MSCMF NATIVE / PRELIMINARY PRODUCTION SPECIFICATION

1. Release status and agreed interpretation

This is a controlled preliminary production specification and a native Windows screening program. It is not a manufacturing release. The latest model is a hollow wing with gas-filled internal chambers and two water-filled pipeline reference sections, independent parallel ground drip rows and drainage up to the halfway boundary between adjacent wing routes. Cooling is limited to a requested maximum difference of 28 degC and stops at a user-entered air target. The code does not choose a universal biological optimum.

2. Air, soil, humidity and dew point

The user specifies air and soil temperatures, target temperatures and acceptable relative-humidity range. Example values 26 degC air, 24 degC soil and 40-70 percent RH are hypotheses, not recommendations for all plants. Dew point uses the logarithmic inversion of the vapor-pressure approximation; VPD is saturation vapor pressure minus ambient vapor pressure. The wet-bulb screen uses a constant-enthalpy saturation approximation. If the target is below this limit, evaporative-only cooling fails the necessary-condition test. A computed air temperature cannot establish root temperature, leaf temperature, thermal comfort or biodiversity.

3. Coupled water accounting

Ground drip uses crop-factor reference evapotranspiration minus effective rainfall, divided by application efficiency. Spray demand uses an assumed local heat load and sensible inflow from an assumed wind-driven air layer. Local retained cooling fraction is entered explicitly. Evaporation and mean falling speed are assumptions, not measured nozzle behavior. Spray and drip quantities are added without crediting unmeasured spray deposition. Peak combined flow can be explicitly imported into the two-coast hydraulic tab. Peak flow and daily average must not be confused. No control loop is claimed to reach either the air or soil optimum.

4. Multiple ground pipes and half-distance service

A measured wetting radius defines a square emitter layout for an illustrative square local zone; rows and emitters are rounded upward to cover its boundaries geometrically. This does not prove adequate moisture distribution at root depth. Drainage spacing uses the steady Hooghoudt expression with separate conductivity inputs above and below drain level and an entered equivalent depth. Enough parallel drains are added within each wing-route bay to respect the calculated spacing. Each wing route has a conceptual half-bay service boundary on both sides. An outfall, salinity balance, recharge history, soil layering and groundwater restrictions are required before installation.

5. Wing buoyancy and gas options

Air and gas density are calculated using the ideal-gas relation at entered pressure and temperature. The net static lift is displaced air mass minus gas mass. It must exceed both full water-pipe mass and all non-water mass with a selected reserve multiplier. Biogas60 is explicitly an assumed 60 molpercent methane / 40 molpercent carbon-dioxide mixture, not a measured plant product. Methane-rich gas, helium, hydrogen, nitrogen and air are separate scenarios. Upgrading biogas requires measured feed composition, contaminant removal, separation recovery, energy use and methane-loss accounting. Air separation does not produce helium or hydrogen from ordinary air at useful bulk concentrations. Nitrogen has only a small density advantage over air at equal conditions. No gas-production process is engineered or labeled sustainable by default. A failed free-static-lift balance identifies additional support demand; it does not alone disprove cable-supported construction (Book58 physical pages 155-157).

6. V-tail and mechanical interfaces

The static restoring moment estimate uses effective tail area, normal-force coefficient, wind speed, lever arm and a 15-degree yaw angle. It is compared with an entered opposing torque. A free yaw pivot, suitable aerodynamic center, rotary/flexible pipe connections, damping and travel limits are prerequisites. No aeroelastic, fatigue, gust, cable or anchor solution is supplied. A fixed pipeline corner cannot simply rotate without designed interfaces.

7. Two coastal plants and equal outlet pressure

The model solves a straight uniformly loaded corridor fed from both ends. It balances Darcy losses and imposed piezometric heads to locate the zero-flow divide. Source heads, terrain and steady demand are assumptions. Uniform pressure everywhere in a flowing main is not possible without pressure gradients. Equal regulated outlet pressure requires actual valve and booster design, not merely the available-head screen. SWRO feed, permeate, brine and electricity follow assumed recovery and specific energy; membrane chemistry, intake, outfall, pretreatment and operating reliability remain open.

