

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**

INTEGR **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?

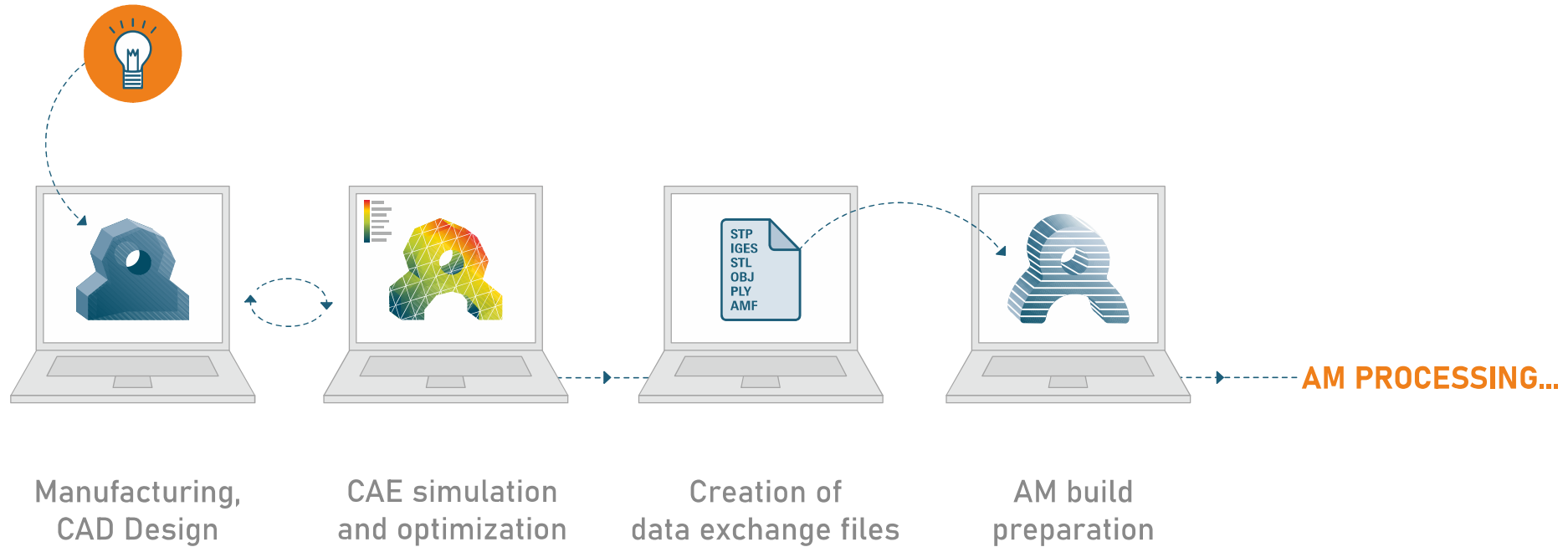
IntegrAM stands for "Integrated Post Process Solutions and Finishing Technologies for Additive Manufacturing".

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.

