The network of **specialists**, for **AM professionals**

Specific for **Polymers**

INTEGR AM

IntegrAM is the cutting-edge technology that deals with integrating post-processessing and surface finishing related to AM (acronym for "Additive Manufacturing"). We integrate our knowledge in the field of surface finishing, with an interdisciplinary approach and a spirit of innovation, efficiency and automation of post-process technologies. **IntegrAM** is a network of specialists who have created **a program of innovative, original and competitive solutions for AM professionals**.

Integrated post processing and finishing technology for **AM**

SPENGLER, a French company founded in 2021 by two Italian engineers who are experts in the design and manufacture of SLS and Additive Manufacturing systems at pre-existing companies. Thanks to decades of consolidated experience in the AM sector, full of specialist and multidisciplinary projects, **SPENGLER** is dedicated to three main themes:
1. Consulting in AM projects
2. Development of "custom" systems and machines
3. Distribution of Post Processing and Finishing Plants

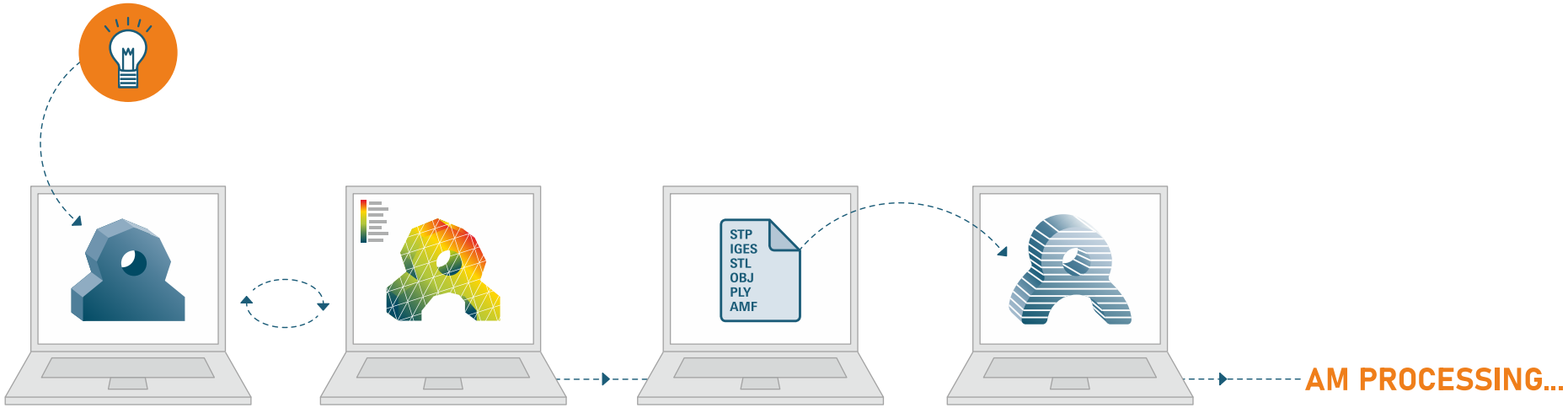
Rollwasch® is an Italian company founded in 1950 in Milan and specialized in surface treatment. Manufacturer of machines and consumer products, Rollwasch® is an **innovative SME**, always engaged in R&D, which in the last decade has developed a series of patents to revolutionize post-processing and finishing in AM.
In 2021 he won the first prize in the Innovation 4.0 Award, as part of the 15th edition of the A&T - Automation & Testing Fair, with **VibroBLAST** technology.

Techno Surface is an Italian company founded in 2015 and specialized in various technologies, **with strong convergence towards Additive Manufacturing**. Engaged since its inception in technological consultancy and R&D, it has filed a series of specific patents for post-process applications and surface treatments in AM. These innovations include the **Eco-Sonic 3D ultrasonic cleaning system**, the ecological **Eco-Dyeing** of polymers.
Techno Surface is the coordinator of the **IntegrAM** program and network.

