postpro SF GEN2

SAFETY AND PROCESS TRAINING

(FA9202)



August 2026 // V2.3

amt postpro®

AGENDA

1. Safety
2. Machine Overview
3. HMI Screens
4. Pre-Processing Tips and Tricks
5. How The Process Works
6. Running a Process
7. Troubleshooting
8. Recipe and Technical Support

1. Safety

PERSONAL SAFETY

Personal Protective Equipment (PPE)

- Disposable nitrile gloves.
- Heat resistant gloves (170 degrees).
- Closed toe safety shoes.
- Laboratory spill resistant coat.
- Close fitting chemical eye protection.
- Half face mask with A2 organic type filters.















MACHINE SAFETY

UNINTERRUPTIBLE POWER SUPPLY (UPS)

- Automatically activates if the system loses power or is shut down incorrectly.
- Provides approximately 5 minutes of backup operation to safely complete essential system actions before total shutdown.

EMERGENCY STOP

- Located on the front left-hand side of the SF System.
- Instantly stops all machine movement and power in the event of an emergency.

MACHINE ERRORS

In the event of a detected error that may present a safety risk, the machine will automatically stop the process.

Note: Once activated, the process run cannot be recovered and must be restarted after inspection.



MACHINE SAFETY

FORCED DRYING CYCLE

- If the machine shuts down or an E-stop is pressed during a cycle it will enter a forced drying cycle when the machine resumes.
  Short drying cycle to extract any potential solvent from the chamber.
  If this is interrupted, it will continue to attempt the forced drying cycle until it completes.

TWO HAND START

- The door only moves when the two hand start is pressed.
- The Buttons are located on both right and left side of the machine.





2. Machine Overview



1 **HMI**
With the HMI the user can set process parameters, start a process run, diagnose the machine in case of warnings or errors and communicate with AMT's support.

2 **Power On/Off Button**
This button is used to power on and off as well as "lock-out" of the machine when carrying out maintenance.

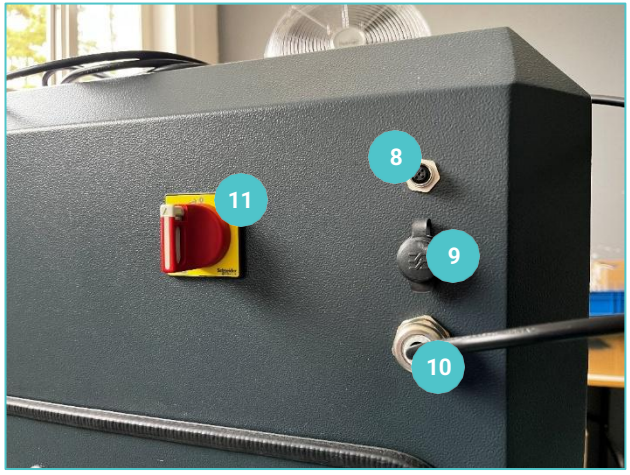
3 **Emergency Stop (E-Stop)**
An emergency button is placed on the front side and should be pressed in case of an emergency.

4 **Process Chamber Door**
The door lowers to give access to the processing chamber and raises again during processing.

5 **Door Movement Buttons**
To avoid getting trapped, the two buttons must be pressed simultaneously to activate the door opening and closing mechanism.

6 **Canisters Drawer**
Push with two hands until the canister drawer locks in place.





7 **Air Extraction Outlet**
The outlet which is connected to the extraction unit.

8 **Extractor Connection**
Start-Stop connection to the Extraction Unit.

9 **Ethernet Connection**
To connect the machine to the AMT server for remote monitoring and stable connection

10 **Power Connection**
Power lead to connect to the mains power supply.

11 **Power On/Off Button**
Controls the main power supply to the SF System.

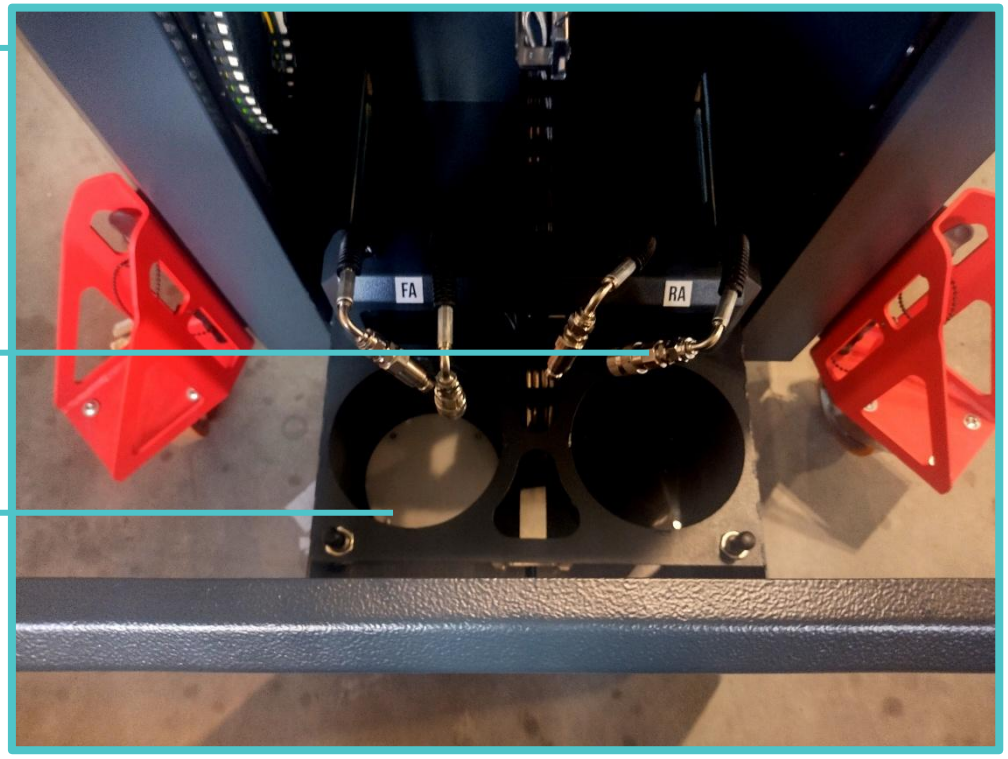
CANISTER & CANISTER CONNECTIONS

Canister Quick Release Connectors





Male & Female Quick Connector



CANISTER & CANISTER CONNECTIONS

Key Function:
When the system detects that a consumable canister is nearly empty, it will prompt you to replace it.

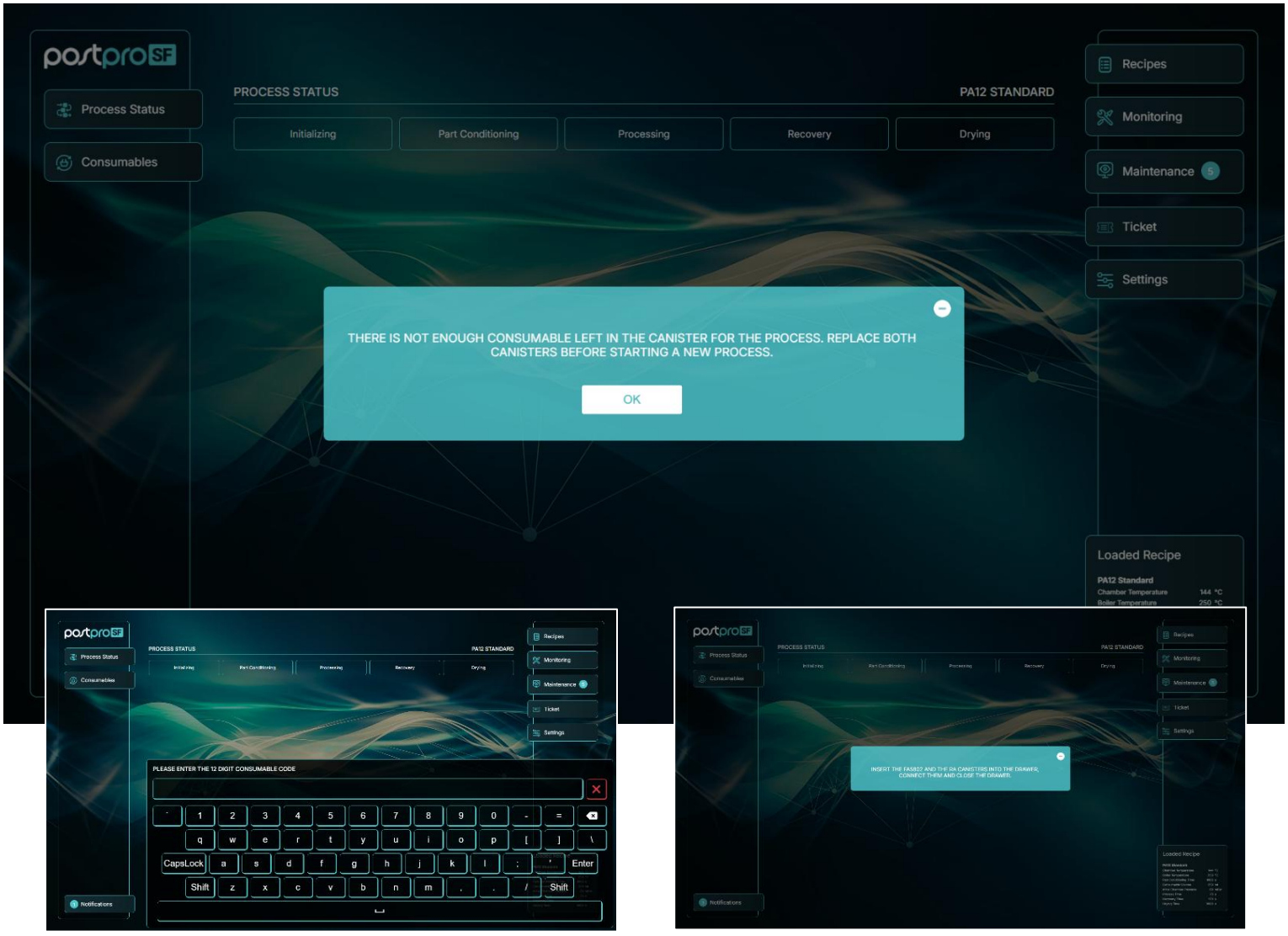
The machine provides **step-by-step on-screen instructions,** simply follow these to complete the replacement safely.

Process Overview:

1. When prompted, open the Canister Drawer and disconnect the empty canisters using the quick-connect fittings.
2. Attach the new canisters securely, ensure the connection is tight to avoid leaks.
3. The system requires the unique 12-digit code to verify the new canisters.
4. Once confirmed, the HMI will display an updated canister level and resume readiness for processing.

Important Notes:

- Only use **AMT-approved FA9202 canisters**.
- Always wear **PPE** when handling canisters.
- If the replacement process is interrupted, contact AMT or your authorized AMT Representative for guidance.



3. HMI Screens

MAIN SCREEN OVERVIEW

Process Status – View the progress and stage of the current process.

Consumables – Displays canister and carbon filter information.

Notifications – Lists any active system notifications and errors.

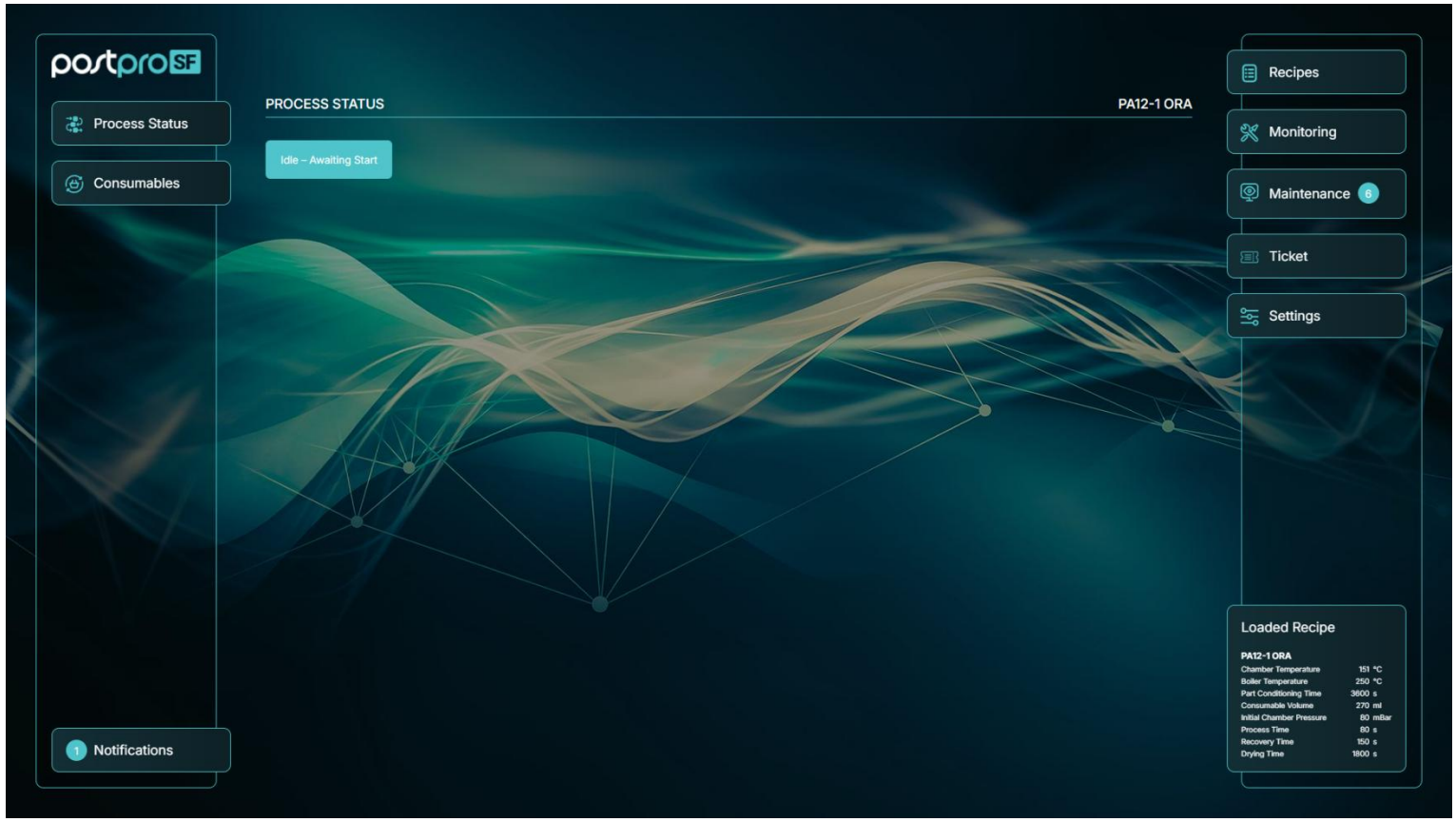
Recipes – Access stored and saved process recipes. This menu is also used to start a process.

