

CFIHOS Use Case 3 – Equipment Data Validation

Contractor or Principal quality assurance workflow validating extracted equipment datasheet attributes against equipment register information. Aligned to CFIHOS v2.0 Core Reference Data Library structures.

Introduction

Contractor or Principal quality assurance workflow validating extracted equipment datasheet attributes and consistency between engineering equipment datasheets and equipment register information.

This user guide demonstrates how to use Rihal Data eXtract (RDX) and Rihal Data Refine (RDR) to:

- extract equipment attributes and metadata from submitted engineering equipment datasheets
- review extracted equipment attributes against the source datasheets
- compare extracted equipment attributes against equipment register information
- validate equipment attributes against Principal reference data requirements
- identify missing, inconsistent or invalid equipment attributes
- generate Principal-aligned equipment register outputs for submission or further review

The workflow can be performed by Contractor Document Control before information is transferred to the Principal, or by Principal Document Control as part of received-submission quality assurance.

These instructions assume that RDX extraction rules and RDR properties, reference data, transformation rules and Excel templates have already been configured for the applicable project standard.

Rihal Data eXtract – Import Files and Extract Metadata

1. Prepare files for equipment data extraction into one folder for upload to RDX
2. Log in to RDX using the instance URL and login credentials provided by your organisation
3. Select **Projects** from the left-hand menu and select the appropriate project

Rihal Data eXtract

 Projects

Figure 1. Projects

4. Where required, remove files from a previous run before uploading the new submission. Confirm that the files are no longer required before deletion. Remove previously uploaded files by selecting the delete button next to each file



Figure 2. Delete previously uploaded files

5. Select the **Upload** button



Figure 3. Upload button

6. Navigate to the prepared folder and press **Ctrl+A** to select all files then select **Open**

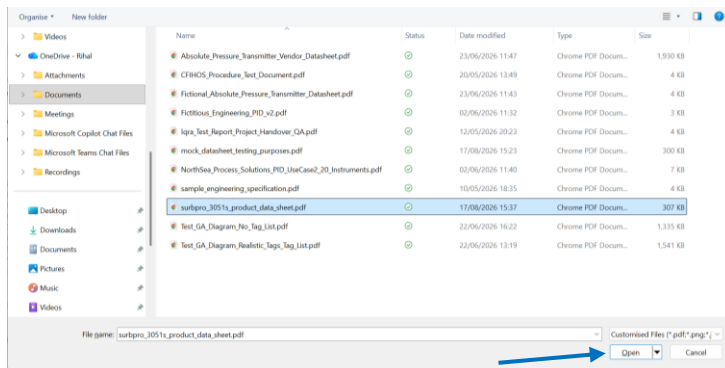


Figure 4. Select all files then Open for upload

7. Select **Start** to begin the extraction process



Figure 5. Start extraction

8. Wait for the Extraction status to show “Completed” then select **Results** view

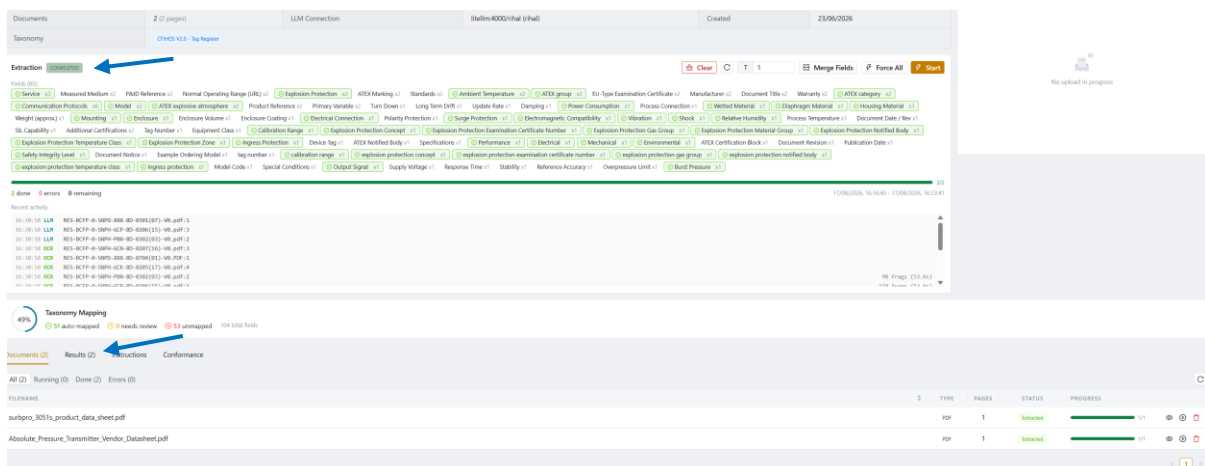


Figure 6. Extraction completed, select Results view

9. The Results view shows extracted fields and each document page as a record, extracted fields are organised into columns for each page

