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Tips and helpful resources for Moldflow

Agenda

01 Personal introduction

02 Keep updated, get support

03 Moldflow Synergy tips

04 Valuable resources

Introduction

Who’s presenting today?

We all have a story

- Industry background:
  - 20 years career on automotive industry tier 1 companies.
  - 10 of them as a Moldflow analyst, 150-200 projects per year (executed and supervised combined).
- Tenure at Autodesk:
  - Joined 7 years ago.
  - Based in the Barcelona (Spain) office.
  - Jack of all trades and master of some. Special skills:
    - Anyone running Moldflow on Linux or HPC?
    - Synergy API scripting.

Autodesk Support

Your trusted partner

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Support by Autodesk

How and where

- How familiar are you with Autodesk Customer Support?
- Give the in Moldflow Autodesk Assistant a try! Answers based on the Moldflow help and Autodesk Knowledge articles.
- Autodesk Assistant on the Autodesk site, the door to Autodesk support team:
  - Article suggestion based on the prompt.
  - Forwarded to support team when needed.
- Main options, depending on contract: Web support, or Schedule a Call (have a specialist call you)
- Knowledge Articles are findable through regular web search.
- We like hearing from you, provide feedback on case closure:
  - Autodesk Support in general, and the individual specialist.

Keep Moldflow updated

Apply updates, try latest release

- Moldflow 2027 is live! Announcement in the Moldflow forum.
- Moldflow software is updated by:
  - Complete side-by-side updates, which can coexist (2021.1, 2021.2).
  - On-top updates, which modify the existing installation (2026 becomes 2026.0.1).
- Some components have now individual update schedules:
  - From Moldflow team: Moldflow Material database, Moldflow Python API.
  - General components: Autodesk Licensing Service, Autodesk Shared Components.
- Where to get them:
  - Product updates section in Autodesk Account (https://manage.autodesk.com/products/updates)
  - Autodesk Access app.

Synergy tips

Options, meshing, and automation

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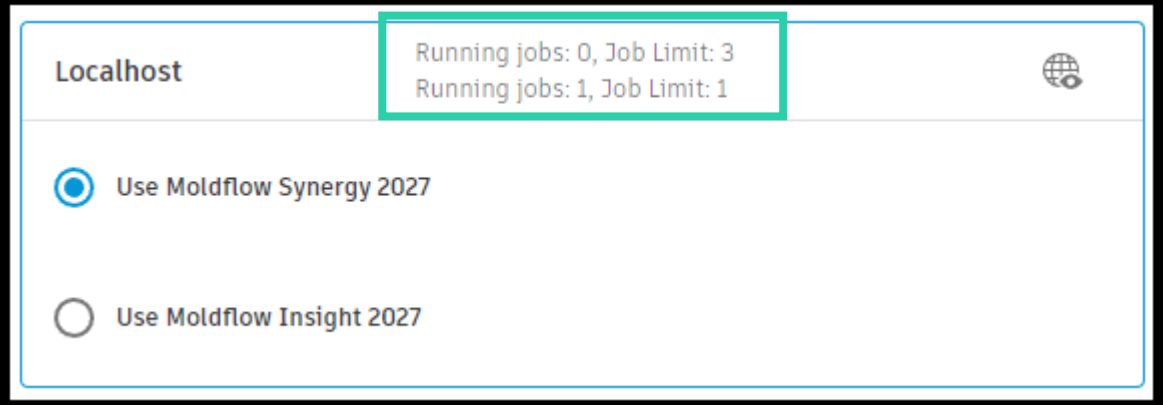
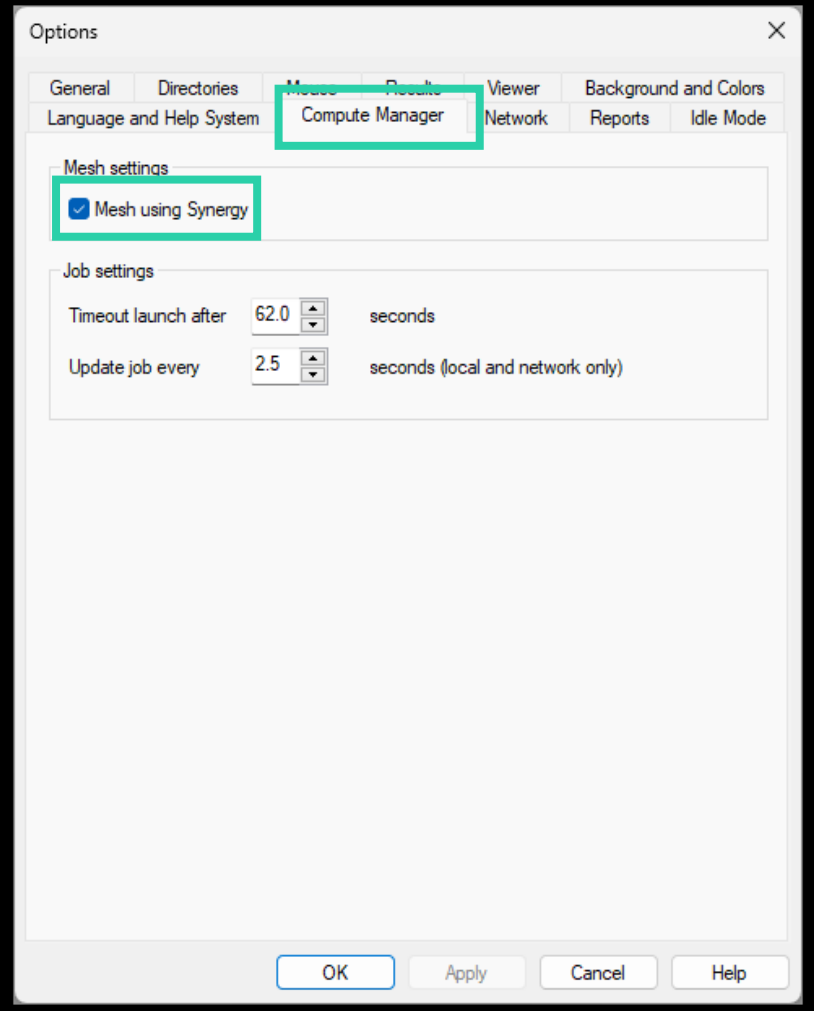
Options

