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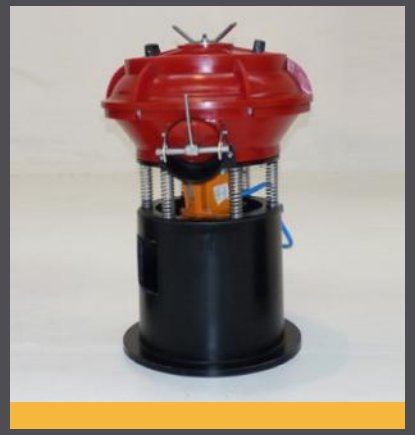
Post Processing Tools

FOR PLASTIC & METAL ADDITIVE MANUFACTURING

V1.8 – 20.01.2025

Post processing systems (1/2)

SMR Standard tribofinishing

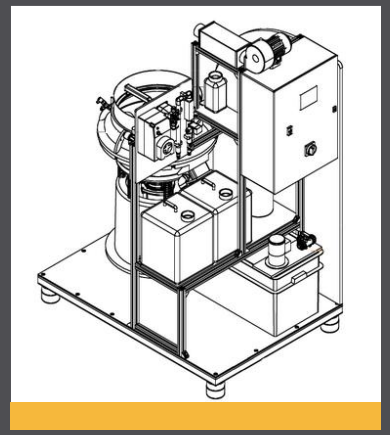


Classic **tribofinishing** systems for **plastic** and **metal**, dry or wet processes possible.

SurfPro MF surface finishing

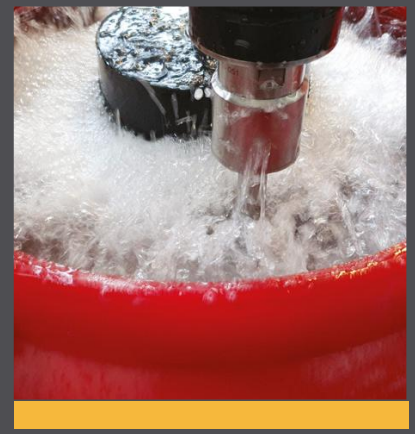
Microfluid patented surface finishing technology. Fully automatic evolution of the tribofinishing process, that make use of **abrasive gels**. For **plastic** and **metal**.

SurfPro SD mass coloring



Steam Dyeing coloring system. A revolutionary vapor-based system for plastic parts coloring, that **allows incredible waste water and color consumption reduction.**

Ecosonic ultrasonic cleaner



Automatic ultrasonic washing system for medical and food applications.

Post processing systems (2/2)

Vibroblast Air
powder removal & blasting

Patented tumble and blast process. An alternative to rotational sandblaster, that also pre-finishes the surface. For **SLS** and **MJF**, can be used to blast **metal parts** as well.

DCK Series
decacking tools

Unique SLS/MJF decaking systems. The **DCK 01** is a «all in one» system for decaking, parts cleaning and powder recovering. The **DCK 350** is for heavy load applications.

SVR Powder
sieving systems

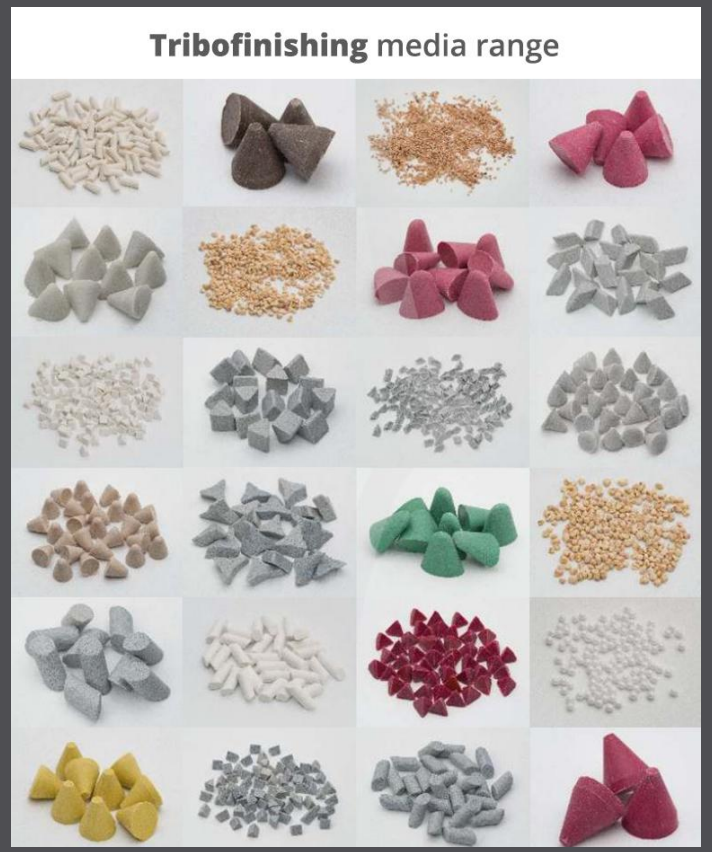
Industrial-grade sifters for SLS and MJF printers.

Available in different **configurations**, to match the specific needs of our customers.

SMR Systems

SMR Systems

Standard tribofinishing tools for metal and plastic



Capable of dry and wet process, **The SMR50** features **30% more volume** and **60% lower price point** than other tribofinishing solutions for additive manufacturing.

Energy consumption: 1,7kw/h

SurfPro Microfluid Systems

SurfPRO Microfluid systems

Surface finishing systems for metal and plastic

The **SurfPRO MF** allows operating **microfluid** (patent pending) multi-task processes.