IntegrAM stands for "**Integrated Post Process Solutions and Finishing Technologies for Additive Manufacturing**".
IntegrAM is a brand, a program and a network of companies dedicated exclusively to the specialization of AM.
The pillars of the IntegrAM network, in addition to the companies presented aside, are:
1. Multidisciplinary skills
2. Continued dedication to R&D projects
3. Interactivity with competence centers, universities and centers of excellence mainly in Italy and France
4. High coordination of Teamwork

What does **IntegrAM** mean?
IntegrAM stands for “Integrated Post Process Solutions and Finishing Technologies for Additive Manufacturing”.
The IntegrAM network is a partnership of specialists, manufacturers, solution developers, specifically dedicated to the Additive Manufacturing sector.
The IntegrAM network is evolving day by day and continuously adding new solutions to offer the best possible program of post processing and finishing technologies, but not only ...
... Get in touch with our sales or technical representatives to find out about the latest up-to-date opportunities.
Many of these solutions are designed by the IntegrAM team and produced in Italy by Rollwasch® Italiana Spa, a manufacturer with over 70 years of experience. Other solutions, services and products offered are produced by specialists under the guidance of the IntegrAM Team, to fully meet the expectations of AM professionals according to international standards.

PRE-PROCESSING



Manufacturing, CAD Design

CAE simulation and optimization

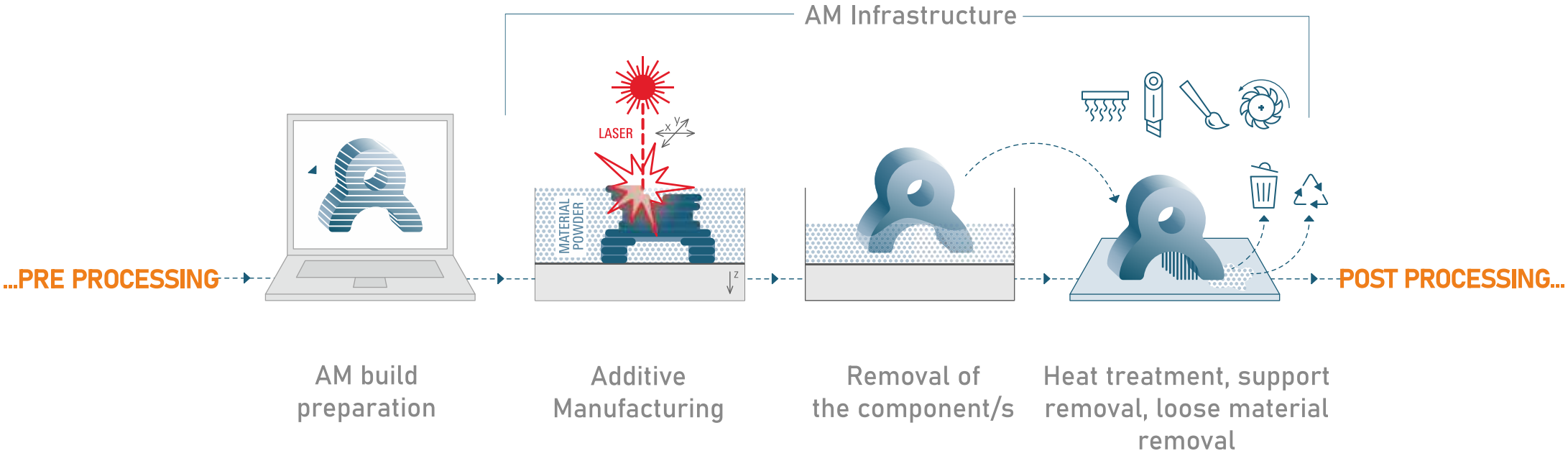
Creation of data exchange files

AM build preparation

QUESTIONS ABOUT **PRE-PROCESSING**

- What are the component and material properties that the AM component whould have in any case?
- Is the material generally or specifically qualified or validated for the intended application?
- What is specially important to «design for Additive Manufacturing»?
- Are there special design specifications for the AM compliant component design?
- What design possibilities result from AM compliant component design?
- In which way must the CAD data of the part model be available?
- Is a special AM process particularly suitable for the desired components?