Mesh using Synergy

- Mesh with Insight consumes a slot from the defined job limit.
- Mesh with Synergy to use specific queue and job limit:
  1. Click Options.
  2. Navigate to Compute Manager Tab.
  3. Enable “Mesh using Synergy”.

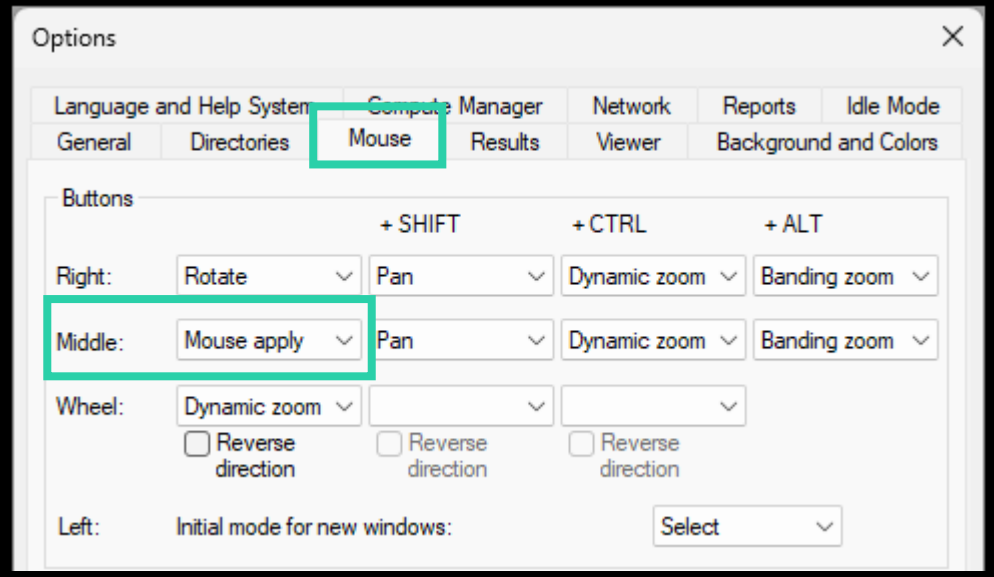




Options

Customize mouse button

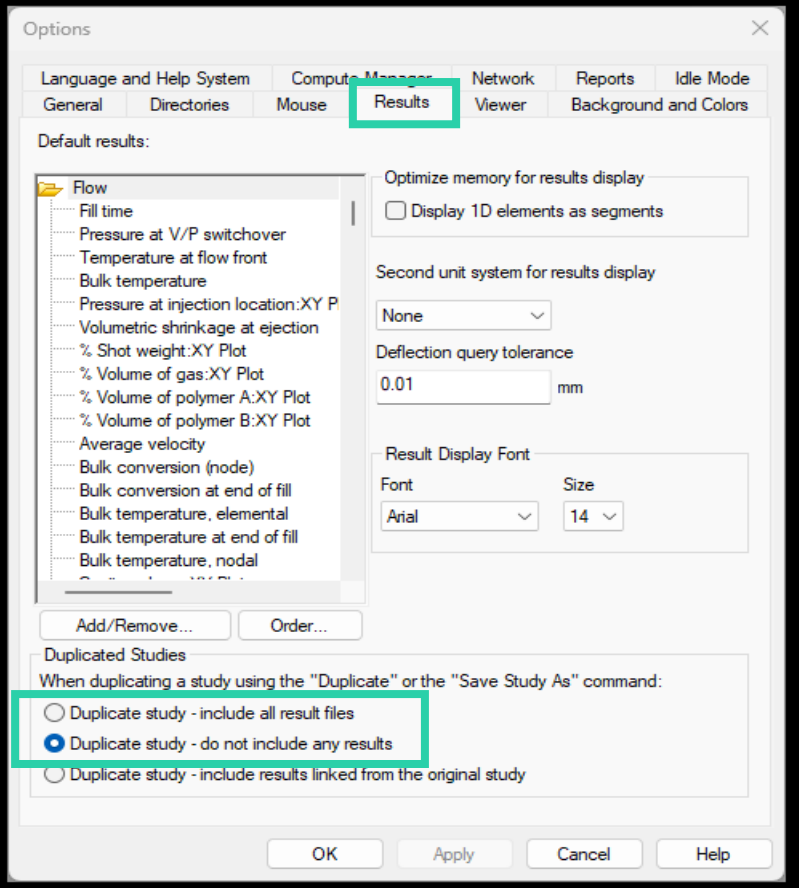
- On large monitors apply button is far away from last click location.
- Save time and movements by configuring center mouse button:
  1. Navigate to Mouse tab.
  2. Set “Middle” to “Mouse Apply”.



Options

Customize duplicate behavior

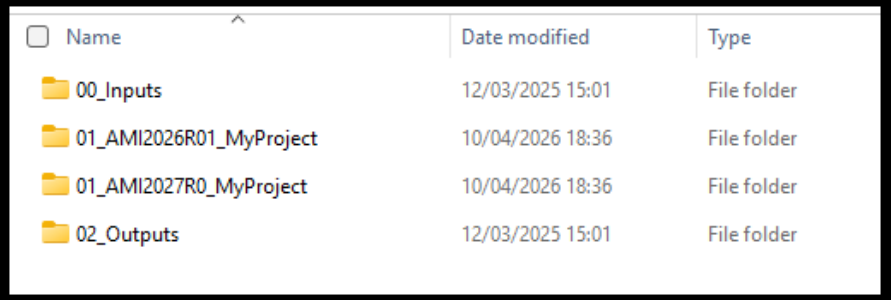
- Default behavior:
  - “include results linked from the original study”.
  - Intends saving disk space.
  - Same result file is shared by multiple studies, risk of losing results.
- My recommendation:
  - Use “Do not include any results”, to not have results linked.
  - When intended, set “Include all results files”. Use cases:
    - Cool+Fill+Pack, reuse Cool but run Fill and Pack again.
    - Fill+Pack+Warp, reuse Fill and Pack and rerun Warp.