Monitoring – Allows for the process set points to be reviewed for troubleshooting.

Maintenance – Displays the maintenance activities which need completing to keep the machine functioning correctly.

Ticket – Create and send support tickets directly to AMT.

Settings & Information – Provides a summary of the machine and allows for the system settings to be adjusted.



PROCESS STATUS SCREEN

The **Process Status** screen shows the progress and stage of the current process and allows the operator to see the set-points and duration remaining.

The SF System recipe runs through **four main stages:**

Initialization – Chamber warms up, ready for the process to begin.

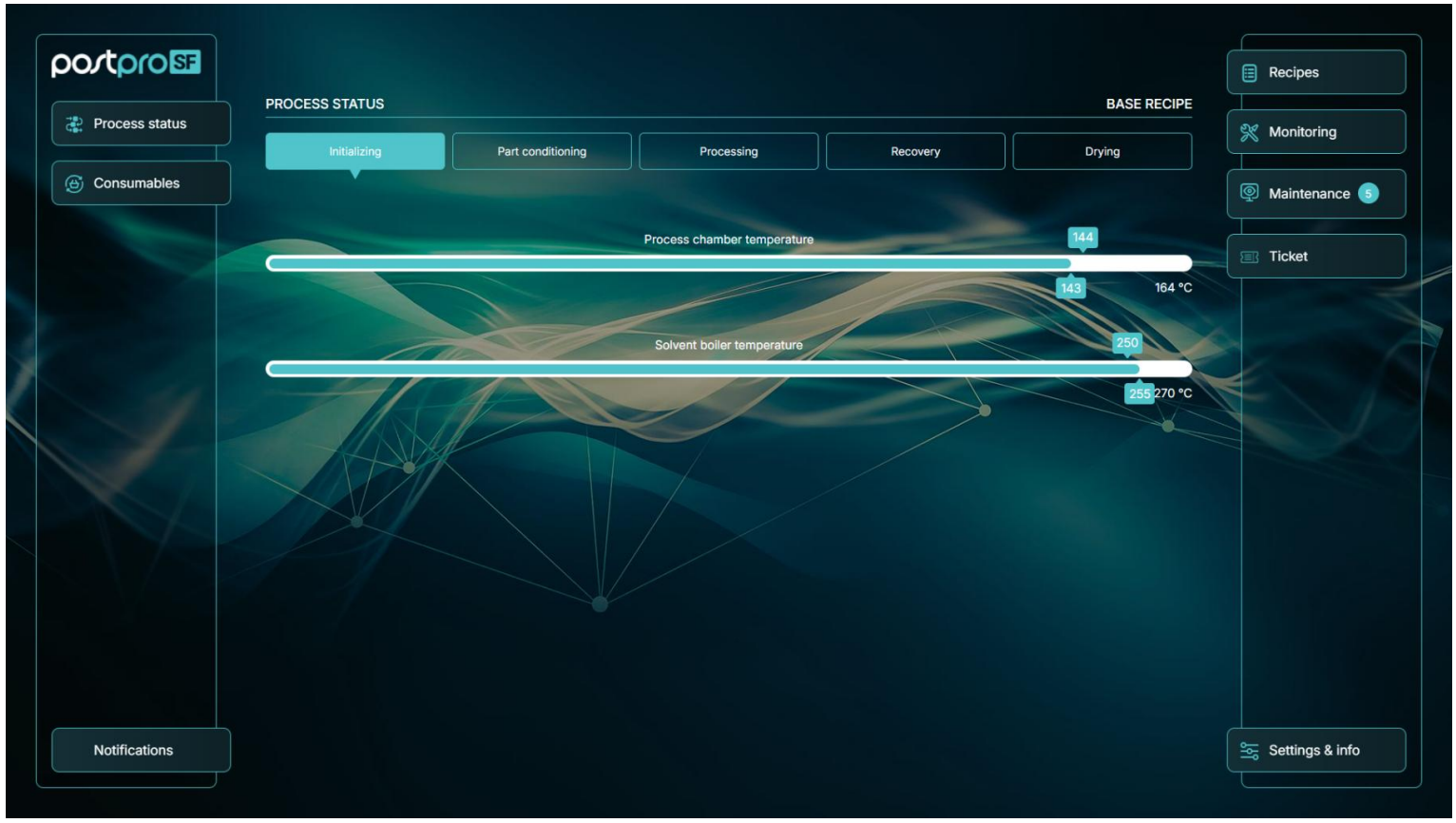
Processing – Solvent vapor is then injected into the chamber and condenses on the parts, smoothing the surface.

Part Conditioning – Parts are conditioned in the chamber at a set temperature for a specified duration.

Recovery – Solvent is collected and recycled from the chamber.

Drying – Any remaining solvent is removed from the chamber and parts.

The current stage is highlighted in **blue**, and key parameters, including time remaining, are displayed during each stage.



CONSUMABLES SCREEN

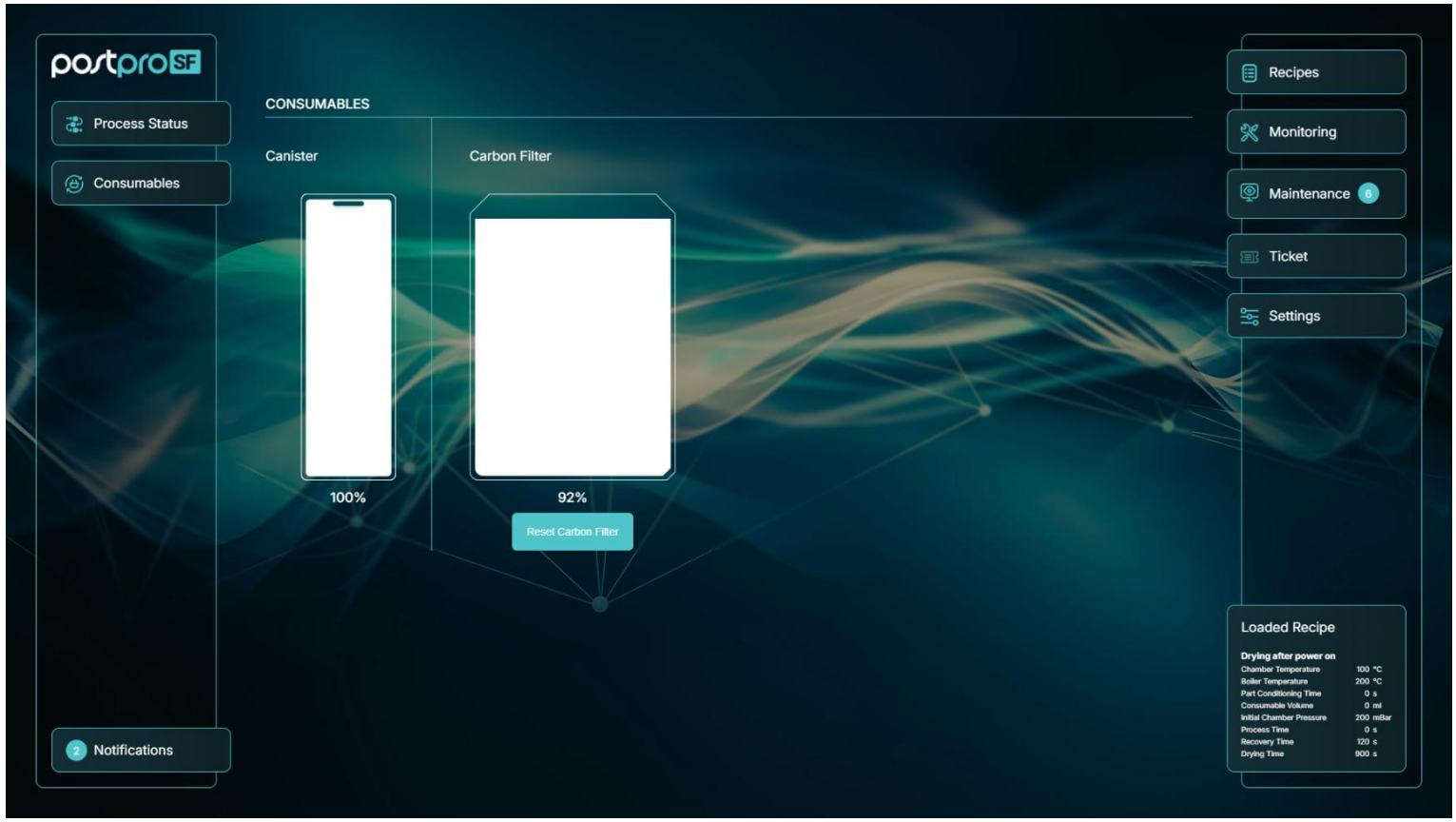
Displays the status of the **canisters** and **carbon filter** installed in the SF System.

Canister

The Canister indicator presents the available solvent to be used, and it decreases as it empties out.

Carbon Filter

The Carbon filter indicator presents the usage of the carbon filter and it increases with the machine usage. (100% indicating the end of its lifecycle. Needing replacement)



NOTIFICATIONS SCREEN

The SF System displays three types of notifications:

I – Informative

- Provides general information about system components.
- Can be cleared by the operator using the **Clear** button, and the machine will continue to run normally.

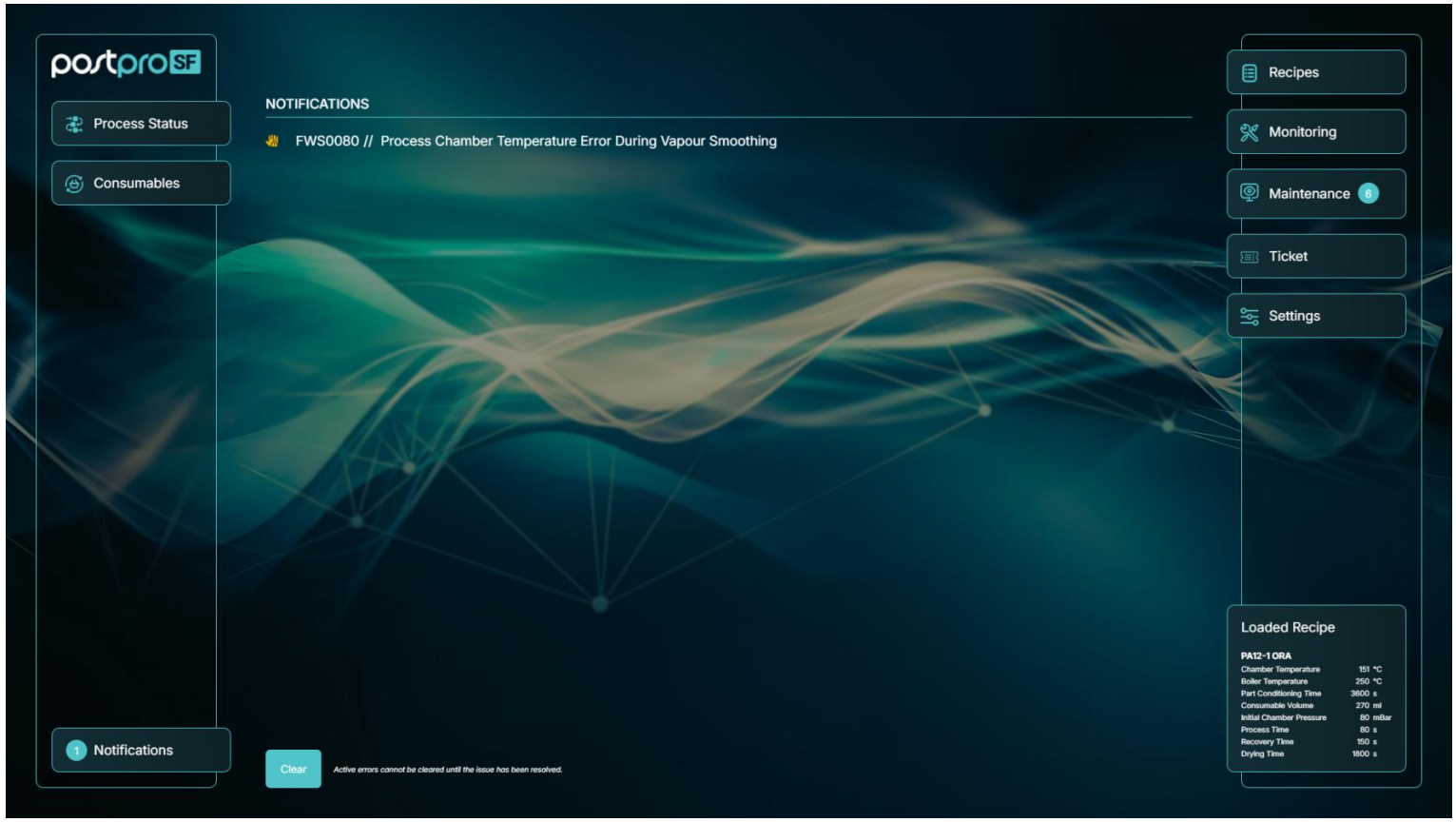
S – Soft

- Indicates a **minor issue** (e.g. a parameter out of tolerance).
- Can also be cleared by the operator, but if repeated, it may escalate to a hard error.

H – Hard

- Signals a **major system issue**.
- Cannot be cleared, the machine will not start a new process until the issue is resolved.

Note: When any error is active, the **Notification button turns red** and shows the number of current errors.



RECIPE SCREEN

Displays all **recipes programmed on the machine**, organized for easy navigation.

For any **user-created recipe** (not pre-installed by AMT), three actions are available:

Start Process
Begins initializing the system for that recipe to start.

