

Reference Build: First-Piece Sheet to Feeder-Line Sub-Jobs

FirstPass Systems — Production-Grade AI for Manufacturing & Operations. Anthony Ford, founder. A complete working system built around a fictional plant — Wabash Filter Works — on fully synthetic data. Every company, customer, part number, and form in it is invented; only the engineering is real. It exists so a prospective client can watch a FirstPass system work, failure handling and all, before spending a dollar.

The Scenario

When a first-piece inspection sheet is accepted, the run is real — which means every feeder line now owes material: media to slit and pleat, expanded metal to shear, liners and gaskets to cut, assembly to schedule. In most plants a person does that breakout by hand, from sheets that arrive messy: hand-copied field labels, metric units on export orders, rush notes in the margin, and sometimes a value missing entirely.

What the System Does

Six first-piece sheets go in — two ugly, one incomplete, one wrong. One command runs the breakout:

- **Reads the messy sheets** — drifting field labels and metric dimensions handled by tolerant parsing; a millimeter export order converts on the way in.
- **Explodes material requirements** — media lineal footage from pleat count and height, expanded-metal sheets with nesting efficiency, liner board, gasket footage with scrap factors.
- **Creates routed sub-jobs for every work center** with due dates back-scheduled from the ship date in business days; a rush note on the sheet propagates EXPEDITE priority to every feeder job automatically.
- **Checks inventory in due-date order** and converts shortages into suggested purchase actions with exact quantities — found today, not at the line.
- **Outputs what a plant actually uses:** printable travelers per job, a jobs.csv for the system of record, and a status dashboard for the wall.

What It Catches

The demo data is seeded with the failures that kill real releases, and the run handles all of them in one pass:

- **19 sub-jobs released** across five work centers from the six sheets, four expedited by an automatically propagated rush flag.
- **Two material shortages caught at release time** — including a rush order 1,100 feet short of media, flagged with the exact purchase quantity and date.
- **A sheet with a missing pleat count held, not guessed:** it lands in "needs attention" with the reason. One bad sheet never stops the others.
- **The closer: a sheet the inspector accepted that the control plan rejects.** FPS-26-0346 was marked ACCEPTED at end of shift, but its pleat count is outside the control-plan limits for that part. The system holds it and releases **zero downstream sub-jobs** — no cut media, no sheared metal, no staged gaskets for 1,500 units. The inspector is human; the control-plan check runs every time, the same way. Scrap that never happened.

Deterministic Where It Must Be, Agentic Where It Pays

The breakout math and the control-plan checks are plain code — an AI model never does arithmetic or disposition here. The AI layer goes where judgment lives: reading a photo of the paper form instead of typed text, resolving a

held sheet by pulling the missing value from the print revision on file, and drafting the purchase requisitions. That division of labor is the FirstPass design rule, and it is why these systems survive production instead of dying as demos.

Next step: watch it run live — the full demonstration takes three minutes in a free 30-minute working session. Swap the fictional plant's catalog and control plan for yours, and this same engine runs on your parts. That is exactly what a fixed-scope two-week pilot is.

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