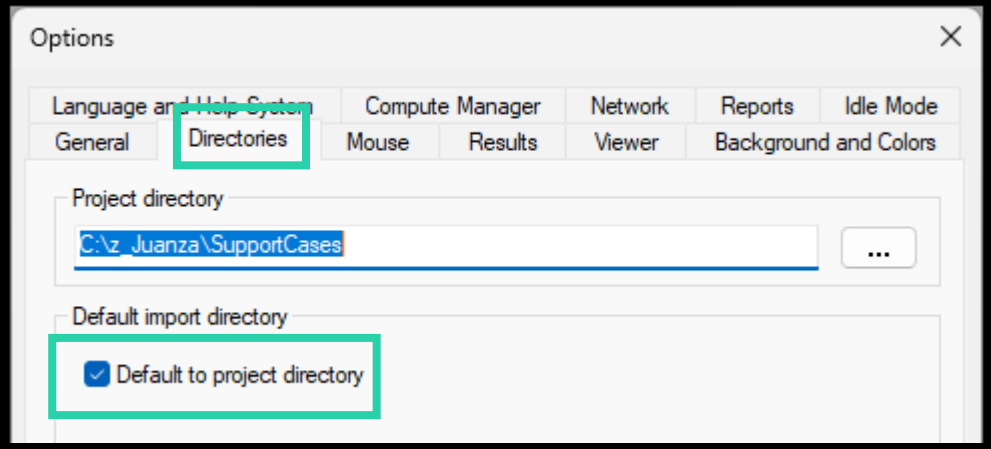


Options

Predictable import folder

- Default behavior: Import from last used folder.
- Use a project centric folder structure, and import from a folder next to the Moldflow project folder:
  1. Click Options.
  2. Navigate to Directories tab.
  3. Enable “Default to project directory”.

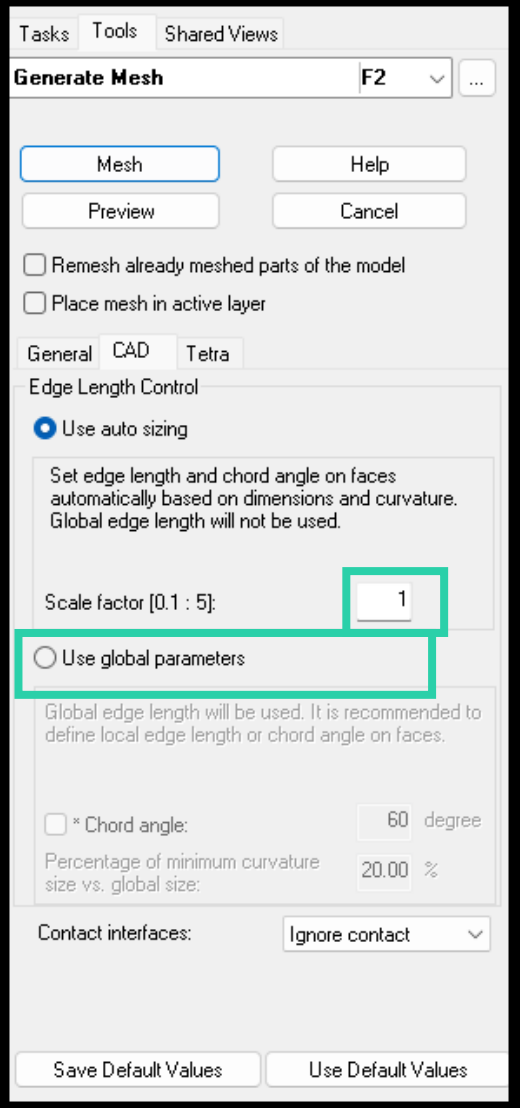




Meshing

Try different parameters

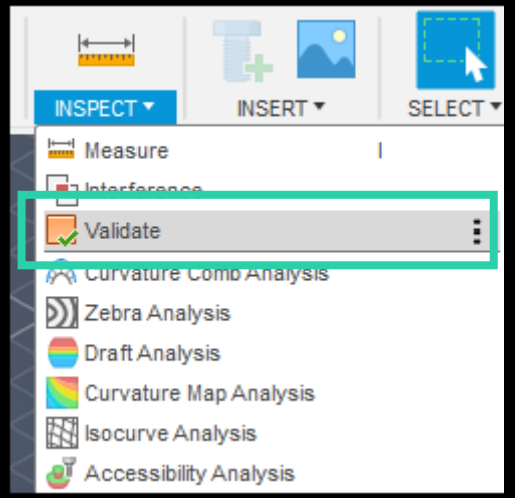
- Try different parameters, small changes matter:
  - When using auto sizing, try with values like 0.7 or 1.2.
  - Give the old “Global parameters” method a try.

