests with different SLA materials regarding the ideal calibration and matching of frequency, amplitude, cleaning liquid and interval timing we can now offer a solution, helping you to clean your SLA parts in a cost- and time efficient way.

SCHMITT GmbH
ULTRASCHALLTECHNIK

The Cleaning Process



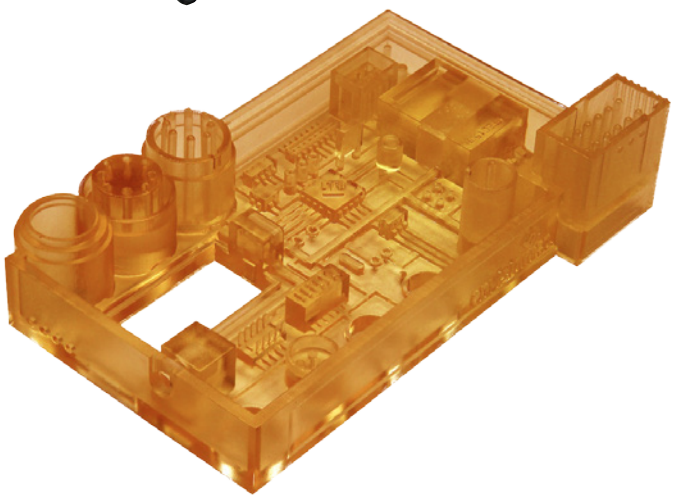
Our **SLA-Clean** systems are designed to clean multiple objects simultaneously. The objects are placed into a metal basket which is hooked into the system. The combined *Ultrasound/ Turbulent Flow* system is controlled by an electronic interval program: The ultrasonic sequence loosens the particles of the support structure; the *Turbulent Flow sequence* dissolves the particles and washes them off. If the temperature of the liquid exceeds the definable maximum value *(due the ultrasound pressure)*, the ultrasound is switched off and the cleaning continues utilising the turbulent flow only. Once the temperature has dropped again below maximum, the system reactivates the ultrasound. 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 much faster than before - using a conventional system.* ***The support removal can be done in an unattended overnight process.***

Pump and material saving chemistry

Our dedicated developed chemistry does ***not crystallize*** *and therefore does not damage any pumps or piping – a very important cost saving factor in the 3D printing process.*

Stand alone or Dual

Our systems are available as ***Solo Systems*** with just one basin or as ***Duo Systems*** with a cleaning basin plus a rinsing basin. The optional **Caddies** (mobile drip trays) 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. They are designed to hold the cleaning system on the grid on one side and still provide enough space on the other side to place one basket onto the grid so the liquid can drip into the basin. A drain valve at its right side allows to empty the tray.



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 cleaning SLA parts utilise frequencies and amplitude modulations which we specially developed for this application. 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 or resin residue 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.

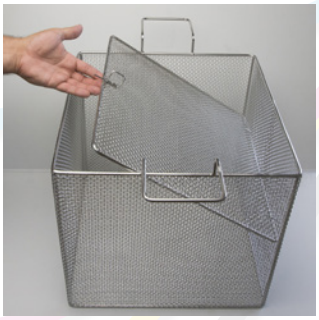
Strictly solid components

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

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 ?
   For SLA cleaning (depending on workload and complexity) up to 8 weeks.
2. Which liquid should be used and what are the costs ?
   *The cleaning liquid is named **SUTClean 5**, approx. 9,– Euro per litre, undiluted usage*
3. How much time does the cleaning take ?
   This also depends on the material and the accessibility of the support material. The average expenditure of time is approx. 30 minutes @ 30° C
4. Which Safety Precautions must be considered?
   The Ultrasound as well as the SUT Cleaner 5 require certain safety precautions like wearing protective goggles and gloves. Details are listed in the corresponding Safety Data sheets.
5. How can the saturated cleaner be disposed?
   Because of different regional regulations we recommend to give a sample of the saturated liquid to your local water authorities for testing. They will tell you how to dispose it legally.

Technical Data SLA Clean Systems *(systems with higher volumes on request)*

Product key: SUT ### US FL

- SUT – Schmitt Ultraschall Technik
- ### – Liter
- US – Ultra-Sound
- FL – Flow
- Heating

	SUT20 USFL	SUT70 USFL	SUT90 USFL	SUT110 USFL
Technology	Ultrasound + Flow			
SLA materials	The SLA-Clean 3D Systems have proven themselves in practical tests for being ideally suited to clean SLA prints from resin residue			
Cleaning solution	**SUT-Clean 5:** Pump-protecting ready-to-use cleaning liquid (see separate spec sheet/safety information).			
Cleaning Basin	Welded, heat insulated Cleaning Basin consisting of 2mm stainless steel with included pump.			
Basin Lid	Standard – with hinge			
Handles / Rolls	Side Handles	Rolls Standard	Rolls Standard	Rolls Standard
Dimensions W x D x H	approx. 420 x 370 x 620 mm	approx. 580 x 605 x 800 mm	approx. 700 x 650 x 1020 mm	approx. 770 x 770 x 1020 mm
Basin W x D x H	approx. 320 x 270 x 300 mm	approx. 430 x 430 x 430 mm	approx. 500 x 450 x 500 mm	approx. 570 x 570 x 450 mm
Basket W x D x H	approx. **300 x 250 x 250 mm**	approx. **410 x 410 x 370 mm**	approx. **480 x 430 x 450 mm**	approx. **550 x 550 x 370 mm**
Cubic Capacity	**20 litres**	**70 litres**	**90 litres**	**110 litres**
Flushing Openings	2 x 14 (120 + 220mm)	14 (120 mm + 220 mm)	19 (200 mm + 300 mm)	19 (130 mm + 280 mm)
Ultrasonic Devices	6 pcs, directly cemented	12 pcs, directly cemented	12 pcs, directly cemented	12 pcs, directly cemented
Drain Connection	1 Inch	1 Inch	1 Inch	1 Inch
Electrical Supply	230 V | 50/60 Hz approx. 0.8 kW	230V | 50/60 Hz approx. 1.1 kW	230V | 50/60 Hz approx. 1.2 kW	230V | 50/60 Hz approx. 1.5 kW
Weight	approx. 36 kg	approx. 70 kg	approx. 102 kg	approx. 110 kg
Optional Caddy	approx. 86 x 38 x 27 cm | 14 kg	approx. 120 x 65 x 27 cm | 24 kg	approx. 140 x 70 x 20 cm | 29.5 kg	approx. 150 x 80 x 20 cm | 36 kg
Optional Supplies	**Clamp Grids** for holding down parts, vertical basket zoning and positioning of parts in front of (or apart from) flushing openings			
Compatible Printers	Envisontec & 3D Systems (Listing of further systems and materials after corresponding tests)			
Materials* (not listed materials have most likely not yet been tested)	**ABS Flex Black, , E-Shell 300/303//310/450/600, E-Silicone, E-Tool, R05, RC70/90 VisiJet SL Tough, VisiJet SL HiTemp**			

May 2019 E&OE. – Specifications and details subject to change without notice

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.

Wax-Clean 3D for removal of wax based support material.

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.

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Schmitt Ultraschalltechnik GmbH
Albert-Schweitzer-Strasse 6
D-63165 Muehlheim-Laemmerspiel | Germany
Tel: +49 (0) 61 08.79 34 41 | Fax: +49 (0) 61 08.79 34 42
info@schmitt-ultraschall.de | www.schmitt-ultraschall.de