FIELD MANUAL · VERSION 2.0

FABRIX

Engineering User Manual

How to use every screen, where to obtain engineering inputs, what to upload, how calculations are produced, and which PDF / Excel files you receive.

15
Application screens

03
Distinct import pathways

02
Worked job-card examples

29
Actual staging screenshots

Live reference: **fabrix.dnjfactory.online**

Start here

This guide is based on the deployed FABRIX 2.0 Cloudflare staging application, not a conceptual mock-up.

01

Choose the active tender

Projects & Tenders → select project in the header.

02

Choose your input path

IFC/MTO, Tekla connection JSON, or deck weld-master CSV.

03

Validate engineering

Resolve missing sizes, NDT, quantities, rates, and revisions.

04

Export controlled results

Download fabrication reports, connection cards, and Excel files.

Audience

Estimator: pricing and work packages. Engineer: geometry, welding and technical reconciliation. Checker: verify assumptions and release status. Planner: hours, crews and actuals. Manager: dashboard and reports.

Important status notice

The staging Worker has an authenticated D1 API, but the current React frontend still primarily stores projects in **this browser's local storage**. It does not yet provide working cross-device sync or a formal authenticated engineering approval screen.

> Use the sample files in the accompanying ZIP first. The results are test examples, NOT actual company fabrication rates or an authorization to issue production documents.

The three engineering routes

Select the route matching the source documents available to your engineering or fabrication team.

A

Model and MTO

IFC or tabular material list → Model Intelligence → parts, weight, geometry and project estimate.

B

Tekla connections

Normalized companion JSON → Connection Library → matching fingerprints → calculated and checked job cards.

C

Deck fabrication

Weld Master Table CSV + optional Part List CSV → Deck Job Cards → operation-hour and Excel register.

D

Commercial planning

Quantities + reviewed rates → Estimation, Scenario Lab, Production Planning → tender report.

Not interchangeable: An IFC is NOT a deck weld-master CSV. A Tekla companion export is NOT the native Tekla model database. Uploading one input type does not automatically complete every other engineering module.

Complete only the route whose required inputs have been checked. Missing records should remain excluded or blocked instead of silently guessed.

Where do the files come from?

The screen and the responsible source matter as much as the filename.

Required file	Where to attach in FABRIX	Where to obtain it	What you get
IFC 2x3 / IFC4 (.ifc)	Model Intelligence → Import IFC model	Design engineer / BIM team / model export	3D meshes + declared model quantities
FABRIX MTO (.csv / .json)	Model Intelligence → Browse files	MTO report; start from CSV template button	Steel parts, profiles, marks, weights
Tekla companion (.json)	Connection Library → Register & groups → Import Tekla connection export	Windows Tekla workstation + version-matched FABRIX companion	Weld GUIDs → connection groups → cards
Weld Master Table (.csv)	Deck Job Cards → Import master table	Fabrication engineer exports Master table from Excel	Weld rows, operations, hours and deck grouping
Part List (.csv)	Deck Job Cards → Import part list	Engineering part report / reference Excel Part list	Pieces and handling quantities
Approved rate schedule	Rates & Productivity	Commercial / finance / engineering approved rate sheet	Cost basis: labour, material, machines, welding
Drawings .pdf / .dwg	Model Intelligence → Browse files (reference)	Document control / drafting team	Reference only; no automatic drawing take-off

> Sample input files with these exact names and formats are included in the ZIP. Do not rename .xlsx to .csv: export a real comma-separated file from Excel.

Before uploading

Check the input files against this checklist to prevent incorrect calculations.

IFC / engineering model

Confirm project, model revision, units (mm/m), member GUIDs, part marks, grades, section designations and IFC quantities. Ensure the IFC uses supported object properties.

Tekla route: The license-backed Windows companion must export a normalized JSON file using contract `fabrix.tekla-export`. A native Tekla model file cannot be opened directly on the cloud website.

Weld and fabrication records

Confirm weld size, type, length, process, preparation, NDT requirement, joint count and IDs. For deck cards confirm the Master table headers and Part list columns shown in the sample.

Do not treat a connection as identical because only its two beam profiles match; the engineering fingerprint also matters.

Cost, labour and procurement

Obtain dated approved material, wage, machine, consumable, NDT, coating, access and overhead rates. Record supporting evidence and validity. Test values provided in FABRIX are fictional.

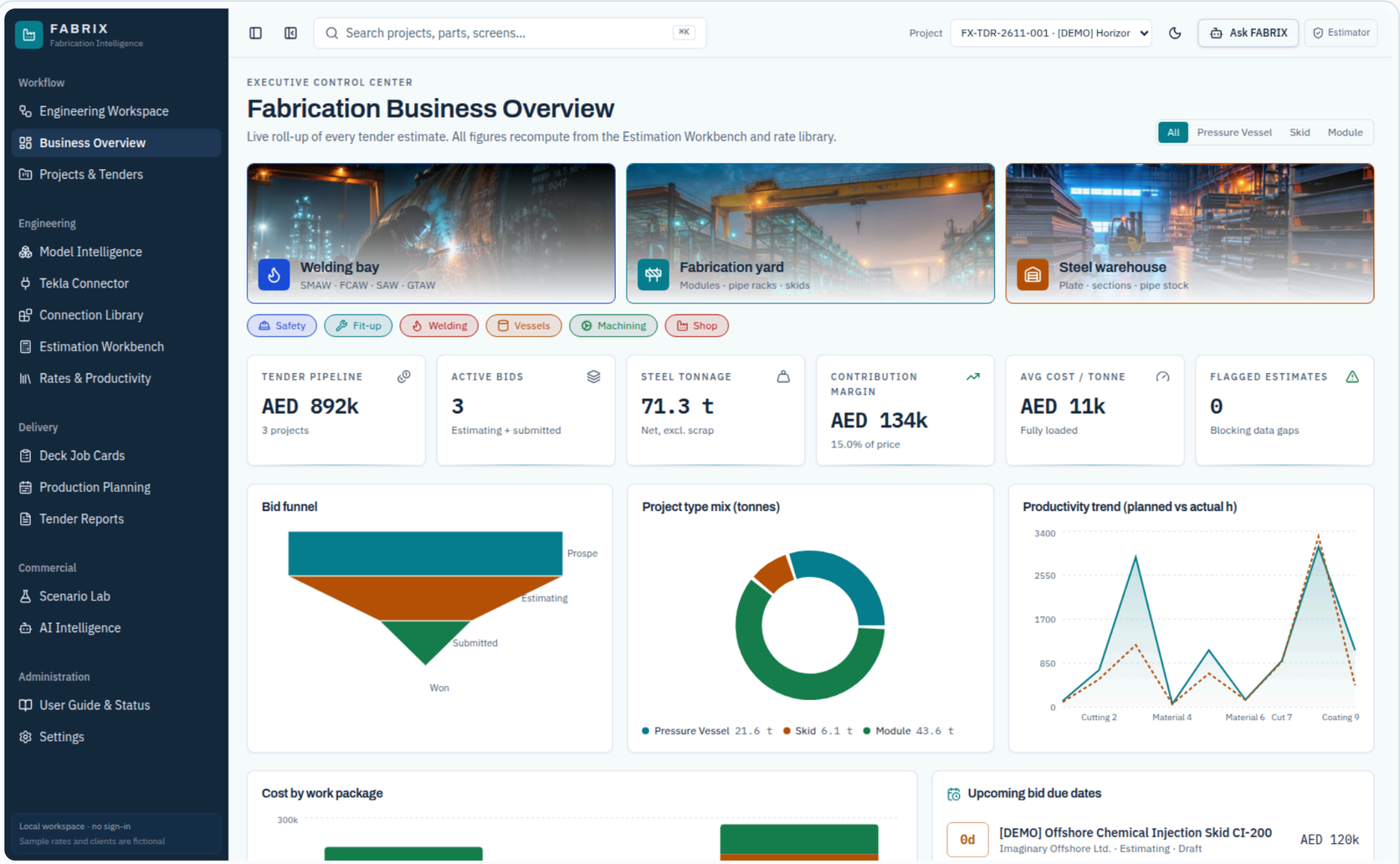
Approval and custody

Keep original engineering files and full ZIP backups. Use named internal verification, revision tracking and an independent company checker before any operational release. A local check in this version is not authenticated approval.

Never upload a confidential tender to the public staging URL unless your company has authorized this environment and access-control review. These training files are synthetic/reference fixtures only.

Business Overview

Project KPIs and tender portfolio at a glance.



STEPS TO FOLLOW

1. Open Business Overview from the Workflow menu.
2. Filter All, Pressure Vessel, Skid or Module.
3. Read AED pipeline, bid deadlines, cost per tonne and flags.
4. Click Projects & Tenders or the workspace to investigate a figure.

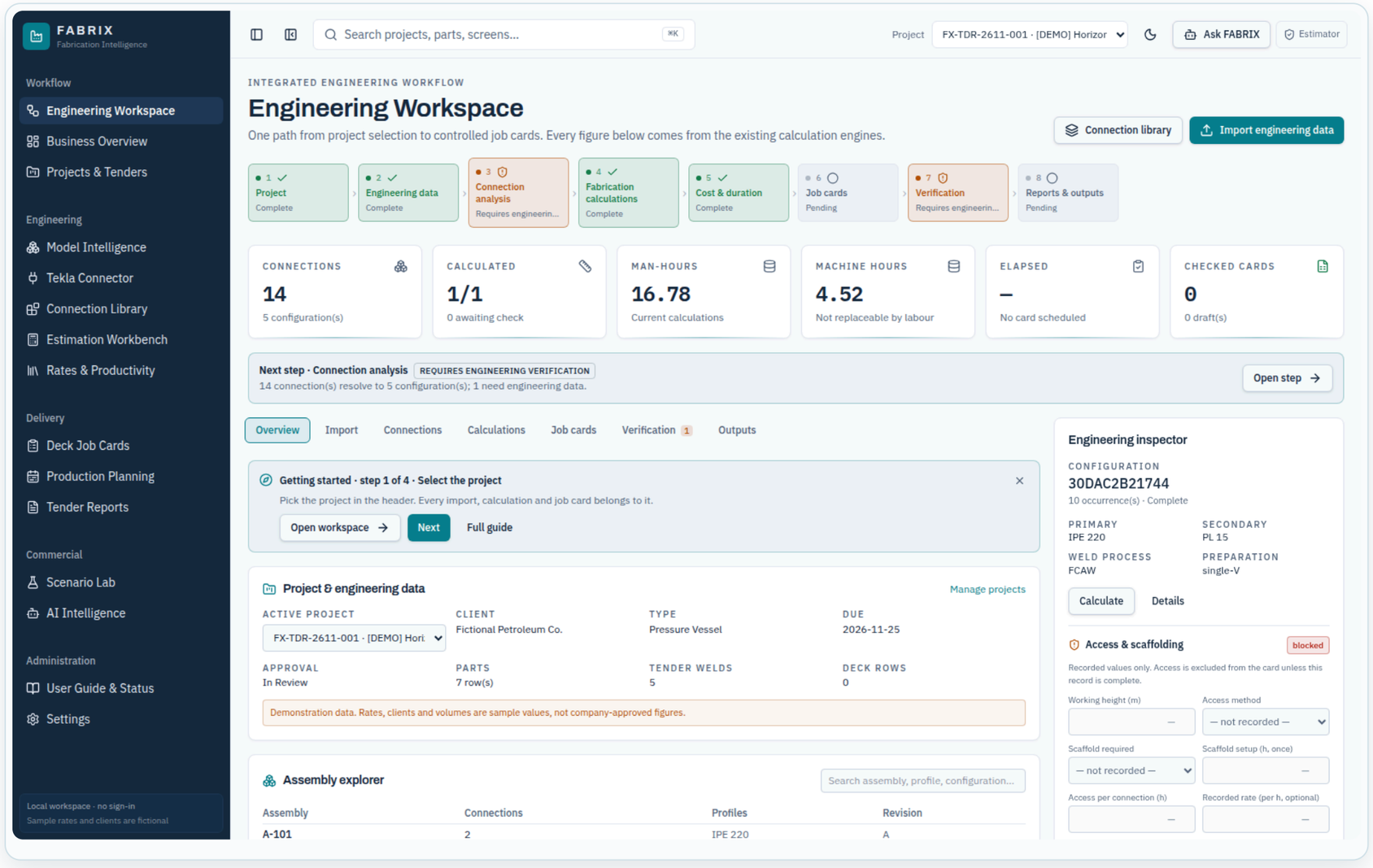
> **Result:** Filtered portfolio and next action for each tender.

> **Check:** Demonstration clients and values are fictional.

Open in staging: /

Engineering Workspace

One screen for the full engineering path, assembly explorer, connection calculations and output status.



STEPS TO FOLLOW

1. Select the correct project from the header.
2. Read 8 stages: Complete, Pending, Blocked or Needs verification.
3. Choose Overview, Import, Connections, Calculations, Job cards, Verification or Outputs.
4. Use the right-hand engineering inspector to view a connection and recorded access.