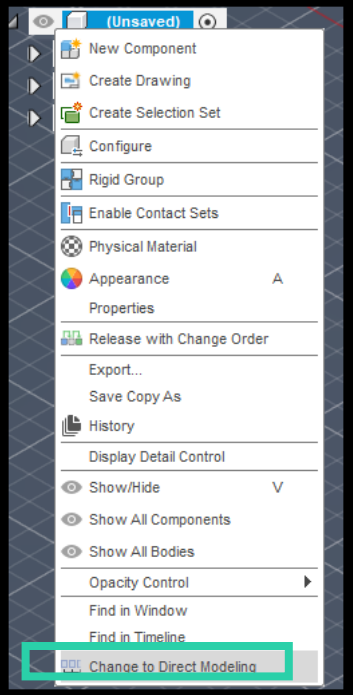


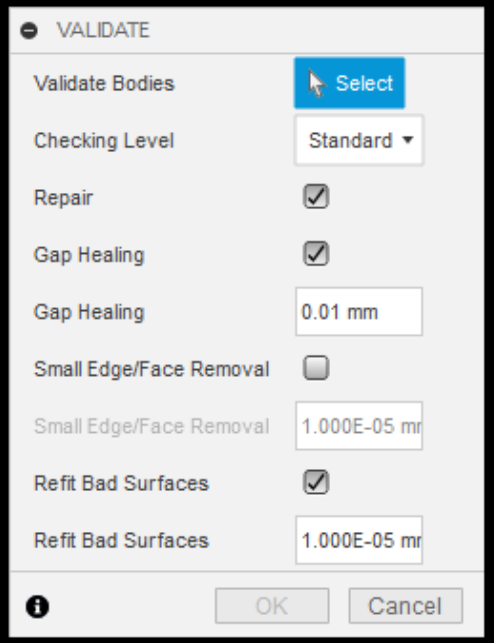
Meshing

Fusion tip: Validate and repair

- Rely on a CAD software like Fusion to repair the CAD model:
  - Change to parametric modeling mode.
  - In Validate tool, enable repair and try different parameters.
- Delete faces, stitch, unstitch, and create patches.



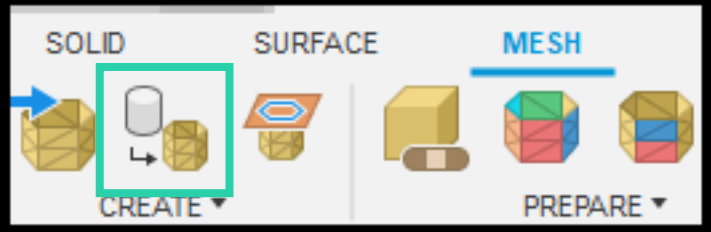


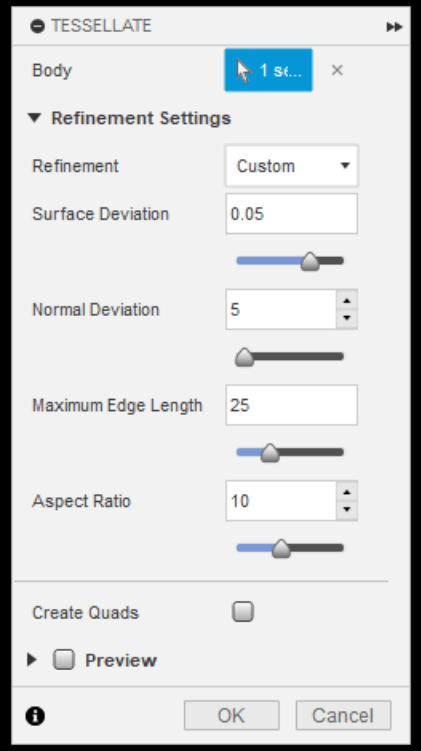


Meshing

Fusion last resort: Tessellate

1. Import the model in Fusion.
2. In the Mesh ribbon click Tessellate.
3. Adjust parameters:
   - Surface deviation, will control thickness mapping.
   - Normal deviation, will cap the triangles size.
   - Aspect ratio, will influence general quality.
4. Export from Fusion in STL format.
5. Import in Synergy and mesh.