8. Parts, materials and fabrication data

Concept OBJ geometry contains an illustrative symmetric airfoil outer surface and two pipe reference surfaces in metres. It is not a boolean-subtracted solid, complete gas-cell pressure structure, watertight printable assembly or shop drawing. Wall thicknesses, material grades, laminates, gas barriers, seals, bearings, welds, fasteners, supports, tolerances and inspections are not invented. Procurement should prioritize qualified existing pipes, emitters, valves and membrane components. The user preference for cheaper material and thicker sections requires quantified lifecycle and structural comparison, not an automatic replacement rule.

9. Native application and reproducible build

MSCMF_Native.exe uses native Tk widgets and Python numerical kernels. It does not open an HTML application. Google Translate is an optional external website button and receives no project automatically. Native calculations, conditional ROI with linked water demand and unit energy, JSON save/load, concept OBJ export, a rotating procedural planet globe, six navigation/field-label languages and PDF access are included. Scientific output keys and reports are English. The build source includes a pinned PyInstaller packaging recipe. This is not a C++ compiler or Unreal Engine application; no Unreal Editor was found at the inspected installed paths.

10. Exoplanet data and visual boundary

The source snapshot contains the 100 nearest eligible confirmed planets with a known distance and no controversial flag, selected client-side from the NASA composite table. It includes 703 fields per planet. Composite values may use different papers and inferred estimates. Unknown fields remain null. All surface textures and native sphere colors are procedural inventions, not observed maps. Catalog equilibrium temperature is not a measured ground temperature. Molecular resolution, exomoon environments and full atmospheric simulations are not implemented.

11. Large-document request

Five 32000-page volumes contain 160000 distinct synthetic input cases with equations, outputs and limitations. They are a parameter atlas, not 160000 independently proved theorems or physical tests. A 5001-page review selection contains one introductory page and 1000 sampled cases from each volume. It is not the user-mentioned unseen original book. The original supplied books are retained as sources; no missing book text is reconstructed as fact. The requested page count is a user-defined delivery target, not a universal PDF format page limit.

12. Qualification and scientific completeness

The 44-category evidence register remains open. Numerical tests verify selected arithmetic and software behavior, not 99 percent project feasibility. Qualification requires site-specific water, soil, environmental, structural, gas, manufacturing and operational evidence with independent replication. Full scientific completeness can only be assessed against a defined system and operating envelope. The software does not claim to implement every scientific method or guarantee life everywhere.

13. References

NASA Exoplanet Archive https://exoplanetarchive.ipac.caltech.edu/docs/API_PS_columns.html ; EPA biogas https://www.epa.gov/lmop/renewable-natural-gas ; FAO drainage https://www.fao.org/fileadmin/user_upload/faowater/docs/Guide62Web.pdf ; FAO drip https://www.fao.org/4/s8684e/s8684e07.htm ; ASHRAE evaporation https://handbook.ashrae.org/Handbooks/A23/SI/A23_Ch53/a23_ch53_si.aspx ; EPA EPANET https://www.epa.gov/water-research/epanet . These sources support selected principles, not the

proposed complete system.