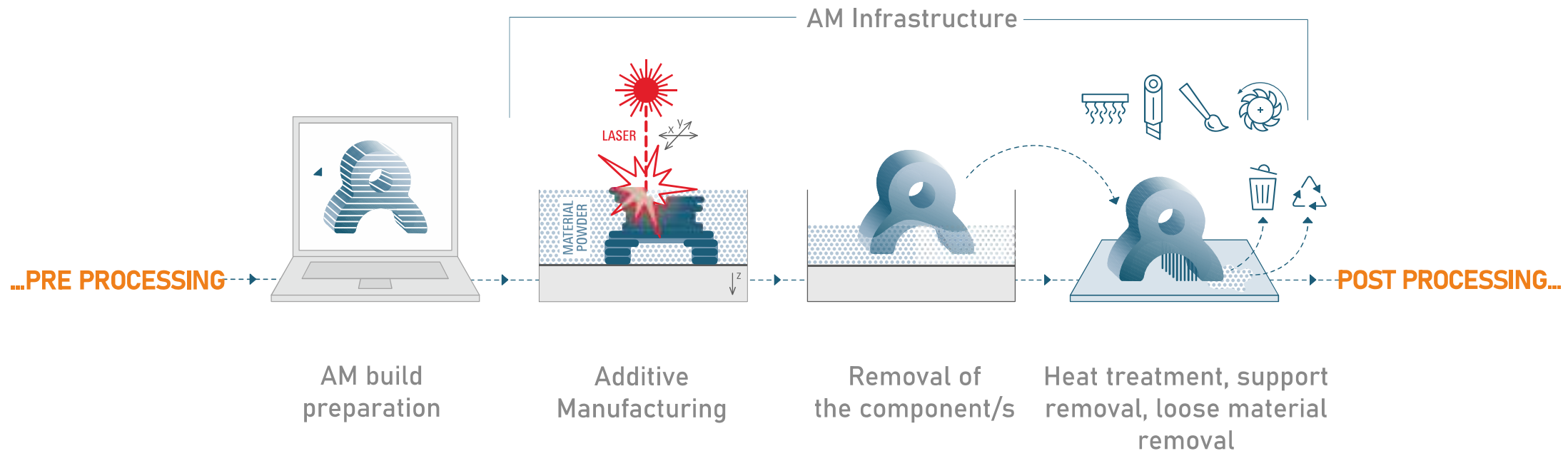
Many of these solutions are designed by the IntegrAM team and produced in Italy by Rollwasch® Italiana Spa, a manufacturer with over 70 years of experience. Other solutions, services and products offered are produced by specialists under the guidance of the IntegrAM Team, to fully meet the expectations of AM professionals according to international standards.



QUESTIONS ABOUT PRE-PROCESSING

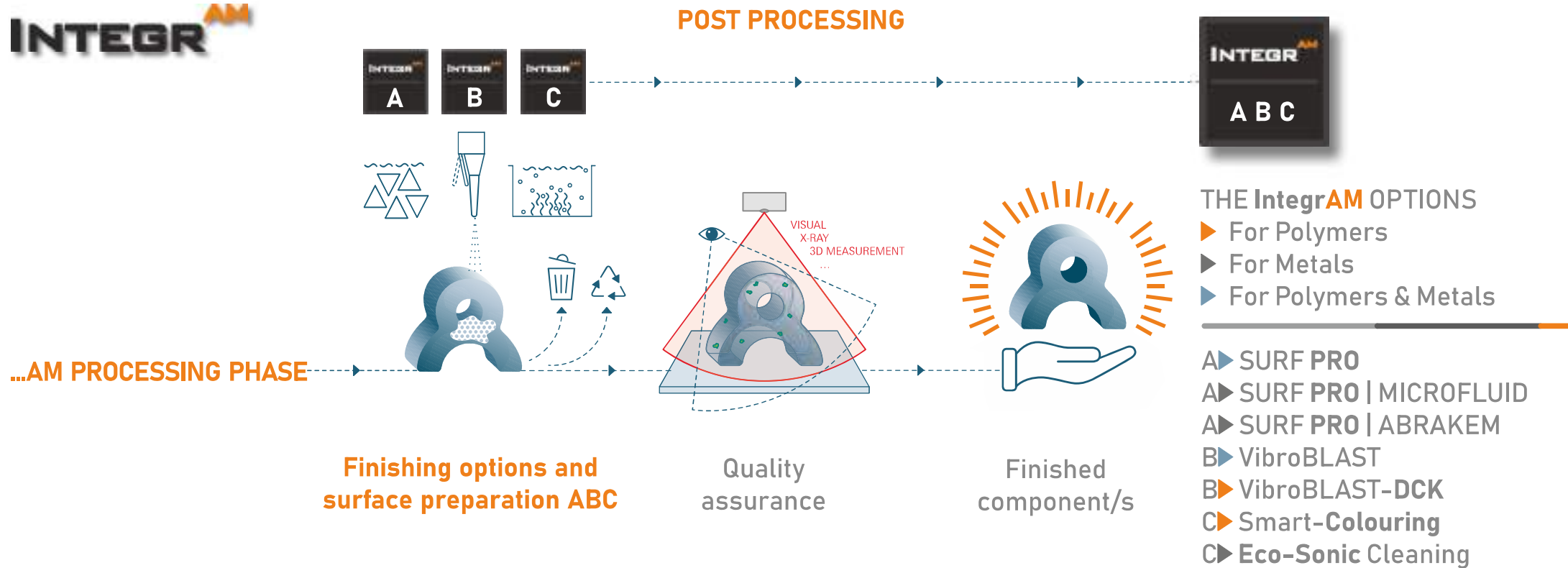
- What are the component and material properties that the AM component should have in any case?
- Is the material generally or specifically qualified or validated for the intended application?
- What is specially important to «design for Additive Manufacturing»?
- Are there special design specifications 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 or 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?