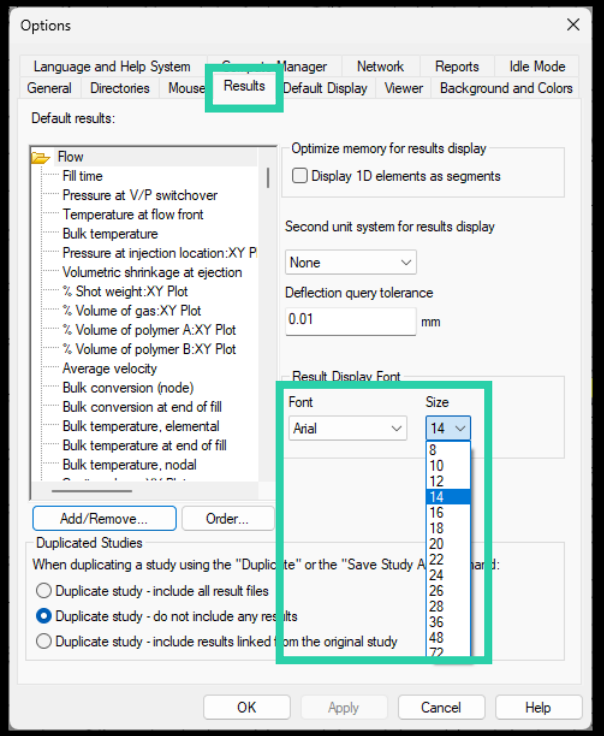




API Automation

Example: Human readable results in screenshots

- On typical screenshots, the scales and values are barely readable.
- Strategy one: Make text larger
  - Pros: You may want to keep it for regular daily use.
  - Cons: If not happy with it, it requires manual adjustment on every use.
- My suggested strategy: Make image smaller and report friendly.
  - Pros: It can be automated! No need to resize once pasted.
  - Cons: None to me!



SetViewSize_Big_1168x750.py

```
1  # %RunPerInstance
2
3  from moldflow import Synergy
4
5  synergy = Synergy()
6  viewer = synergy.viewer
7  viewer.set_view_size(1168, 750)
```

API Automation

Example: Automated deletion of RFN files

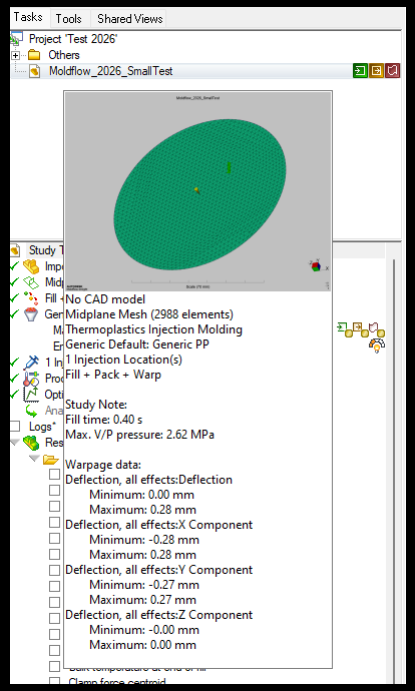
- Nobody likes it, but sometimes we must delete RFN files.
- It can be easily automated, starting with the project opened in Synergy:
  - Read project folder.
  - Close project.
  - Delete RFN files.
  - Reopen project.

```python
# %RunPerInstance
import os
from moldflow import Synergy

# Delete files based on folder path and file name extension
def delete_files_with_extension(folder_path, file_extension):
    # Remove trailing backslash if it exists
    print(folder_path)
    if folder_path.endswith('\\'):
        folder_path = folder_path[:-1]

    # Loop through the files in the folder
    for file_name in os.listdir(folder_path):
        # Check if the file has the specified extension
        if file_name.lower().endswith('.' + file_extension.lower()):
            file_path = os.path.join(folder_path, file_name)
            os.remove(file_path)
            # print(f"Deleted file: {file_path}")

# Check if the project object is actually valid/open
def check_active_project(project):
    if project is None:
        # MessageBox.error("Project must be open before running this script.")
        sys.exit()

synergy = Synergy()
# Read active project into "project"
project = synergy.project
# Call check_active_project to make sure there was an active project.
check_active_project(project)
# Extract path from project while the objectt still exists.
project_path = project.path
# Close the project.
project.close()
# Call the delete_files_with_extension function with arguments project_path and "rfn" (the target files).
delete_files_with_extension(project_path,"rfn")
# Reopen the most recent project, which happens to be the one we just closed.
synergy.open_recent_project(0)
```