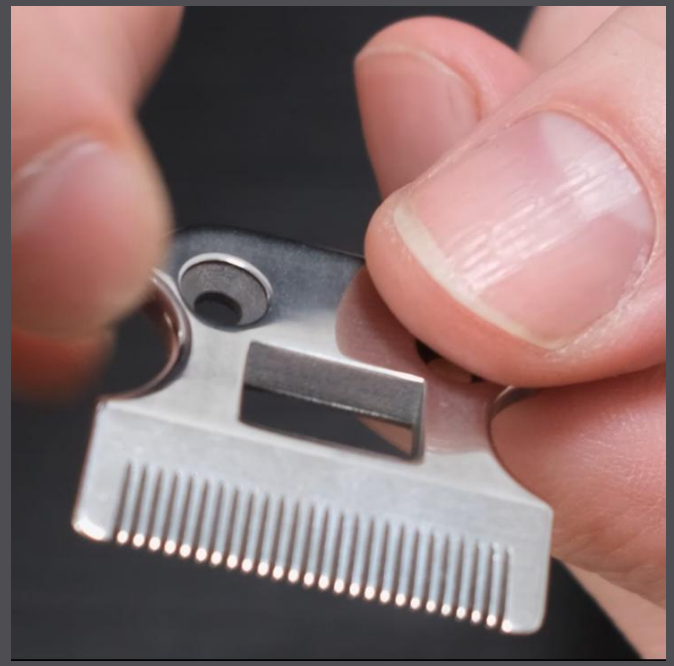
Thanks to an automatic abrasive gel-dosing system, **SurfPRO** seamlessly pass through three different surface finishing stages: from tough to medium abrasion to mirror polishing.

*Fully **automated**, **cost efficient**, perfect for parts wih **small/delicate features** as well as **massive geometries***

*Suitable for metal **SLM**, **DMLS**, **Binder Jetting** technologies, as well as plastic **SLS** and **FDM** technologies*

Surface Finishing + polishing

Part Sanification cycles



SurfPRO Microfluid systems

Surface finishing systems for **metal** and **plastic**

Microfluid technology, the main **advantages**

Automatic – SurfPRO brings **a new level of automation** to the **surface finishing** world.
Once started, the machine will **dose automatically the different gels**, and perform **automatic cleaning** after each cycle. The operator only needs to load the parts and unload them at the end of the process.

Affordable - With **just one machine** you can perform all the steps aforementioned, without the need for human intervention: just put your parts in the machine, load your recipe, and **press play**. **Less hardware** in your factory, **less labor**, and a **low TCO** (total cost of ownership) granted by low-cost consumables and extremely low maintenance needs.

Gentle with small features - Compared to other mechanical finishing technologies, the patented SurfPRO process is much more **gentle**, allowing to reach **extremely low Ras without destroying thin details** and **preserving sharp corners**.

Flexible -The SurfPros are **fully programmable** by the user: time per each cycle, the quantity of gel to be used, duration of the wash cycle, etc. If needed, you could even convert it into a traditional tumbling machine!