Edit (Pencil Icon)
Allows the user to modify recipe parameters.

Delete (Red Cross) Removes the recipe from the list.

A **folder system** is available to help structure and group recipes.

- Create new folders by pressing the **"New Folder"** button.

Note: Keep recipe names clear and organized within folders for faster selection.



RECIPE EDITOR SCREEN

The **Recipe Editor** allows you to adjust all parameters for a selected recipe.

From top to bottom:

Name
Enter a clear, descriptive name so it can be easily identified later.

Folder
Choose a folder to organize your recipe (optional).

Next Recipe (in Chain)
If multiple cycles are required without unloading parts, select the **next recipe** in the chain here.

All other recipe parameters can be entered according to the **AMT Recipe Book** and adjusted as needed for your parts or materials.

To edit a value, **click the box** and use the on-screen **keypad** to enter a number.

When finished, you can either:
- **Save** – Overwrite the existing recipe.
- **Save as New** – Create a new recipe with your updated settings.

Note: Always save recipe changes under a clear, logical name to make it easier for others to identify later.

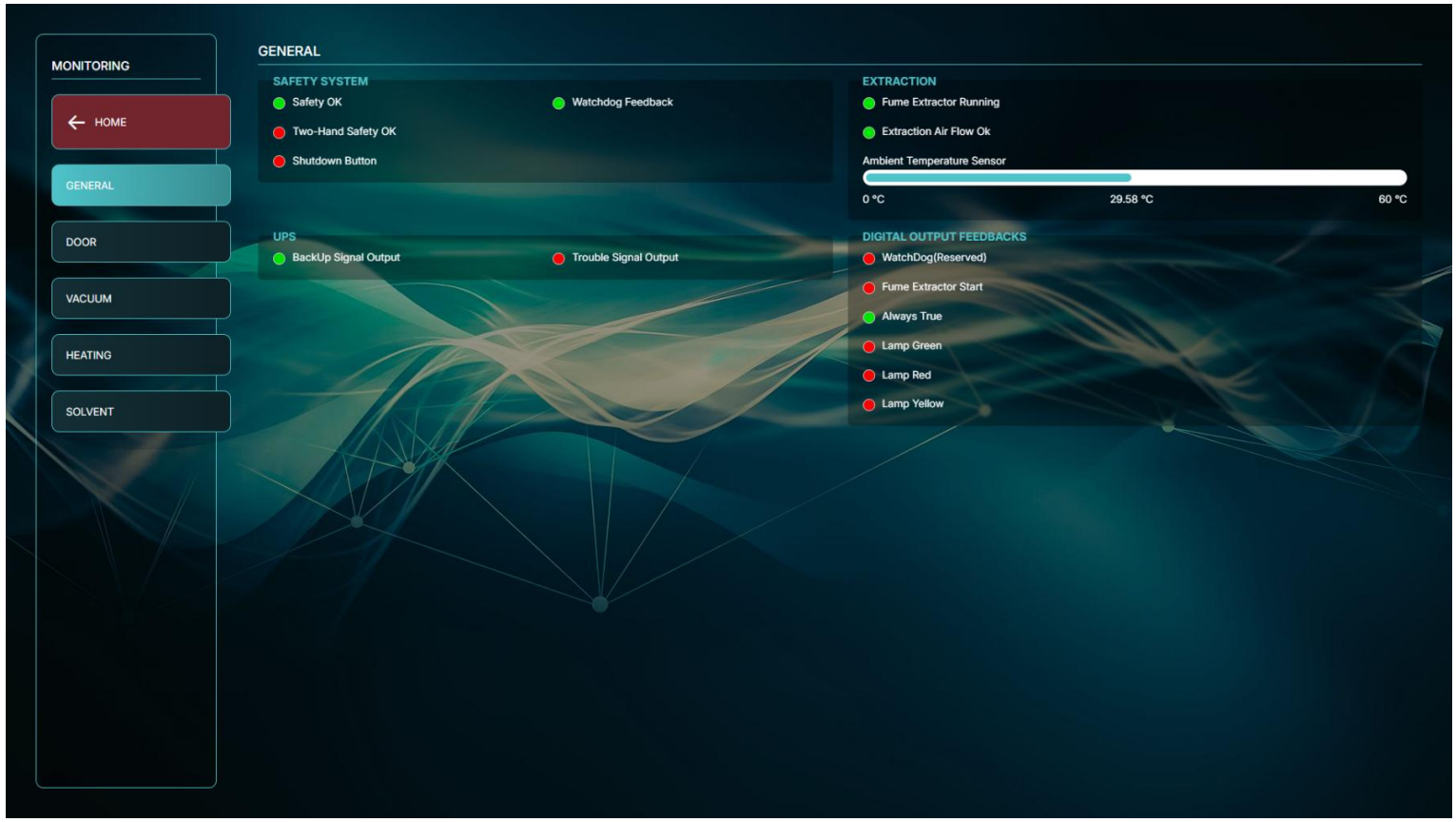


MONITORING

Use **Monitoring Mode** to view the SF System's advanced machine settings in real time.

- Displays detailed system parameters and sensor values.
- **Settings cannot be adjusted** in this mode, it is view-only.
- Useful for **troubleshooting** and verifying machine performance during process development.

Tip: Monitoring Mode is ideal for AEs or advanced users diagnosing process variations or verifying system behaviour.

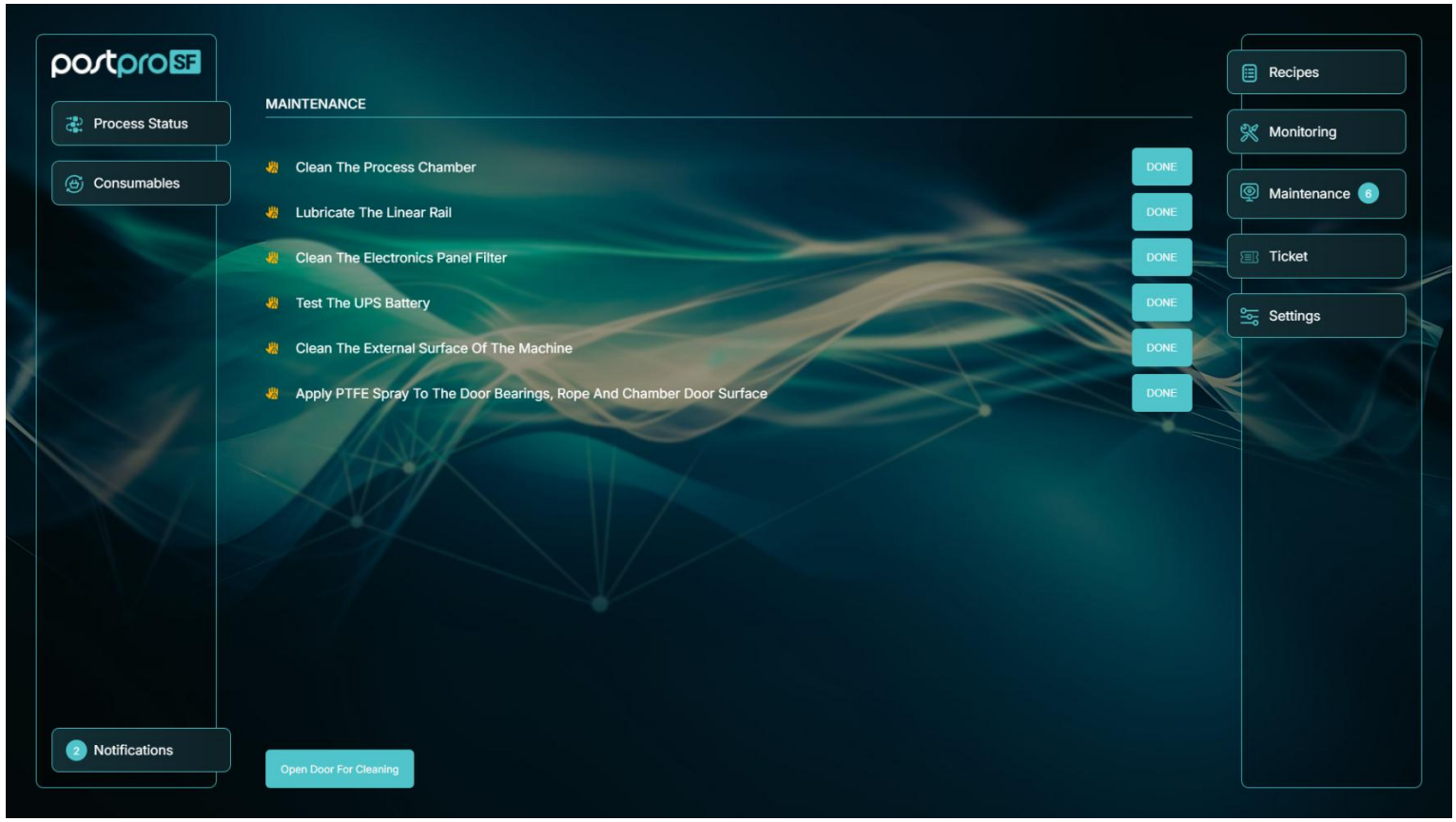


MAINTENANCE

The **Maintenance Screen** provides access to key service and upkeep functions for the SF System.

It allows trained users to monitor component status, perform routine maintenance tasks, and reset service counters when required.

This area primarily used for engineers and trained personnel to ensure safe and correct operation of the machine.



TICKET

If you experience an issue or need assistance, support is available directly through the machine interface.

- Click the **“Ticket”** button to submit a support request through the **AMT Ticketing System**.
- Tickets can also be raised by **email** or via the **AMT Support Portal**.
- Full details on support options are available **at the end of this training** or in the **User Manual**.

Note: Always include key details such as machine serial number, recipe used, material, and a brief description of the issue to help AMT resolve it faster.



SETTINGS

This screen gives users a quick overview of the SF System's setup and technical details.

- Provides access to **system configuration and information** menus.
- Displays key data such as **software version, machine serial number, and network settings**.



4. Pre-Processing Tips and Tricks

amt postpro® PRINTING

Good printing quality is the foundation for achieving consistent vapor smoothing results.

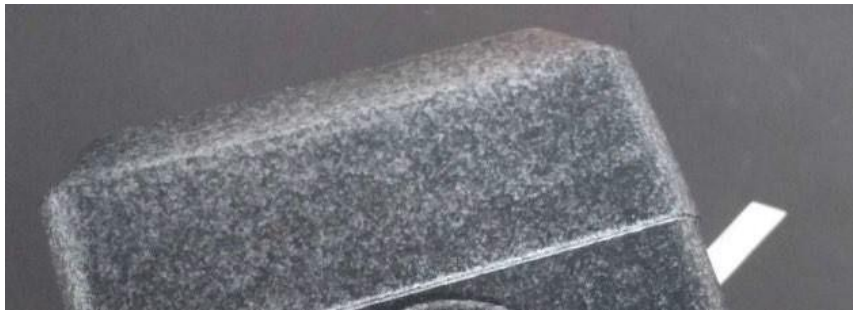
Key factors that affect print quality:

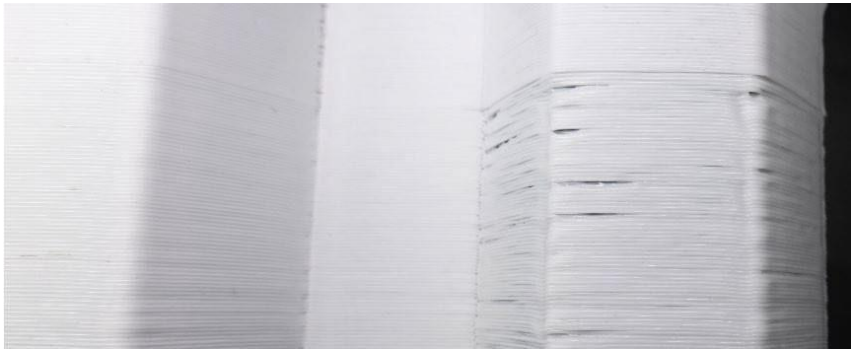
- **Design and geometry** of the part
- **Build orientation** during printing
- **Printing technology** used (SLS, MJF, etc.)
- **Material type**
- **Printing parameters** such as temperature and layer height

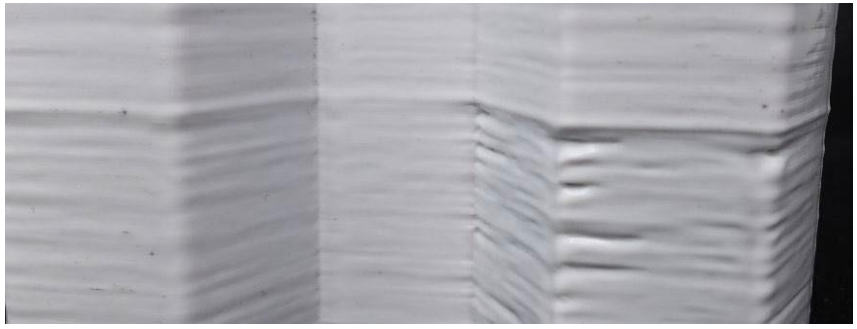
Keep these variables as **consistent as possible** to achieve repeatable smoothing results.

Ensure prints have **strong layer adhesion** and **no thermal degradation or bleeding**, as these directly impact surface finish quality.

Note: Poor printing quality cannot be corrected during smoothing, the post-processed result will always reflect the input quality.





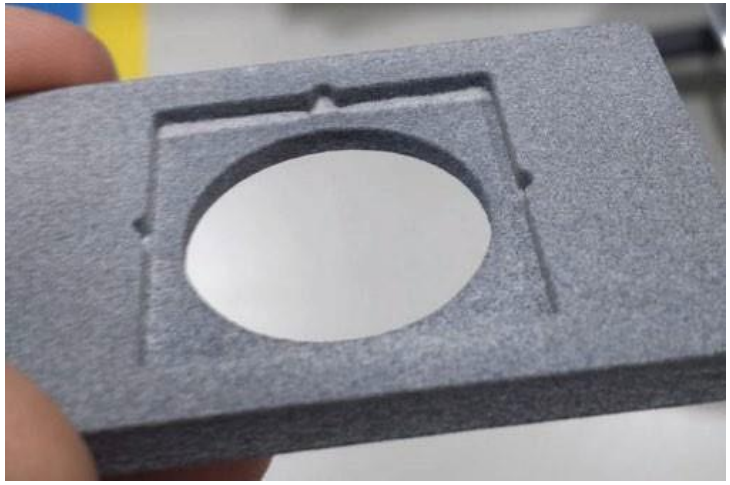


amt postpro® DEPOWDERING

Thorough depowdering is essential for achieving high-quality, consistent smoothing results.

