



POLY-CLEAN 3D

Get yourself a time and competitive advantage:

EXTREMELY EFFECTIVE REMOVAL OF POLYJET- & MIMAKI- 3D-PRINT SUPPORT MATERIAL

AUTOMATIC | FAST | CLEAN | SAFE | ECONOMICAL

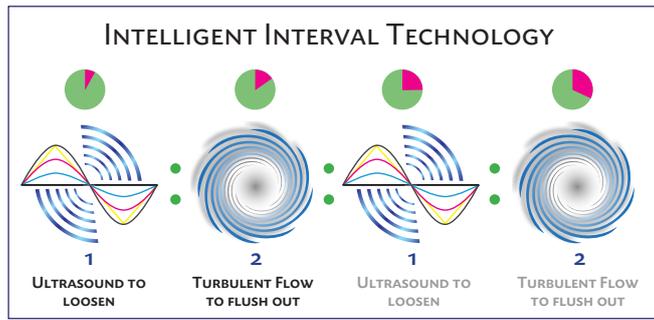
Rapid Prototyping – the fast availability of 3D prototypes is a highly topical subject. The fast production of 3D prints is in fact impressive – the availability of the final and cleaned print version instead is often delayed due to the time consuming and often manual removal of the support material.

*The far better alternative is a fast, efficient and economical support structure removal using our **Poly-Clean System** which we developed especially for Polyjet 3D prints.*

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



THE REMOVAL PROCESS



Our **POLY-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

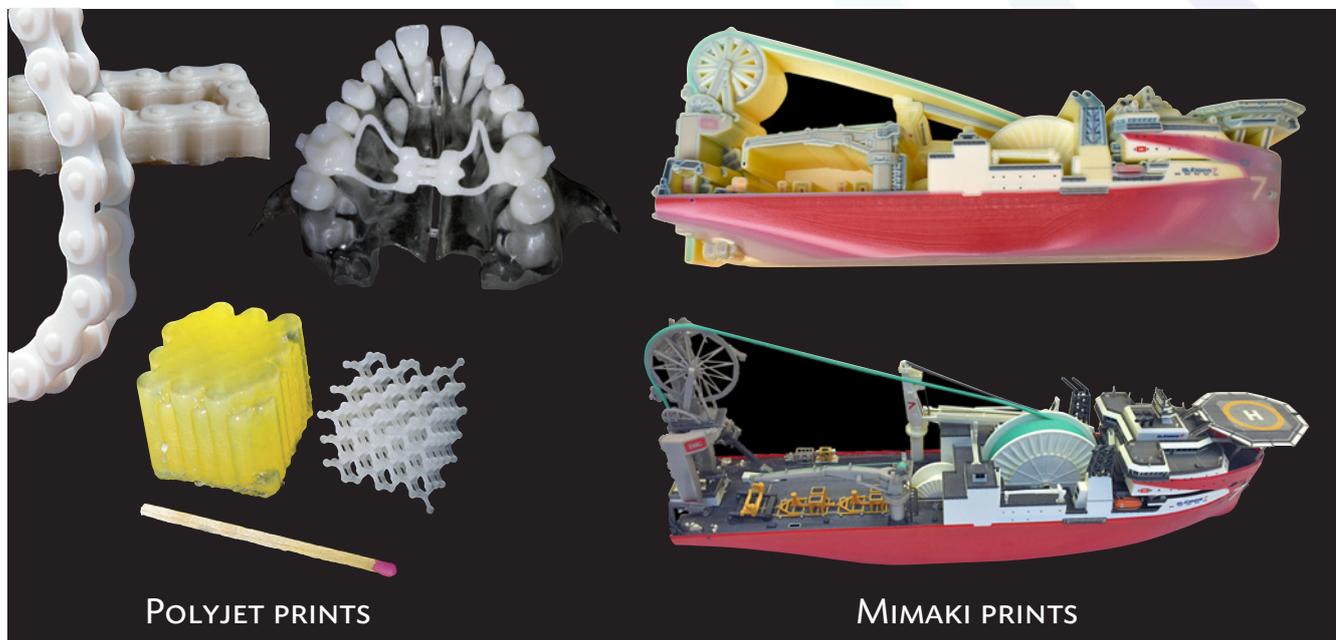
Our dedicated developed chemistry does **not crystallize** and therefore does not damage any pumps or piping – a very important cost saving factor in the 3D printing process.

STAND ALONE OR WITH CADDY

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. 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.