SurfPRO Microfluid systems

Surface finishing systems for metal and plastic

Surface Finishing + polishing

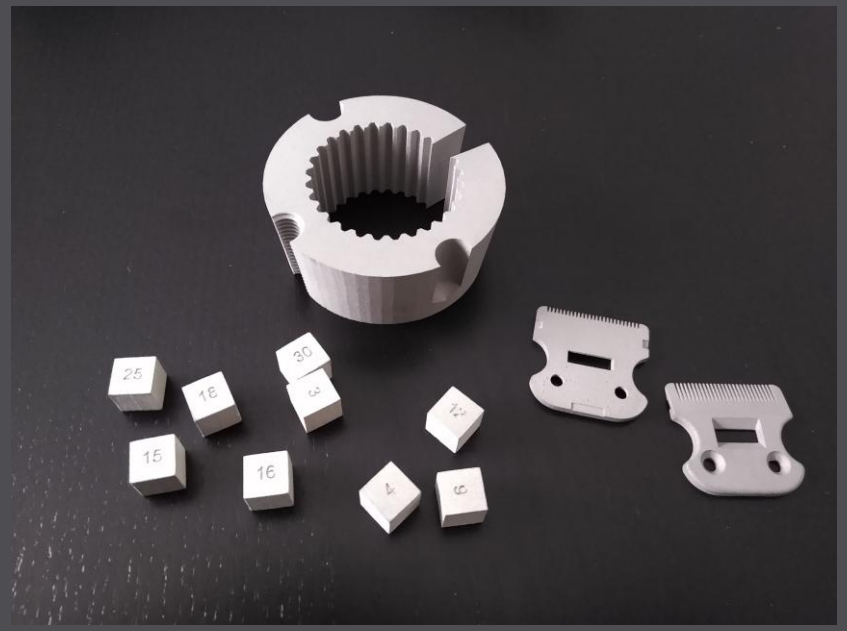
Example 01: Desktop Metal MBJ parts

Material: stainless steel 17-4ph

Machine used: SurfPro MF 50 liters

Number of parts per cycle: 120 – 150

Energy consumption: 1,7kw/h



Raw parts

Post-processed parts

SurfPRO process details

Supporting media: **Smooth ceramic EB0410EZ**

Phase 1 highly abrasive: **Abragel 31Z - 1,6 kg**

Phase 2 medium abrasive: **Abragel 800Z - 0,4 kg**

Phase 3 polishing: **Abragel Fe18L - 0,5kg**

Total Demineralised water consumption: **55 liters**

Total process duration: 30 hours

Total Abragel cost: 35€

SurfPRO Microfluid systems

Surface finishing systems for **metal** and **plastic**

Surface Finishing + polishing

Example 01: Desktop Metal MBJ parts

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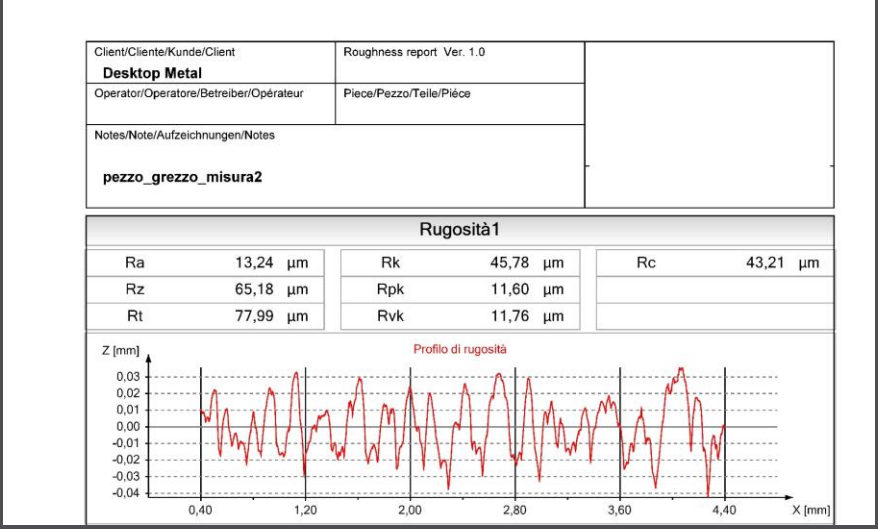
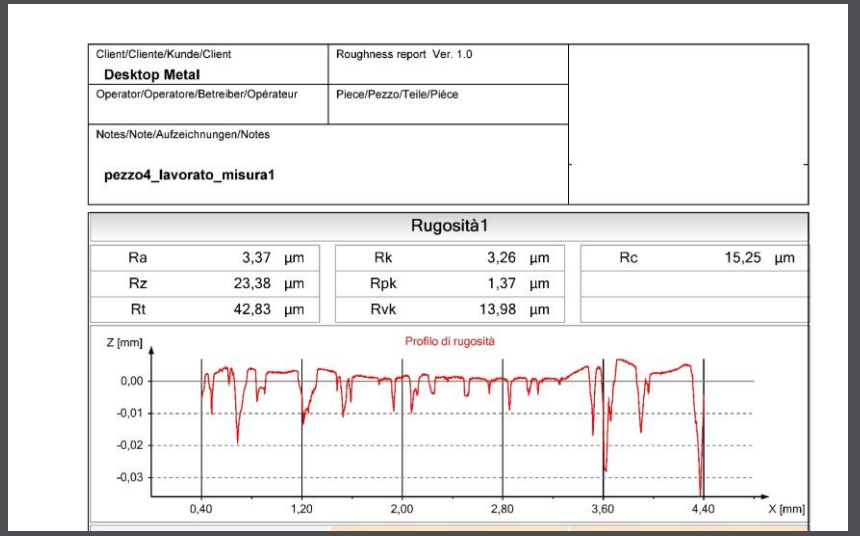