- **Remove all powder** from parts, especially from **internal cavities**, **corners**, and **sharp features**.
- Any remaining powder will create **surface imperfections** during processing.
- If needed, perform a **secondary blasting step** to fully clean intricate features.
- Always ensure **blasting media is clean and uncontaminated,** poor media can transfer debris onto parts.
- Replace and filter blasting media **regularly** to maintain quality.

Note: Clean parts produce smoother, more uniform finishes, depowdering is one of the most critical preparation steps.





CLEANLINESS

Keep the **Vapor Smoothing room clean,** good housekeeping is key to achieving flawless results.

- **Cleanliness** in and around the machine prevents unwanted contamination.
- Part surfaces are **highly sensitive to dust and debris**, which become clearly visible after smoothing.
- The **processing chamber should be cleaned every day** using a **lint-free wipe** and **IPA**.
- If running white parts, consider cleaning the parts more frequently to prevent contamination.
- Regular cleaning ensures consistent surface quality and extends machine reliability.

Note: Treat the vapor smoothing area like a cleanroom, the cleaner the environment, the better the results.







DESIGN FOR POST PROCESSING

Incorporate **hanging features** into the part design to make loading faster and easier.

This also helps **prevent witness marks** during processing by supporting parts evenly.

The most effective approach is to include **sacrificial hooks or tabs** on the parts that can be **easily removed after processing**, leaving a clean, finished surface.

For more in-depth design tips, please read the PostPro SF Design Guidelines PDF document

Note: Designing for post processing at the printing stage saves time and improves final part quality.





HANGING EQUIPMENT

Using Stainless Steel Wires and Hooks

Use **stainless steel wires or hooks** to suspend parts securely on the process racks.

Some materials can **react or oxidize** during the process, which may cause surface contamination. Stainless steel is **inert, reliable, and widely available**, making it ideal for part suspension.

Always use **thin clips, hooks, or welding rods** to minimize condensation buildup, this helps prevent **drip marks** from forming on the parts during smoothing.

Note: Keep all hanging hardware clean and free from residue to ensure consistent, defect-free finishes.





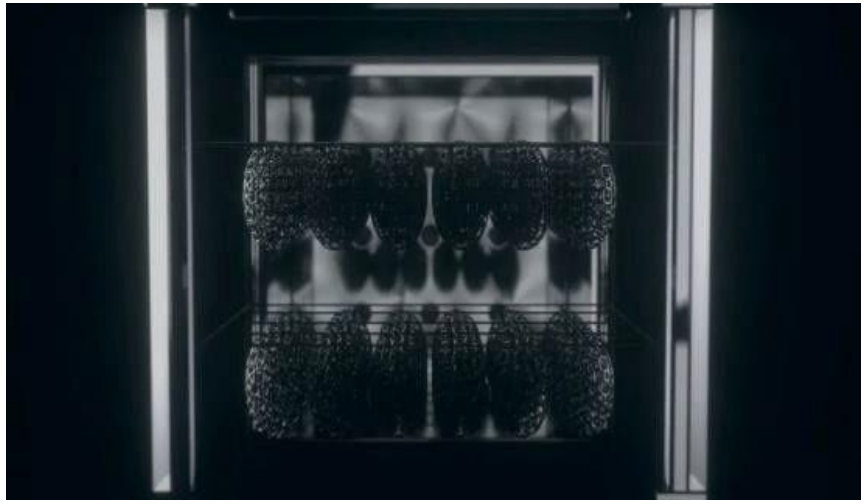


LOADING PARTS INTO THE CHAMBER

Hanging Parts Correctly

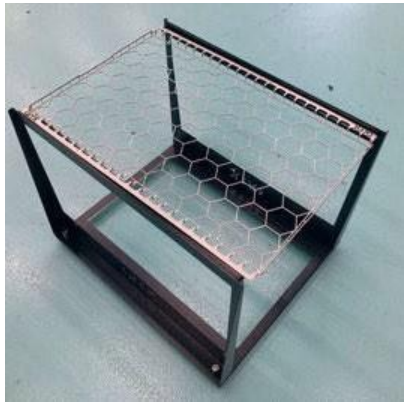
For best and most consistent results:

- Keep all parts at least **50mm away from the chamber walls.**
- Maintain minimum **20mm gap between parts,** ensure they are not touching.
- **Cupped geometries** should hang with openings facing **downward at a 10°–20° angle**.
- **Minimize contact points** between clips, wires, and the part to reduce visible **witness marks** after processing.



Notes:

- Whenever possible, position racks and parts **in the center of the chamber** for even exposure
- During processing, parts become **soft and flexible,** allow extra time to ensure they are securely hung and not under stress, especially at weaker features.





5. How The Process Works

VAPOR SMOOTHING PRINCIPLES

General Principles

Vapor smoothing with PostPro Polypropylene is a high-temperature process due to the solvent's high boiling point.

Temperatures inside the processing chamber typically range from **100°C** to **130°C**, depending on the part material and geometry.

Different materials have unique softening temperatures, where they begin to lose structural integrity or even melt.

As a result, the thermal properties of each material are the key factor in setting processing parameters.



HOW THE PROCESS WORKS



GROUPING THE PARTS



POWERING ON THE MACHINE



CREATING AND LOADING THE RECIPE



MACHINE INITIALIZATION



HANGING AND LADING PARTS INTO THE CHAMBER



MACHINE RUNNING



UNLOADING AND INSPECTION OF PARTS



POWERING DOWN THE MACHINE

GROUPING THE PARTS



GROUPING THE PARTS

What **Technology** was used to manufacture the parts?	SLS / MJF
What is the **Material** of the parts?	BASF PP / RICOH PP etc
What is the average **Wall Thickness** of the parts?	1-2 mm / 3-4 mm / >5 mm, etc.
How **Full** is the processing chamber?	Half full, Completely full, etc.

GROUPING THE PARTS

GROUPING THE PARTS

Printing Technology

Parts of the same material, printed with different technologies, react differently to and therefore need to be processed separately. The reason for this is down to how they are formed and their properties thereafter.

Material

The same can be said for the material of the part, with each material having a different chemical resistance in relation to the consumable. As a result, more, or less aggressive parameters need to be used to overcome this.

Wall Thickness

Since the PostPro SF relies on a condensation process to deposit the consumable onto the parts, the part temperature directly impacts its effectiveness. As such, depending on the wall thickness of the part, different part conditioning is needed.

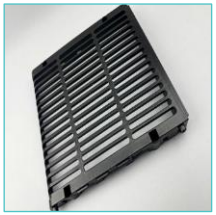
Chamber Fill Level

Unrelated to the actual parts, is the how full the chamber is. The chamber fill level is important as it defines how much solvent is needed, with a higher level of fill needing more solvent. The fill level is relatively subjective since it is heavily dependent on part geometries, however it can be estimated using the recommended hanging guidelines.

Part Colour

Finally, only process parts of the same colour together to avoid contamination. If you plan to dye the parts, it is recommended that this is done after smoothing.

THIN PARTS



THICK PARTS



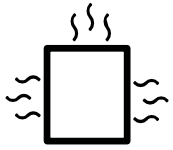
WHITE PARTS



EXPLANATION OF PROCESS PARAMETERS

The process has 5 main stages:

1 INITALIZATION



Processing chamber warms up

2 PART CONDITIONING



Parts are conditioned in the chamber at a set temperature for a specified duration.

3 PROCESSING



The solvent is vaporized and injected into the chamber where it dissolves the part surface making it smooth and sealed.

4 RECOVERY



Recovery of the solvent starts

5 DRYING



Any remaining trace of solvent in the parts and processing chamber is removed

- Each of these stages has their own parameters which are adjustable.
- It is necessary to change the process parameters depending on the material, geometry and quantities of the parts being processed.
- By changing the parameters, different levels of smoothing and sealing can be achieved.

1. INITIALIZATION STAGE

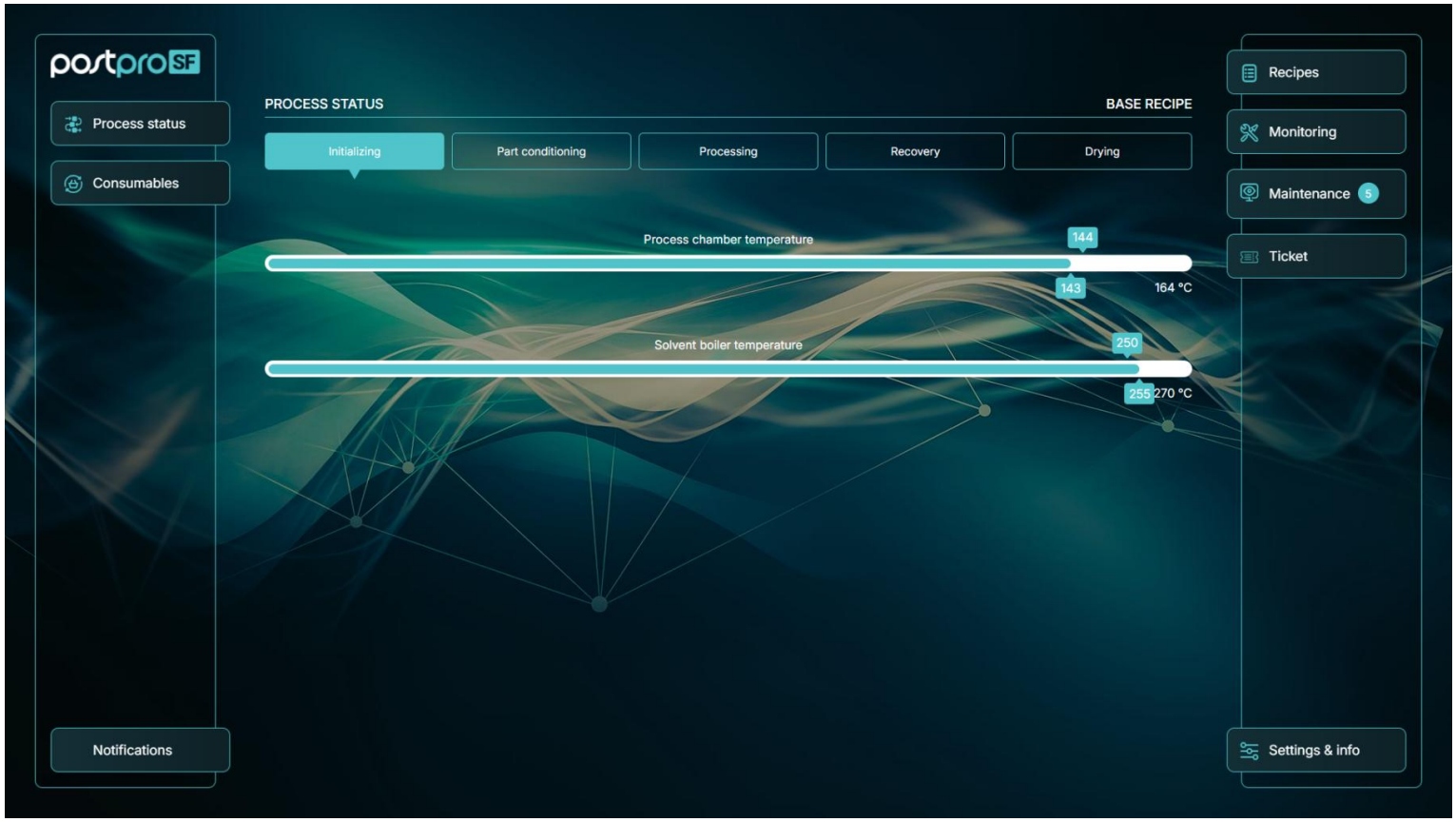
The following parameters can be adjusted to control the behavior of the **Initialization Stage:**

Process Chamber Temperature (°C) – The temperature setpoint for the chamber walls that must be reached before the process starts. This directly affects the **aggressiveness of the smoothing process**.

Solvent Boiler Temperature (°C) – Determines how hot the boiler becomes to **evaporate the solvent effectively** and generate the required vapor.

Note: Always verify temperatures against the **AMT Recipe Book** to ensure safe and consistent results across different materials.

GREEN: regular change.
ORANGE: occasional change.
RED: rarely change.