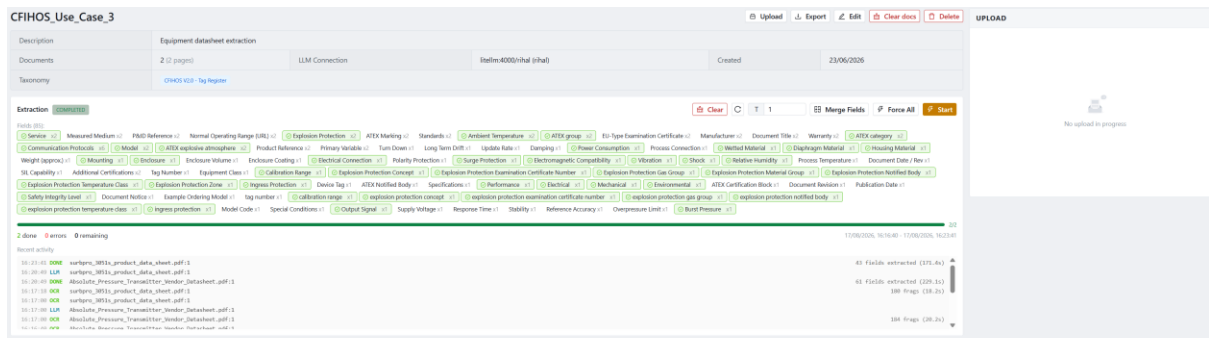


Figure 7. Results view

10. Select the Edit icon to view the file

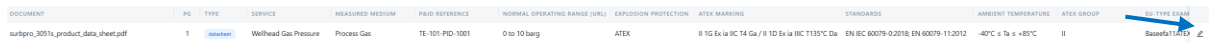


Figure 8. Open the Document Viewer

- The Document Viewer provides a visual quality assurance interface that displays extracted equipment data directly against the source datasheet. Users can verify extracted metadata and review confidence scores before validation and transformation activities.

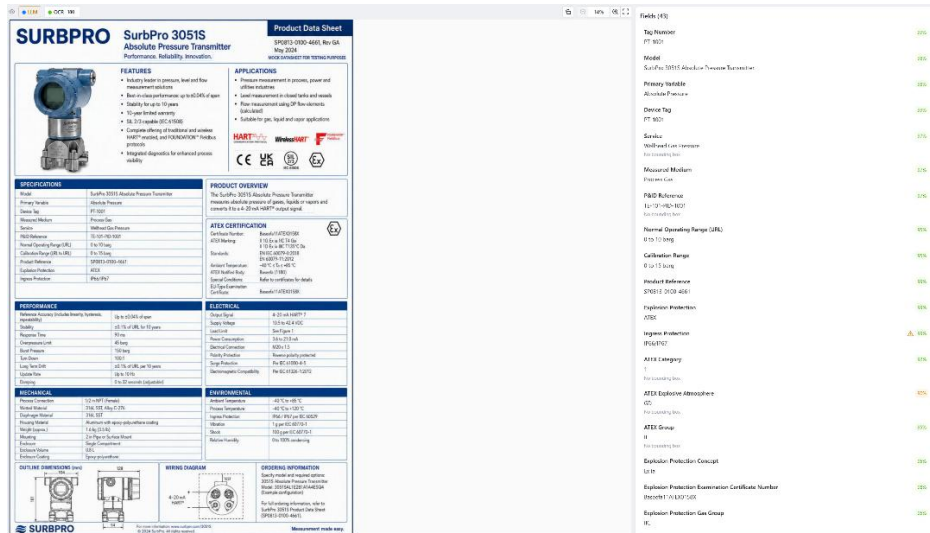


Figure 9. Document Viewer

12. Select **Back** to return to Documents view

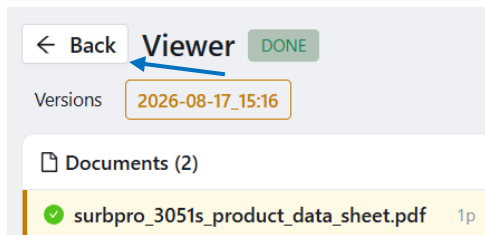


Figure 10. Back button to return to documents view

13. Select the **Export** button



Figure 11. Export button

14. Select **Excel (wide – fields as columns)**

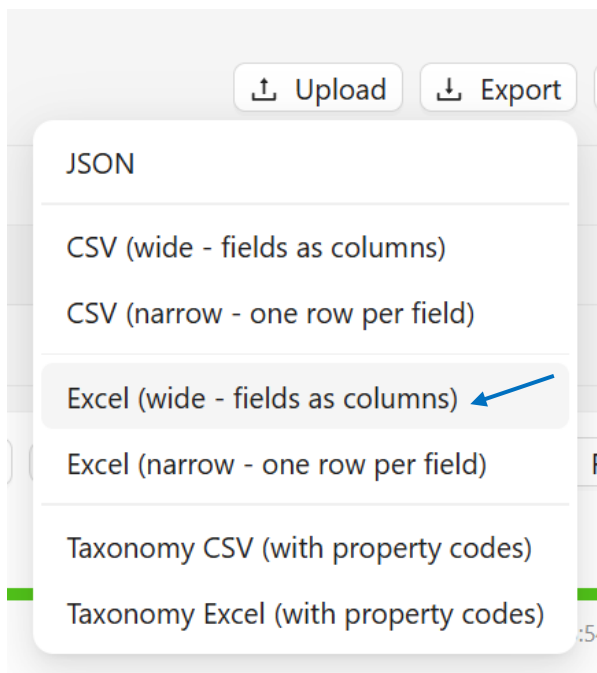


Figure 12. Select export format

15. Use Save As dialog box to rename file, navigate to save location then select **Save**

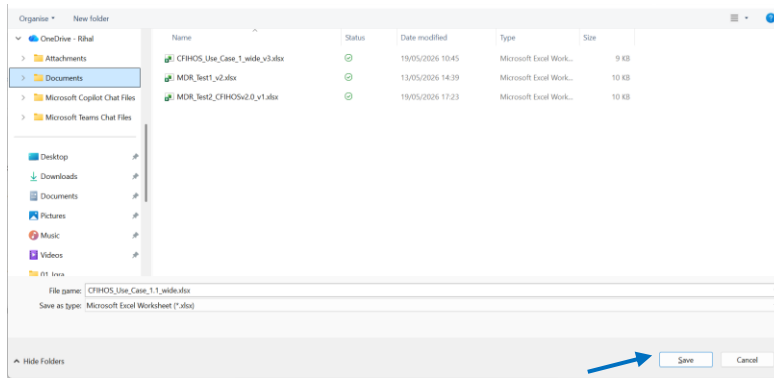


Figure 13. Save As dialog box

RDX output: structured equipment data export ready for comparison to equipment register in RDR.