Ra Raw parts: 13,24 µm



Ra Post-processed parts: 3,37 µm

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SurfPRO Microfluid systems

Surface finishing systems for metal and plastic

Surface Finishing + polishing

Example 02: SLM part printed on Renishaw

Material: stainless steel 316 ph

Machines used: SurfPro MF 50 liters + Vibroblast 50 liters

Number of parts per cycle: 60 – 80

Energy consumption: 1,7kw/h

SurfPRO process details

Supporting media: **Smooth ceramic EB0410EZ**

Phase 1 highly abrasive: **Abragel 31Z - 1,2 kg**

Phase 2 medium abrasive: **Abragel 800Z - 0,8 kg**

Phase 3 polishing: **Abragel Fe18L - 0,5kg**

Total Demineralised water consumption: **42 liters**

Total process duration: 26 hours

Total Abragel cost: 28€

Electropolishing process details

Electrolyte: **SCL-255**

Process duration: 0,5 hours

Process cost: 10€ per 60 parts

VibroBlast process details

Supporting media: **QF 20NL elastic media**

Blasting media: **Corindon – 150µ**

Blasting pressure: **5 bar – 100 l/min**

Process duration: 2 hours

SurfPRO Microfluid systems

Surface finishing systems for metal and plastic

Surface Finishing + polishing

Example 02: SLM part printed on Renishaw

Material: stainless steel 316 ph

Machines used: SurfPro MF 50 liters + Vibroblast 50 liters

Number of parts per cycle: 60 – 80

Energy consumption: 1,7kw/h

Ra Raw parts: 25 µm

Ra Post-processed parts: 0,47 µm

SurfPRO Microfluid systems

Surface finishing systems for metal and plastic

Surface Finishing + polishing

Example 03: plastic parts printed on SLS and FDM printers

Materials: ABS, PA11, PEEK, ULTEM

Machine used: SurfPro MF 50 liters

Number of parts per cycle: ND

Energy consumption: 1,7kw/h

SurfPRO process details

Supporting media: **Smooth ceramic EB0410EZ**

Phase 1 medium abrasive: **Abragel N21Z - 1,5 kg**

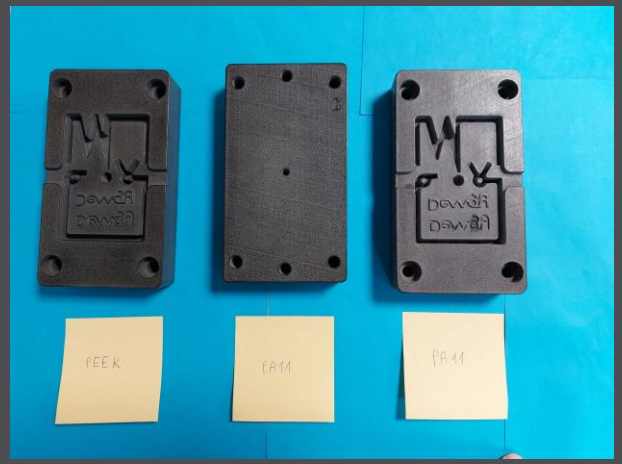
Phase 2 polishing: **Abragel Me100L - 0,3 kg**

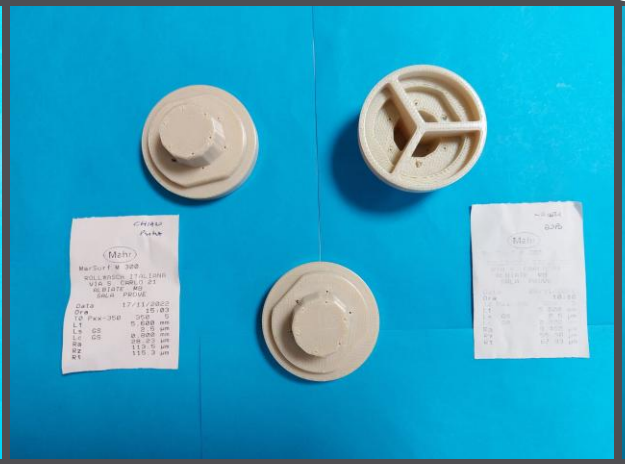
Total Demineralised water consumption: **18 liters**

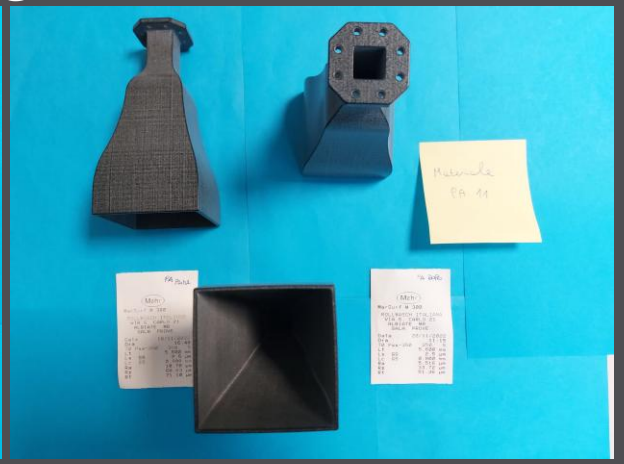
Goal of the test: validate the post processing results on different plastic parts, using one **"general purpose"** process

Total process duration: 34 hours

Total Abragel cost: 27€







SurfPRO Microfluid systems

Surface finishing systems for metal and plastic

Surface Finishing + polishing

Example 03: plastic parts printed on SLS and FDM printers

Materials: ABS, PA11, PEEK, ULTEM

Machine used: SurfPro MF 50 liters

Number of parts per cycle: ND

Energy consumption: 1,7kw/h

SLS PEEK (8 – 10 parts)

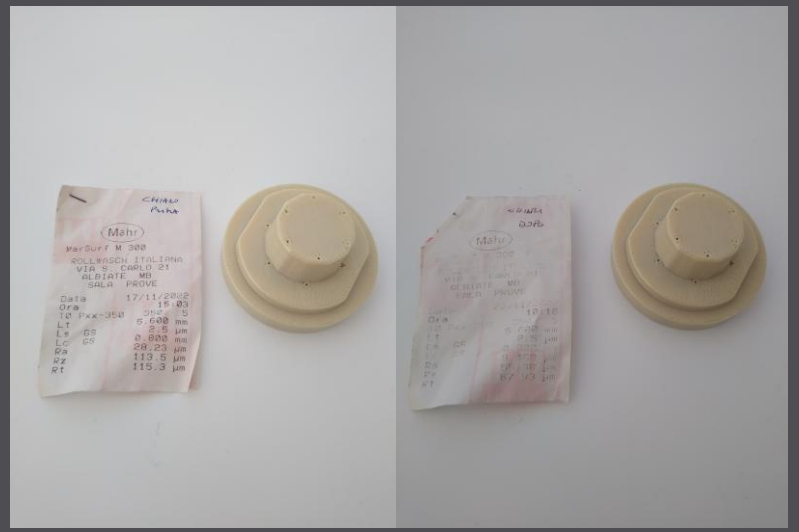
Ra Raw parts: 14,04 µm

Ra Post-processed parts: 8,3 µm

SLS PA11 (6 – 8parts)

