



DYEING SYSTEMS

SUT 3D-PRINT DYEING SYSTEMS

FAST | CLEAN | SAVE | ECONOMICAL

SUT-systems with ultrasound, turbulent flow and heating are also ideally suited for dyeing **Polyamide, Polyurethane, Acrylic, Resin, Carbon Fiber, Polyester and ABS-parts**. The interval steered combination of ultrasound and turbulent flow supports the adhesion of the ink pigments to the surface structures of the printed parts.

POWERED BY



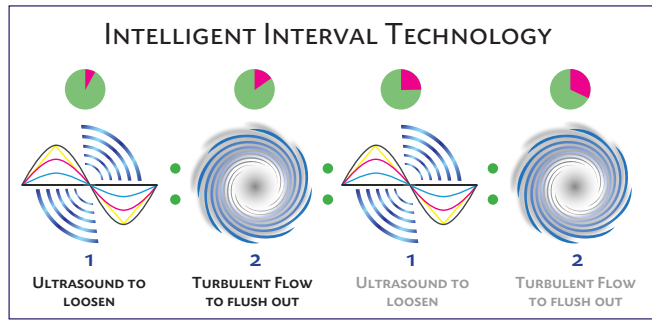
The dyeing is based on especially developed dyeing liquids (*we recommend liquids, developed and manufactured by a french company named TCN*)

Dyeing takes place at a temperature of approx. 60°- 75°C. The process takes approx. 10 to 20 minutes.

If you are already using a dyeing system, the SUT systems with ultrasound and flow interval can be used for pre-cleaning printed parts from powder residues before dyeing. This leads to a much more consistent and uniform dyeing of the parts.



THE DYEING PROCESS



Our **3D PRINT DYEING** systems are designed to dye 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 even smallest air bubbles and dust residue from the surface of the parts; the *Turbulent Flow sequence* washes them off. The temperature is adjustable – in our systems a setting of 60°C to 70°C is absolutely effectual and even minimises the grade of evaporation. After the dyeing

the objects solely need to be rinsed with clean water. *Depending on the characteristics and colour of the material, dyeing takes approx. 10 to 20 minutes.*

SOLO-, DUO- AND TRIO-SYSTEMS

Our solutions are available as **Solo-systems** (one basin), **Duo-systems** (two basins) and **Trio-systems** (three basins). The optional 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 dyeing basin.

The functionality of the individual basins can be customised (for example **DYEING 1 | FLUSHING | DYEING 2**).



BASIC PRINCIPLE OF ULTRASOUND SUPPORTED DYEING



The ultrasound removes air bubbles from the parts surface taking dust and dirt particles as well.

Ultrasound 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 1000 bar), which leads to strong currents in the micro level and therefore to a brush-effect, which removes air bubbles and dust particles from the surface of the parts structure. Therefore the ultrasound optimises the adhesion of the pigments onto the parts surface.

Our ultrasonic based systems for dyeing 3D printed parts utilise frequencies and amplitude modulations especially suited for the dyeing process. Once these frequencies are applied to the dyeing liquid, they produce millions of extremely small continuously imploding bubbles. This process is known as cavitation. The cavitation (electronic brushing) allows to even cover areas, which are difficult to access without damaging the construction material. This in addition leads to an outgassing of the dyeing liquid.



STRICTLY SOLID COMPONENTS

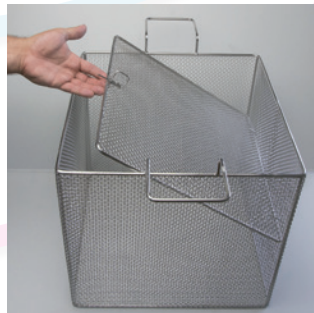
All metal parts of our systems are manufactured from high quality special stainless steel – this applies to the basins as well as to the pipes, cover plates and frames.

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).



Feedback from our customers confirm, that especially TCN's liquid dyeing fluid concentrates have proved to be a reliable solution. TCN also recommends our ultrasound supported dyeing systems. TCN offers two versions of their dyeing liquids:

GTC LIQUID DYES (concentrate) for dyeing plastics like polyamide, polyurethane, elastomer, acrylic, polyester, TPU, PEEK, ABS, PEI, . . .

Wide variety colour palette with 30 standard colours, which are mixable to achieve many more colour variations. GTC liquid dyes can be shipped according to customer-specific references.

- dyeing of small parts– independent from shape and geometry. • No defects as no excess thickness and dust..

GTD HIGH PERFORMANCE LIQUID DYES (concentrate) especially for dyeing Polyamide PA11, PA12, filled polyamide, acrylic, . . .