Rihal Data Refine – Comparing Extracted Metadata to Equipment Register

1. Prepare extracted metadata Excel workbook from RDX and equipment register workbook into one folder for upload into RDR
2. Log in to RDR using the instance URL and login credentials provided by your organisation
3. Ensure correct project is selected

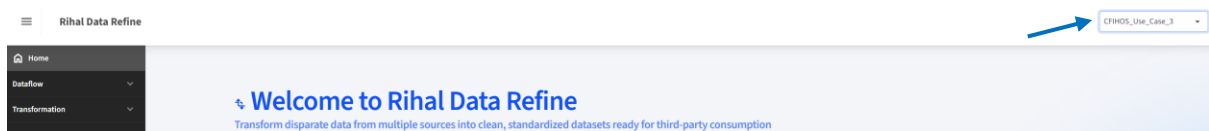


Figure 14. Select project

4. On the left-hand menu select **Dataflow** then **Upload Data**

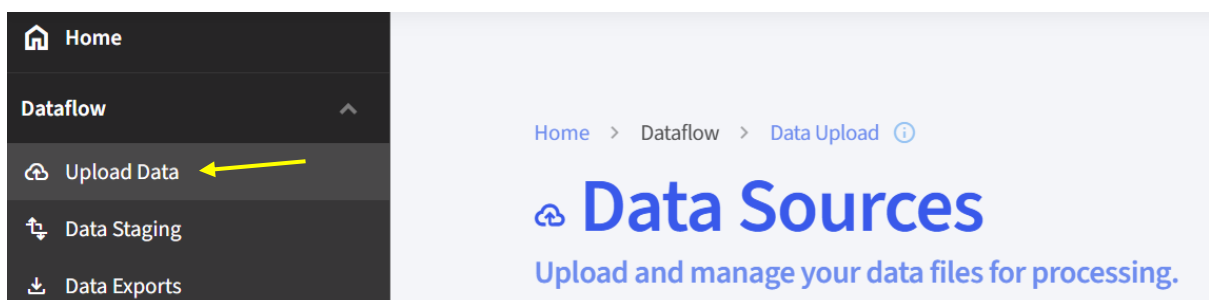


Figure 15. Upload data

- Where required, remove files from a previous run before uploading the new submission. Confirm that the files are no longer required before deletion. To clear previously loaded files, select the Select All checkbox then select **Delete Selected**

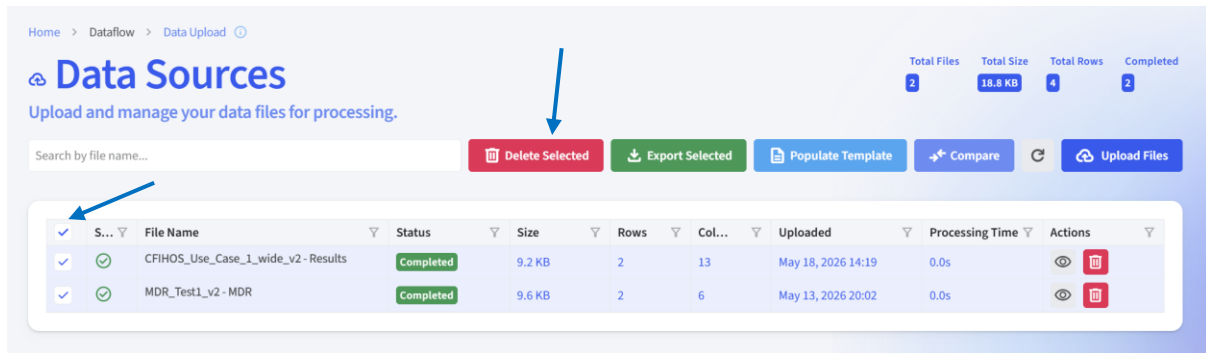


Figure 16. Delete selected files

- Confirm delete selection

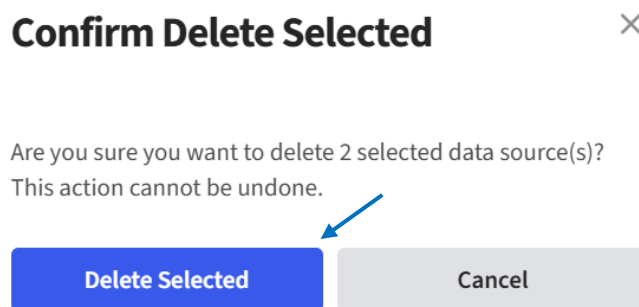


Figure 17. Confirm delete selection.