Ra Raw parts: 7,12 µm

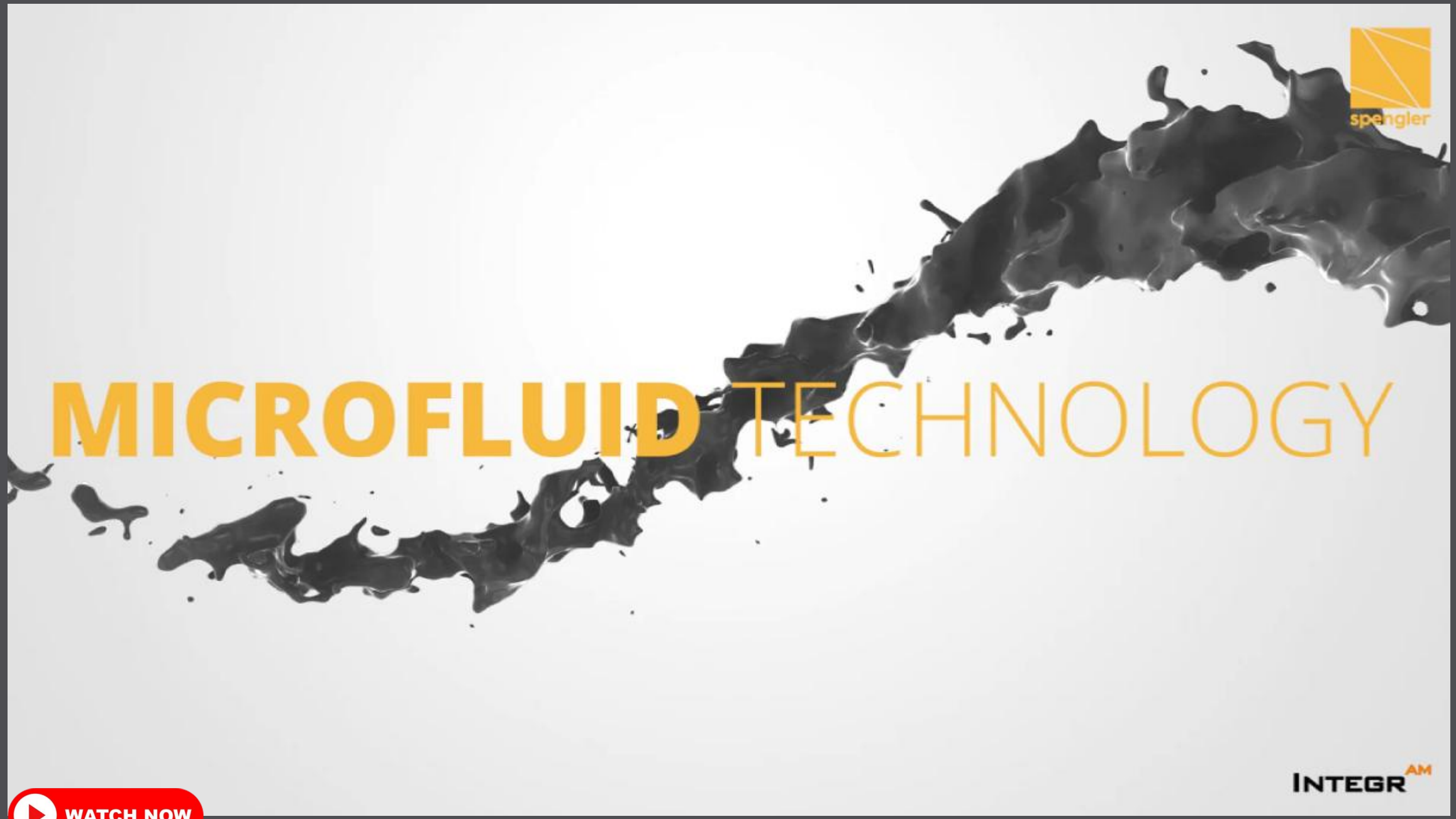
Ra Post-processed parts: 1,35 µm



FDM ULTEM (8-15 parts)

Ra Raw parts: 28,23 µm

Ra Post-processed parts: 9,46 µm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MICROFLUID TECHNOLOGY
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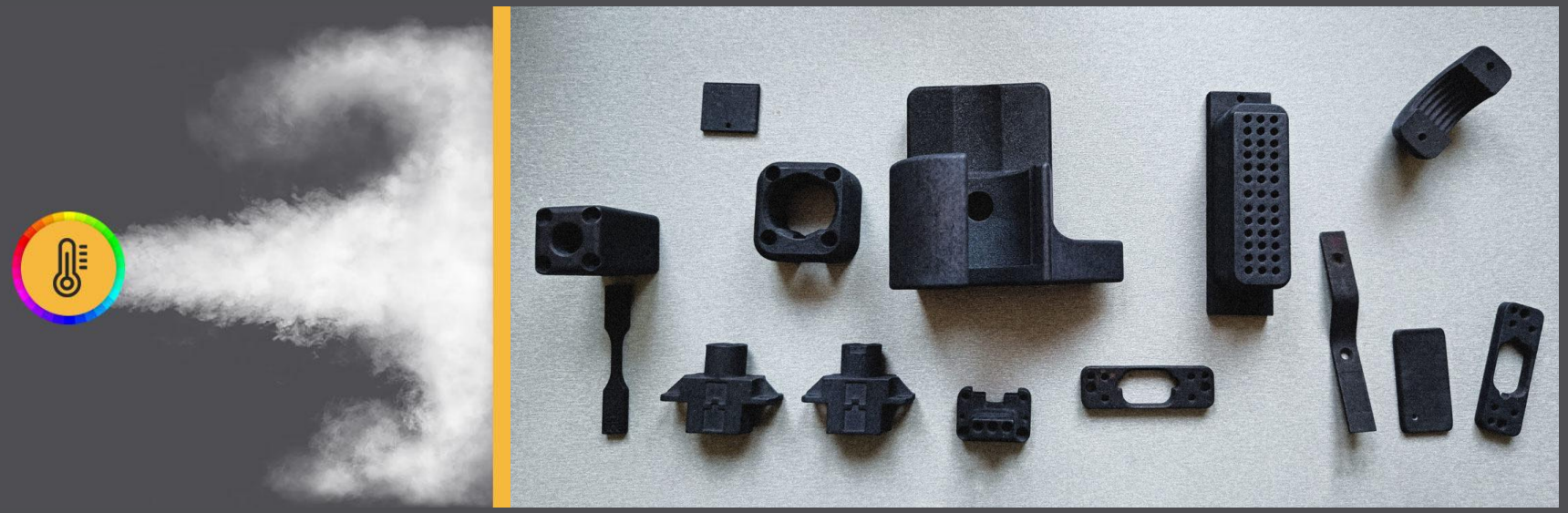
SurfPro Steam Dyeing Systems