SYSTEM	DIMENSIONS
Caddy 20	approx. 86 x 38 x 27 cm
Caddy 55	approx. 106 x 54 x 27 cm
Caddy 90	approx. 140 x 70 x 20 cm



POLYJET PRINTS

MIMAKI PRINTS

BASIC PRINCIPLE OF ULTRASONIC CLEANING

Ultrasonic stands for oscillations with frequencies above 16 kHz. A highly energetic ultrasonic cleaning 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

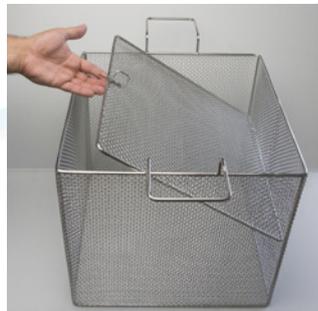
All metal parts of our systems are manufactured from high quality special stainless steel – this applies to the basins as well as to the pipes, cover plates and frames.

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

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*).

1 How long does the cleaning liquid last ?

For Polyjet and Mimaki material (depending on workload and complexity) up to 12 weeks.

2. Which liquid should be used and what are the costs ?

*The cleaning liquid for Polyjet material is **SUT-Clean 2**, approx. 9,- Euro per litre, mixing ratio 1:20 (5 %)*

*The cleaning liquid for Mimaki material is **SUT-Additiv 1**, approx. 25,- Euro per litre, mixing ratio 1:20 (5 %)*

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

This may work but will result in a faster saturation of the liquid and a much longer cleaning time. A rough manual pre-separation reduces the removal time and extends the lifetime of the cleaning liquid significantly.

4. 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. 2-8 hours @ 30° C

FAQs

TECHNICAL DATA POLYJET & MIMAKI SYSTEMS

	P-DW20US	P-DW55US	P-DW90US
Technology	TURBULENT FLOW + ULTRASONIC SOUND		
Support structure materials	The Poly-Clean 3D Systems have proven themselves in practical tests for being ideally suited to remove PolyJet and Mimaki support structures*.		
Cleaning solution Polyjet material	SUT-Clean 2: Pump-protecting alkaline liquid concentrate to be mixed with water in a 1:20 5% ratio (see separate spec sheet/security information).		
Cleaning solution Mimaki material	SUT-Additiv 1: Pump-protecting alkaline liquid concentrate to be mixed with water in a 1:20 5% ratio (see separate spec sheet/security 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 optional)	Side Handles (Rolls optional)	Rolls Standard
Dimensions W x D x H	approx. 420 x 370 x 620 mm	approx. 520 x 520 x 700 mm	approx. 700 x 650 x 1020 mm
Basin W x D x H	approx. 320 x 270 x 300 mm	approx. 400 x 400 x 350 mm	approx. 500 x 450 x 500 mm
Basket W x D x H	approx. 300 x 250 x 250 mm	approx. 370 x 370 x 320 mm	approx. 480 x 430 x 450 mm
Cubic Capacity	20 litres	55 litres	90 litres
Flushing Openings	14 (120 mm)	16 (120 mm + 220 mm)	19 (200 mm + 300 mm)
Ultrasonic Devices	6 pcs, directly cemented	9 pcs, directly cemented	12 pcs, directly cemented
Drain Connection	3/4 Inch	1 Inch	1 Inch
Electrical Supply	230 V 50/60 Hz approx. 0.8 kW	230V 50/60Hz approx. 1.0 kW	230V 50/60Hz approx. 1.2 kW
Weight	approx. 37 kg	approx. 57 kg	approx. 77 kg
Supplies	Caddy (rollable stand with collecting tray and additional drip pan area for baskets) Clamp Grid for hold down parts, vertical basket zoning and positioning of parts in front of (or apart from) flushing openings		
Compatible Printers	Objet 24 Objet 30; Objet 30 pro	Objet 24 Objet 30; Objet 30 pro Objet Eden 260 V; Objet 260 Connex Objet Eden 350 V; Objet 350 Connex	Mimaki 3DUJ-553 Objet 24; Objet 30; Objet 30 pro Objet Eden 260 V; Objet 260 Connex Objet Eden 350 V; Objet 350 Connex Objet Eden 500 V* Objet 500 Connex* Objet 500 Connex3* * max print size: 470 x 400 x 200 mm
Materials* <i>(not listed materials have most likely not yet been tested)</i>	VeroWhitePlus VeroGray Vero-Blue; VeroBlack Durus-White	VeroWhitePlus VeroWhite VeroClear VeroGray VeroBlue VeroBlack Durus-White Tango-Black Tango-Gray FullCure720	VeroWhitePlus VeroWhite VeroClear VeroGray VeroBlue VeroBlack Durus-White Tango-Black Tango-Gray FullCure720

May 2018 E&OE. – Specifications and details subject to change without notice

* Most kinds of support material is successfully removed. We will shortly publish a list of tested material on our WEB site and also add it as a table to this spec sheet. But you can also use us for testing the system with the material you use – contact us!

Other Systems for support structure removal:

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

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

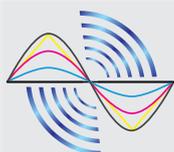
WAX-CLEAN 3D for removal of wax based support material.

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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