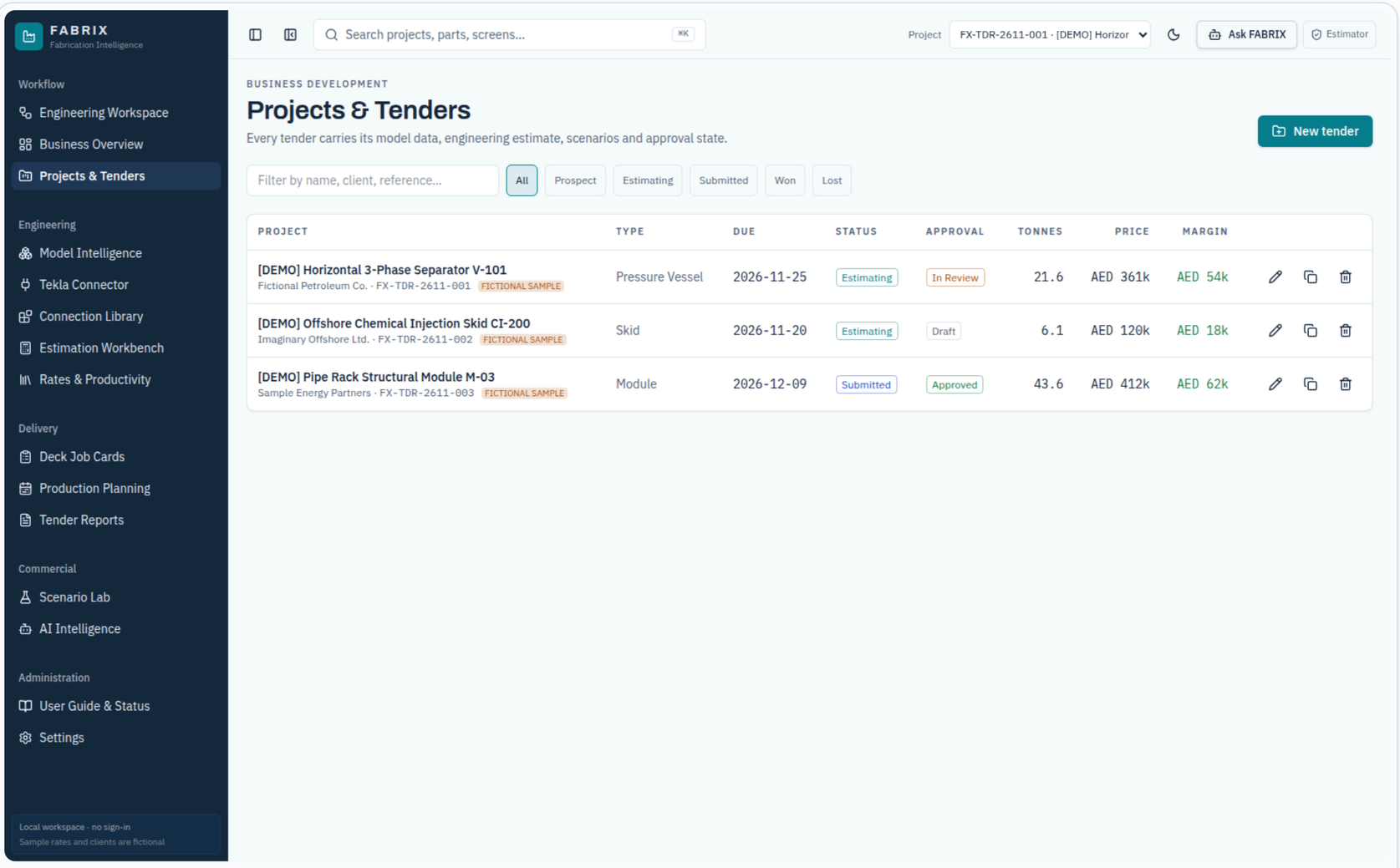
Result: Connected navigation to existing calculation engines.

Check: The current UI is local-browser persisted; D1 API is not yet fully connected to these screens.

Open in staging: /workspace

Projects & Tenders

Create a separate engineering and costing record for each tender.



STEPS TO FOLLOW

1. Click New tender; enter reference, name, client, project type and due date.
2. Move its stage between Prospect, Estimating, Submitted, Won or Lost.
3. Use Edit for changes, Duplicate only when a copy is genuinely needed.
4. Select the intended project at the top before performing other imports.

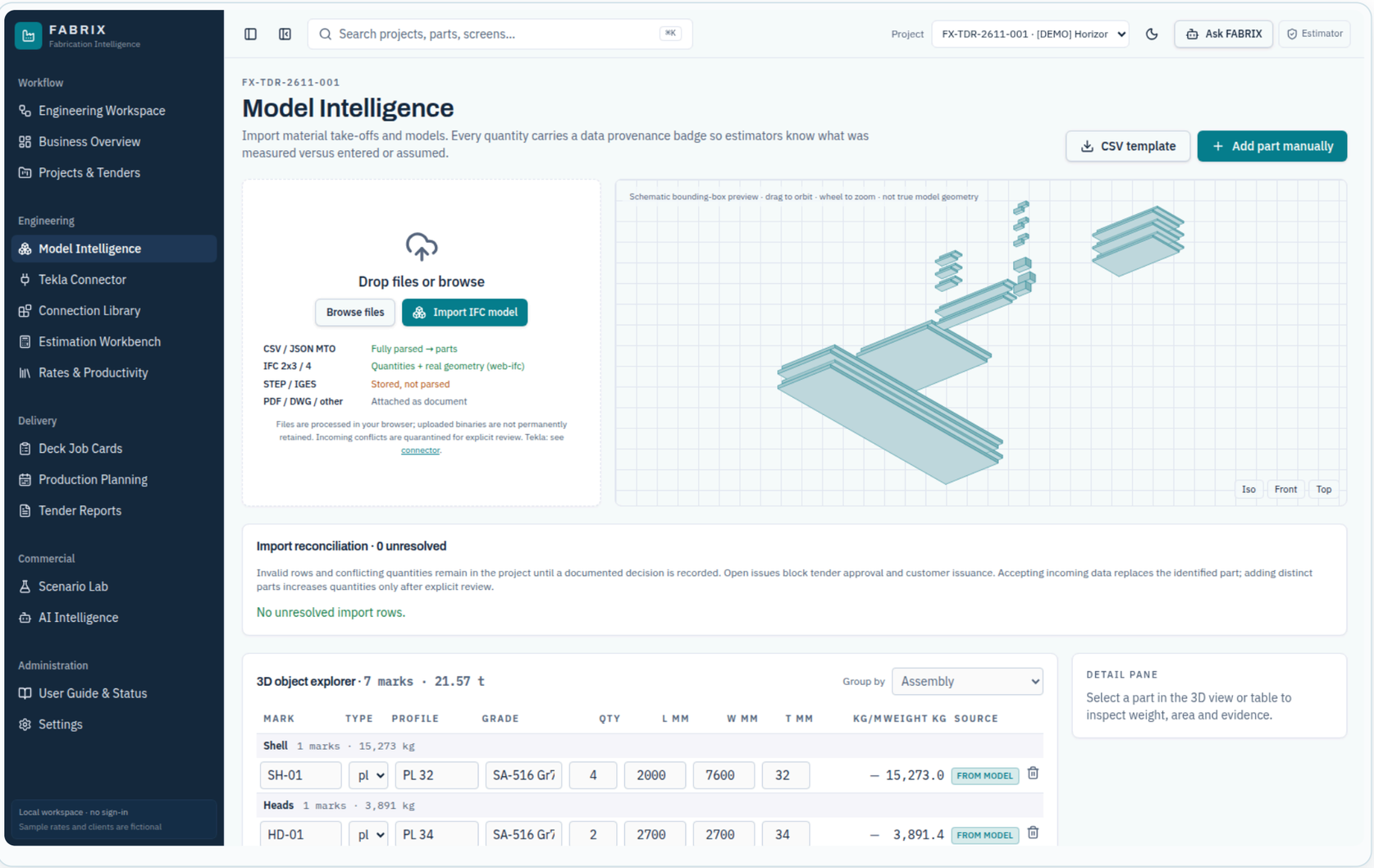
> **Result:** Tender register and chosen active project.

> **Check:** Do not confuse duplicated synthetic sample projects with real company jobs.

Open in staging: /projects

Model Intelligence

Import geometry or MTO data with quantity provenance.



STEPS TO FOLLOW

1. Choose CSV template if a material list needs formatting.
2. Use Import IFC model for an .ifc file; view the 3D objects and available quantities.
3. Use Browse files for a supported MTO .csv/.json or reference document.
4. Inspect the reconciliation, rejected rows and source before applying.

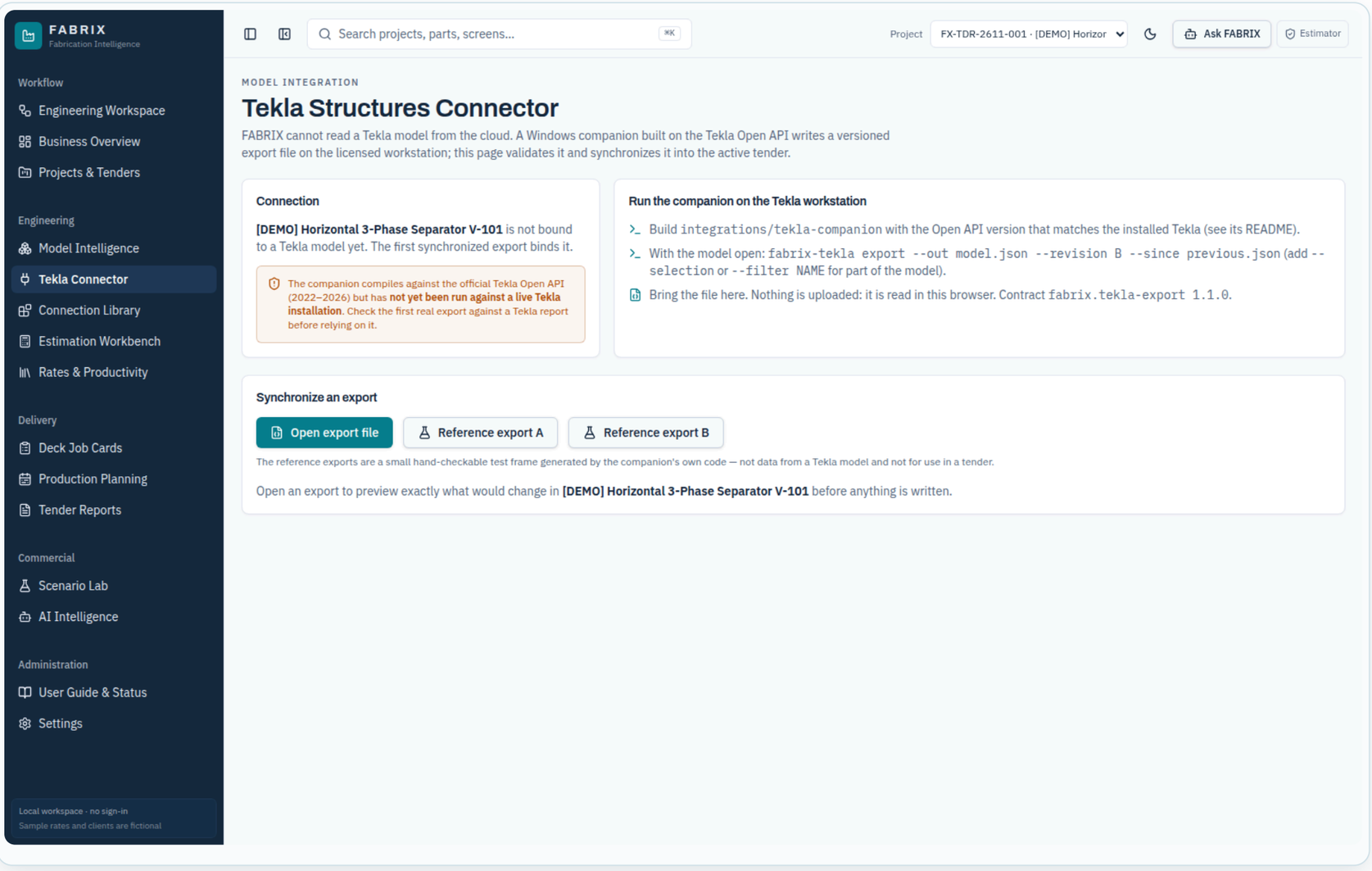
Result: Part register, material weight and geometry viewer.

Check: IFC does not provide a full weld-master table, and PDF/DWG is reference only.

Open in staging: /model

Tekla Structures Connector

Compare normalized Tekla exports and stage model updates.



STEPS TO FOLLOW

1. On licensed Tekla, run the matching companion to export model.json.
2. For training, use Reference export A or B; neither is a real Tekla export.
3. Click Open export file for a normalized JSON generated on the workstation.
4. Inspect model identity, revision and changes before synchronizing.

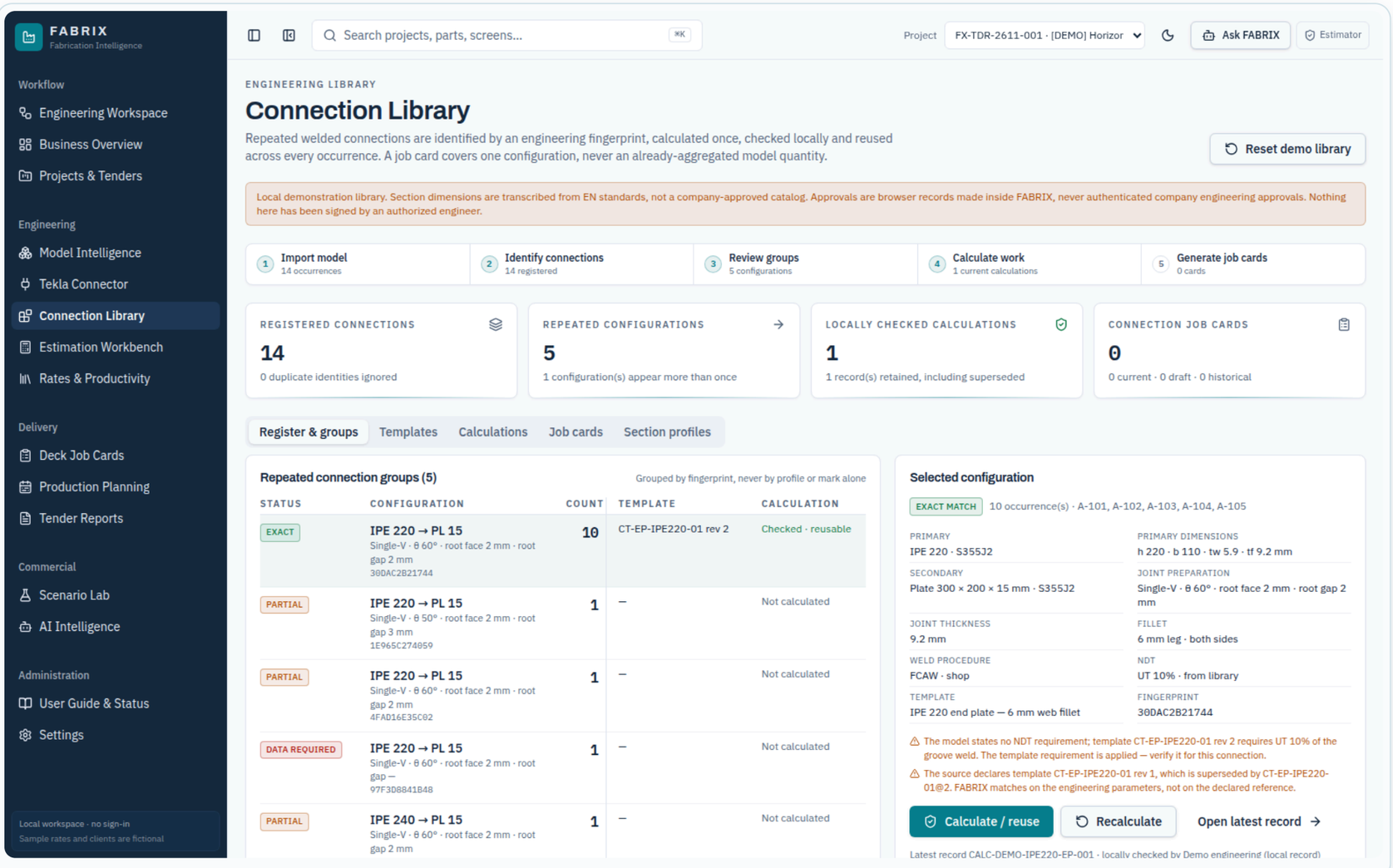
Result: Controlled Tekla export preview and model synchronization data.