SurfPRO Steam Dyeing systems (vapor based)

Automatic mass-coloring system for plastic 3D printing

The SurfPro Steam Dyeing is a mass-colouring system for plastic 3d printing with the **lowest possible environmental impact,** thanks to its reduced **water (1/10)** and **color (1/20) consumption** compared to conventional systems.

Ideal for high-productive environment equipped with **MJF** or fast **SLS** printers.



Advantages, in a nutshell

1. **Less water, less color, same results**
2. **Reduced ecological impact, great economic benefits**
3. **Just one system, multiple colours**

Ecosonic Systems

EcoSonic

Multifunction ultrasonic cleaner

The **ECOSONIC systems** have been developed to perform **automatic ultrasonic cleaning**.

Automated

Washing, Rinsing and **Drying**

VibroBLAST Systems

VibroBLAST Air systems

Automatic powder removal for plastic and metal

The perfect 2-in-1 **automatic depowdering** and **pre-finish tool** for powder-bed additive manufacturing systems.

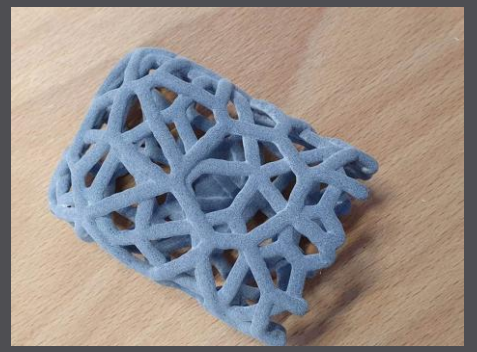
- ***More gentle*** *than a rotational sandblaster for* ***SLS*** *printed parts*
- *Ideal* ***surface preparation tool*** *for the SurfPro (it can speed up metal surface finishing up to 30%)*

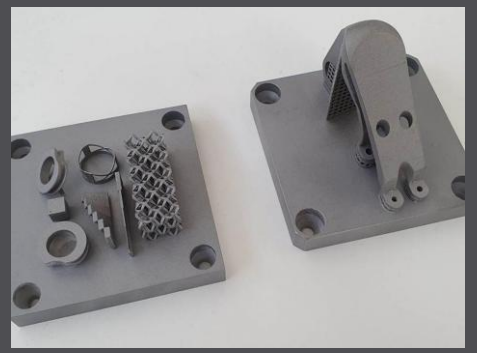
1: Cleaning

AUTOMATED DEPOWDERING PROCESS (PATENTED)

2: Finishing

SURFACE SMOOTHING CYCLES





IntegrAM VibroBlast machines are already successfully installed at the CETIM in Saint-Étienne and HALL32 in Clermont-Ferrand

VibroBLAST Air systems

For SLS and MJF **plastic parts**

- VibroBLAST Air uses **“elastic” vibratory finishing media** both as **shock-absorber** and as a **three-dimensional movement vector** for the 3d printed parts, exposing them to the blasting nozzles multiple times with always different angles.
- Compared to rotational blasters, the VibroBLAST Air is by its own nature **much more delicate** in the way it handles the 3D printed parts.
- The elastic media perform a **soft abrasion** action on the parts, simulating the “brush action” and helping the powder removal
- The **PCCP versions** of the system *(**Contamination Prevention**, patent-pending)* allow the cleaning of the parts by using the very same material of the printed objects (e.g. PEEK) as blasting media, so as to avoid even the minimal risk to “pollute” the parts.
- Average de-powdering cycle duration: **30 – 60 minutes**
- Blasting Media used: **glass beads**
- **Energy consumption:** 1,7kw/h
- Compressed Air consumption at 5 BAR : 100 liters/minute

1: Cleaning

AUTOMATED DEPOWDERING PROCESS (PATENTED)