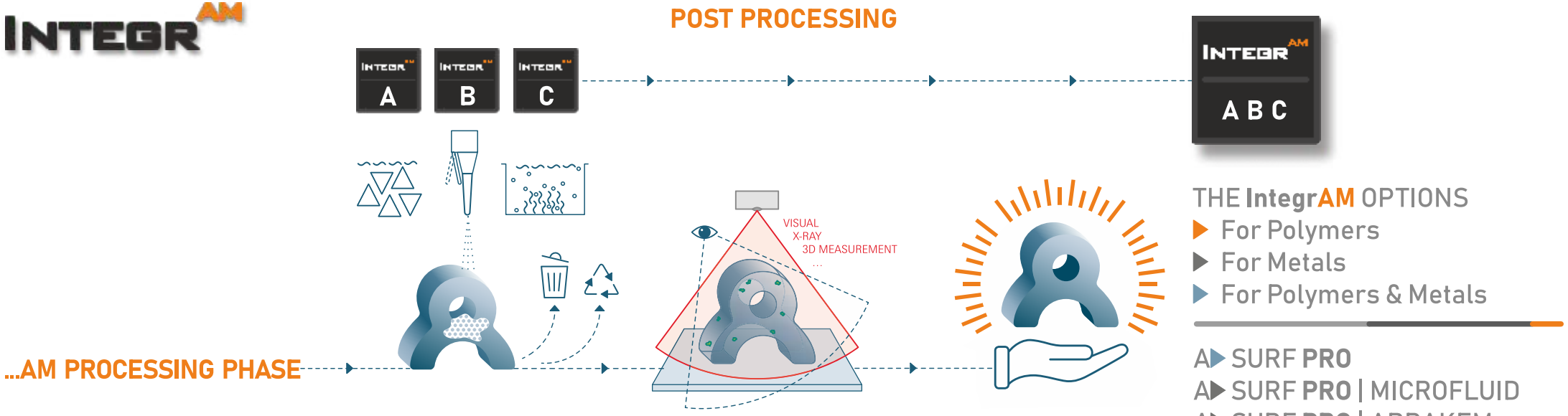
AM PROCESSING PHASE



QUESTIONS ABOUT **AM PROCESSING PHASE**

- Can the AM process be integrated into existing processes?
- How much support is required for the desired AM process?
- What maintenance costs are to be expected for the AM process?
- Are the materials freely available for purchase of can they only be purchased originally from the system manufacturer?
- Is the system a black box or can production parameters be individually adjusted?
- Are there special protection requirements for the people and the environment?
- What is the production / building speed of the AM process?

POST PROCESSING



THE **IntegrAM** OPTIONS

- For Polymers
- For Metals
- For Polymers & Metals

A▶ SURF **PRO**
A▶ SURF **PRO** | MICROFLUID
A▶ SURF **PRO** | ABRAKEM
B▶ VibroBLAST
B▶ VibroBLAST-**DCK**
C▶ Smart-**Colouring**
C▶ **Eco-Sonic** Cleaning

QUESTIONS ABOUT **POST-PROCESSING**

- Is there any special post-processing work on the AM components?
- Do the AM components have to be aftertreated in a further process step, e.g. a finishing process, a dyeing process?
- **What level of surface rugosity and final outlook is required for the finished component, must it be waterproof?**
- **The AM component has already the correct surface tension and final hardness?**
- Can material not used in the AM process be recycled?
- How must the unused material be handled?
- Does the component quality have to be proven by a qualification, e.g. by a non-destructive testing procedure?

ADDITIVE MANUFACTURING FOR POLYMERS

Powder Bed Fusion

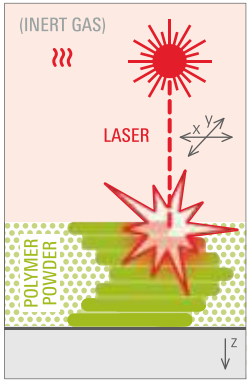
Fused with agent + energy

MJF
Multi Jet Fusion

Tiny liquid droplets are applied locally to a layer of polymer powder. They increase or suppress the heat absorption of the powder. An integrally acting infrared source melts the material respectively.