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

Material Extrusion

Material Jetting

Photopolymerization

Fused with
agent + energy

Fused with
laser

Material extrusion
Filament

Material extrusion
Granulate

Cured with
UV light

Cured with
laser

Cured with
projector

MJF

Multi Jet Fusion

SLS

Selective Laser
Sintering

FDM

Fused Deposition
Modeling

APF

Arburg Plastic
Freeforming

MJ

Material Jetting

SLA

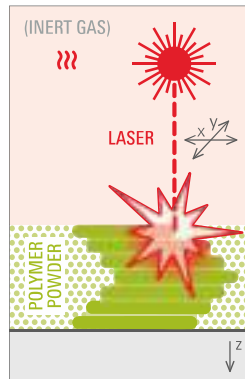
Stereo Lithography

DLP

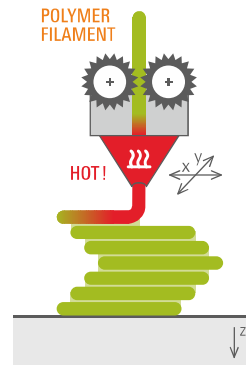
Direct Light Processing



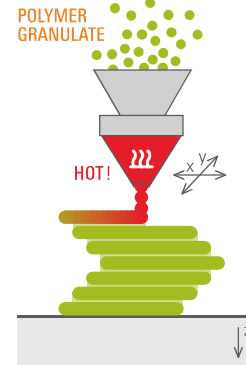
Tiny liquid droplets are applied locally to a layer of polymer powder. They increase or suppress the heat absorption of the powder. An integrally acting infrared source melts the material respectively.



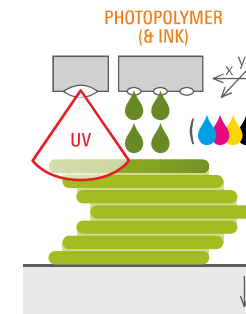
By means of a movable laser beam, a polymer powder is selectively sintered locally layer by layer and thus solidifies a cross-section of the component.



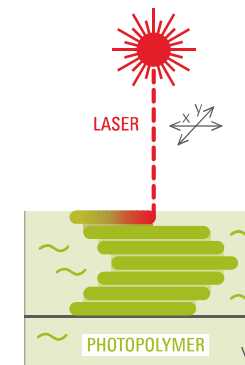
Wire-shaped plastic, so-called filament, is plasticized in a nozzle unit and selectively dosed locally layer by layer.



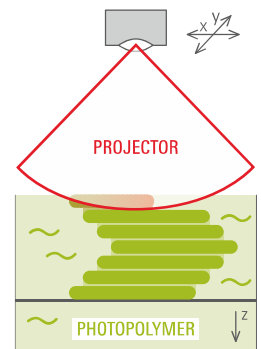
Plastic granulate is plasticized in a nozzle unit and selectively dosed locally layer by layer.