2: Finishing

SURFACE SMOOTHING CYCLES

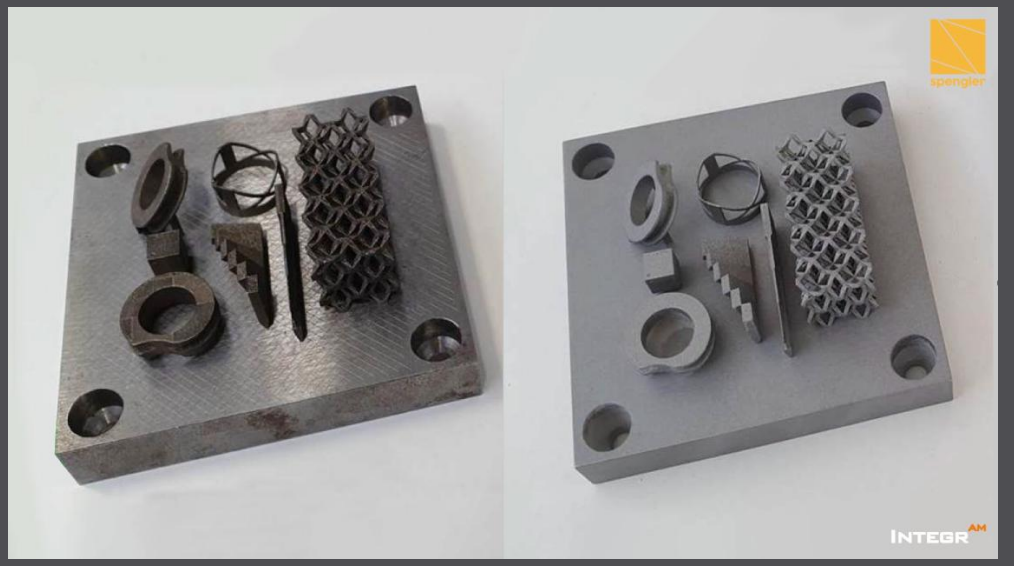
VibroBLAST Air systems

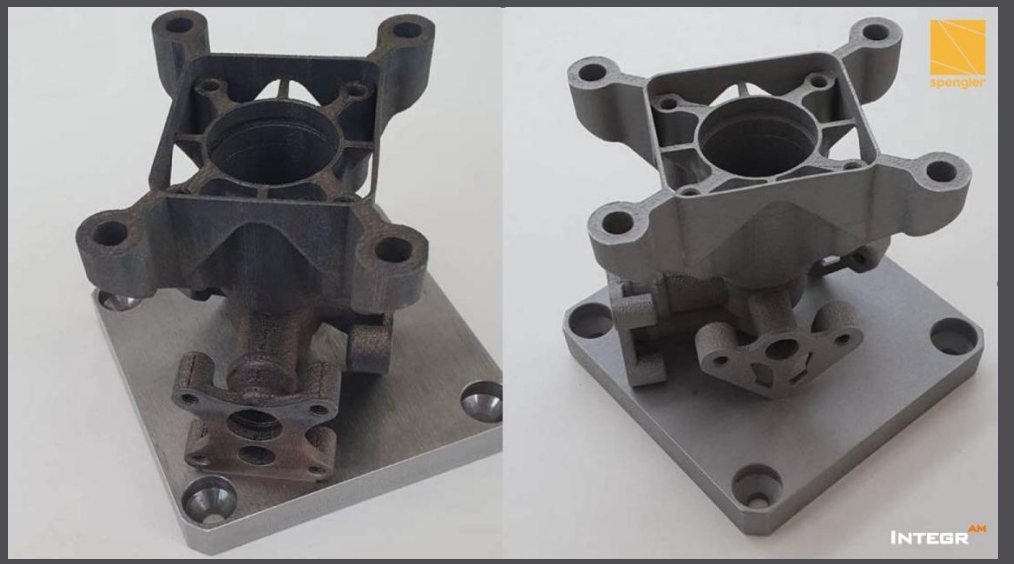
For MBJ and SLM **metal parts**

- VibroBLAST Air combines the three-dimensional vector movement and the blasting to perform a **surface preparation** on metal parts.
- **Rugosity uniformation** between upskin, downskin and vertical walls
- **Time reduction** of SurfPRO Microfluid treatment up to 30%
- Average surface preparation duration: **120 minutes**
- Blasting Media used: **corindone**

Finishing

RUGOSITY REDUCTION AND
SURFACE PREPARATION





VIBROBLAST TECHNOLOGY

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DCK Systems

DCK 01

The All-in-one SLS post processing tool

The definitive SLS post-processing solution for **midsized printers** and **high production environments**.

32 Liters PA12 Build

98 Objects processed

12 Minutes MANPOWER

Energy consumption: 1,7kw/h

Compressed Air consumption at 5 BAR : 100 liters/minute

1: De-caking

AUTOMATIC, GENTLE DESTRUCTURATION OF YOUR BUILD

2: Cleaning

AUTOMATED DEPOWDERING PROCESS (PATENTED)

3: Finishing

SURFACE SMOOTHING CYCLES

4: Powder recovery

EFFICIENT USED POWDER RECOVERY, WITH AUTOMATIC SIEVING

5: Mixing

2 CYCLES, *OPTIONAL* MIXING SYSTEM

DCK 01

The All-in-one SLS post processing tool

The definitive SLS post-processing solution for **midsized printers** and **high production environments**

RETURN-ON-INVESTMENT **SIMULATION**

ROI analysis, based on the **average hourly cost** of an additive manufacturing technician in Europe, to showcase the economic benefits of the adoption of an **automated post-processing** tool.

We based our simulation on the following **key elements**:

- *The **time** needed to **manually break-out** a build and recover used powder*
- *The **time** needed to **manually sandblast** an average of 3-4 parts per each build-liter, and bringing them to the tumbling machine afterward*
- *The **economy** of not having to purchase every tool needed to process cake ad parts manually*

For **32 liters'** daily production
EG: **1 X** PRODWAYS **PROMAKER P1000 X**
OR **2 X** EOS **FORMIGA VELOCIS**

BREAK EVEN: 15 MONTHS

For **69 liters'** daily production
EG: **1 X** EOS **P396**
OR **1 X** FARSOON **403P**

BREAK EVEN: 10 MONTHS

For **85 liters'** daily production
EG: **1 X** EOS **P396**
+ 1 X EOS **FORMIGA VELOCIS**