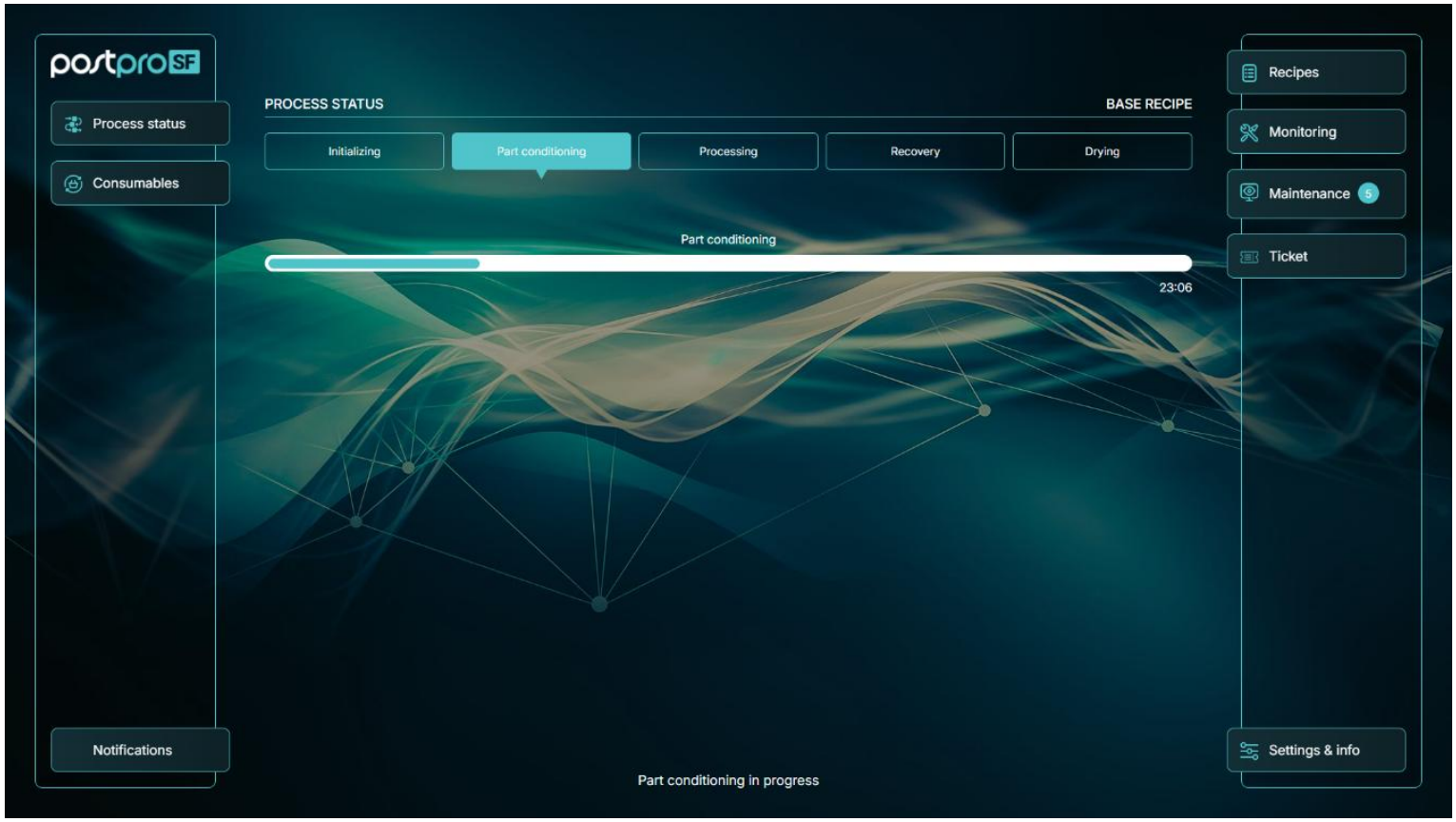
2. PART CONDITIONING STAGE

The following parameters can be adjusted to control the **Processing Stage**:

Part Conditioning Time (s) – The time parts are conditioned before smoothing begins. Thicker parts need **longer conditioning**, while thin or delicate parts require **shorter times**.

Note: Part Conditioning Time is the primary parameter used to adjust the part finish.

GREEN: regular change.
ORANGE: occasional change.
RED: rarely change.



3. PROCESSING STAGE

The following parameters can be adjusted to control the **Processing Stage**:

Consumable Volume (ml) – The **volume of solvent** dosed into the chamber. More solvent increases the **aggressiveness** of the process. Also, higher surface areas require more solvent to fully process the parts.

Process Chamber Initial Pressure (mbar) – The **vacuum level** created in the chamber before solvent injection.

Processing Time (s) – The **duration of solvent exposure** on the part surfaces. Longer times result in **smoother finishes**, but excessive time may cause over-processing.

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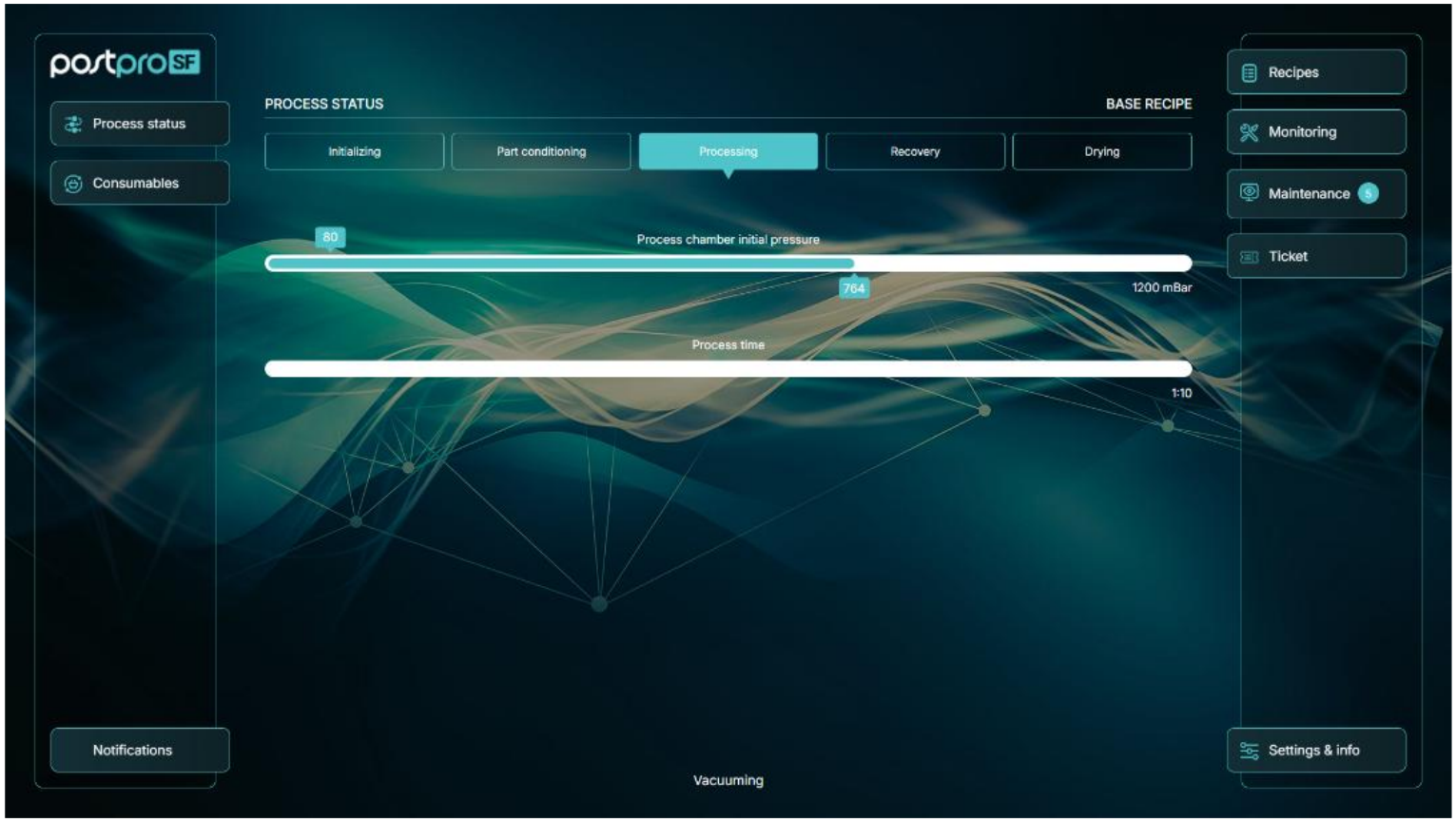

4. RECOVERY STAGE

The following parameter can be adjusted to control the **Recovery Stage**:

Recovery Time (s) – The duration in which the machine **recovers and collects most of the solvent** from the chamber before drying begins.

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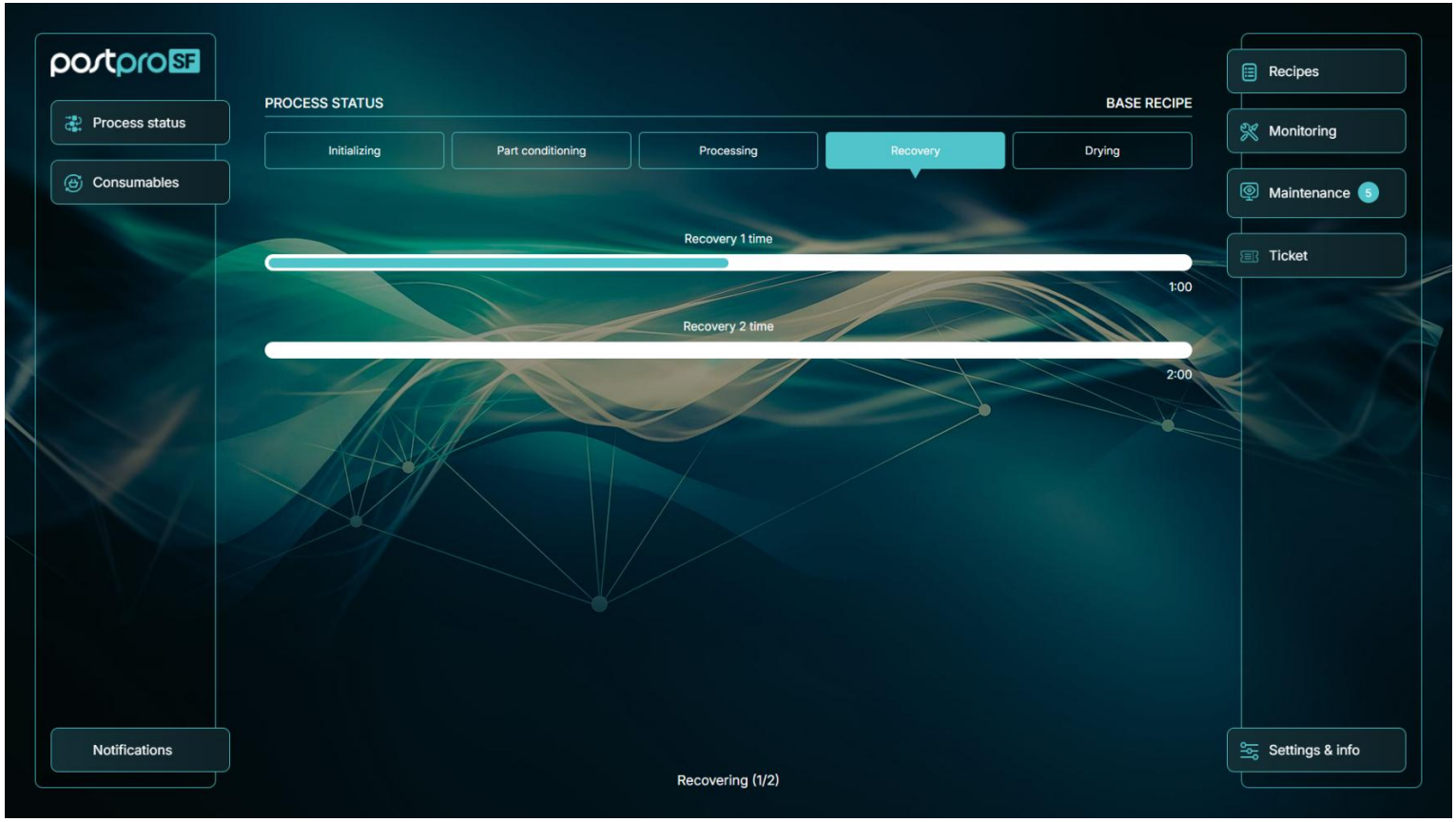
ORANGE: occasional change.
RED: rarely change.



5. DRYING STAGE

The following parameter can be adjusted to control the **Drying Stage**:

Drying Time (s) – The duration of the drying cycle used to **remove any remaining traces of solvent** from the chamber and parts.

A MINIMUM OF 3600 SECONDS OF DRYING IS REQUIRED.

Note: Adequate drying time ensures parts are completely clean, stable, and ready for safe handling after processing.

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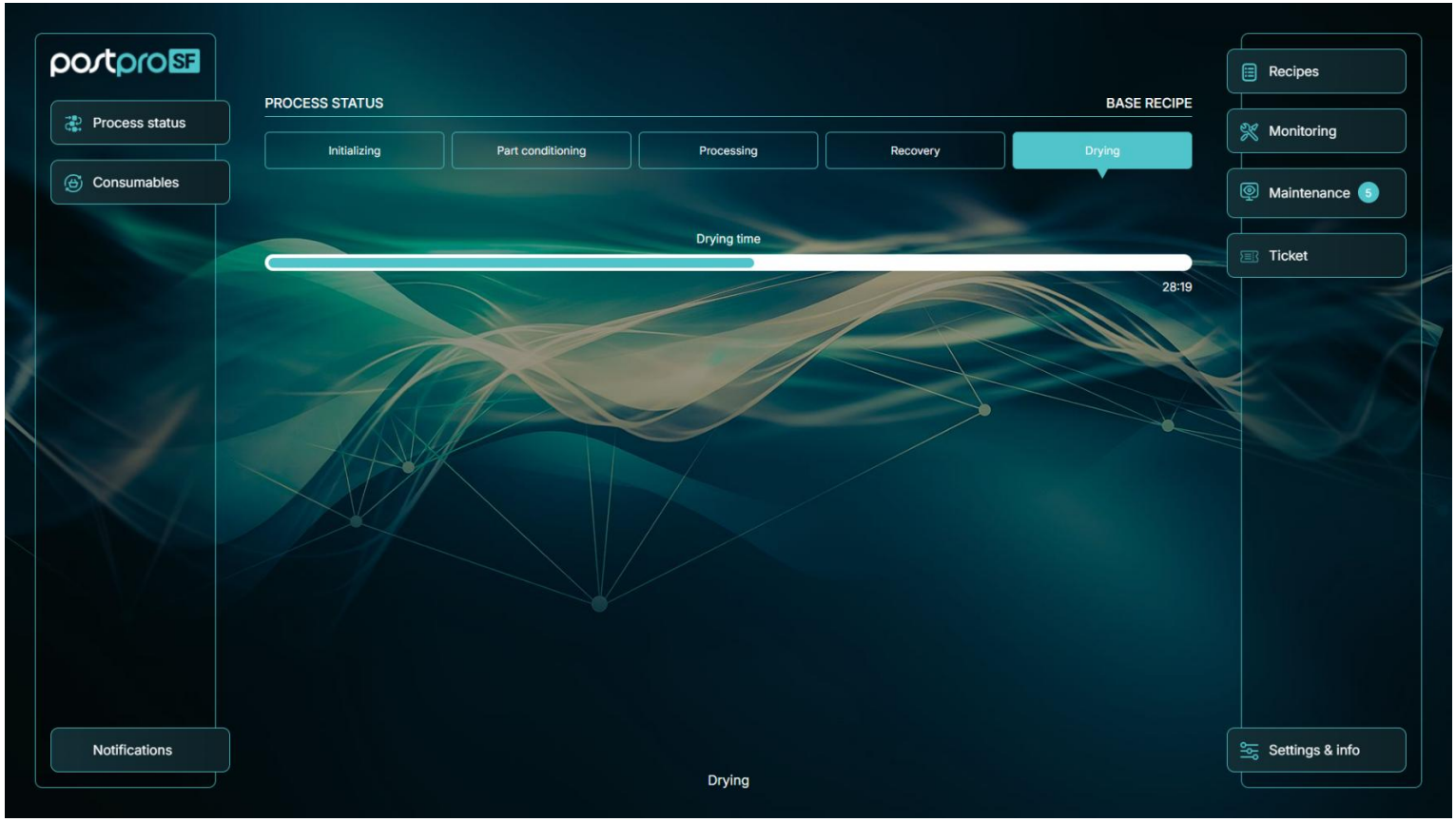
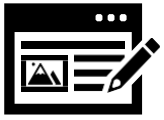


CREATING AND LOADING THE RECIPE



CREATING AND LOADING THE RECIPE

Explanation of process parameters

How to create a recipe

CREATING A RECIPE

By clicking on the recipe box on the right-hand side of the screen, the recipe list will be displayed.



