MSCMF Studio 2.0 - implemented scope and reproducibility
Date: 2026-10-05

Windows: compiled native desktop with 20 workspaces. Apple macOS and Linux:
editable Python sources and local build launchers; no native binaries tested.
Quantum: target selector and OpenQASM 3 two-qubit interoperability diagnostic.
Diagnostic probabilities are checked with a classical simulator. No QPU run,
quantum speedup or many-body engineering solution is claimed.

Appearance: five palettes, five font choices, five sizes, transparency/palette
effects, tab navigation, zoom, resizable windows, independent workspace windows.
Navigation has EN/DE/FR/ES/IT/PL; detailed new controls/manuals remain English.
Google Translate opens the official service; there is no automatic API translation.
Default export profile is 4K. The desktop fits the physical monitor. It does not
turn a lower resolution monitor into 4K. Renderer has 4K/8K/16K GPU snapshot
exports, guarded by estimated RAM budget. GPU texture limits can still prevent
export. Molecular denotes physical units, not a display resolution. No proprietary
holographic display/projection driver is implemented.

3D: Panda3D interactive wing study, mouse orbit and wheel zoom, shaded materials.
Shadow mapping was disabled after artifacts on the tested GPU. This viewer is
not Unreal Engine and does not yet meet the requested complete photoreal scene.
The generated startup image is an artistic concept, not a measured structure.
The 640x640 logo and 256x256 icon are packaged from the generated master asset.

Resource policy: floor(2 N/3) workers, at least one. CPU affinity restricts worker
processes where supported. Admission is min(2/3 installed RAM, 80% available RAM).
Aggregate worker RSS is monitored against the 2/3 RAM ceiling. This is not a hard
OS memory reservation; already-running work can overshoot before the next check.
The short SHA-256 and 8 MiB copy benchmark calibrates simple task scheduling,
not FEM/DFT/GPU throughput. Variant generation exports study JSON and OBJ into
BM/Project/assemblies/part/variant directories. It does not generate pressure-rated
parts, certified screws, CAM programs or manufacturing release.

LOCAL CLIMATE MODEL: area-normalized homogeneous air/soil control volume.
Inputs: hourly temperature, humidity, surface pressure, 10m wind, precipitation,
shortwave radiation; soil and heat/moisture-transfer coefficients remain editable.
Baseline and intervention share identical historical meteorological forcing.
Intervention changes shading, mist water and drip delivery. Outputs hourly air
and soil temperature, relative humidity, liquid/total soil water, evaporation,
condensation, water application and drainage. Rain, water inflow, evaporation,
drainage, radiation, deep-soil conduction and atmospheric exchange all carry energy.

Definitions per square metre: M dry-air mass [kg/m2], w humidity ratio [kg/kg],
W total soil water [kg/m2], U air enthalpy [J/m2], Es soil enthalpy [J/m2].
u(T,w) = (cp_air + cp_vapour*w)*T + (Lf+Lv)*w.
Liquid-water enthalpy hl(T) = Lf + cp_water*T; ice hi(T)=cp_ice*T.
Soil phase law: Es<0 -> T=Es/(Cs+cp_ice W), liquid=0;
0<=Es<=Lf W -> T=0, liquid=Es/Lf;
Es>Lf W -> T=(Es-Lf W)/(Cs+cp_water W), liquid=W.
Cs is dry matrix areal heat capacity [J/(m2 K)].

Mass equation: M dw/dt = A(w_ext-w) + E_soil + E_mist - C_air.
Soil: dW/dt = P + I_drip + I_mist_ground - E_soil - D + C_air.
A [kg dry-air/(m2 s)] is an empirical ventilation rate; all other mass fluxes
are water [kg/(m2 s)]. Condensation and soil-air exchange are internal transfers.
Shortwave: (1-albedo)*(1-shade)*SW. Longwave loss uses emissivity*sigma*(Ts^4-Tsky^4).
Deep soil conduction: G*(Ts-Tdeep). Convective heat: H*(Ts-Ta).

Sky temperature and transfer coefficients need site calibration.

DISCRETE CONSERVATION IDENTITY: internal exchange transfers +Q dt into U and -Q dt into Es; condensation transfers the same water and enthalpy from air to soil. Their combined residual is exactly zero algebraically. Boundary exchange uses the same flux in the update and cumulative balance. The reported relative residual is |state change - cumulative boundary transfer|/(1+sum|boundary transfer|). This verifies bookkeeping and arithmetic, not the correctness of empirical closure.

Numerical evidence: four warm/humid/frost 72h cases, energy/water residual below 1e-9; saturation-pressure comparison to PsychroLib, -70..70 C. Step refinement 300 ->150 ->75 seconds reduces the tested maximum air difference between steps from 0.642 C to 0.358 C. No 99.99% temperature-accuracy claim follows. Berlin 2025 integration fixture uses 8760 hours and completes both scenarios. It is a test site, not an automatically selected project location or forecast. Historical forcing cannot predict changes in regional circulation or clouds.

