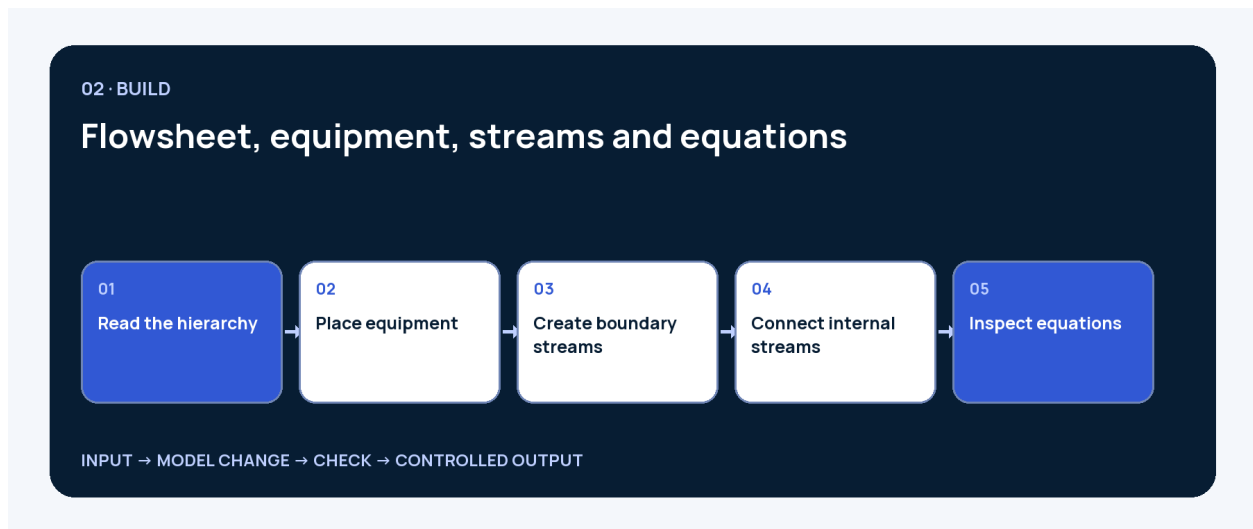




Axion

Flowsheet, equipment, streams and equations

Build, connect and technically inspect a complete process graph



EDITION 2.6 · 19 AUGUST 2026 · MODULE MANUAL · 02 · BUILD

Axion · Bioprocess engineering software



Prepare the model

Input	Why it is required	Ready when
Unit-operation list	Defines main, support, utility, cleaning and waste steps.	Every operation has a tag, function and stage.
Component list	Enables component balances and reactions.	Names, formulas, phase and base unit are unique.
Stream basis	Defines flow, composition, state and direction.	Source/target, units, temperature, pressure and time basis exist.
Equipment basis	Connects size, duty, material, mode and standards.	Nominal/working volume and sizing rule are documented.

Preflight check

- Confirm the correct project, branch and controlled version
- Verify units, provenance and permissions
- Save a restore point before a decision-relevant change
- Keep blocking gaps visible

APPLICABILITY LIMIT

A connected diagram is not yet a closed model. Components, reactions, states and numerical tolerances require review.



Workflow

1. Read the hierarchy

1. Inspect L0-L6 and separate main process, support, utilities, CIP and waste.

VISIBLE RESULT

Every area has one clear technical role.

2. Place equipment

2. Filter the library, add a unit, tag and classify it.

VISIBLE RESULT

The unit appears on canvas and in the register.

3. Create boundary streams

3. Add an external inlet or outlet directly to the unit.

VISIBLE RESULT

Material can cross the model boundary.

4. Connect internal streams

4. Set source, target, ports, direction and stream type.

VISIBLE RESULT

Arrow direction and connection count agree.

5. Inspect equations

5. Open reactions, separations, accumulation, energy and economics.

VISIBLE RESULT

Every calculated quantity has equation and unit.

6. Audit the graph

6. Check isolated units, open ports, cycles and unexplained bypasses.

VISIBLE RESULT

No unexplained main-process island remains.



Review the result

Review criterion	Pass condition	If it fails
Scope and structure	The documented criterion is satisfied and supported by traceable evidence.	Correct the model or keep the output Not decision-ready.
Units and balances	The documented criterion is satisfied and supported by traceable evidence.	Correct the model or keep the output Not decision-ready.
Evidence and uncertainty	The documented criterion is satisfied and supported by traceable evidence.	Correct the model or keep the output Not decision-ready.
Reproducibility	The documented criterion is satisfied and supported by traceable evidence.	Correct the model or keep the output Not decision-ready.
Review state	The documented criterion is satisfied and supported by traceable evidence.	Correct the model or keep the output Not decision-ready.

DECISION RULE

A connected diagram is not yet a closed model. Components, reactions, states and numerical tolerances require review.



Troubleshooting

Observation	Likely cause	Correction
The result looks plausible but cannot be explained	Inputs, units, model version or evidence are missing.	Open the relevant register, restore traceability and rerun.
A change affects unexpected outputs	Dependencies or imported mappings were not reviewed.	Inspect the change plan and before/after diff; undo if required.
The module appears complete but readiness is low	Required industrial evidence is still missing.	Assign the visible gaps and keep maturity at Screening or Not decision-ready.



Handover and next steps

Artifact	Recipient	Must contain
Module result package	Engineering reviewer	Inputs, calculations, results, units, intervals, maturity
Readiness register	Model owner	Gap, required work, owner, due date, intended use
Controlled version	Project team	Branch, version, change note, reviewer and restore point

Completion check

- The active project, branch, version and intended use are visible.
- All inputs have units, provenance, review state and uncertainty where relevant.
- Blocking model, physical, numerical and evidence gaps are closed or assigned.
- The result maturity matches the available evidence.
- A controlled output package opens correctly and includes limitations.

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