Check: Direct native Tekla file import is not supported; live Tekla workstation interoperability remains to be validated.

Open in staging: /tekla

Connection Library

Group physical welded connections by verified configuration and calculate once per group.



STEPS TO FOLLOW

1. Under Register & groups, import the normalized Tekla JSON.
2. Select a repeated configuration; check size, preparation, process, NDT and count.
3. Click Calculate / reuse; enter a checker name and Record local check.
4. Open Job cards to issue, revise or download the record.

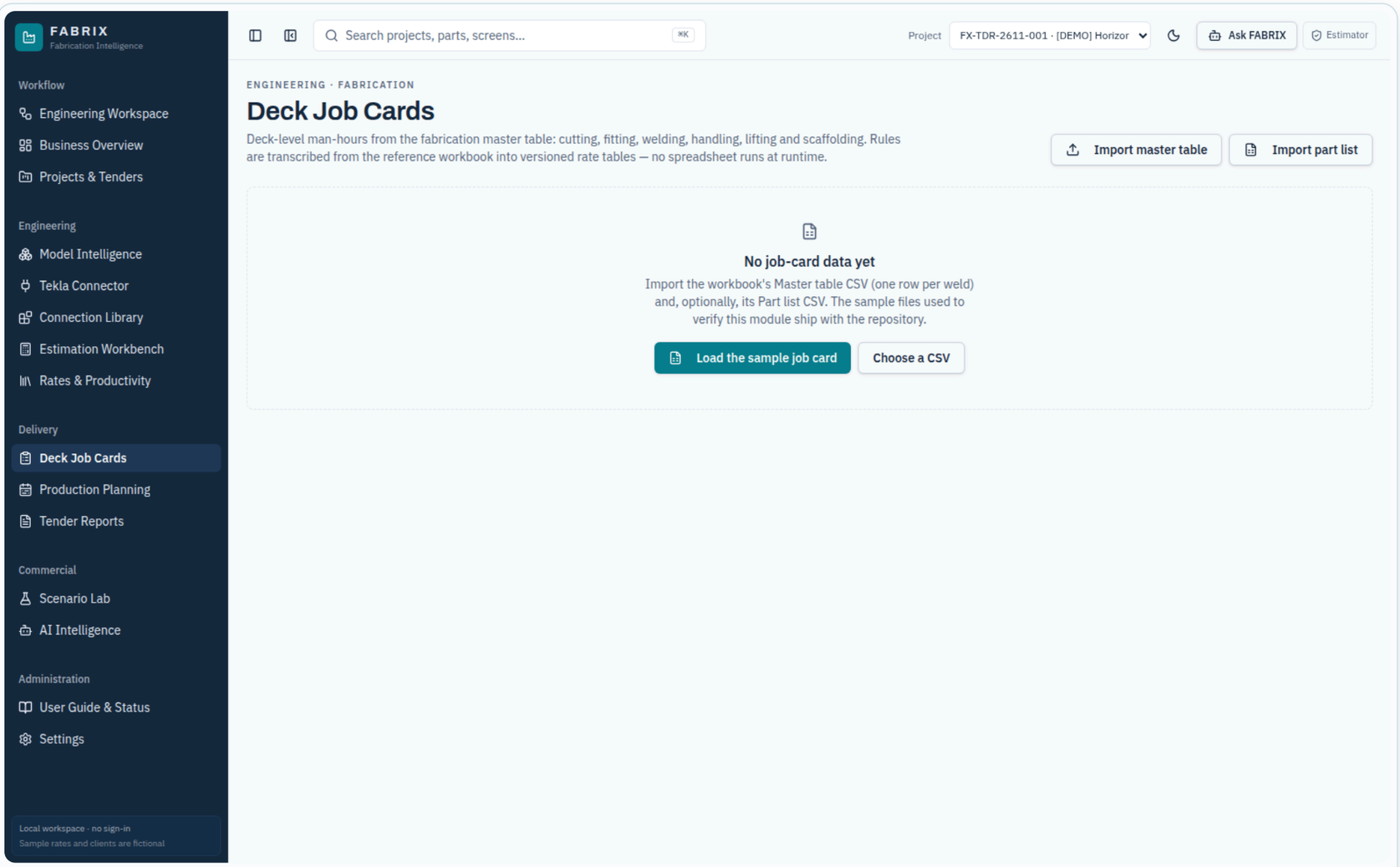
Result: Reusable calculation and traceable connection job card.

Check: Missing engineering data blocks issue. Local check is not a formal authenticated approval.

Open in staging: /connections

Deck Job Cards

Calculate fabrication man-hours by deck using a master weld table.



STEPS TO FOLLOW

1. Choose Import master table and upload the actual CSV.
2. Choose Import part list and upload corresponding parts CSV.
3. Select a deck, review rows, operations, productivity and reconciliation.
4. Export Excel workbook or Print / PDF.

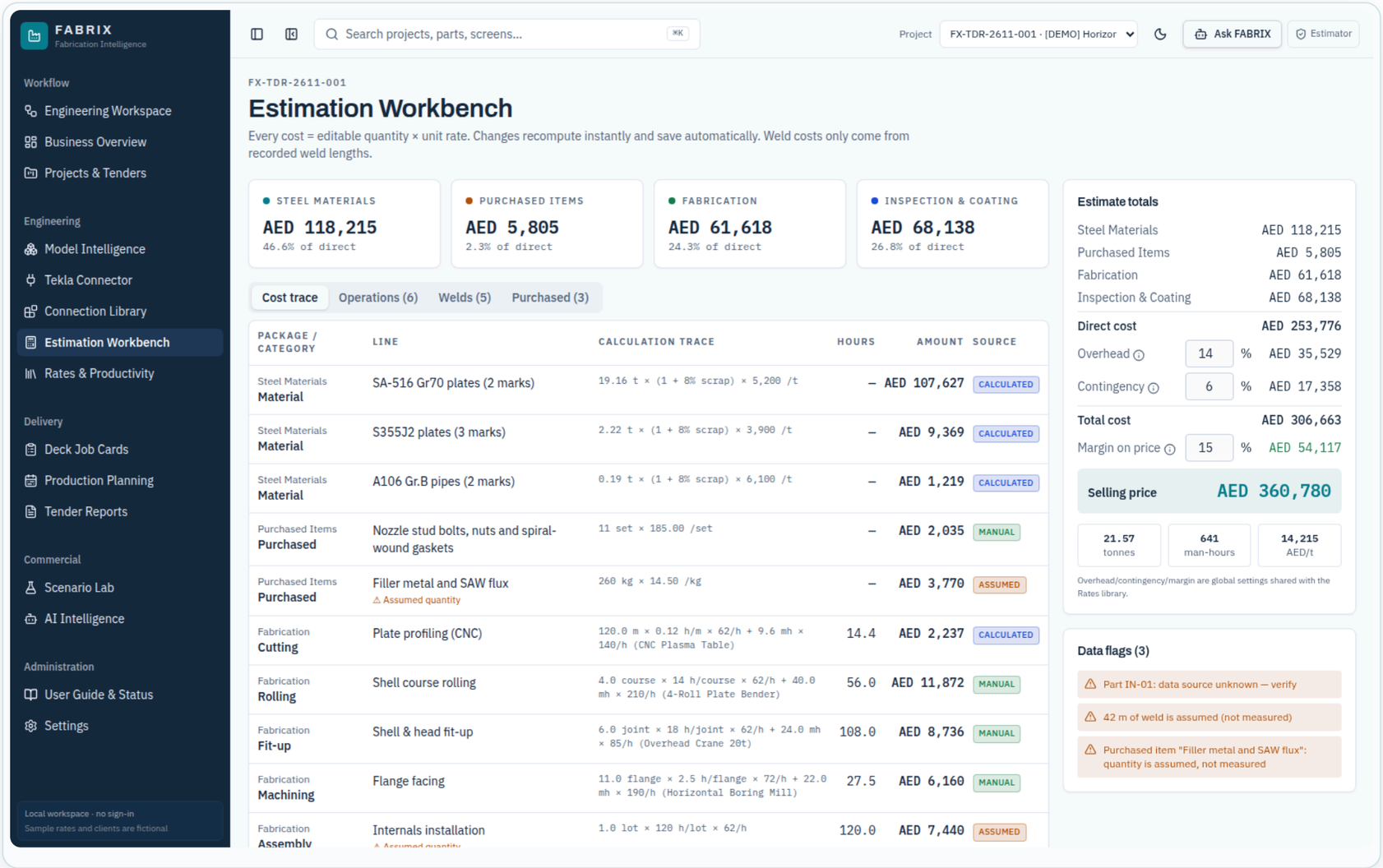
> **Result:** Deck register, cutting/fitting/welding/handling hours and printable cards.

> **Check:** Separate from connection cards. An IFC alone does not populate the deck weld-master table.

Open in staging: /jobcards

Estimation Workbench

Combine material, purchased, fabrication and inspection packages into a traceable estimate.



STEPS TO FOLLOW

1. Choose the active project and review each work package.
2. Open Cost trace, Operations, Welds and Purchased.
3. Check quantity × rate, hours, flags and original source.
4. Resolve invalid quantities, assumed values and rates before issuing a tender.

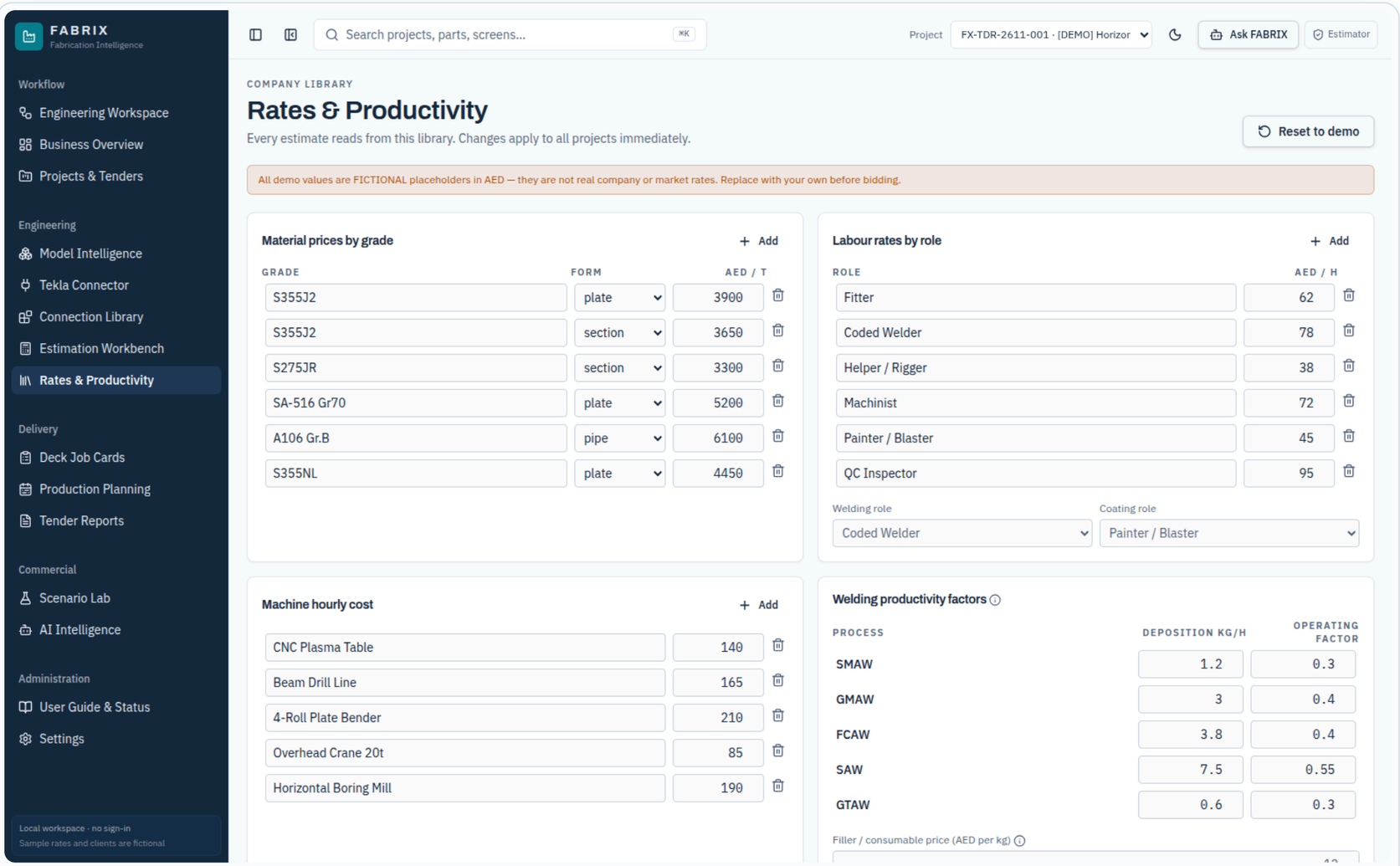
Result: Cost, hours and price breakdown tied to project records.

Check: Seeded rates are not company-approved cost assumptions.

Open in staging: /estimate

Rates & Productivity

Maintain material, labour, machine, welding and indirect-cost assumptions.



STEPS TO FOLLOW

1. Obtain an approved and dated company rate sheet.
2. Update material AED/t, labour AED/h, machine AED/h and welding deposition factors.
3. Review coating, NDT, waste, overhead, contingency and margin.
4. Recheck every affected project estimate after changing global rates.