Fused with laser

SLS
Selective Laser Sintering

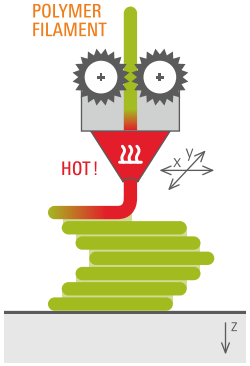


By means of a movable laser beam, a polymer powder is selectively sintered locally layer by layer and thus solidifies a cross-section of the component.

Material Extrusion

Material extrusion Filament

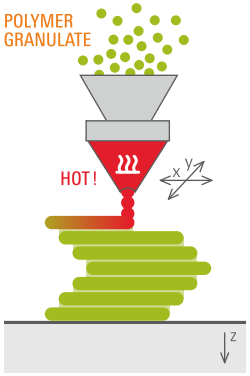
FDM
Fused Deposition Modeling



Wire-shaped plastic, so-called filament, is plasticized in a nozzle unit and selectively dosed locally layer by layer.

Material extrusion Granulate

APF
Arburg Plastic Freeforming

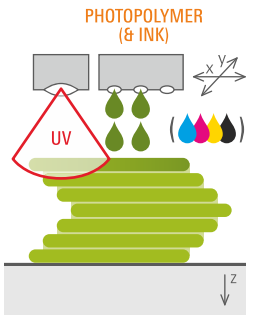


Plastic granulate is plasticized in a nozzle unit and selectively dosed locally layer by layer.

Material Jetting

Cured with UV light

MJ
Material Jetting

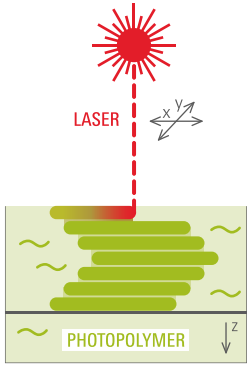


Small droplets of photopolymer are applied locally and layer by layer through many nozzles. The viscous photopolymer is then cured instantly by UV-light.

Photopolymerization

Cured with laser

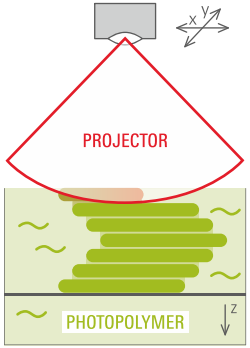
SLA
Stereo Lithography



By means of a movable laser beam, a viscous photopolymer is selectively cured locally in layers and solidifies there.

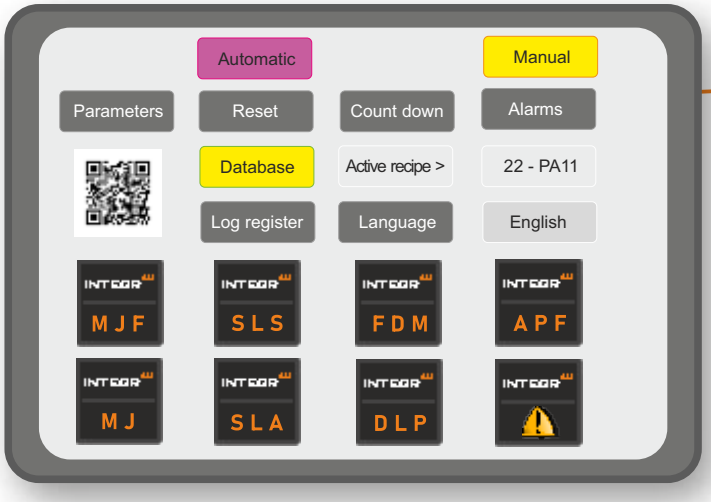
Cured with projector

DLP
Direct Light Processing



A photopolymer is exposed layer by layer using a projector. The exposed material is polymerized locally and solidifies.