- Wait for files to be deleted

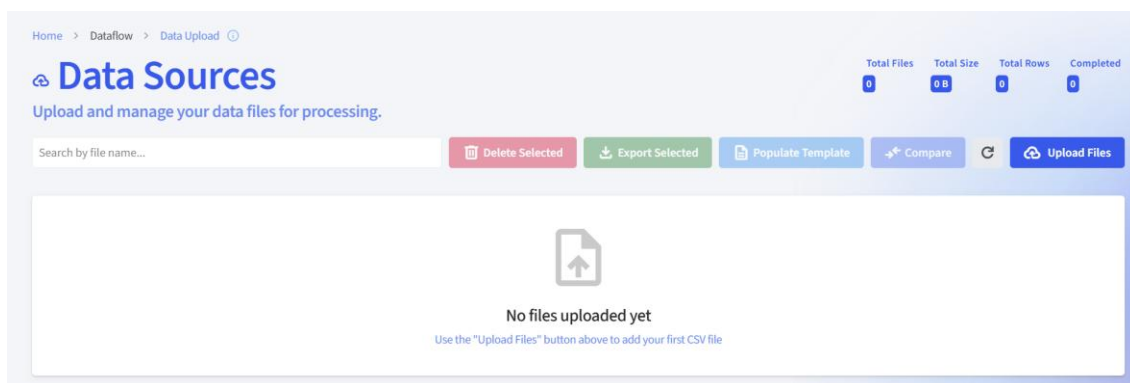


Figure 18. Data sources cleared

- Select Upload Files

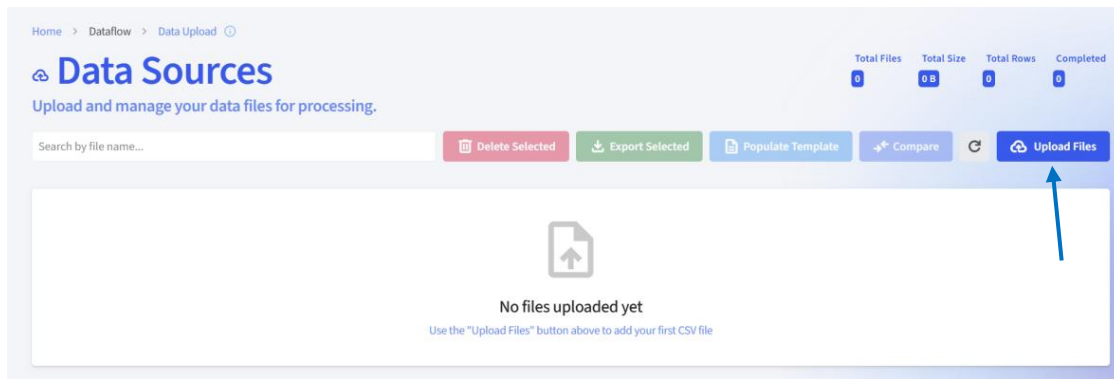


Figure 19. Upload files

9. Navigate to folder with extracted metadata and equipment register workbooks then press **Ctrl+A** to select all files, then select **Open**

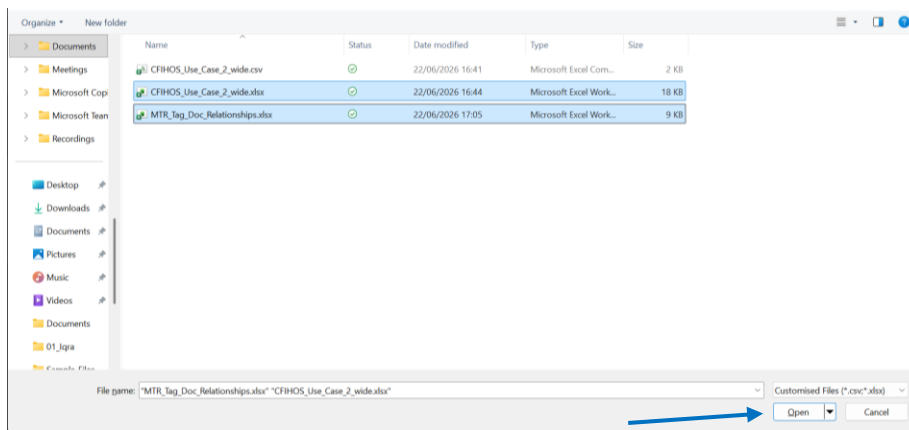


Figure 20. Open files

10. The files will display as Data Sources on Upload Data page

Status	File Name	Status	Size	Rows	Columns	Uploaded	Processing Time	Actions
Completed	Pressure_Transmitter_Equipment_List.csv	Completed	0.6 KB	1	19	Jun 23, 2026 17:10	0.0s	View Download
Completed	CFIHOS_Use_Case_3_wide.csv	Completed	0.8 KB	1	24	Jun 23, 2026 14:32	0.0s	View Download

Figure 21. Uploaded files

11. Expand the Tools menu and select **Data Comparison**



Figure 22. Data comparison

12. Select a **Left Data Source** (Equipment Register) and **Right Data Source** (Extracted metadata) then select **Compare**