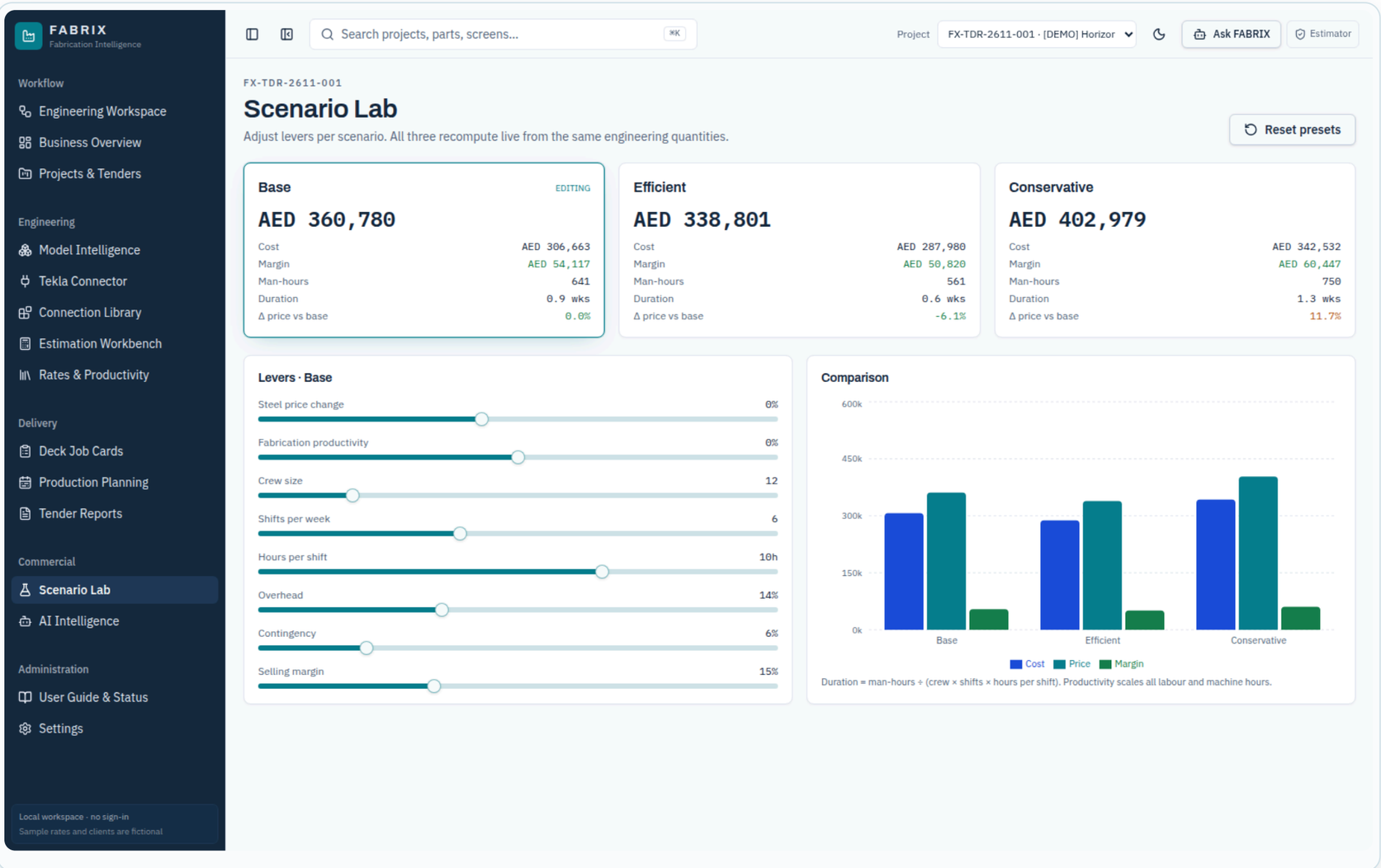
> **Result:** Consistent estimation parameters for the current browser workspace.

> **Check:** Changes to this rate library can alter all project calculations.

Open in staging: /rates

Scenario Lab

Compare bid price and completion time when assumptions change.



STEPS TO FOLLOW

1. Choose Base, Efficient or Conservative.
2. Adjust productivity, materials escalation, crew size and shifts.
3. Review hours, duration, cost, price and margin side by side.
4. Use comparisons to support a commercial decision.

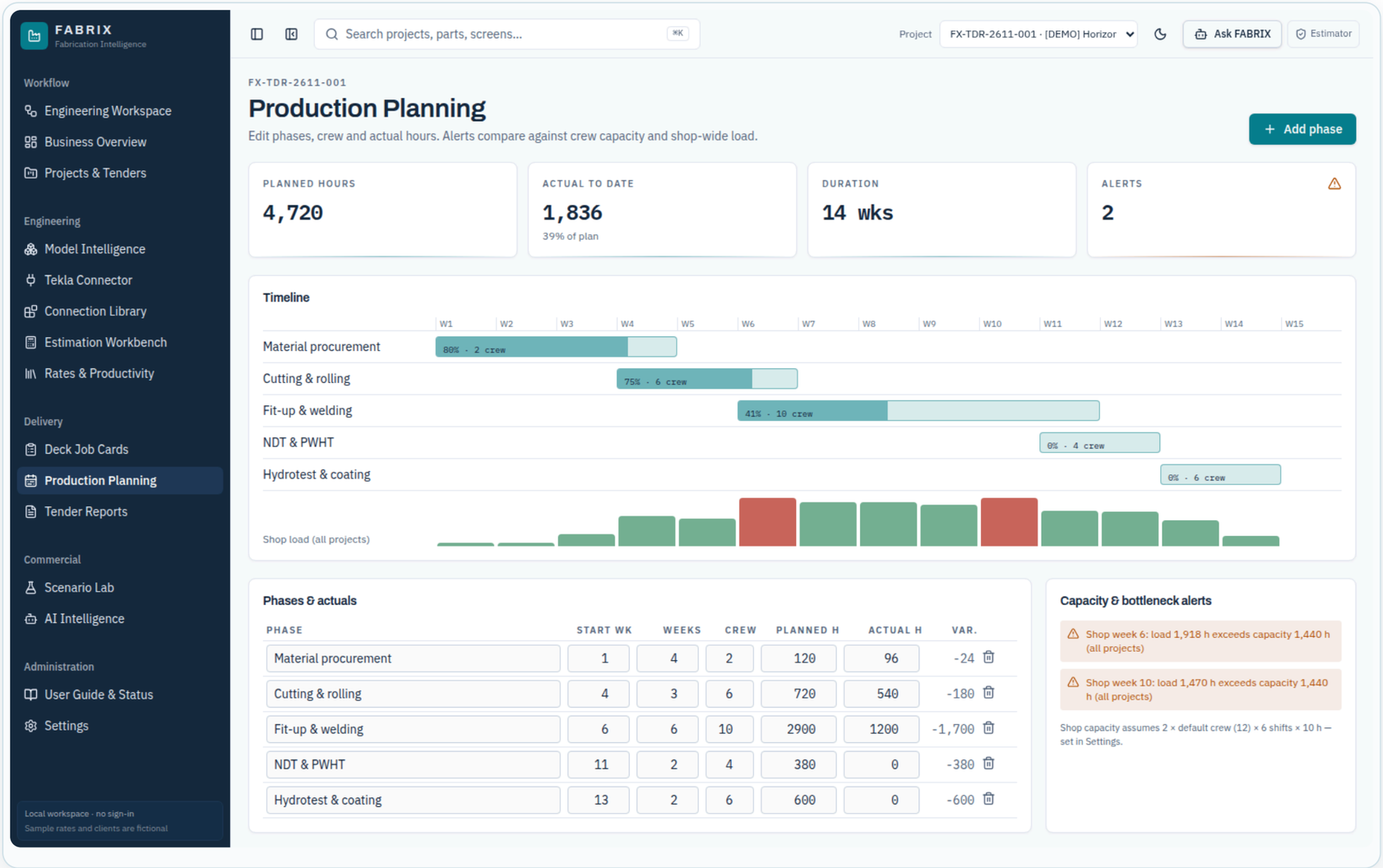
> **Result:** Sensitivity analysis for tender review.

> **Check:** Scenario durations are estimates, not committed shop schedules.

Open in staging: /scenarios

Production Planning

Manage phase schedules, manpower and actual hours.



STEPS TO FOLLOW

1. Open the weekly timeline and phase register.
2. Adjust start week, crew, duration and planned hours.
3. Record actual hours and compare with planned activities.
4. Review capacity conflicts and revise the sequence.

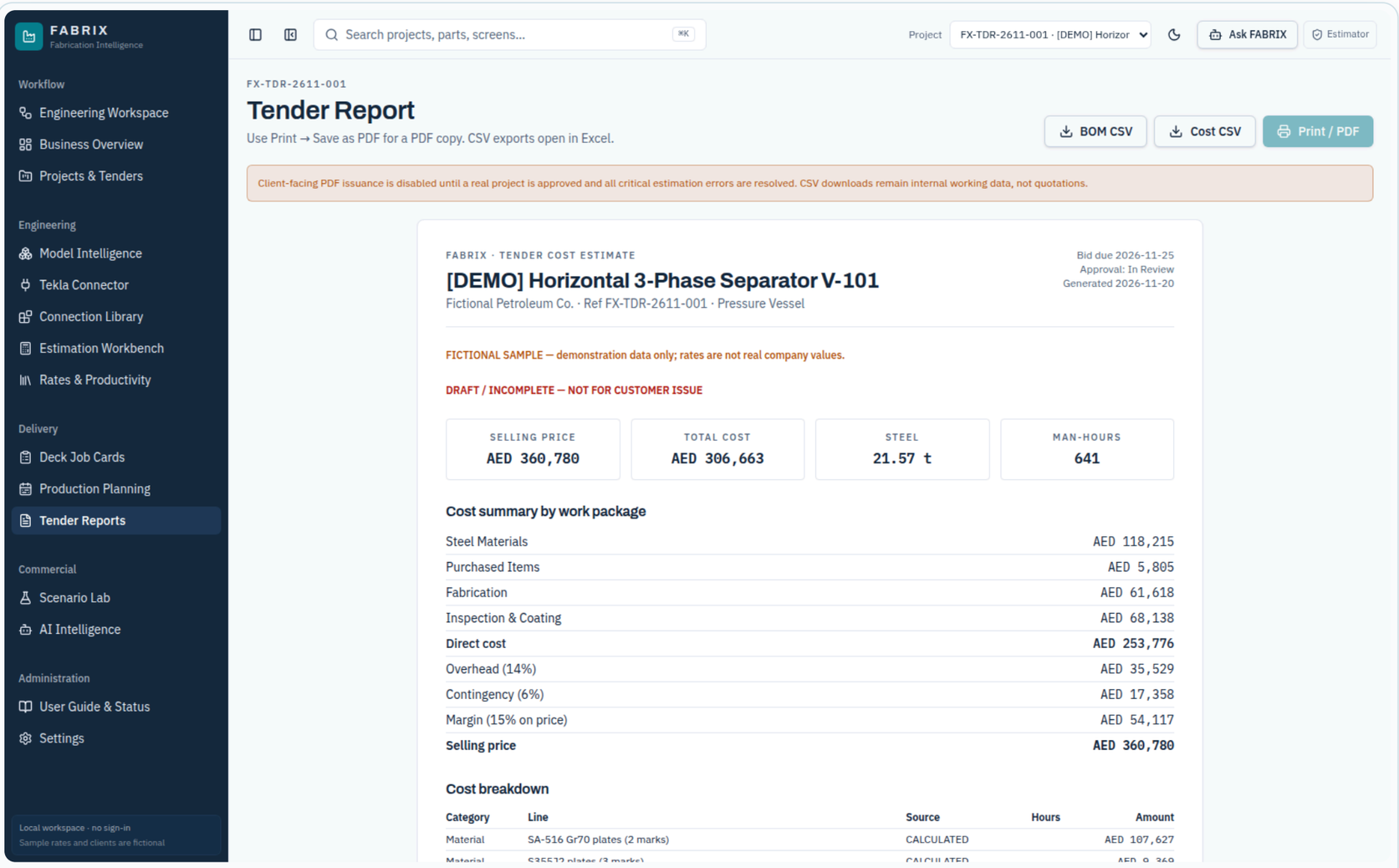
> **Result:** Phase and resource plan with variance visibility.

> **Check:** Not a substitute for production ERP or work-center scheduling.

Open in staging: /planning

Tender Report

Prepare internal estimate summaries and commercial documentation.



STEPS TO FOLLOW

1. Select the project and read the cost summary.
2. Check quantities, assumptions, exceptions and unresolved issues.
3. Download BOM CSV or Cost CSV for Excel.
4. Use Print / PDF for a review copy, subject to current issue restrictions.

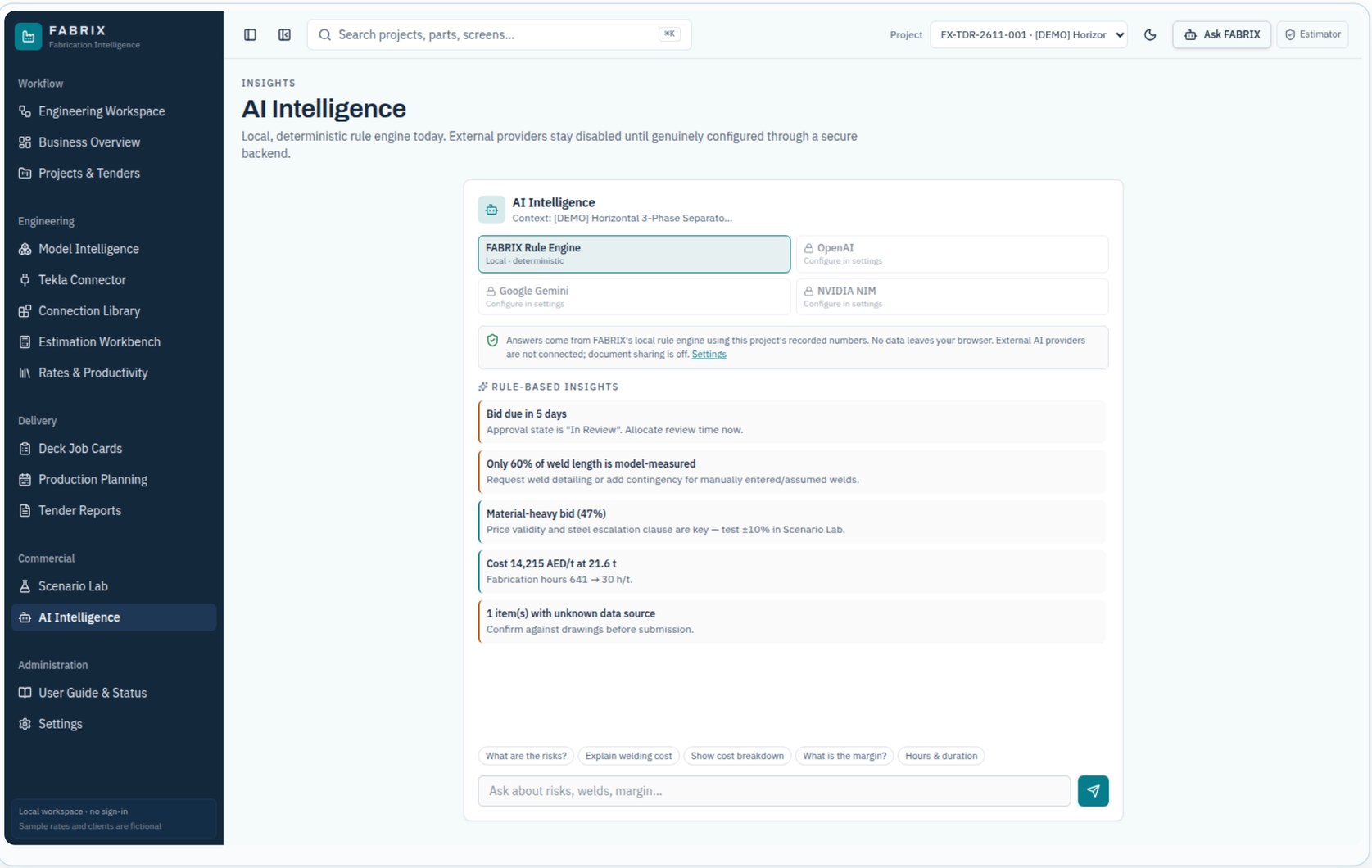
> **Result:** Internal cost report, BOM and costing CSVs.