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



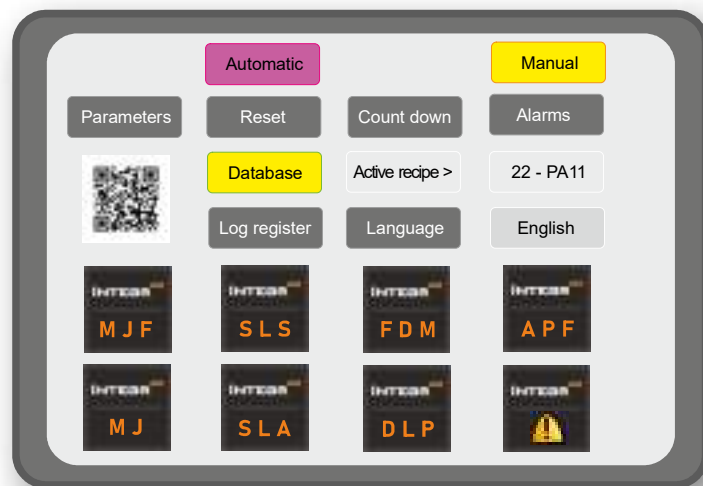
By means of a movable laser beam, a viscous photopolymer is selectively cured locally in layers and solidifies there.



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.



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



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SURF^{PRO}



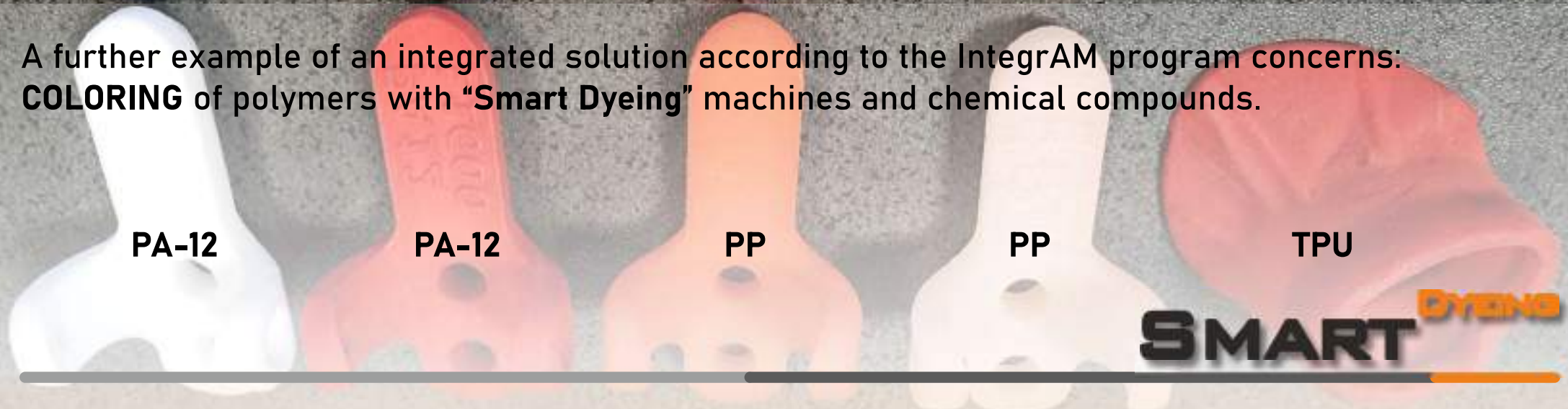
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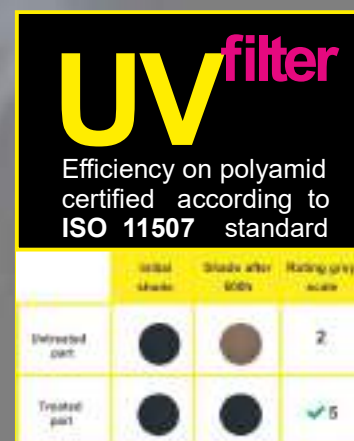
A further example of an integrated solution according to the IntegrAM program concerns: **COLORING** of polymers with “**Smart Dyeing**” machines and chemical compounds.



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



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La presente brochure è da considerarsi puramente orientativa. Il contenuto potrà variare in conseguenza
dell'evoluzione dei prodotti.