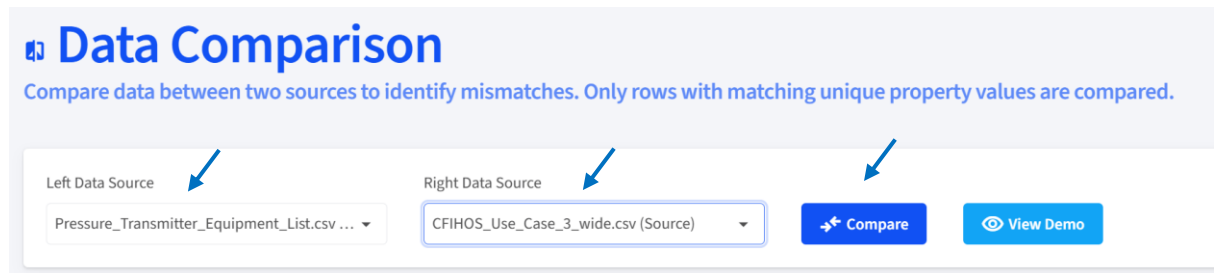


Figure 23. Select data sources for comparison

13. Under Property Mismatch Summary, select the relevant property mismatch, then select **Click to view affected unique items**

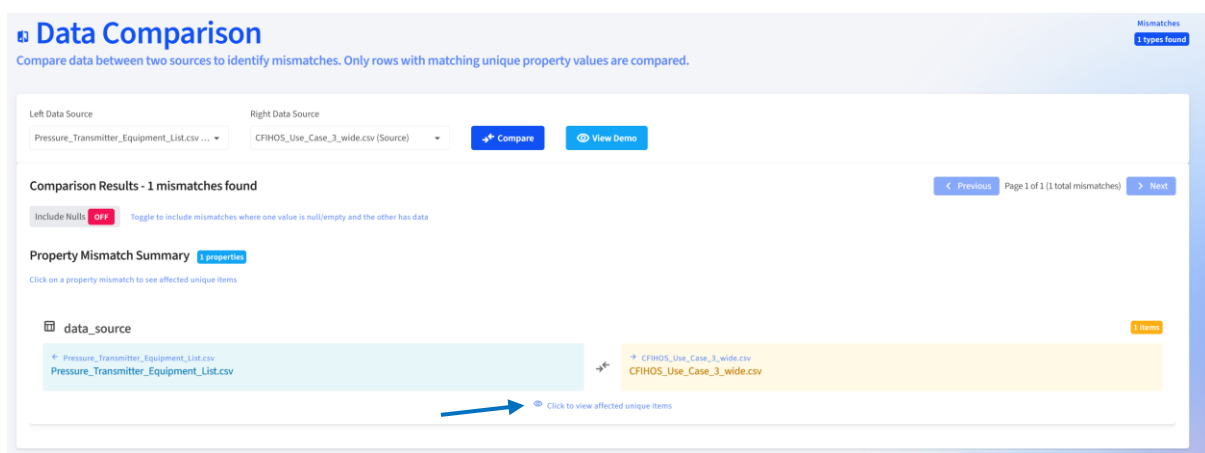


Figure 24. Click to view affected unique items

14. Review the side-by-side comparison shown for each unique document file

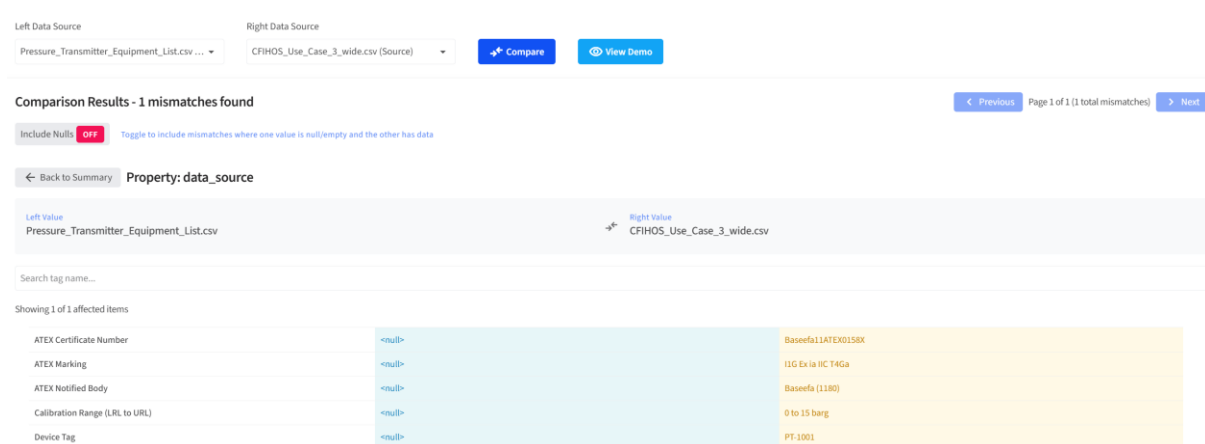


Figure 25. Side by side column comparison

15. Go to **Data Staging** under the **Dataflow** menu heading

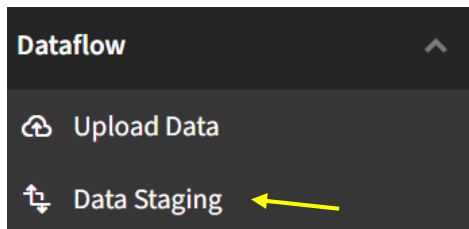


Figure 26. Data staging

16. Select **Run Transformation**

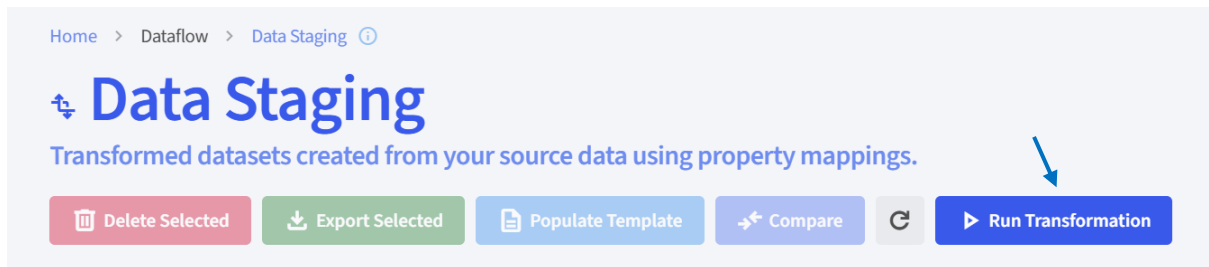


Figure 27. Run transformation

17. Once transformation is completed a staging dataset is created, select the eye button to view

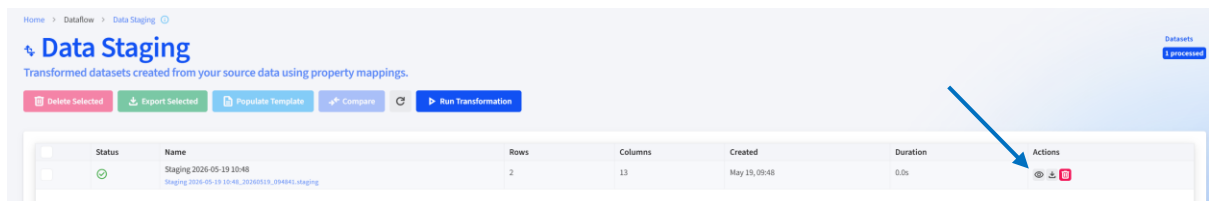


Figure 28. View staging dataset

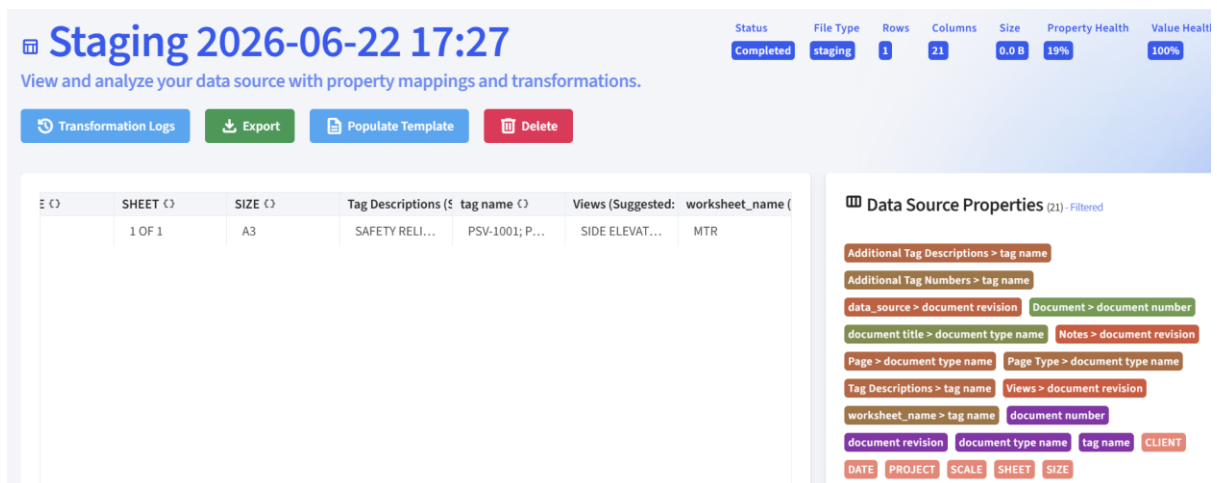


Figure 29. View staging dataset

18. Review the transformation results

WHILST REVIEWING THE STAGING DATASET REFER TO **RESOLVING INVALID VALUES SECTIONS** BELOW

19. Select **Populate Template**



Figure 30. Populate template

20. Select the correct equipment register template and staging source then select **Populate Template**

Populate Excel Template ×

Populate Excel Template

Select Template
Pressure_Transmitter_Equipment_List_Template_v01 ←

Select a staging data source to populate the template. Source columns are matched to template columns by exact name (case-insensitive, whitespace trimmed); unmatched columns are skipped and reported on the export.

Data Source Columns

ATEX category	ATEX explosive atmosphere	ATEX group	calibration range	equipment class name
equipment description	explosion protection concept	explosion protection examination certificate number		
explosion protection gas group	explosion protection temperature class	explosion protection zone		
fault tolerance	hazardous area certification standard	ingress protection	manufacturer datasheet	
pipng and instrumentation diagram	tag name	model part name	+16 not in project properties	

17 matched 1 missing in template 16 not in project properties

Select Staging Data Source
Staging 2026-06-23 17:28_20260623_162816.staging ←

Selected: Staging 2026-06-23 17:28_20260623_162816.staging ×
Rows: 1
Columns: 34
Uploaded: 2026-06-23 17:28