REQUIRED NEXT EVIDENCE: calibrated transfer/soil/optical parameters; sensor time series at untreated and treated reference plots; withheld-season comparison; measurement uncertainty and spatial coverage; grid/time convergence; canopy and root uptake models; regional atmosphere-land coupling and ensemble uncertainty. Snow insulation, snow albedo and vegetation physiology are not implemented. The model does not establish a universal flora/fauna optimum, 28 C cooling, regional greening, structural safety or production feasibility.

Book library: 12,742 extracted PDF pages and candidate text records available; duplicate/code detection and 12 separately verified mathematical identities are included. The complete source corpus has not been scientifically reconstructed. Books 41/42, encrypted/corrupt variants and image-only equations remain gaps. All-source formulas are data, never executed as supplied code. BM1-6 start is saved; higher stages remain an information option requiring an explicit request.

REFERENCES

https://github.com/psychrometrics/psychrolib
https://www.fao.org/4/x0490e/x0490e06.htm
https://www.fao.org/4/x0490e/x0490e08.htm
https://www2.mmm.ucar.edu/wrf/site/users_guide/physics.html
https://open-meteo.com/en/docs/historical-weather-api
https://docs.panda3d.org/1.10/python/programming/render-to-texture/index
https://openqasm.com/versions/3.0/intro.html

MSCMF Studio 2.0 - Native Windows workbench

START: MSCMF_Studio_2_0.exe or Start-MSCMF.cmd. Keep _internal beside the EXE. The installer creates a Start Menu shortcut. No browser UI is required.

BM SELECTION: Open Projects in the left rail. At the top choose Startstufe / Start BM between 1 and 6. Work planning ends at BM6. The extension button only displays information; it enables no higher stage. Save project retains the selected BM, model inputs, gas, automatic calculation settings, location and formula notes. BM levels are source/workflow labels; verified engineering meaning remains open.

AUTOMATIC SIZING: Open Automatic sizing in the left rail. Country defaults to the OS user region where available. This is not verified GPS/IP positioning. Choose country, enter a town, use Find town coordinates and confirm the result, or enter latitude/longitude directly in geodetic WGS84 degrees. Coordinates remain editable. Select a completed historical year. Load annual weather retrieves complete UTC

hourly reanalysis. Missing/invalid hours block use; no values are invented.
The 10 m wind record is not a certified 200 m design wind.

Choose hydrogen or helium. The entered and all loaded weather states must have gas density <=50% of air. Apply 1:4 dimensions calculates thickness/chord=1/4 with a closed-form static-buoyancy balance. Values are copied into the Wing panel and remain editable. Structure mass is a fixed user assumption, not a proven scaled structural design. No fire/leak, cable, wind, buckling or fatigue release. Hydrogen lifecycle evidence is required. Helium is nonrenewable.

AUTOMATIC UPDATES: Setup enables recalculation on input changes. Linking climate peak flow to coast demand is a separate explicit toggle. Invalid upstream inputs block dependent outputs. A loaded project requires reloading annual weather.

LIBRARY: Source library contains searchable source texts and variants. These are not fully verified equations. Original paths refer to the supplied books on D: and Desktop. Original book files are not duplicated in the installer. Source coverage has gaps: Books 41 and 42 missing, protected PDFs/corrupt DOCX recorded. The Verification workspace shows the bounded mathematical audit and 12 checked identities. Whole-book physical/material approval and 99.99% feasibility remain open.

PROJECTS: 16 initial work packages can export separate planning directories with assemblies and part requirements. Empty part requirements are not fabrication CAD. The patent PDF button creates an evidence worksheet, not a filing-ready patent, novelty finding or EU conformity declaration.

DOCUMENTS: Existing specifications/concept media and the new mathematical reports. Older source documents retain their original model/version assumptions.
The prior five-volume synthetic atlas remains a separate historical delivery.

BUILD: Source/Build-Windows.cmd needs Windows x64 Python 3.12 with Tcl/Tk and py. Bundled wheels install PyInstaller, Pillow and ReportLab offline. PyInstaller packages Python runtime/bytecode; it is not a C++ or Unreal compiler. Source/build-tools/InnoSetup supplies the installer compiler and its license. Build-Installer.cmd builds an application-only installer after Build-Windows.cmd. macOS/Linux source launcher is supplied but untested. No operational QPU backend. No Unreal renderer, regional climate simulator, manufacturing toolpaths or technical approval are provided by this software release.

Sources:
https://open-meteo.com/en/docs/historical-weather-api
https://open-meteo.com/en/docs/geocoding-api
https://learn.microsoft.com/windows/win32/api/winnls/nf-winnls-getuserdefaultgeoname
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https://www.usgs.gov/news/national-news-release/usgs-estimates-306-billion-cubic-feet-recoverable-helium-united-states