> **Check:** Incomplete/unapproved estimates must not be issued to customers.

Open in staging: /reports

AI Intelligence

Ask the available rule engine about cost, welding and risks.



STEPS TO FOLLOW

1. Choose FABRIX Rule Engine.
2. Click What are the risks? or Show cost breakdown.
3. Check the response against actual estimate and flags.
4. Do not enable external AI providers until securely configured.

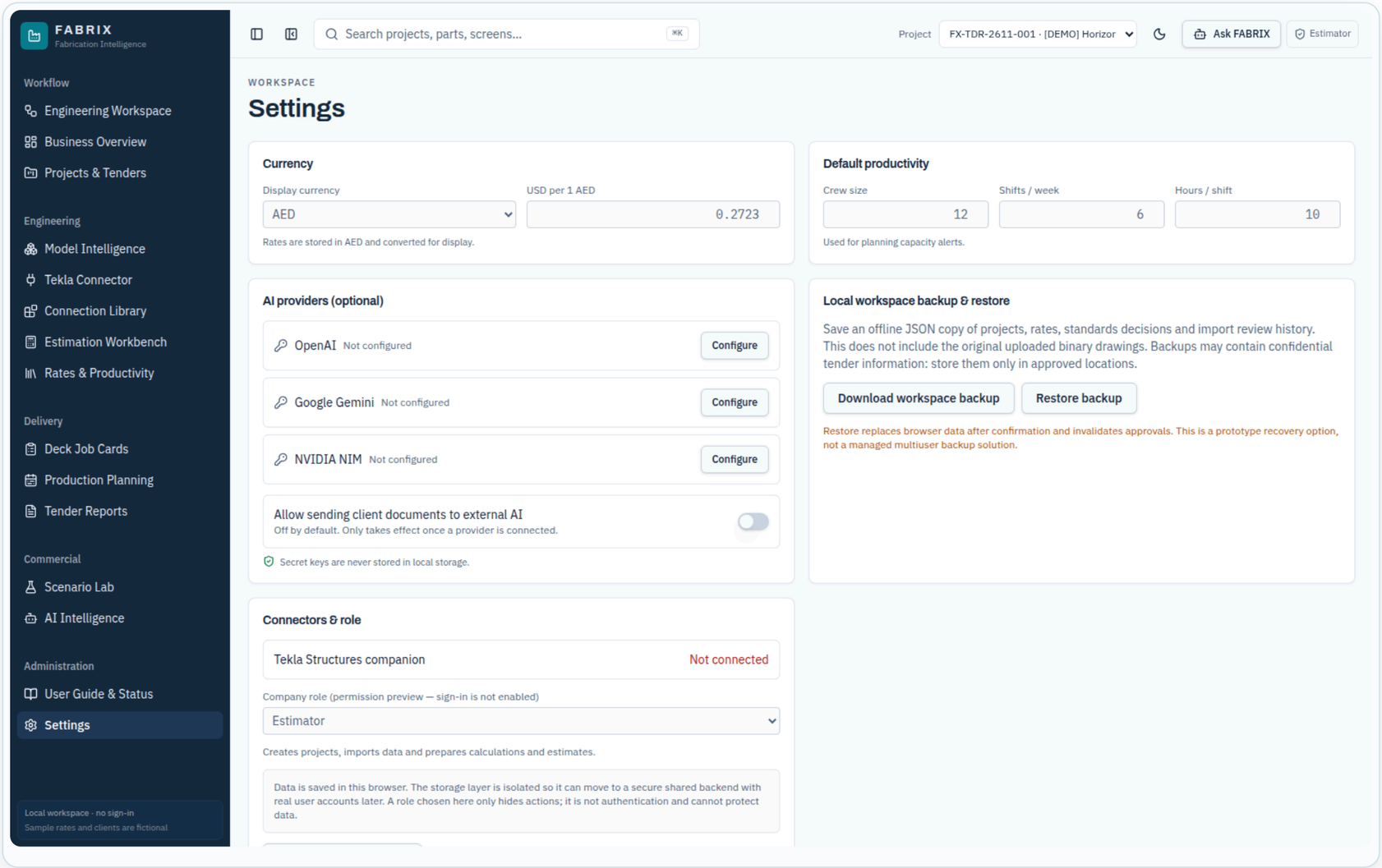
> **Result:** Explainable local rules and estimate insights.

> **Check:** No external LLM provider is active in this release.

Open in staging: /ai

Settings

Change workspace preferences and keep a copy of your browser data.



STEPS TO FOLLOW

1. Review default currency and crew assumptions.
2. Use Download workspace backup regularly.
3. Use Restore backup when moving your own work into the browser.
4. Avoid Reset all demo data if you have unsaved or unbacked-up changes.

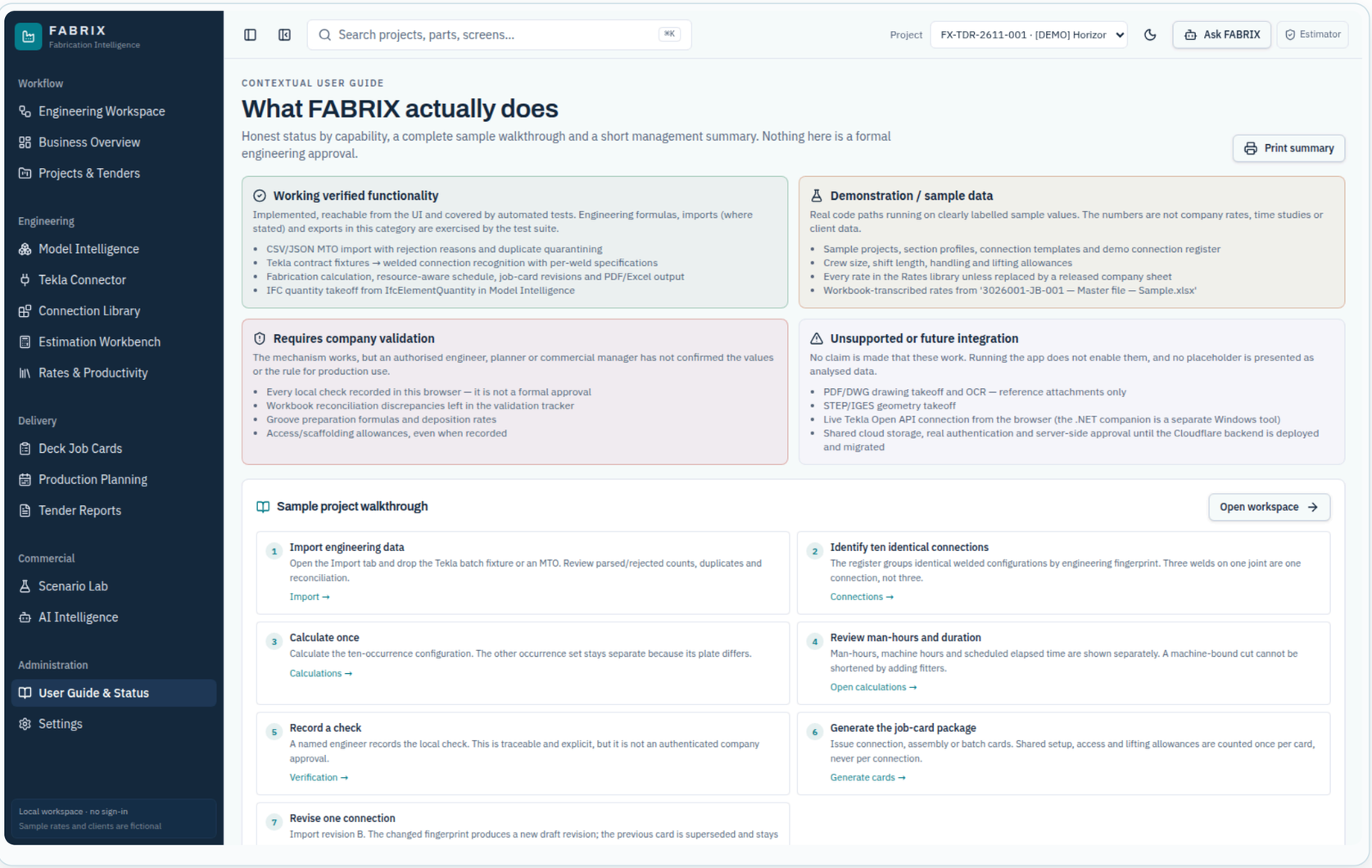
> **Result:** Saved configuration and browser workspace backup.

> **Check:** This is not enterprise multi-device sync. Preserve the backup files safely.

Open in staging: /settings

User Guide & Status

Review built functionality and clearly distinguish demonstrations from production features.



STEPS TO FOLLOW

1. Open User Guide & Status under Administration.
2. Read the sample-project walkthrough and module explanations.
3. Review verified/partial/unsupported feature labels.
4. Use Print summary if a short meeting reference is needed.

Result: In-app reference for explaining existing capability.

Check: This extended PDF includes additional screenshots and actual exported example files.

Open in staging: /guide

Files included in the sample ZIP

All files below originate from FABRIX test fixtures or were downloaded/generated using the deployed Cloudflare staging version.

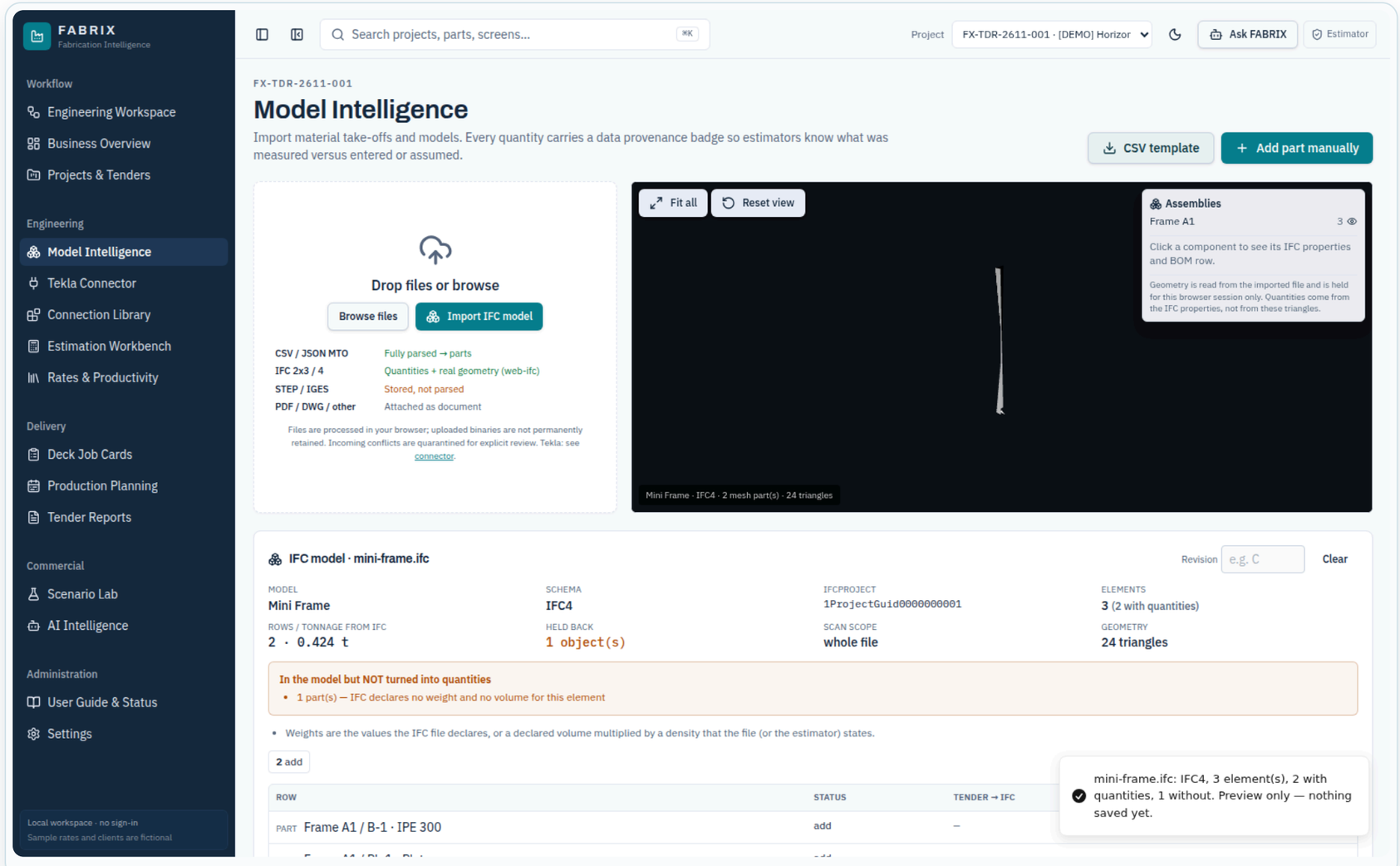
File in ZIP	Upload location	Source / notes
01-Tekla-10-Connections-Revision-A.json	Connection Library	Reference Tekla 10-identical-joint revision A JSON
02-Tekla-10-Connections-Revision-B.json	Connection Library	Reference Tekla revision B; use to test changes
03-IFC4-Mini-Frame.ifc	Model Intelligence	Synthetic IFC4 mini-frame geometry and quantities
04-Deck-Weld-Master-Table.csv	Deck Job Cards	Reference fabrication Master table; 7,959 accepted rows
05-Deck-Part-List.csv	Deck Job Cards	Matching reference Part list; 1,421 parts
06-FABRIX-MTO-Template.csv	Model Intelligence	CSV template generated from the live Model screen

Never use these reference fixture inputs for commercial tender issue. They contain synthetic or reference values and do not verify Tekla compatibility with your company's real model.