CREATING A RECIPE

After clicking the **pencil (edit) icon**, on the Recipe screen the selected recipe will open and display **all processing parameters** for review and adjustment.

At this point, the recipe can be created using AMT's recommendations.

Note: Review each parameter carefully before editing to ensure it is suitable for the chosen parts and material.

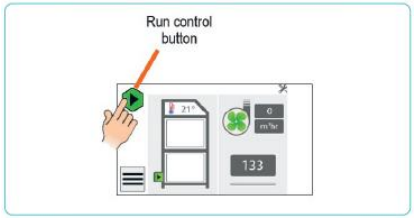


6. Running a Process

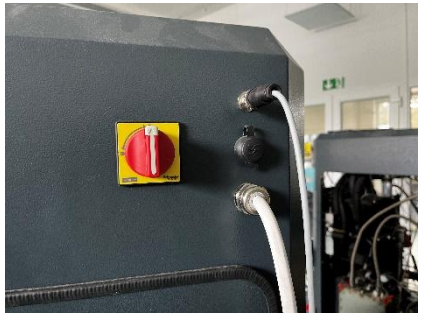
POWERING ON THE MACHINE

POWERING ON THE MACHINE

Turn on the external extractor using the control button on the front.



Turn the Isolator to the ON position (on the back of the machine) to power on the SF machine.



Press the GREEN button to start the machine (front of the machine).

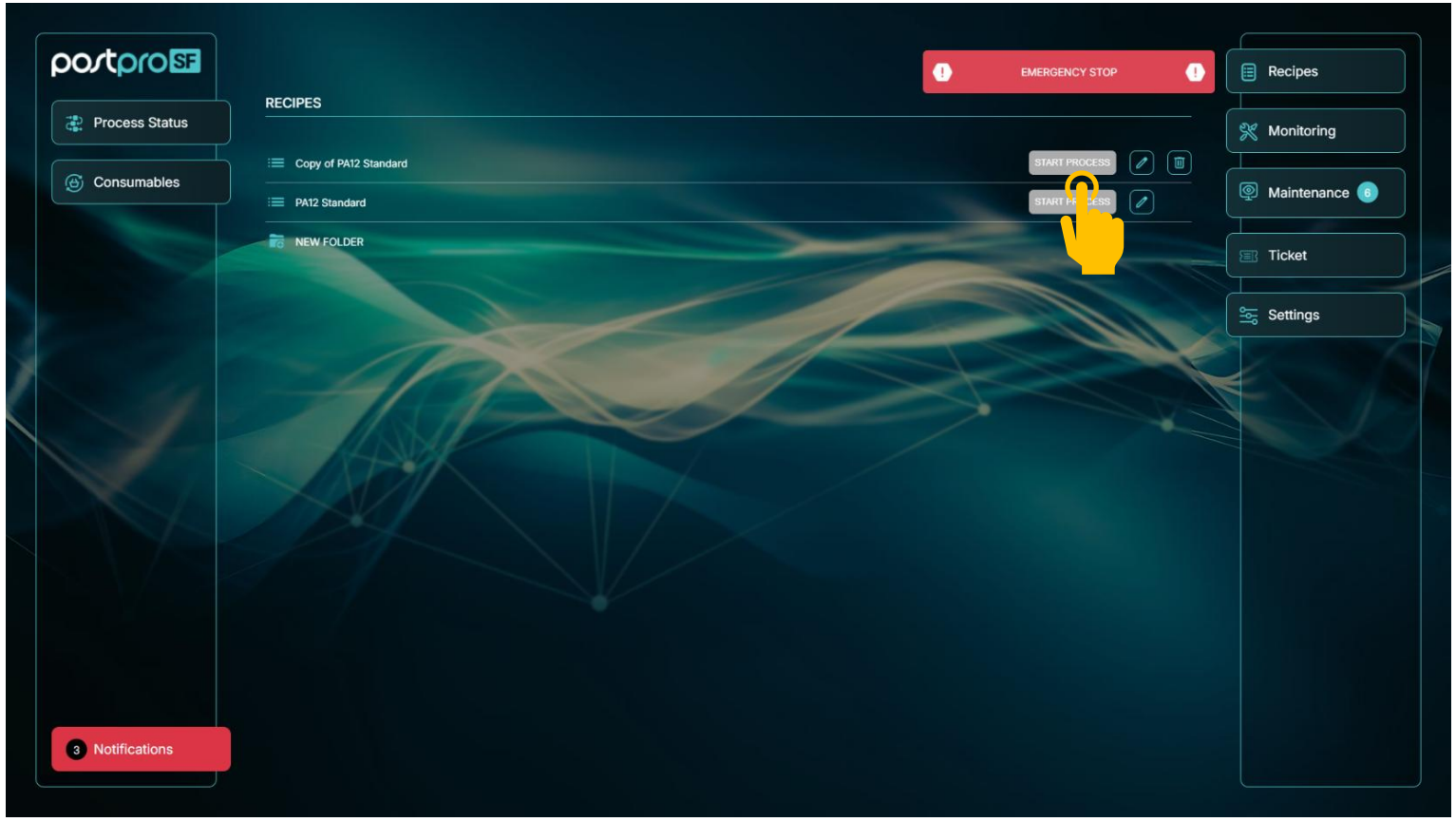


After a few minutes, the SF screen will then display the Main Screen. It will enter to “Drying after power on” recipe automatically to prepare the machine for use.



MACHINE INITIALISATION

MACHINE INITIALISATION

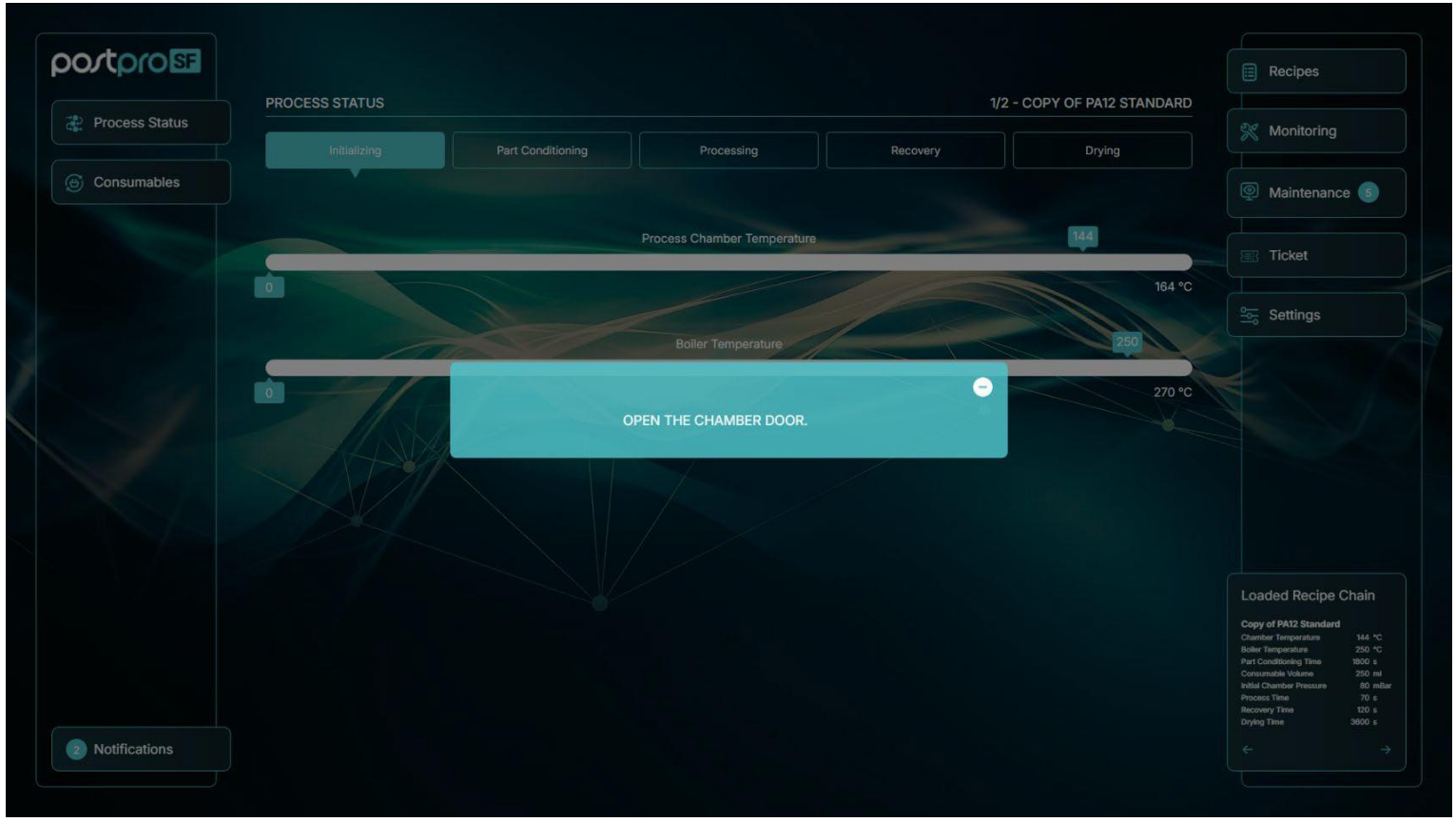


To load the desired recipe, press the "**START PROCESS**" button on the recipe list screen, after which the machine will begin the initialization process. This may take some time depending on the machine's current condition.

ATTENTION! Always double-check that the correct recipe is selected before starting to ensure optimal results.

LOADING THE PARTS

HANGING AND LOADING PARTS INTO THE CHAMBER

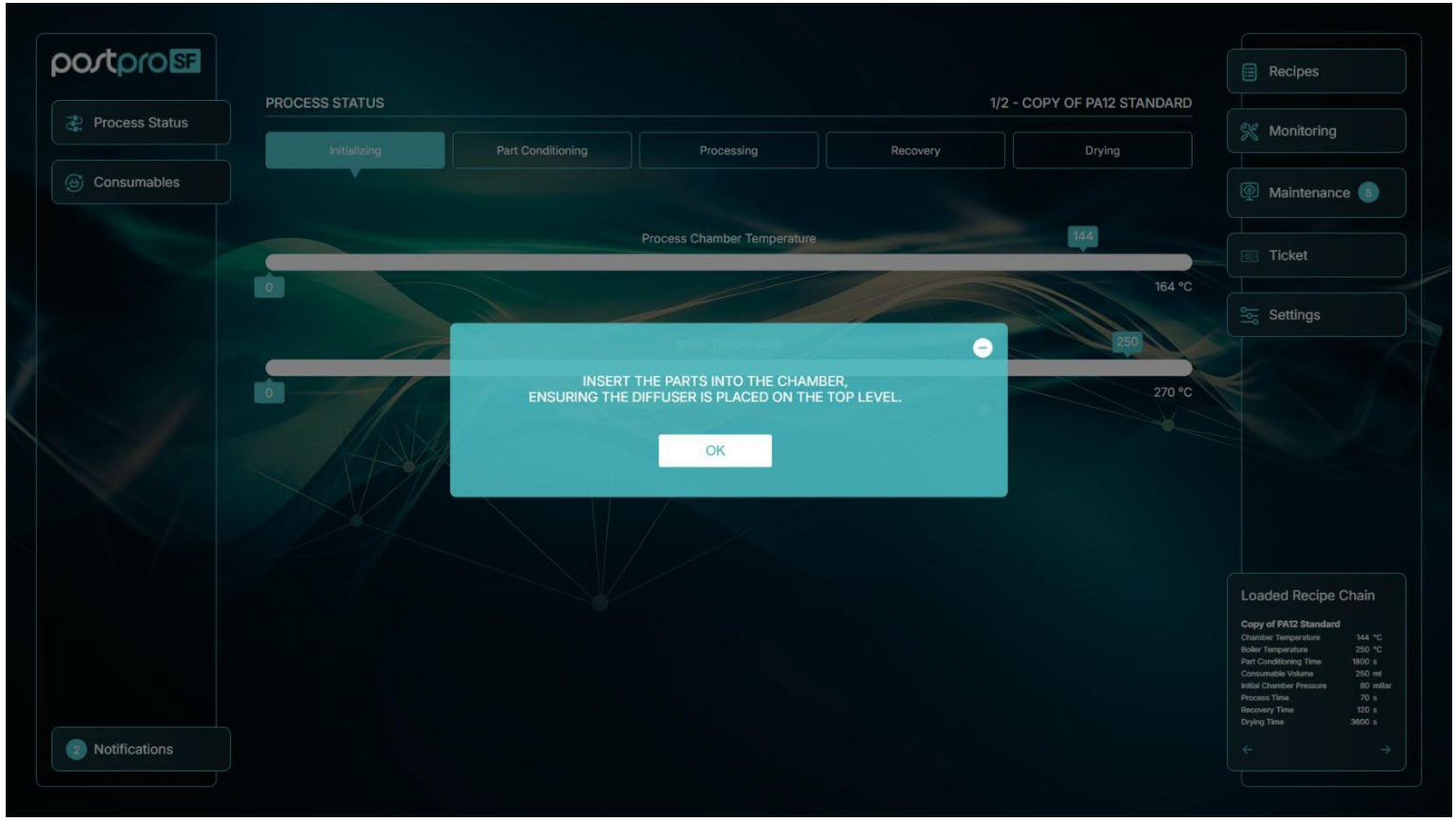


When the machine is ready, press the two-hand buttons on each side of the door until the system asks you to load the parts.