API Automation

Example: Add information to study notes

- Study notes are a handy place to store information.
- Can be reviewed without opening the study, by hovering over it.
- It can be easily automated, starting with the project opened in Synergy:
  - Collect existing notes as temporary notes.
  - Find plots by name.
  - Query values from plots (max, min).
  - Append information to temporary notes.
  - Once collected, write notes to study.

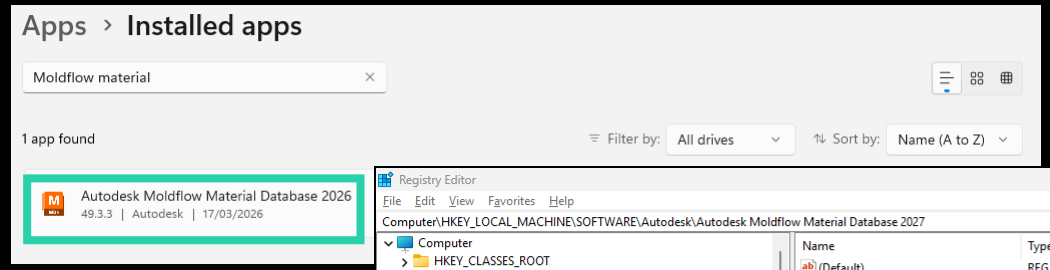


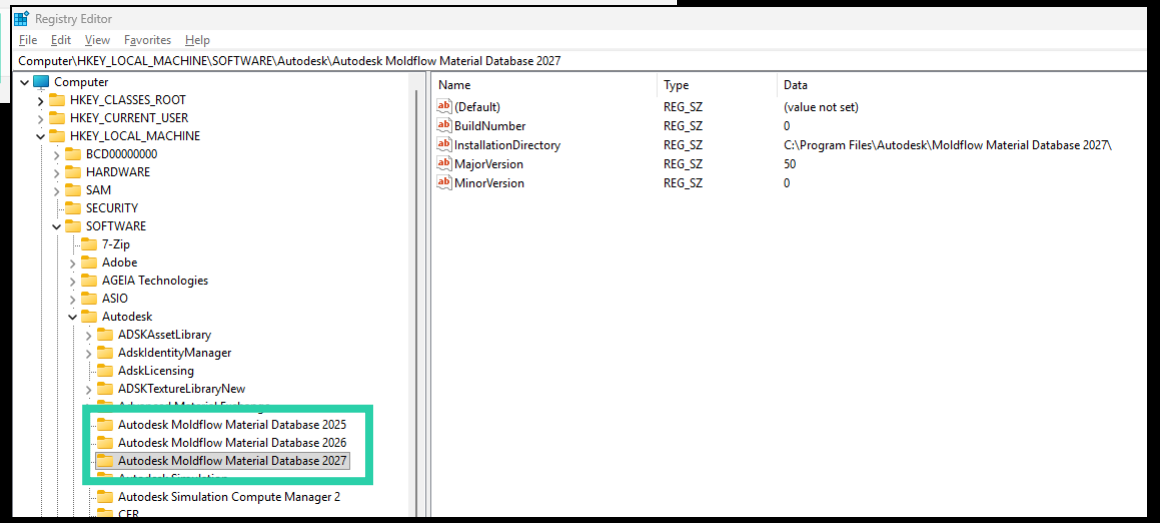

```python
##RunPerInstance
from moldflow import Synergy
int_decimals = 2
synergy = Synergy()
study_doc = synergy.study_doc
plot_manager = synergy.plot_manager
viewer = synergy.viewer
str_notes = study_doc.notes
plot = plot_manager.find_plot_by_name("Fill time")
max = plot.max_value
str_notes += f"Fill time: {max:.{int_decimals}f} s\r\n"
plot = plot_manager.find_plot_by_name("Pressure at V/P switchover")
max = plot.max_value
str_notes += f"Max. V/P pressure: {max:.{int_decimals}f} MPa\r\n"
str_notes += f"\r\nWarpage data:\r\n"
str_results = [
    "Deflection, all effects:Deflection",
    "Deflection, all effects:X Component",
    "Deflection, all effects:Y Component",
    "Deflection, all effects:Z Component"]
for str in str_results:
    plot = plot_manager.find_plot_by_name(str, "Deflection, all effects")
    min = plot.min_value
    max = plot.max_value
    formatted_values = (
        f"{str}\r\n"
        f"\tMinimum: {min:.{int_decimals}f} mm\r\n"
        f"\tMaximum: {max:.{int_decimals}f} mm\r\n"
    )
    str_notes += formatted_values
    # Hide the plot
    viewer.hide_plot(plot)
study_doc.notes = str_notes
```