06 / LIVE SAMPLE A

IFC4 model → 3D viewer

Input: 03-IFC4-Mini-Frame.ifc. This is a small model intended to show the geometry and quantity import controls, not a completed fabrication package.



STEPS TO FOLLOW

1. Open Model Intelligence with the intended active project.
2. Click Import IFC model and select 03-IFC4-Mini-Frame.ifc from the ZIP.
3. Observe the 3D component viewer (2 mesh parts shown in the screenshot).
4. Review IFC-reported quantities and apply only after reconciliation.

Result: The sample IFC contains 3 elements, of which 2 supplied usable quantity rows in the verified import test.

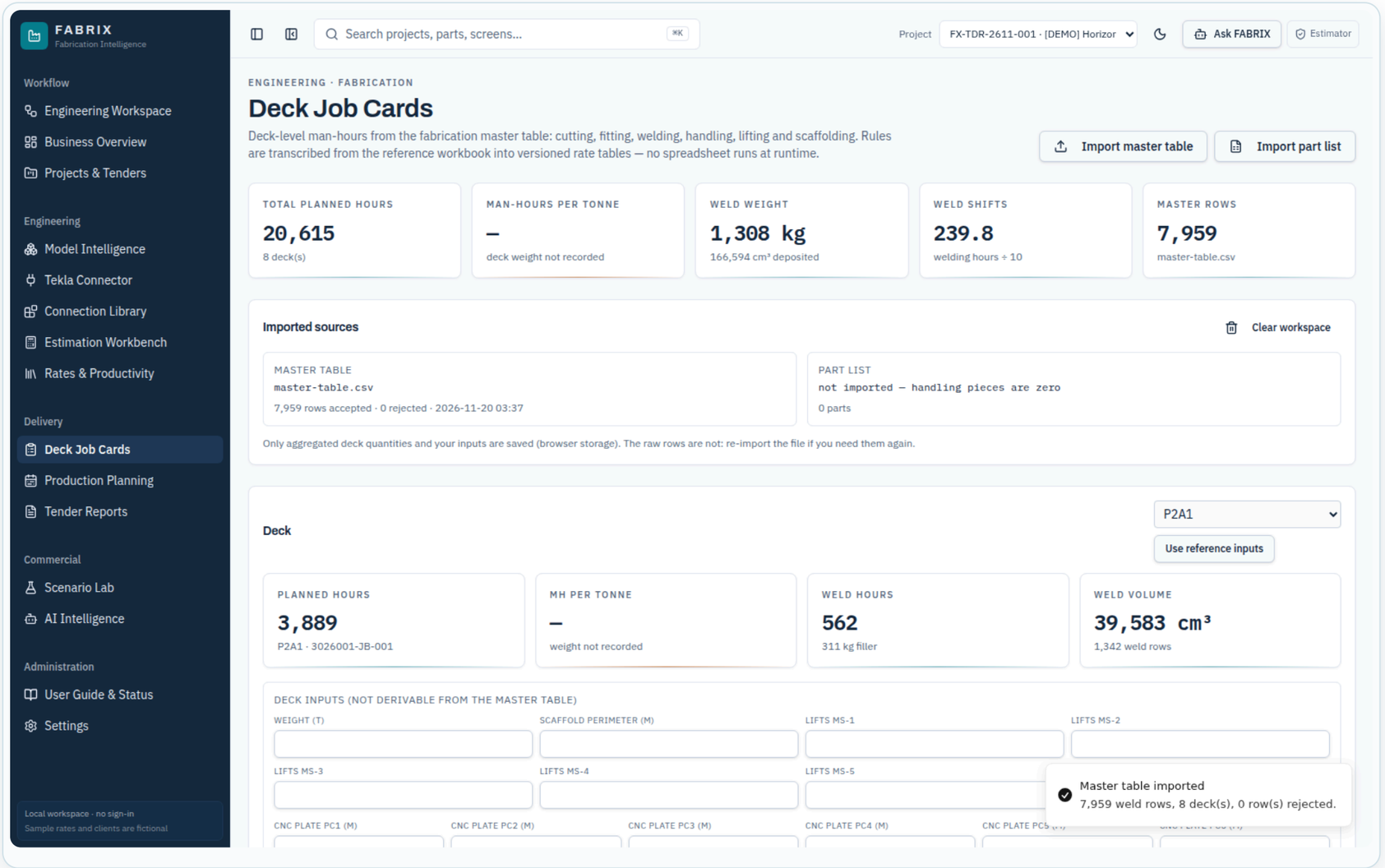
Check: 3D triangles do not automatically mean full weld geometry or NDT coverage.

Open in staging: /model

07 / LIVE SAMPLE B

Weld-master CSV → deck totals

Input: 04-Deck-Weld-Master-Table.csv exported in the file format expected by Deck Job Cards.



STEPS TO FOLLOW

1. Open Deck Job Cards; select Import master table.
2. Choose 04-Deck-Weld-Master-Table.csv; the importer reads the entire file.
3. Confirm 7,959 accepted rows, 0 rejected and 8 deck groups.
4. Check total planned hours before adding a part list.

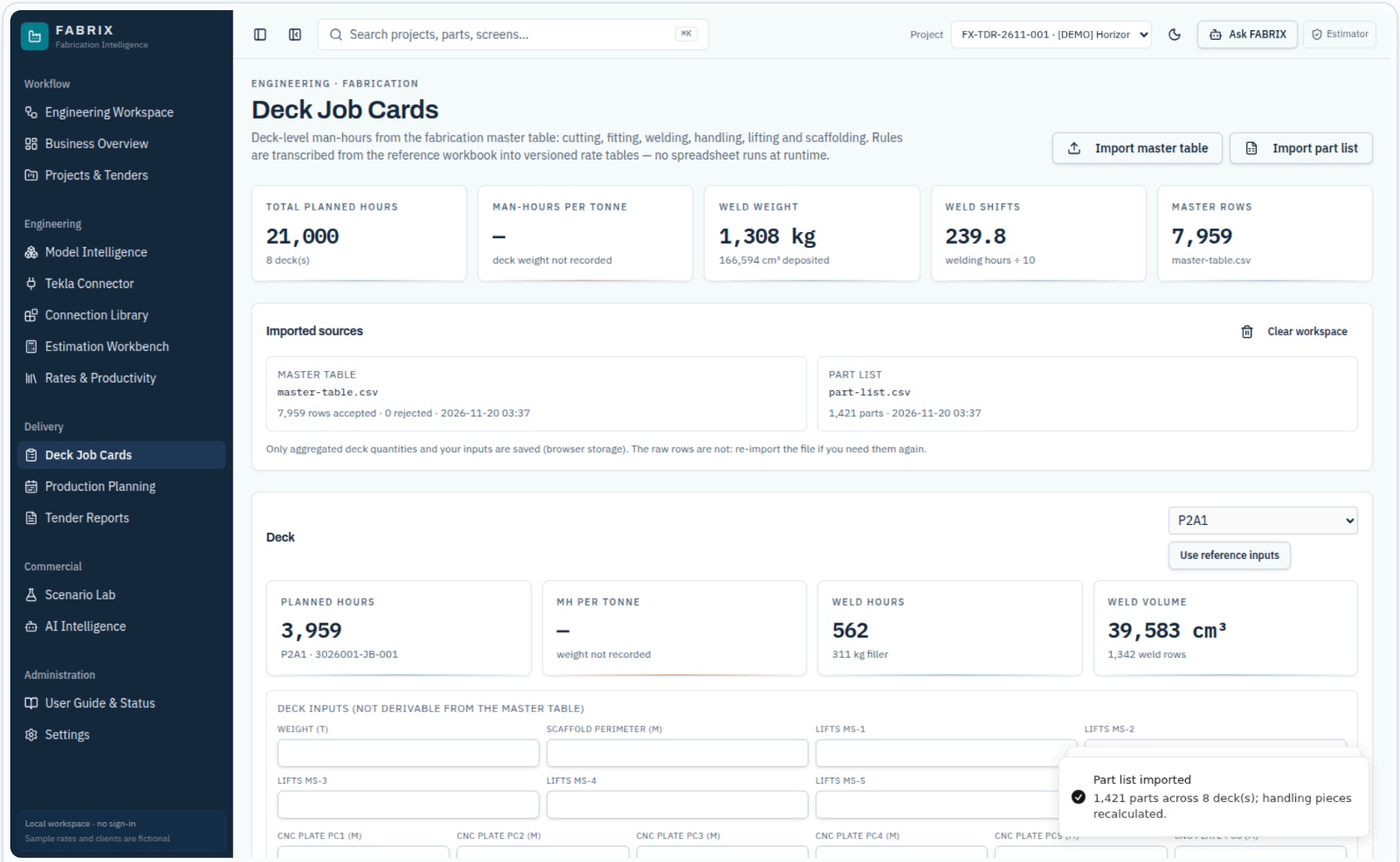
Result: The captured Master-table-only stage shows 20,615 planned hours and 1,308 kg weld metal.

Check: The master table does not supply all handling-piece quantities; import the matching Part list next.

Open in staging: /jobcards

Part list → complete deck record

Input: 05-Deck-Part-List.csv. Use it with the matching master table rather than as a standalone job-card source.



STEPS TO FOLLOW

1. While the Master table is loaded, click Import part list.
2. Select 05-Deck-Part-List.csv from the sample ZIP.
3. Confirm 1,421 parts shown in the Imported sources panel.
4. Select P2A1 or another deck and inspect planned hours.

> **Result:** The captured example increases the overall planned hours to 21,000 across eight decks.

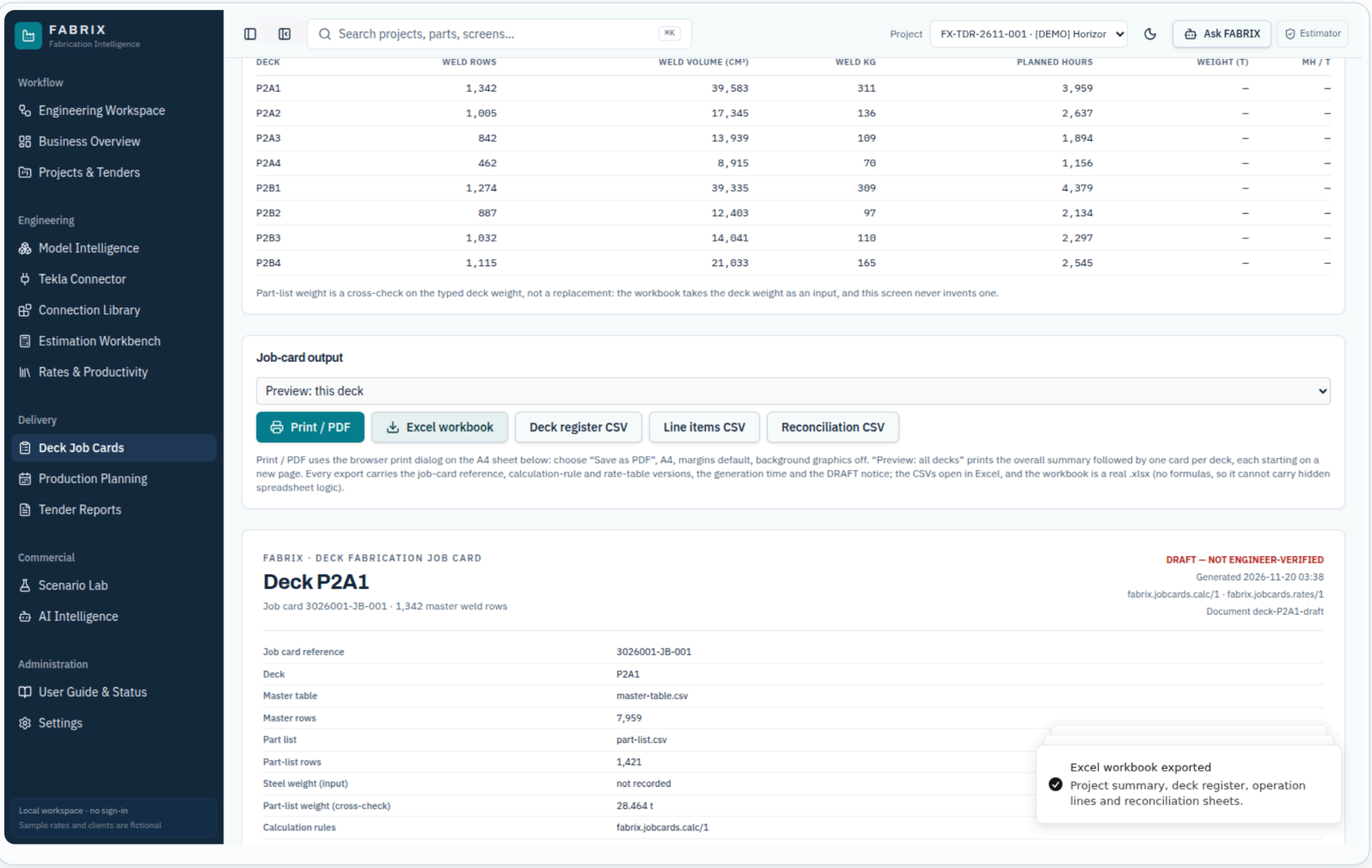
> **Check:** These reference workbook-based results require review against actual company labour standards.

Open in staging: /jobcards

09 / LIVE SAMPLE D

Deck job-card exports

A sample print-to-PDF and the Excel workbook were generated from the deployed staging Job Cards screen.



STEPS TO FOLLOW

1. With both CSV files imported, select the deck to review.
2. Click Excel workbook to download structured worksheet data.
3. Click Print / PDF and choose Save as PDF in the browser print dialog.
4. Open Example-Deck-JobCards.xlsx and Example-Deck-JobCard-Print.pdf in the sample ZIP.