ATTENTION! To avoid getting trapped, only one person should operate the door, and they should be at full arms length.

LOADING THE PARTS

HANGING AND LOADING PARTS INTO THE CHAMBER

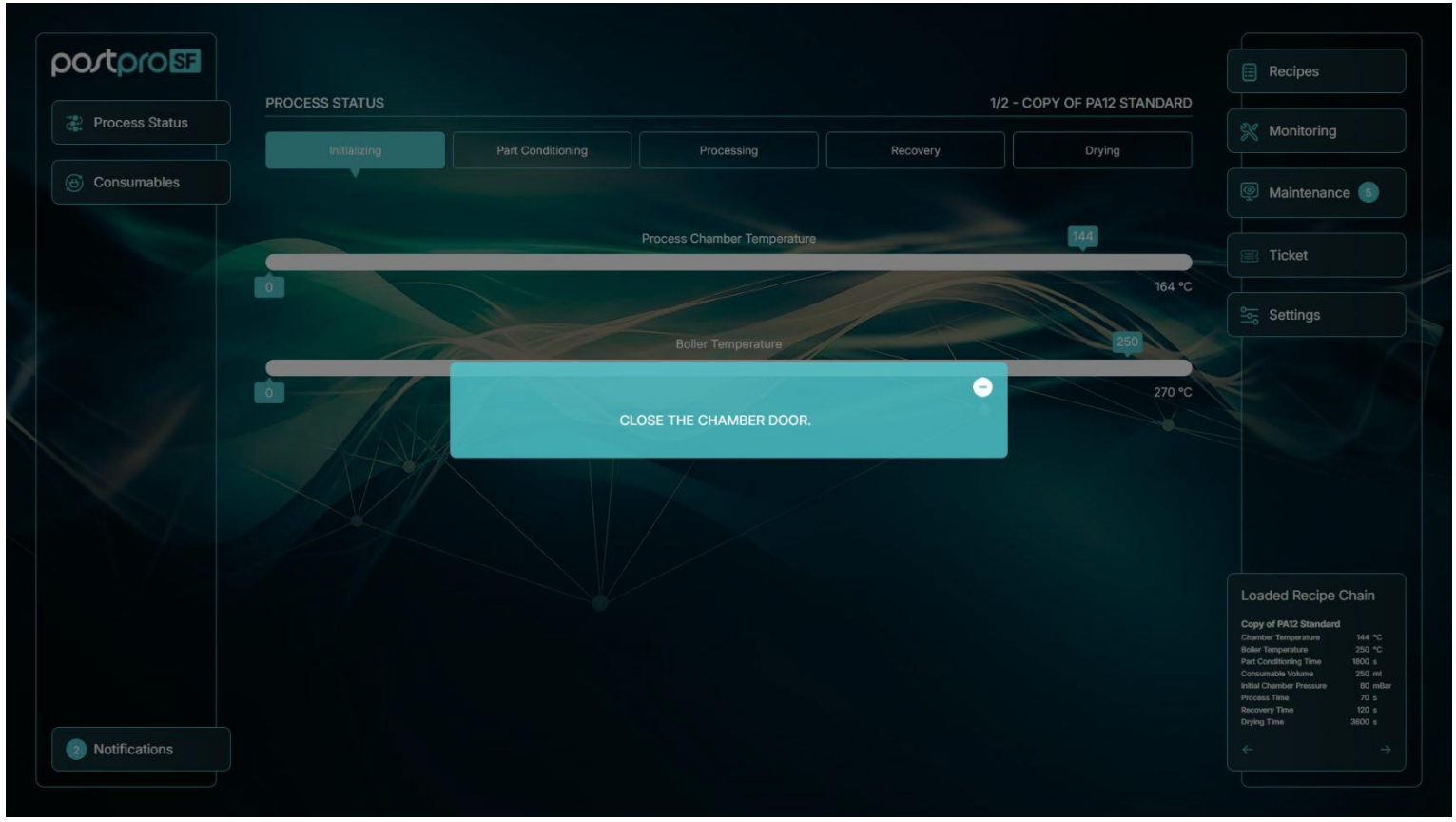


Slide the racks into the chamber carefully, keeping the correct clearances between the parts/walls and ensure the parts are securely fastened. Press “**OK**” when all the racks have been loaded.

ATTENTION! Ensure to place the diffuser on the top rack in the chamber.

LOADING THE PARTS

HANGING AND LOADING PARTS INTO THE CHAMBER

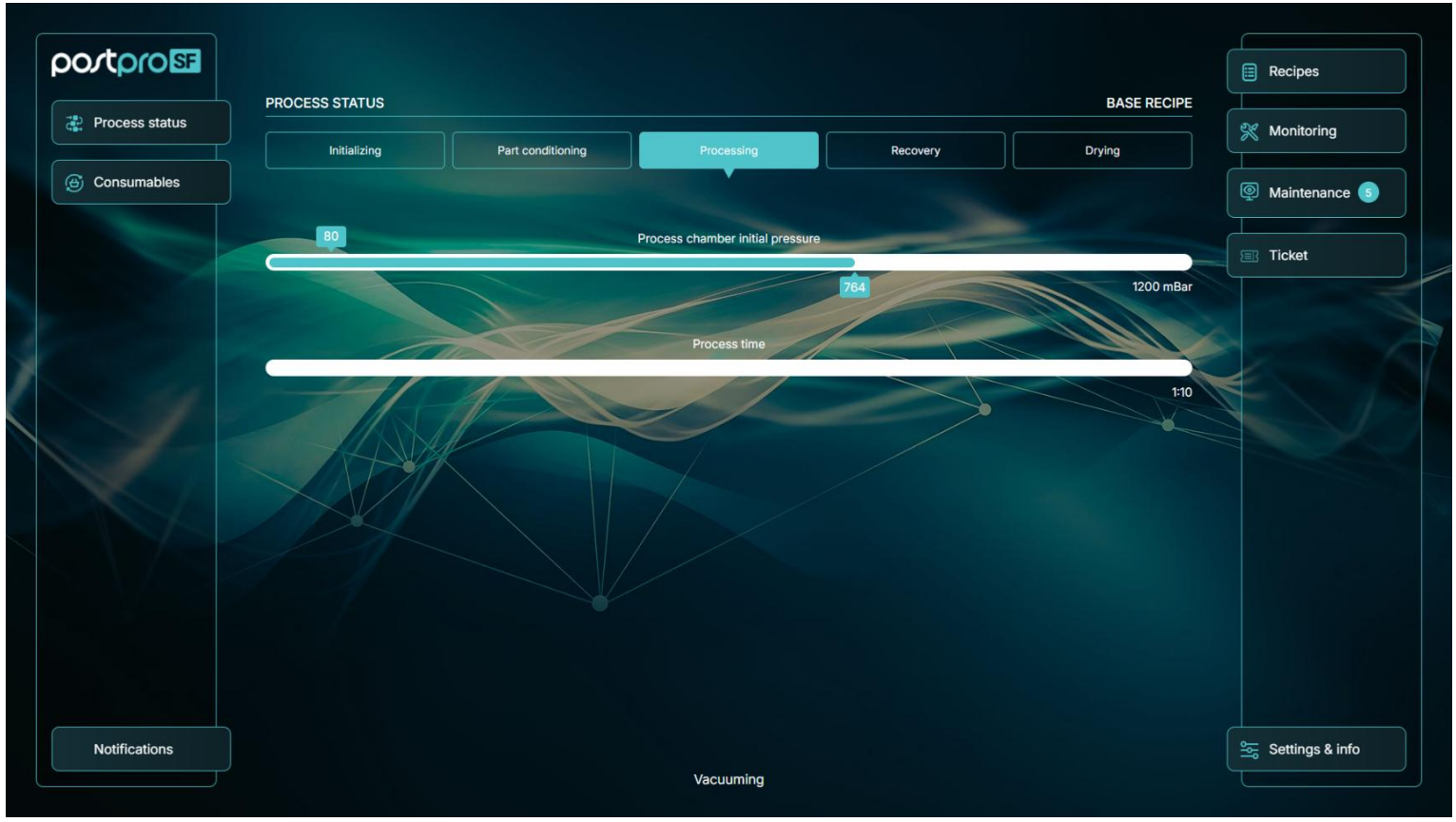


Press the two-hand door buttons again simultaneously to close the door.

Note: Do not release the buttons until the machine returns to the Process Status screen to allow the locks to be applied correctly.

MACHINE RUNNING

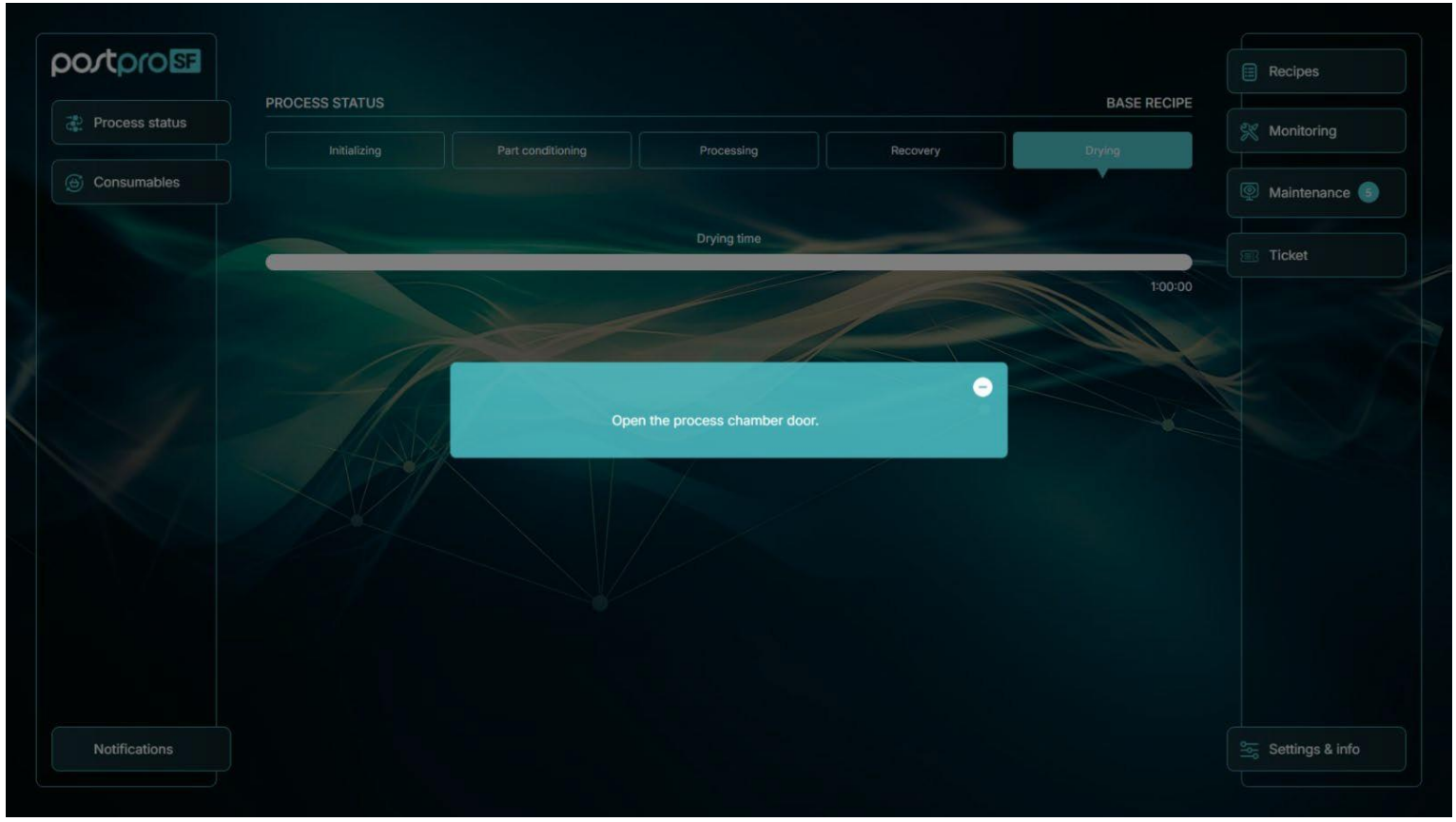
MACHINE RUNNING



The machine will run the process, you can monitor its status in the “Process Status” menu.