INTEGR AM SURF PRO



Models/Versions	Used with:
SURF PRO 50 BS	Media + Liquid compound
SURF PRO 120 BS	Media + Liquid compound
SURF PRO 50 MF	Media + Microfluid process
SURF PRO 120 MF	Media + Microfluid process
SURF PRO 50 ABK	Media + Abrakem process
SURF PRO 120 ABK	Media + Abrakem process
SURF PRO 50 MS-SC	MS-SC MultiSteam Smart Color
SURF PRO 120 MS-SC	MS-SC MultiSteam Smart Color

The **SURF-PRO** series of finishing machines is based on pre-assembled compositions on easily positioned technological pallets and with the prerogative of being **PLUG & PLAY**. Depending on the preferences of the end user, the type of environment in which the finishing machine is destined or more simply the budget, all **SURF-PRO** machines can be supplied in the basic version or with "AM" cabin. All the basic machines have a color touch screen HMI interface, but those with an «AM» booth have a larger panel, ideal for managing recipes based on more types of «AM» processes. The **SURF-PRO BS** line combines the vibratory finishing unit with a control panel with PLC and inverter, a recycling tank for wet processes.

SURF PRO

Models with **AM** extension are equipped with aluminum cab and 18 "color HMI.

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SURF PRO

Models with **AM** extension are equipped with aluminum cab and 18 "color HMI.

The **SURF-PRO** series of finishing machines is based on pre-assembled compositions on easily positioned technological pallets and with the prerogative of being **PLUG & PLAY**. Depending on the preferences of the end user, the type of environment in which the finishing machine is destined or more simply the budget, all **SURF-PRO** machines can be supplied in the basic version or with "AM" cabin. All the basic machines have a color touch screen HMI interface, but those with an «AM» booth have a larger panel, ideal for managing recipes based on more types of «AM» processes. The **SURF-PRO MS-SC** line combines the vibratory finishing unit with a steam generator **and specific accessories for SmartColor and MultiSteam processes.**

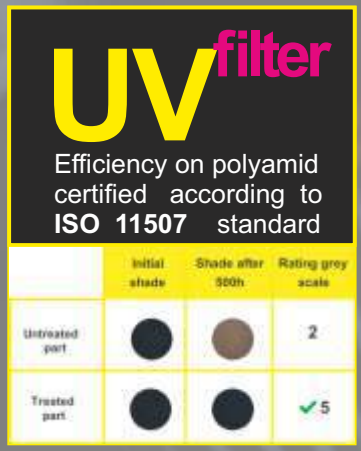
A further example of an integrated solution according to the IntegrAM program concerns:
COLORING of polymers with **“Smart Dyeing”** machines and chemical compounds.

PA-12 **PA-12** **PP** **PP** **TPU**

SMART DYEING

An imperative of the modern **coloring** of polymers is to ensure repeatability, constant quality and the required result in terms of color type (eg: matt or glossy) with the maximum correspondence to specifications. With over ten years of experience in polymer dyeing, the **IntegrAM** Team knows how to obtain a perfect dye, for example on reference materials in PA12. The **IntegrAM** solutions program provides for the control of parameters such as temperature, times and agitation thanks to the partnership with suppliers of raw materials selected over time.

SMART DYEING



Backed by decades of experience in polymer **dyeing** in some fields such as, for example, the eyewear industry, the **IntegrAM** Team has developed the **"SMART DYEING"** program with the possibility, at least on reference materials such as Pa12, to ensure correspondence to **RAL** scales, or to **PANTONE®** scales and without excluding fluorescent fluorescent colors with extremely vivid anise, yellow and orange! The IntegrAM color program offers intelligent support for laboratory tests and, where required, UV filters according to ISO 11507 standards. A cutting-edge range, a partnership with raw material suppliers selected over decades of activity to offer the best professional level of «**SMART DYEING**» possible.

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Specific for **Polymers**

INTEGR AM

The **IntegrAM** program was born from a network of specialists **designed for AM professionals**

Techno SURFACE

ROLL WASCH

spengler

Integrated post processing and finishing technology for **AM**

IntegrAM
The network of specialists, for AM professionals
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