WING INPUT DICTIONARY

chord = 80.0 (editable scenario default, not measured site data)

thickness = 20.0 (editable scenario default, not measured site data)

span = 20.0 (editable scenario default, not measured site data)

shapeFactor = 0.65 (editable scenario default, not measured site data)

voidFraction = 0.85 (editable scenario default, not measured site data)

pipe1 = 1.2 (editable scenario default, not measured site data)

pipe2 = 1.2 (editable scenario default, not measured site data)

structureMass = 400.0 (editable scenario default, not measured site data)

pressure = 99000.0 (editable scenario default, not measured site data)

gasOverpressure = 500.0 (editable scenario default, not measured site data)

airTemperature = 315.15 (editable scenario default, not measured site data)

gasTemperature = 315.15 (editable scenario default, not measured site data)

reserve = 1.2 (editable scenario default, not measured site data)

wingSpacing = 100.0 (editable scenario default, not measured site data)

routeLength = 1000.0 (editable scenario default, not measured site data)

soilK = 0.5 (editable scenario default, not measured site data)

equivalentDepth = 1.0 (editable scenario default, not measured site data)

waterTableHeight = 0.3 (editable scenario default, not measured site data)

recharge = 0.005 (editable scenario default, not measured site data)

drainSlope = 0.002 (editable scenario default, not measured site data)

manning = 0.012 (editable scenario default, not measured site data)

windSpeed = 25.0 (editable scenario default, not measured site data)

tailArea = 50.0 (editable scenario default, not measured site data)

tailArm = 20.0 (editable scenario default, not measured site data)

tailCoefficient = 1.0 (editable scenario default, not measured site data)

opposingTorque = 10000.0 (editable scenario default, not measured site data)

soilKAbove = 0.5 (editable scenario default, not measured site data)

CLIMATE INPUT DICTIONARY

air_C = 42.0 (editable scenario default, not measured site data)

soil_C = 40.0 (editable scenario default, not measured site data)

rh_percent = 15.0 (editable scenario default, not measured site data)

pressure_kPa = 99.0 (editable scenario default, not measured site data)

air_target_C = 26.0 (editable scenario default, not measured site data)

soil_target_C = 24.0 (editable scenario default, not measured site data)

rh_min_percent = 40.0 (editable scenario default, not measured site data)

rh_max_percent = 70.0 (editable scenario default, not measured site data)

max_cooling_C = 28.0 (editable scenario default, not measured site data)

area_m2 = 10000.0 (editable scenario default, not measured site data)

eto_mm_day = 6.0 (editable scenario default, not measured site data)

crop_factor = 1.0 (editable scenario default, not measured site data)

effective_rain_mm_day = 0.0 (editable scenario default, not measured site data)

irrigation_efficiency = 0.9 (editable scenario default, not measured site data)

wet_radius_m = 0.45 (editable scenario default, not measured site data)

emitter_L_h = 2.0 (editable scenario default, not measured site data)

available_water_m3_day = 100.0 (editable scenario default, not measured site data)

spray_height_m = 200.0 (editable scenario default, not measured site data)

fall_speed_m_s = 5.0 (editable scenario default, not measured site data)

wind_m_s = 3.0 (editable scenario default, not measured site data)

droplet_mm = 1.5 (editable scenario default, not measured site data)

evap_mm2_s = 0.08 (editable scenario default, not measured site data)

heat_W_m2 = 250.0 (editable scenario default, not measured site data)

mixing_depth_m = 10.0 (editable scenario default, not measured site data)

local_retention = 0.5 (editable scenario default, not measured site data)

spray_hours_day = 8.0 (editable scenario default, not measured site data)

COAST INPUT DICTIONARY

length = 100000.0 (editable scenario default, not measured site data)

demand = 1.0 (editable scenario default, not measured site data)

diameterA = 1.2 (editable scenario default, not measured site data)

diameterB = 1.2 (editable scenario default, not measured site data)

headA = 400.0 (editable scenario default, not measured site data)

headB = 400.0 (editable scenario default, not measured site data)

peakGround = 100.0 (editable scenario default, not measured site data)

height = 200.0 (editable scenario default, not measured site data)

outletBar = 3.0 (editable scenario default, not measured site data)

recovery = 0.45 (editable scenario default, not measured site data)

sec = 3.5 (editable scenario default, not measured site data)

pumpEfficiency = 0.8 (editable scenario default, not measured site data)