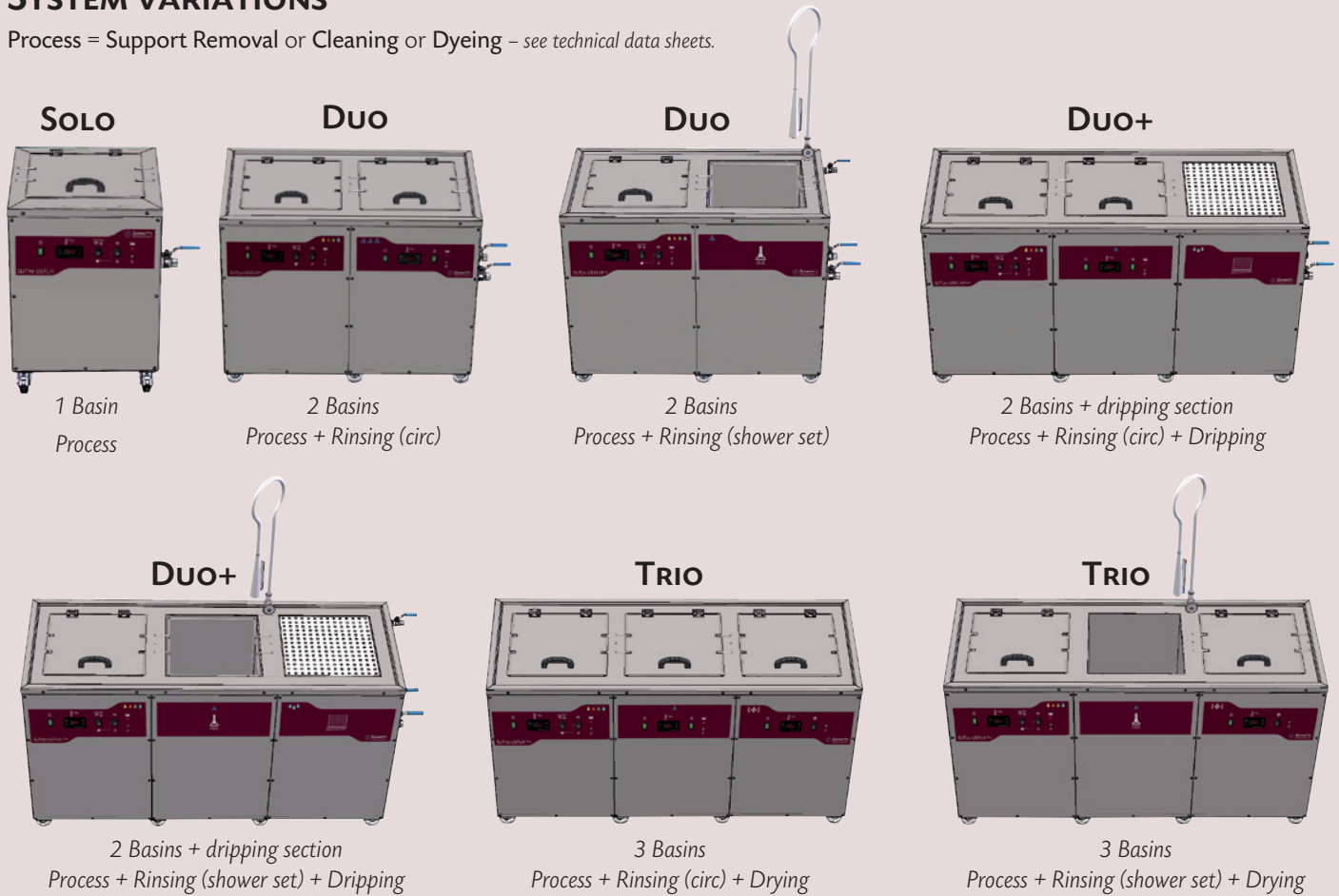
Provides the already known advantages of the GTC universal liquid dyes, GTD high-performance liquid dyes provide outstanding levels of fastness to rubbing, washing, bleaching, perspiration and light.

Further information: TCN Techniques Chimiques Nouvelles | 8 bis allée Marie Louise | 92240 MALAKOFF (France)

Phone + 33 147 3507 63 Email: office@color-tcn.com Web: www.techniques-chimiques-nouvelles.com

SYSTEM VARIATIONS

Process = Support Removal or Cleaning or Dyeing – see technical data sheets.



BASKET DIMENSIONS	20-Liter systems	70-Liter systems	90-Liter systems	140-Liter systems
	300 x 250 x 250 mm	410 x 410 x 370 mm	480 x 430 x 450 mm	630 x 530 x 370 mm

PRODUKT KEY: **SUT** **###** **US** **FL** **H** **SOLO | DUO | DUO+ | TRIO**

Schmitt
Ultraschall
Technik Liter Ultra-
Sound Flow Heating

November 2021 E&OE. – Specifications and details subject to change without notice

Schmitt Ultraschalltechnik Postprocessing Solutions

SUT ## USFL for support removal of temperature sensitive 3D prints and cleaning of SLA parts

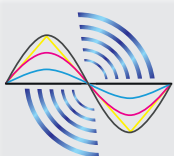
SUT ## USFLH for support removal of FDM-prints, dyeing of FDM-, Polyjet-, SLA- and PLA-Prints, cleaning of metal and plastics.

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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