Cancel Populate Template ←

Figure 31. Populate template

21. Navigate to **Data Exports** under **Dataflow** section of menu

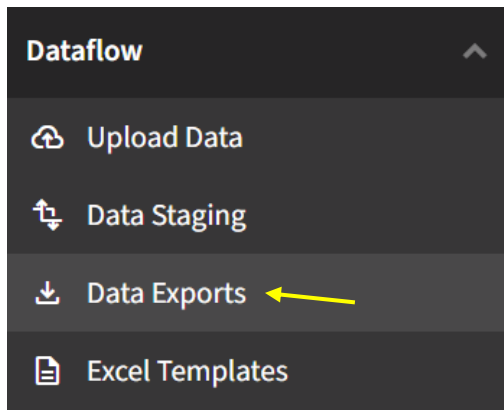


Figure 32. Data exports

22. Select the Download Export button under the Actions column for the required data export

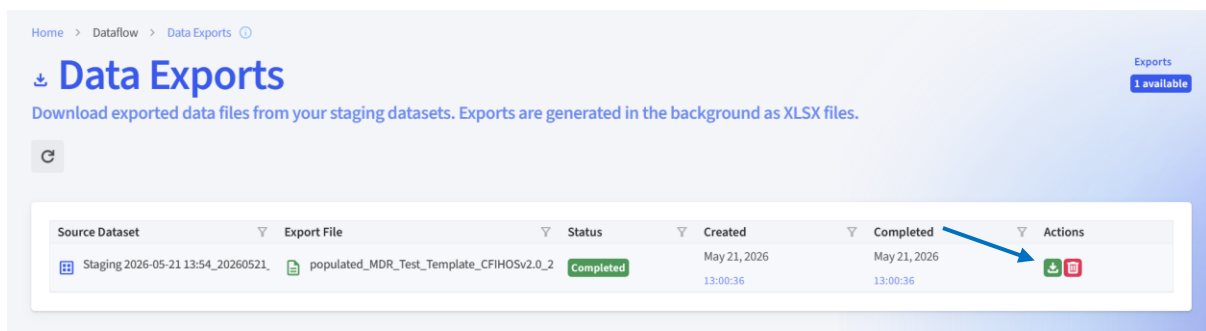


Figure 33. Download export file

23. Use the Save As dialog box to rename the populated template file, select a save location then select **Save**

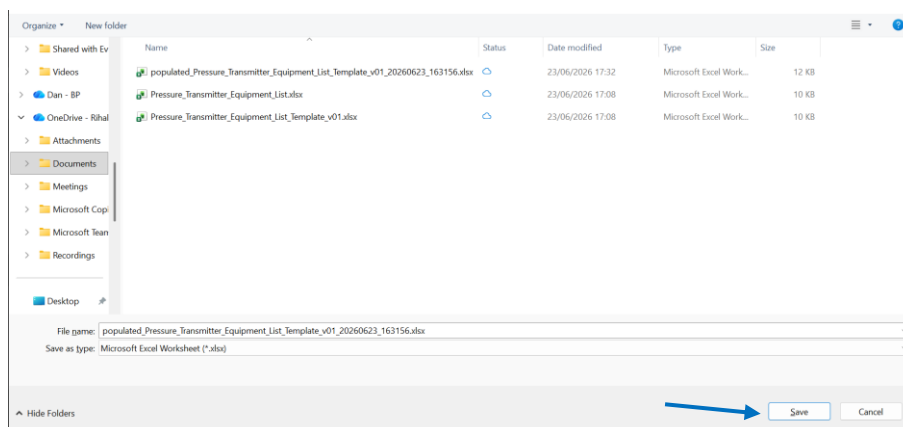


Figure 34. Save As for populated template

24. Open the populated template Excel workbook for review

tag name	equipment description	equipment class name	ATEX category	ATEX explosive atmosphere	ATEX group	calibration range	explosion protection concept	explosion protection examination certificate number	explosion protection gas group
PT-1001	Wellhead Gas Pressure	Absolute Pressure Transmitter	2	G	II	0 to 15 barg	Ex ia	Baseefa11ATEX0158X	IIC

Figure 35. Sample populated equipment register

RDR output: validated and transformed equipment register populated in the required Principal template for transmittal to Principal.

Resolving Invalid Values – RDR (Preferred)

1. Select **Property Mappings** from the **Transformation** section of left menu

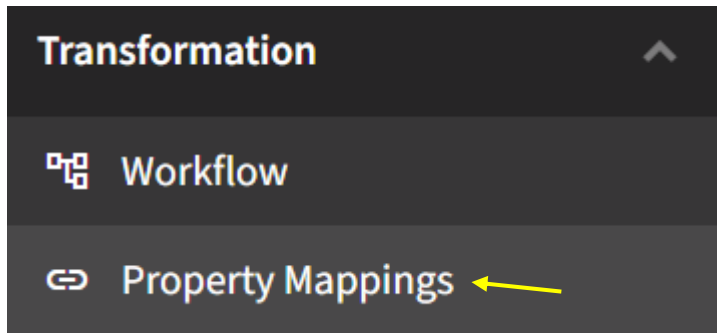


Figure 36. Property mappings

2. Select a property highlighted in purple in the Data Source Properties section and choose **View Values** to review (review each mapped target property)