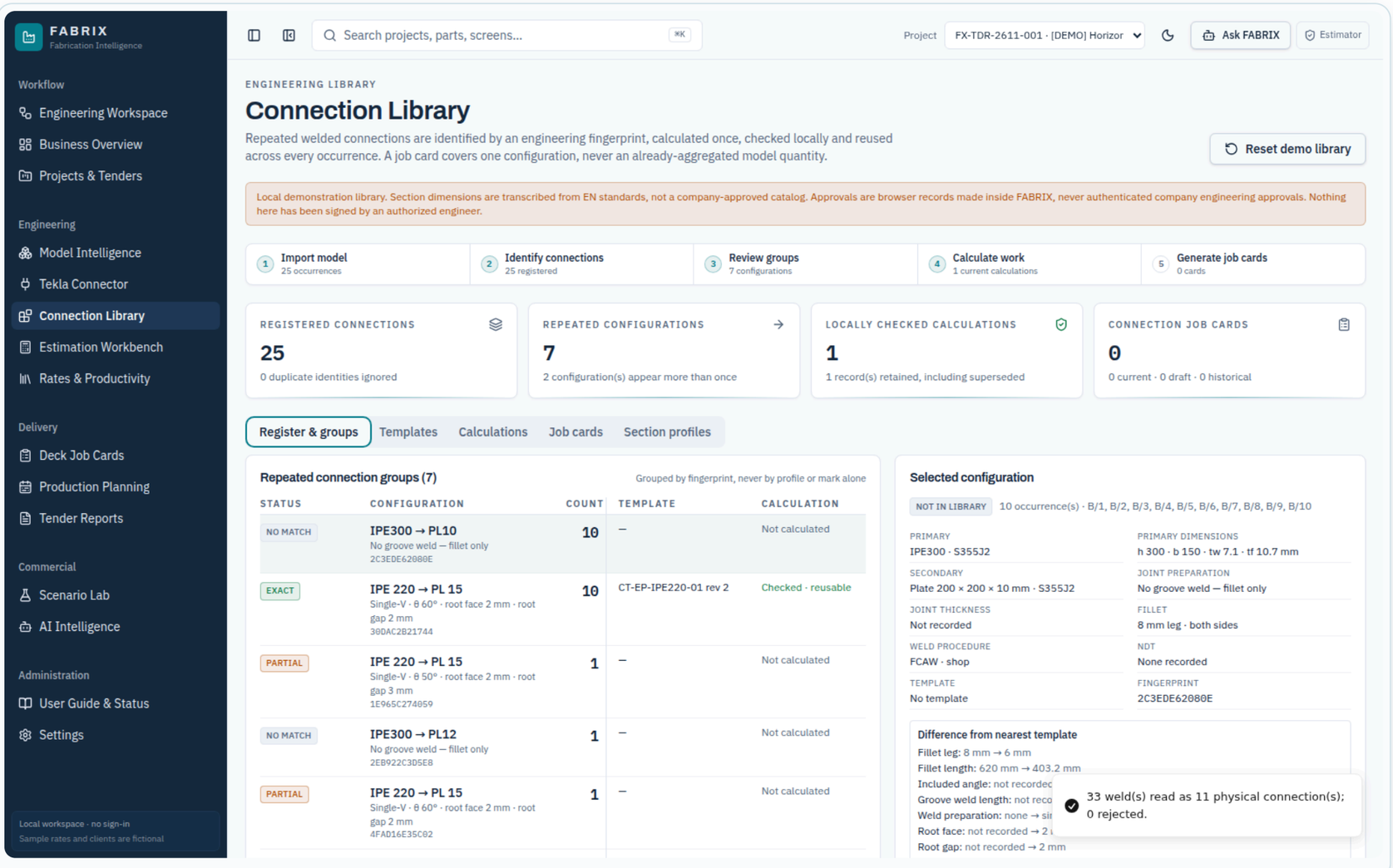
Result: Actual sample XLSX and PDF included. The workbook includes project/deck calculations and reconciliation.

Check: The print file is an internal test copy; review all assumptions before issue.

Open in staging: /jobcards

Tekla normalized JSON → connection register

Input: 01-Tekla-10-Connections-Revision-A.json. Created as a reference fixture, not read from licensed Tekla software.



STEPS TO FOLLOW

1. Open Connection Library → Register & groups.
2. Click Import Tekla connection export and choose revision A JSON.
3. Review the import: 33 welds are organized into 11 physical connections.
4. Check the total register; screenshot shows 25 occurrences because 14 demo connections were already present.

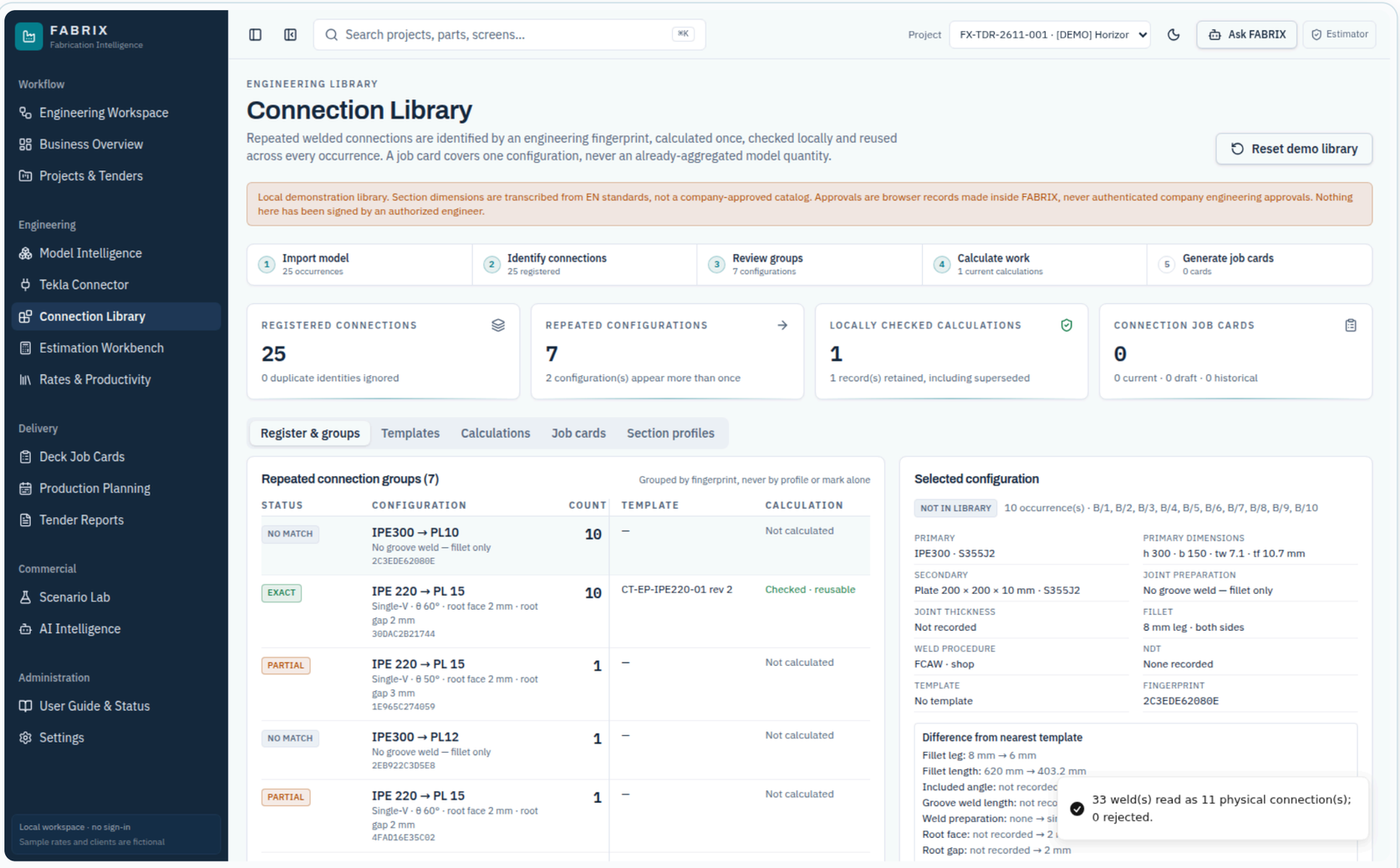
> **Result:** The fixture contains a 10-identical-connection group suitable for calculation reuse.

> **Check:** Do not interpret the 25 displayed register total as 25 joints imported from this file.

Open in staging: /connections

Repeated connections → one calculation

One matching configuration of 10 occurrences is selected using the registered engineering fingerprint.



STEPS TO FOLLOW

1. Select the group with count 10 and the correct IPE 300 / plate configuration.
2. Inspect weld type, dimensions, preparation, process, NDT and group count.
3. Click Calculate / reuse to calculate the matching configuration once.
4. Open Calculations, enter an engineer/checker name, and Record local check.

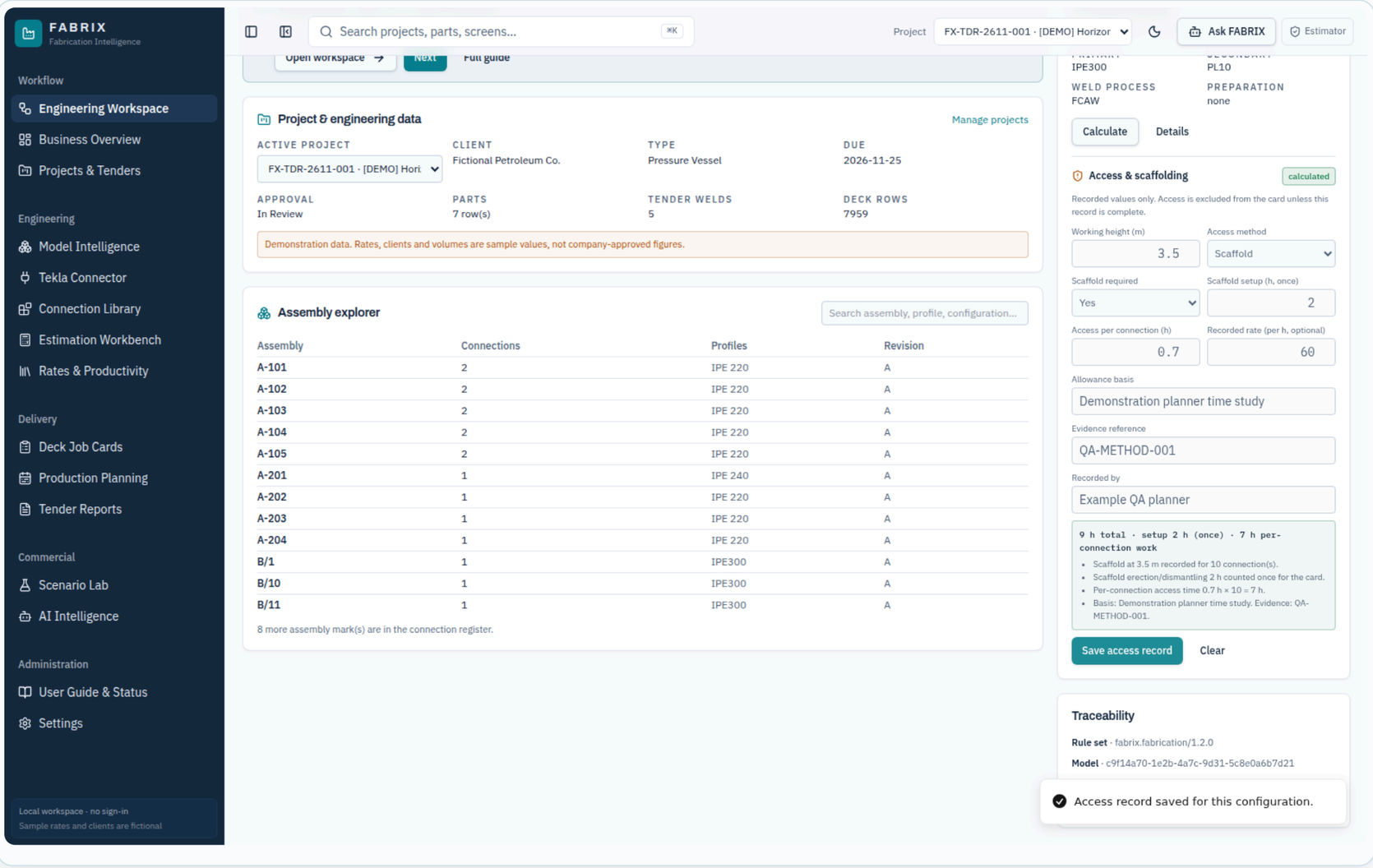
Result: A calculation record is retained for the 10 selected occurrences and can be used to issue a connection card.

Check: A local check remains a training-level check, not a company-authorized engineering signature.

Open in staging: /connections

Scaffold/access allowance

Enter recorded work-access requirements for the selected 10-connection group in the Workspace inspector.



STEPS TO FOLLOW

1. Working height = 3.5 m; Access method = Scaffold; Scaffold required = Yes.
2. Scaffold setup = 2.00 hours counted once per card; access = 0.70 hours for each connection.
3. Recorded rate = AED 60 per hour; enter basis, evidence and recorded-by person.
4. Click Save access record; reload and confirm the same values are still visible.

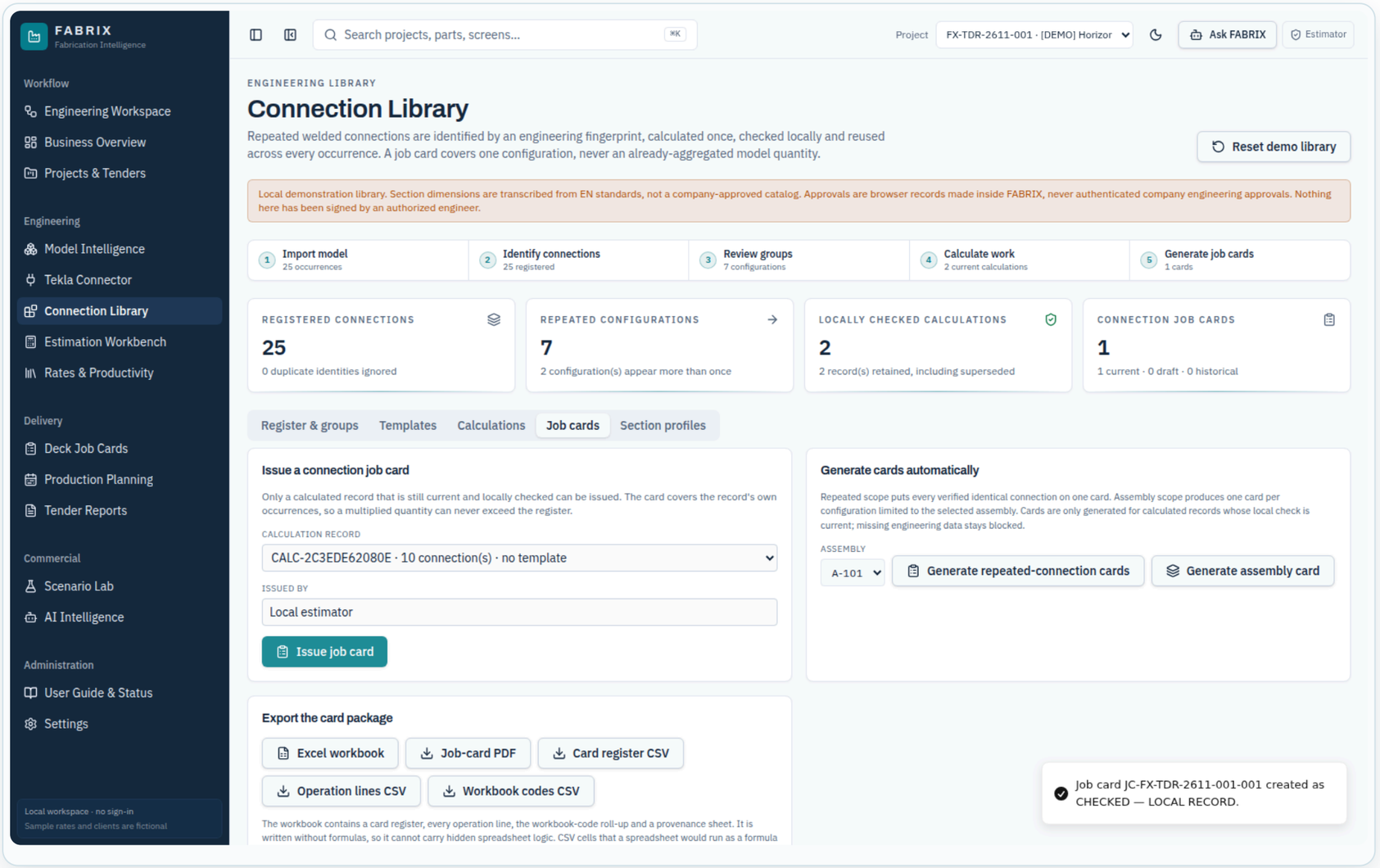
Result: Access hours = 2 + (10 × 0.70) = 9.00 h; illustrative extra cost = 9 × AED 60 = AED 540.