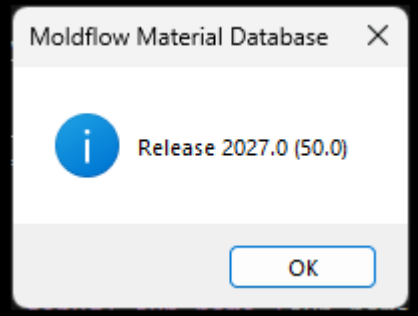
API Automation

Example: Confirm installed Moldflow Materials Database version

- It’s hard to find:
  - When no update is installed, it’s not listed in add or remove programs.
  - Only updates are listed.
- The actual information is in the Windows Registry. Until reported somewhere else, let’s check it through scripting.







API Automation

Highlights: The new Python interface

- It's an addon, VBScripts still work!
- The documentation is available online at Moldflow API. If using an AI tool, configure it to check it.
- Update cycle is decoupled from main Moldflow release. Check for updates and Manage Synergy's Python Interface!
- Scripts launched within Synergy:
  - Run within a self-contained Python virtual environment (venv) in the user's local "appdata" folder.
  - Extra packages (python-pptx, NumPy, etc.) must be added to the venv.
- Scripts launched outside Synergy:
  - Run in the default Python environment in the computer.
  - Extra packages are added to the main Python environment.

Valuable resources

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Autodesk University classes

- Reporting:
  - Learn to Create Professional, Stunning Reports with MS Office and the Synergy API
- Simulation strategies and warpage results interpretation:
  - Battle Royale—a Clash of Injection Molding Approaches Using Moldflow Insight
  - Battle Royale—Round 2: The Continued Clash of Approaches Using Simulation Moldflow
- Synergy API fundamentals:
  - The Autodesk Moldflow Synergy API part 1: An Introduction
  - The Autodesk Moldflow Synergy API part 2: Building real world applications
- Autodesk University site

Moldflow Summit

- Moldflow Summit 2025:
  - Tips and Tricks from the Detroit Moldflow User Group
  - Improving Part Dimensions Through Mold Compensation (Windage)
  - Moldflow Mondays – Round 2
- Moldflow Summit 2024:
  - Shrinkage adjusted constraints: Volvo's solution to warpage challenges
  - The unsung heroes: stories from the Moldflow help desk
  - Moldflow Insight: Where voids go to hide (and how to find them)
- Moldflow Summit 2023:
  - Moldflow Monday's - Miscellaneous Moldflow concepts, workflows, & best practices
  - Shrinkage compensation, and what to do with it?
- Moldflow Summit site

Key take-overs

What you should remember?

- Contact Autodesk Support, we are here to help you!
- Customize your environment to suite your needs.
- Give Synergy API automation a try!
- Invest time on yourself: Explore all available resources.

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Make Anything