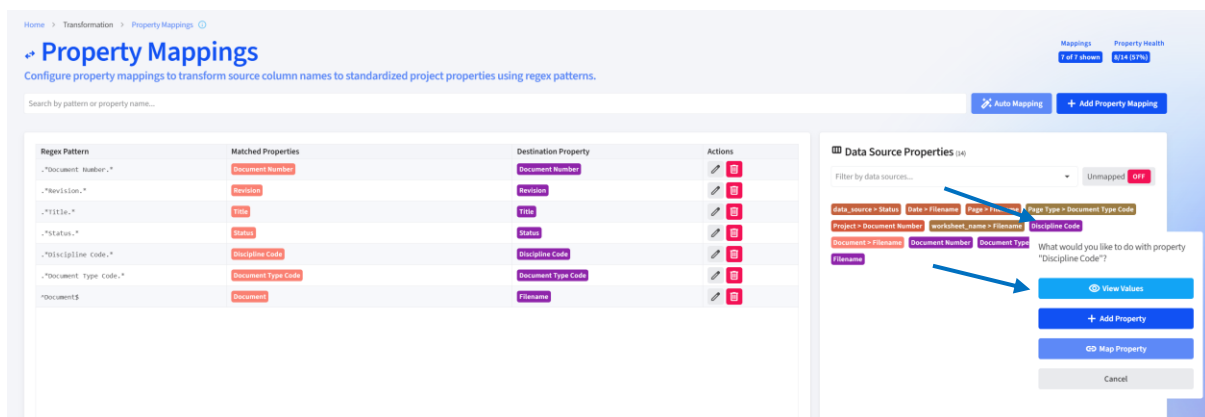


Figure 37. Select data source properties tagged in purple then view values

3. Where an invalid or unresolved value is shown in red, select the value for review

Property Values - Revision

2 unique values from 2 total records → Mapped to: Revision

Invalid Only **OFF**

CFIHOS_Use_Case_1_wide_v3 - Results

A (1) A. (1) ←

Figure 38. Property values

4. Enter a replacement value to create a reusable value mapping correction for the property then select **Create**

Figure 39. Create value mapping to make correction (in this example, revision “A.” will be transformed to “A”)

5. Go to RDR step 15 to re-run transformation with updated rules

Resolving Conflicting Values – Excel (Alternative)

1. Open the populated template in Excel
2. In Excel use Ctrl & F to find cells containing the pipe delimiter to review conflicts

Figure 40. Find cells with conflicting values

3. Resolve each conflict by replacing with the correct value

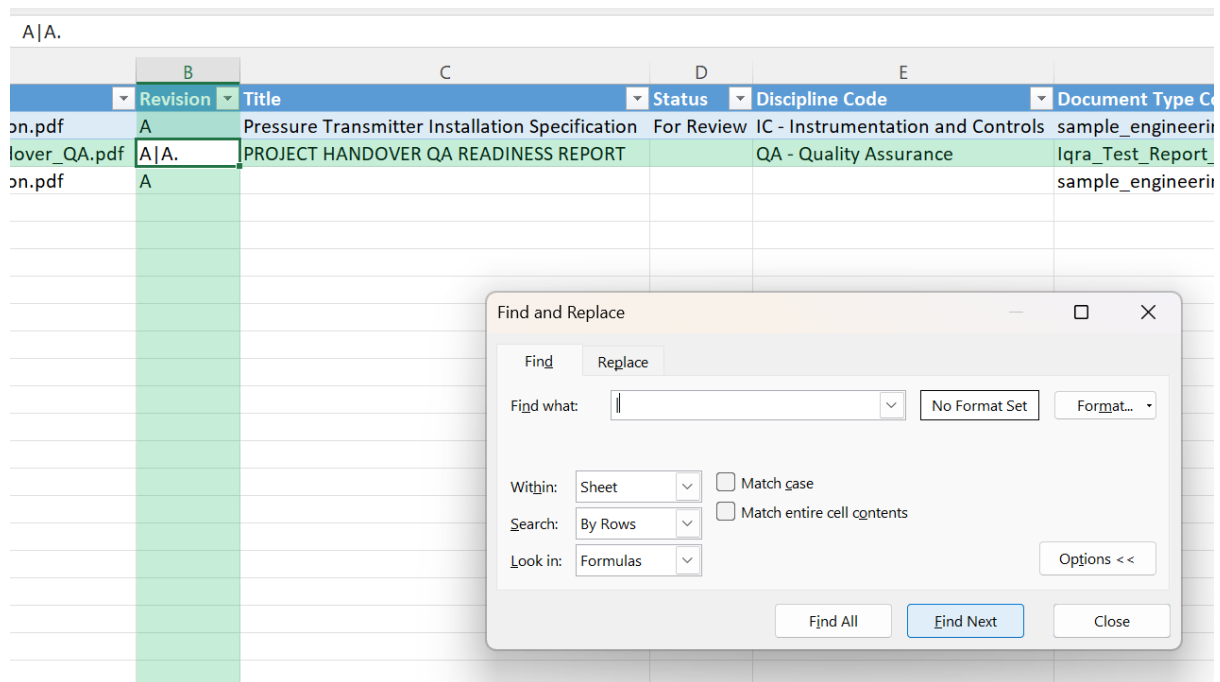


Figure 41. Example value conflict

	A	B	C	D	E	F
1	Document Number	Revision	Title	Status	Discipline Code	Document Type Code
2	ENG-SPEC-PT-001	A	Pressure Transmitter Installation Specification	For Review	IC - Instrumentation and Controls	SPE - Specification
3	REP-QA-OPS-0002	A	PROJECT HANDOVER QA READINESS REPORT		QA - Quality Assurance	REP - Report
4						

Figure 42. Example resolved conflict value

Once all values have been corrected and the validated equipment register has been fully reviewed, the information deliverable is ready for the next stage:

- Contractor workflow: submit the equipment register and associated document files to the Principal through the agreed project information management process.
- Principal workflow: proceed with received-submission quality assurance and review through the Principal's agreed information management process and systems.