Check: Missing access input prints EXCLUDED; conflicting details block checked issue.

Open in staging: /workspace

Checked card → PDF / Excel / CSV

After the local calculation check and access record, issue the connection job card and export it.



STEPS TO FOLLOW

1. Open Connection Library → Calculations, select the checked and current calculation.
2. Click Issue job card to open the card register, then Issue job card again.
3. Review the checked card, revision 1 and its additive access allowance.
4. Download Job-card PDF, Excel workbook and Card register CSV.

Result: This sample card has 16.04 fabrication labour h + 9.00 access h = 25.04 h; machine 4.14 h.

Check: Card check/issue in this training version is not a formal company authorization.

Open in staging: /connections

Example calculation and exported files

These figures were taken from the actual job-card state and downloadable files generated on 20 November 2026.

16.04 h
Fabrication labour

9.00 h
Additive access

25.04 h
Total labour including access

4.14 h
Machine hours (separate)

Measured/test figure	Value	Meaning
Number of included repeated joints	**10**	One engineering fingerprint selected
Scaffolding setup hours	**2.00 h**	Once per job card, not ten times
Access hours	**7.00 h**	0.7 hours × 10 physical joints
Additional access cost	**AED 540**	9 hours × demonstration AED 60/hour
Fabrication baseline cost	**AED 991**	Excludes separately recorded access
Adjusted card cost	**AED 1,531**	Baseline AED 991 + recorded AED 540
Connection card issue state	**checked (local)**	Not an authenticated company approval

> The ZIP includes the real exported PDF, Excel workbook, CSV register and a JSON record of the sample calculation. None of these are customer-issue approved.

Exactly what you download

The sample bundle includes files produced by the live staging build. All example filenames are deliberately descriptive.

Connection Library outputs

Example-Connection-Job-Card.pdf - A4 card showing the connection, revision, work, recorded access and exclusions.

Example-Connection-Register.xlsx - 5-sheet workbook including card register, operations and access.

Example-Connection-Register.csv - CSV register including additive access fields.

Deck Job Cards outputs

Example-Deck-JobCards.xlsx - deck/operation summaries and reconciliation produced after importing Master table and Part list.

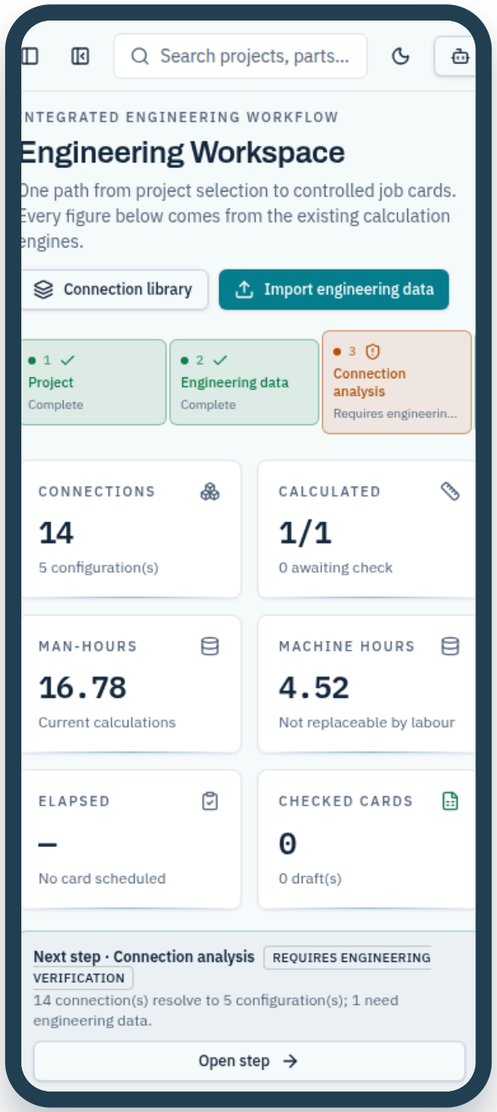
Example-Deck-JobCard-Print.pdf - browser printed A4 job-card view from the same working data.

EXAMPLE-RESULTS.json - inspectable numeric result from the connection sample.

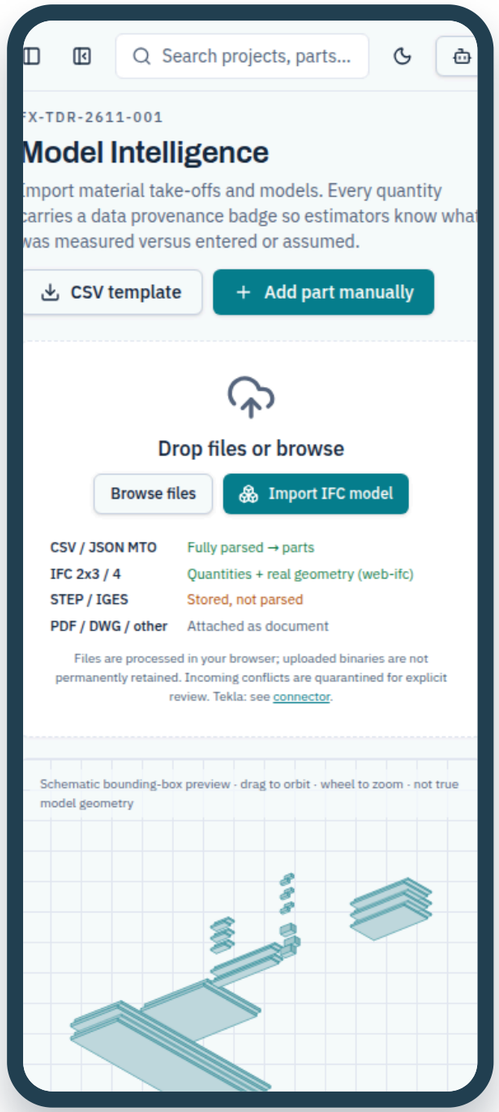
Do not confuse the two export pathways. Connection cards come from the Connection Library. Deck fabrication job cards come from Deck Job Cards. Tender BOM/Cost CSV comes from Tender Reports.

Responsive views on phone

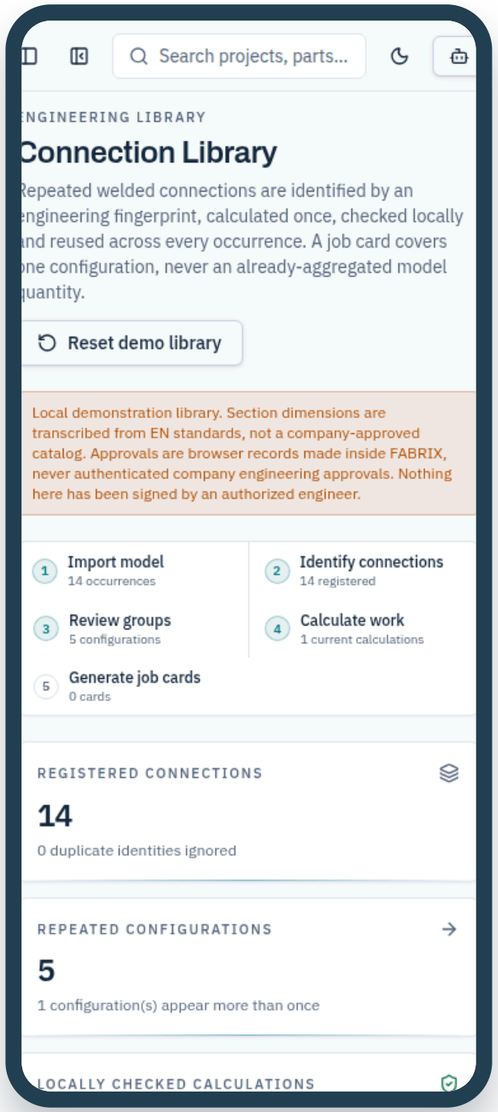
The same staging website adapts for phone and tablet. Screens below were captured at 390 × 844 pixels.



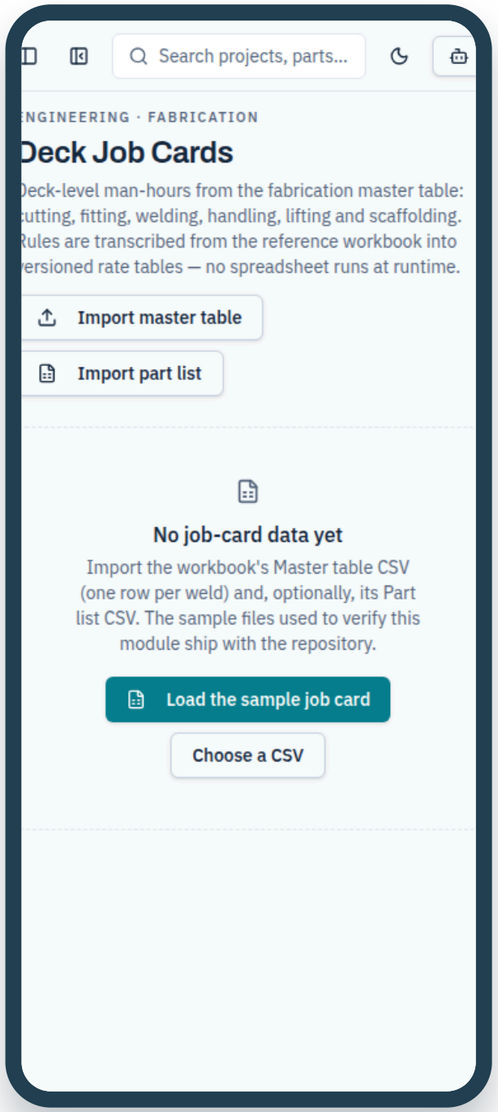
Engineering Workspace



Model Intelligence



Connection Library



Deck Job Cards

> Use mobile for checking summaries and small edits. Large IFC models, wide engineering tables, mass imports and controlled PDF review are better on a workstation. Data is not yet auto-synced between browsers.

Common errors and what they mean

Use these checks before assuming a module is broken.

Symptom	Action
IFC geometry appears but quantities are incomplete	Check the IFC export properties/quantity sets; meshes alone do not provide validated BOM quantities.
Tekla JSON rejected	Ensure it was produced by the FABRIX companion and satisfies the supported contract and revision rules. Native Tekla DB files are not valid JSON input.
Job Cards are blank after IFC import	Deck cards require Master table CSV, not IFC. Use the separate Deck Job Cards importer.
Connection calculation blocked	Check weld dimensions, geometry, preparation, process, NDT and all missing-data warnings.
Scaffolding cost shows EXCLUDED	Record working height, method, scaffold required, hours, basis and evidence. Never invent an allowance.
Card is Draft, not Checked	Resolve contradictory access/engineering inputs and use the applicable local verification path.
Changes absent on another computer	This build still uses localStorage for the engineering frontend. Use Download workspace backup; do not assume D1 sync.
Reports say not for customer issue	Review flags, provenance, approved rates, engineering checks and company document controls.
SAP or live Tekla connection missing	Those enterprise integrations are not available as a validated live connector in this release.

Do not use demonstration data for production

The guide reports what the staging build actually supports, not future SAP or enterprise functionality.

Available and demonstrated

IFC4 file viewing, MTO and CSV processing, Tekla normalized JSON fixture import, repeated-connection calculations, access allowance, revision-aware cards, A4 PDF and Excel/CSV, planned-vs-actual views, responsive browser interface.

Available API but not joined to frontend

Staging D1 server-side project/auth services were tested for login, separation of companies and migration. The site still says “Local workspace · no sign-in” and its normal engineering screens do not yet synchronize using that API.

Not yet verified for company issue

Licensed live Tekla installation, genuine customer IFC files, company-approved wage/rate sheets, signed checker identity, QA-approved work instructions, the complete job-card production process and SAP ERP integration.

Required for enterprise deployment

SSO/MFA and rate limiting, private R2 attachment UI, server-connected frontend, user administration, audit of issue and approvals, company engineering sign-off and passing hosted CI. Live production was intentionally left unchanged.

The sample user manual is for FABRIX 2.0 staging, not a representation that the app has been approved for official engineering issuance.

Daily operating checklist

Keep these steps in order to protect engineering traceability.

1

Confirm project

Choose active tender, model revision and client reference.

2

Confirm source

Check IFC / MTO / Tekla / Master table completeness.

3

Check calculations

Validate each quantity, joint fingerprint, NDT, hours and access record.

4

Review rates

Check approved labour and machine rates with validity dates.

5

Resolve flags

Record exceptions and keep unverified figures excluded.

6

Record revisions

Do not overwrite previously issued calculations and cards.

7

Export package

Generate PDF/Excel and separately preserve all input files.

8

Back up

Download browser workspace backup and follow company document control.

Where to continue: **fabrix.dnjfactory.online/workspace** · For sample files open “Example Inputs & Results” alongside this PDF.