UNLOADING AND INSPECTION OF PARTS

UNLOADING AND INSPECTION OF PARTS

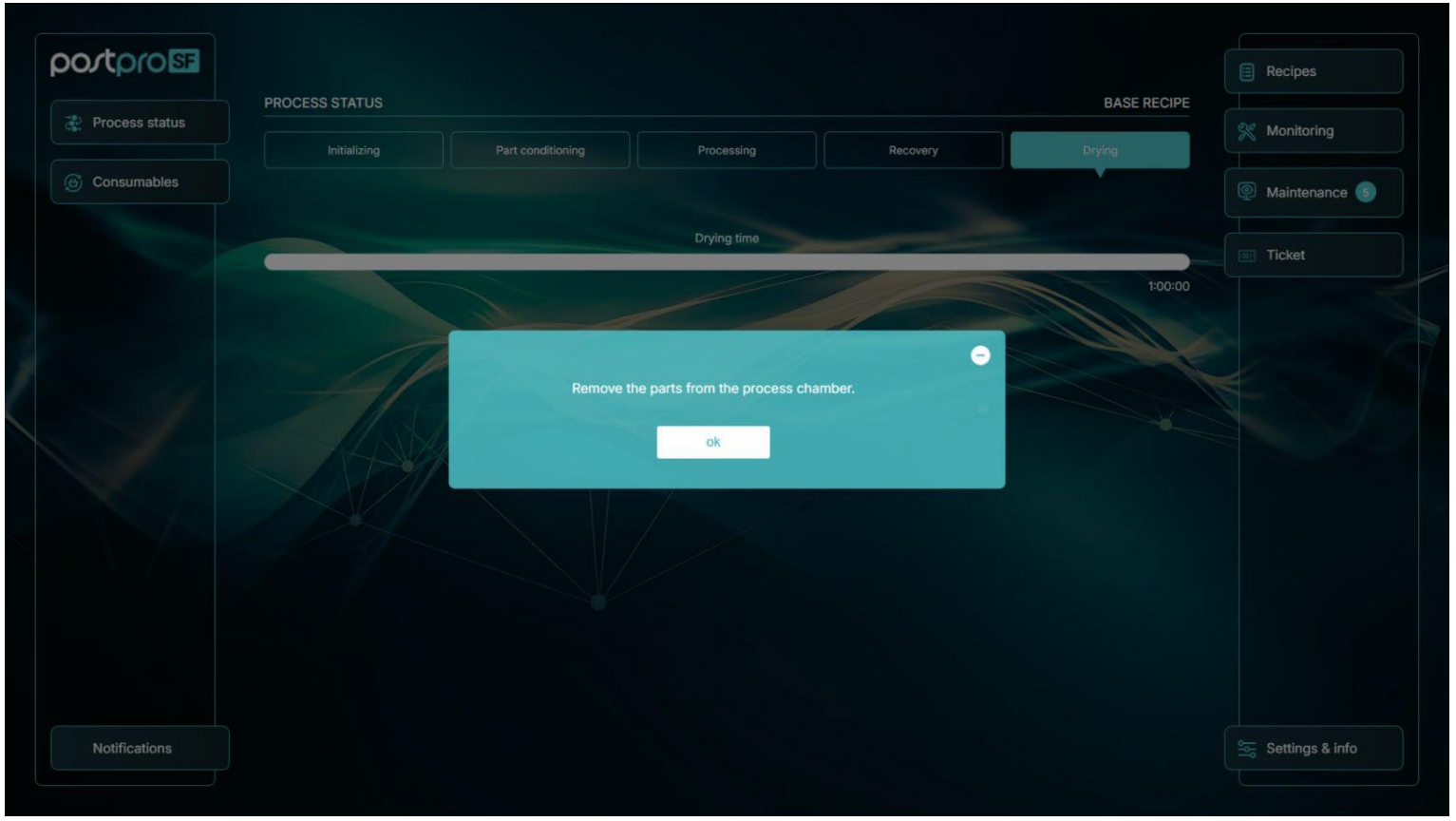


Machine prompt will appear on HMI, requesting the user to unload the parts located in the Chamber. Please unload parts from the chamber. ATTENTION! Make a use of the appropriate PPE as described in earlier version of this guide.

Please make sure you wear all the PPE before opening the door.

UNLOADING AND INSPECTION OF PARTS

UNLOADING AND INSPECTION OF PARTS

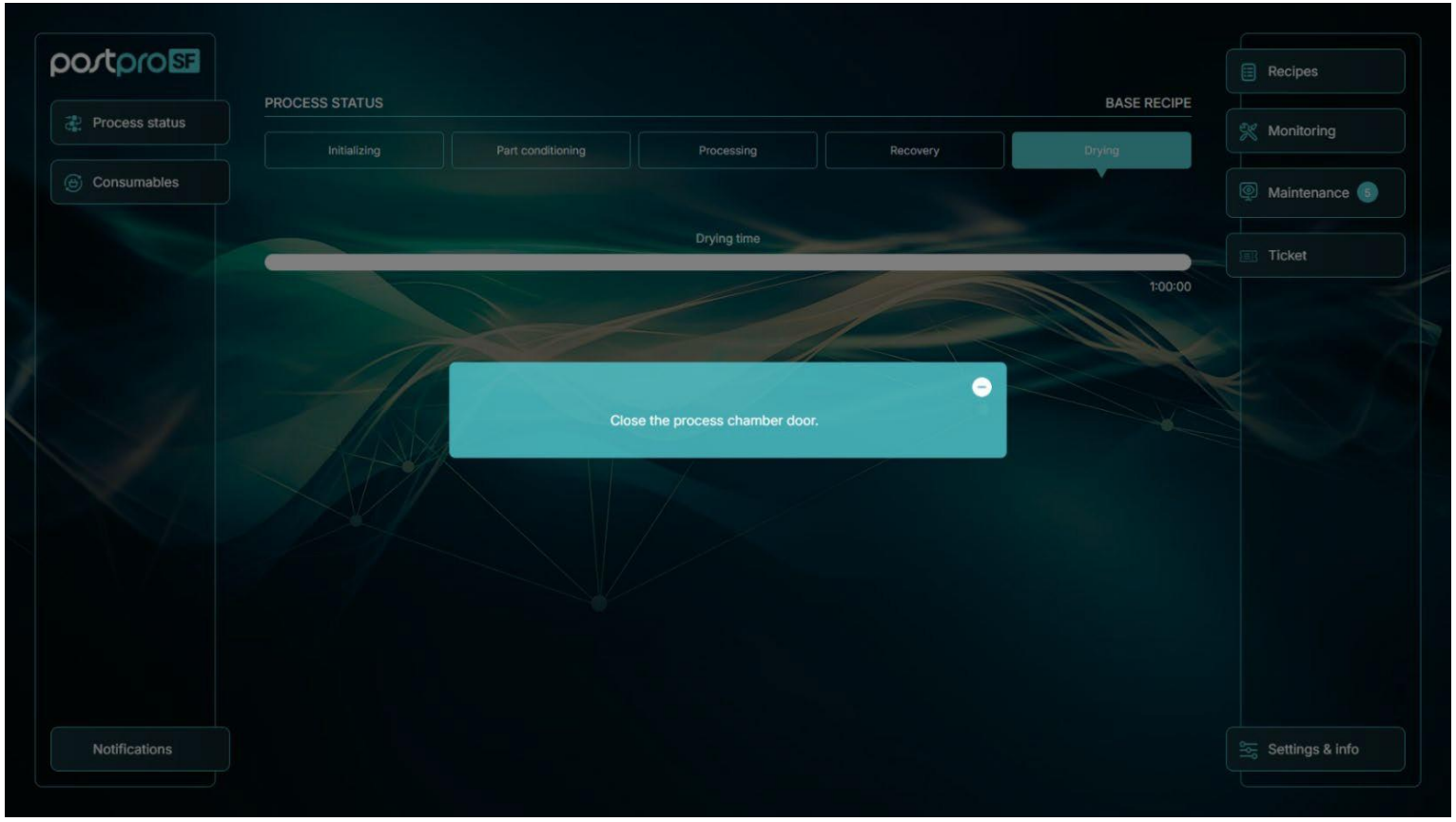


Unload the finished parts from the process chamber and press “**OK**”.

Note: If you plan to run another batch, do not load new parts yet. Wait until the new recipe has been selected and initialized before inserting parts into the chamber.

UNLOADING AND INSPECTION OF PARTS

UNLOADING AND INSPECTION OF PARTS



Press the two-hand door buttons again simultaneously to close the door, only release them when the message disappears to ensure it locks correctly.

ATTENTION! If you wish to run another process, simply select the desired recipe and start again.

POWERING DOWN THE MACHINE

POWERING DOWN THE MACHINE.

To power down the system, press the On/Off Button at the front of the machine and select the relevant option on the screen.

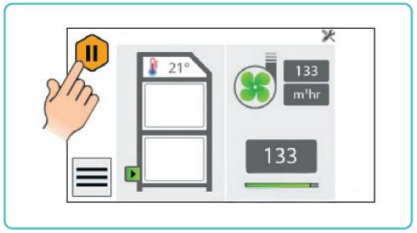


Next, turn the isolator switch to the OFF position (on the back of the machine).

The system will then fully shut down. Due to the UPS, it can take 5 – 10 minutes to fully power down.



Make sure to switch OFF the external extractor once the SF System has fully powered down.



7. Troubleshooting

UNDER-PROCESSED | Parts look the same as when they went in or have a white coating.



What can cause this issue?

1. The material is not approved for use with the AMT Vapor Smoothing technology and is not listed in the “Compatible Material List”.
2. The recipe used was not aggressive enough to smooth the parts.

How to fix it?

1. Check that the material is listed in the “AMT PostPro Compatible Material List”.
2. Verify that the recipe matches AMT’s latest recommendations. If adjustments are needed, increase the parameters in the following order:

a) Part Conditioning Time – Increasing this value with cause the parts to smooth more.
b) Chamber Wall Temperature – Increase this to the maximum possible value for your material (thin parts may need a slightly lower value).
c) Consumable Volume – When more parts are added, more consumable is needed, increase this value to increase the amount of smoothing.

OVER-PROCESSED | Sharp edges are rounded, areas are warped, or flat surfaces have defects.

What can cause this issue?

1. The recipe used was too aggressive to smooth the parts.
2. Hanging orientation or method was not suitable.
3. Depowdering was not completed effectively.



How to fix it?

1. Too much solvent was used, or the part conditioning time and process chamber temperature values were too high causing the parts to melt and deform. To rectify these, reduce the parameters in-line with the recipe book in the following order:
   a) Process Chamber Temperature
   b) Consumable Volume
   c) Part Conditioning Time
2. Adjust the hanging orientation or support the part better to avoid weak or thin areas.
3. Ensure the parts have been thoroughly de-powdered.

CONTAMINATION | Dust and/or dots of contamination are stuck to the surface of the part.



What can cause this issue? / How to fix it?

1. **Bad Printing Quality**
   - There were impurities before processing (not visible to the naked eye).
   - The quality of the printing powder is not good enough (It is contaminated or has been reused too many times).

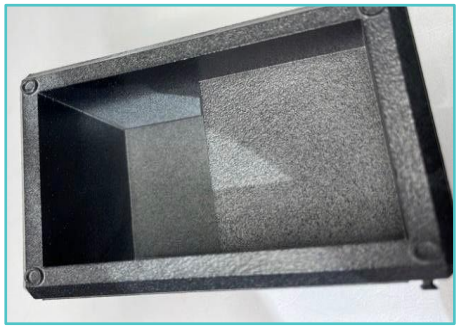
2. **Poorly Controlled Preparation**
   - The quality of the blasting media or poor cleanliness in your depowdering process.
   - Clean gloves and lab coat were not worn when handling parts.
   - Parts were mixed with parts of a different colour.
   - Storage boxes were not cleaned between use.
   - Different colour parts were smoothed in the same process run.

3. **Dusty environment and Insufficient Cleaning Process**
   - The environment varies from the recommendation outlined in the AMT Site Preparation Document.
   - Contamination inside the SF machine.
   - Chamber and racks were not cleaned as per AMT recommendation. If running different colour parts, consider increasing the frequency of cleaning.
   - If you smooth previously dyed parts, some contamination could be left in the chamber.

UN-PROCESSED INTERNAL SURFACES | There is a variation in smoothing between internal/external surfaces

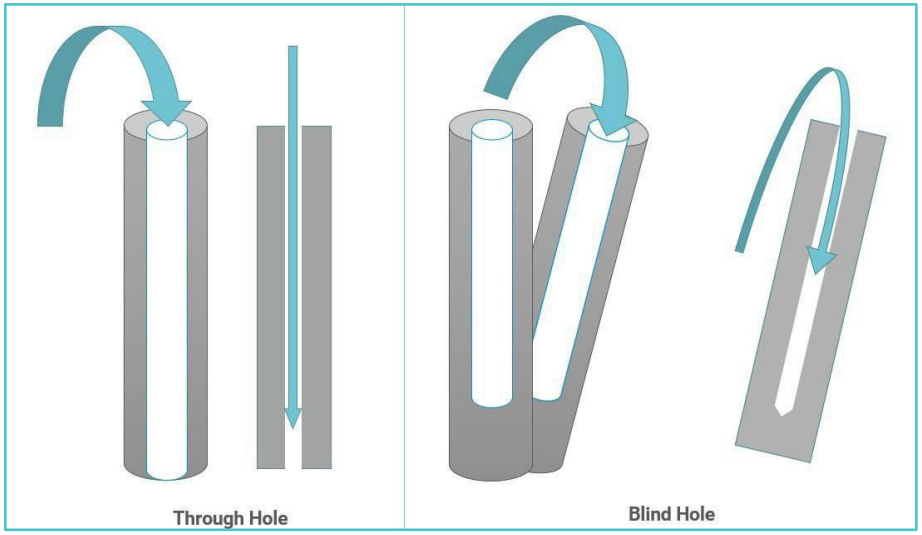
What can cause this issue?

The vapour cannot enter the internal surfaces easily.



How to fix it?

1. Make sure the opening is facing up.
2. A slightly inclined angle improves the vapour flow through the hole.
3. The through-hole can be placed vertically, but it depends on the length, geometry, and material.
4. How deep the vapor can go through depends on the length, geometry, and material. In some cases, it may not be possible to smooth the entire internal surface.



DRIP MARKS | There are drip marks where the material has been processed more than the rest of the part.

What can cause this issue?

1. The recipe used was too aggressive to smooth the parts.
2. Hanging orientation or method was not suitable.
3. The diffuser was not placed on top of the top rack.

How to fix it?

1. Check that the recipe parameters are correct as per the recipe book recommendations.
2. Adjust the hanging orientation or support the part better.
3. Avoid hanging parts directly above one another.
4. Make sure the diffuser plate is on top of the top rack.



8. Recipe and Technical Support

RECIPE GUIDANCE AND SUPPORT

Recipes are tested and defined in a controlled AMT process facility. The recommended recipes may need to be adjusted depending on your specific environment and parts. This includes room temperature, humidity, printers, materials grade/mix ratio, part geometry and quantity, hanging orientation, etc.

For this reason, it is important to note that the recipes suggested may require some fine-tuning to achieve optimal results in your facility. AMT will support you as needed.

For recipe support, please email SUPPORT@AMTECHNOLOGIES.COM and include the details below so we can help quickly.

- Printing technology
- Material grade
- Average wall thickness of the parts
- Part size and geometry
- Whether the parts have been dyed
- Number of parts to be processed
- Previous attempts, the recipe used, and the outcome

Thank You!

For more information contact AMT.

E-mail
support@amtechnologies.com

Support
amtechnologies.com/support

US
+1 737 600 0959

EU & ROW
+44 114 697 4025