BREAK EVEN: 7 MONTHS


INTEGR AM
DCK 01
The all-in-one
SLS® and MJF® Post Processing Tool
spengler
1: De-caking
AUTOMATIC, GENTLE
DESTRUCTURATION OF YOUR BUILD
2: Cleaning
AUTOMATED DEPOWDERING PROCESS
(PATENTED)
3: Finishing
SURFACE SMOOTHING CYCLES
4: Powder recovery
EFFICIENT USED POWDER RECOVERY,
WITH AUTOMATIC SIEVING
5: Mixing
2-CYCLES, OPTIONAL MIXING SYSTEM
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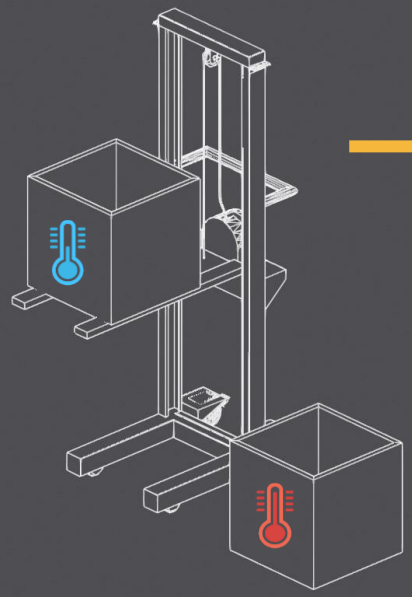
DCK 350 Ecosystem (special projects)

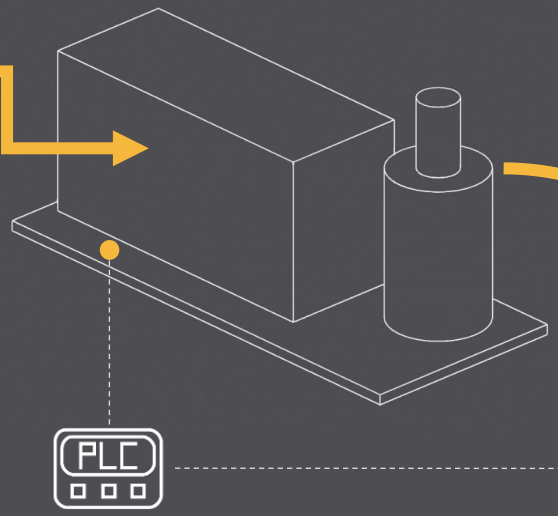
Natural cool-down system + cake-moving trolley



External cool-down Insulated metal box / guillottine with integrated thermometer + nitrogen inlet (optional)

Customized manual trolley for cake transportation from the machine / stock to the decaking system

DCK 350 Automatic decaking system with PLC controller

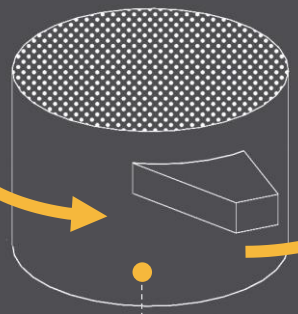


350 Liters decaking system with powder filtering system

DLP with display to edit/control machine parameters

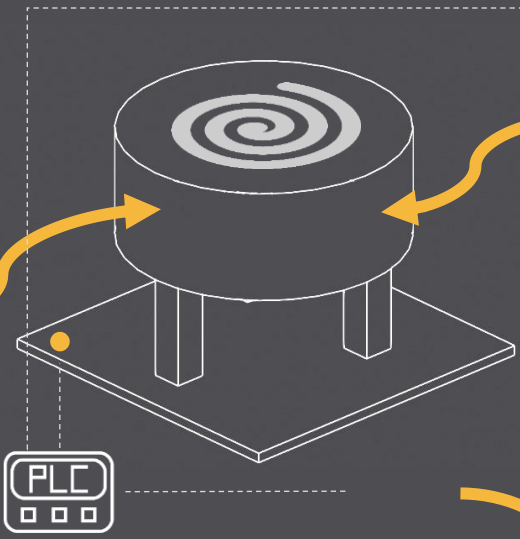
+ Optional external casing for further powder fly-by limitation and noise reduction

Ø 1200 mm ultrasonic Sifter



High-performance Ultrasonic powder sifter with 1200mm diameter mesh

300 liters ATEX mechanical mixer With PLC controlled load-cell



Mechanical mixer + programmable PLC-driven load cell.

The PLC also controls also controls the DCK 350/Sifter and the screw conveyors for the powder transfer

SVR Systems

SVR Powder sieving systems

Industrial-grade sifters for SLS and MJF 3D printers

Our SVR sieving systems, designed and built in Europe with the highest standards in mind, feature industrial-grade hardware, to allow high and consistent throughput rates, without compromise.

They are available in different sizes and configurations, to match the specific needs of our customers:

- *Single or multiple meshes, for 2 or more degrees of separation*
- *Nylon 12, 11 and TPU **tested configuration***
- ***Ultrasonic option**, for high efficiency in heavy duty environments*

For **light** workloads

EG: SINTERIT **LISA**,

FORMLABS **FUSE 1**,

EOS **FORMIGA**, ETC.

Ø 400 mm Ø 600 mm

For **medium** workloads

EG: EOS **FORMIGA**,

FARSOON **EFORM** OR **252P**,

PRODWAYS **PROMAKER P1000 S/X**, ETC.

Ø 600 mm Ø 900 mm

For **heavy** workloads

EG: EOS **P396 / P500**,

3D SYSTEMS **SPRO 60, SLS 380, SLS 300**,

HP **MJF5200**, ETC.

Ø 900 mm Ø 1.200 mm

Contactez-nous

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