Da Vinci Smart Manufacturing

BRD S08.02 _Lab Analysis_SpoutAnalysis

Version	Created/Modified by	Description	Date
1.0	Leopoldo Rivera Sahana Badal	S08.02 First draft	22/05/2025

1. Spout Analysis

1.1. Spout Analysis List Screen

This screen will display a list of analysis records for samples taken from the furnace spout before being collected in the ladle. These records are pulled from an external source, Xray, and populated in the list screen. Users can also add new analysis records directly in the system. The Spout Analysis ID is system-generated using the analysis date and time, furnace number and reprise. Below is a detailed layout of the screen.

1.1.1 Header Section

- **Title**: "Spout Analysis"
- **Stats Section:** Total count of Draft | New | Linked | Rejected
- **Search Bar**: Tooltip text: Search by Analysis ID (Furnace ID_DDMMYY_HHMM_Reprise)
- **Filters**:
    - Analysis Date and Time -
        - Date range picker
    - Furnace ID -
        - Multiselect Dropdown:
        - All furnaces for which analysis exists.
    - Status -
        - Multiselect Dropdown:
        - Values: New/Draft/Linked/Rejected
    - Shift
        - Multiselect Dropdown
        - Values: 1/2/3
    - Source
        - Multiselect Dropdown:
        - Values: Manual/Xray
    - Clear Filter - This will clear all the applied filters
    - All Filter drop downs should be sorted alphabetically / numerically
- **Action Buttons in Header**:
    - **Add Analysis**: Button to create a new analysis record.

1.1.2 Analysis List Section

    - The main area of the screen will feature a data table displaying the spout analysis records. The table will have the following columns:
    - **Table Default Sorting** : Analysis Date and Time in descending order.
- **Spout Analysis ID**:
    - System-generated ID in the format (Furnace ID_DDMMYY_HHMM_Reprise).
    - Sorting: Yes
    - Frozen - Yes

- **Furnace ID**:
  - The furnace number from which the sample was taken.
  - Sorting: Yes
  - Frozen: No
- **Analysis Date & Time**:
  - The date and time when the analysis was conducted.
  - Sorting: Yes
  - Frozen: No
- **Source**:
  - The source of the sample. (Options: Xray, Manual).
  - Sorting: Yes
  - Frozen: No
- **Shift:**
  - Shows the shift to which the analysis record belongs to (1,2,3)
  - Sorting: Yes
  - Frozen: No
- **Status**: Indicates the status of the record (Draft, New, Linked, Rejected).
  - **New** – Any Spout Analysis record created either from Xray or submitted Manually will have the initial status as New.
  - **Draft** - During the creation of an analysis record, it can be saved as a draft. This will be indicated by a Draft status.
  - **Linked** – Once a spout analysis record is linked to a Tap Id under Core process, the status in the list screen will display as Linked.
  - **Rejected** – On the list screen, a user can mark a submitted record as rejected, which will be indicated by a Rejected status.
  - Sorting: Yes
  - Frozen: No
- **Created By:**
  - Shows the UserID | First name + Last name
  - Sorting: Yes
  - Frozen: No
  - **Note:** Horizontal scroll is required to be able to navigate through all columns and visualize all data but always respecting the frozen columns.

- **Action Buttons**: Depending on the status, allows users to edit or view the record.
  - **Draft**:
    - Add Details – Additional details can be included into the analysis record prior to submission.
    - Delete – Selected analysis record will be permanently deleted
    - View - Record details can be viewed in non-editable mode
  - **New**:
    - View – Record details can be viewed in non-editable mode
    - Edit – Record details can be edited
    - Mark as Rejected – Record status can be changed to Rejected
  - **Linked**:
    - View – Record details can be viewed in non-editable mode
  - **Rejected**:

- View – Record details can be viewed in non-editable mode

- **Pagination Controls**: Navigation buttons to browse through multiple pages of records, if applicable (for more than 10 records).
- Rows Per page : Default 10, Dropdown values: 10, 20, 30, 40, 50
- Once one spout analysis with the same furnace ID, Date and time has been linked, the remaining records with other reprises both in the status New and Draft will be automatically be changed to Rejected status. Once unlinked in production screen, they will revert to New status.

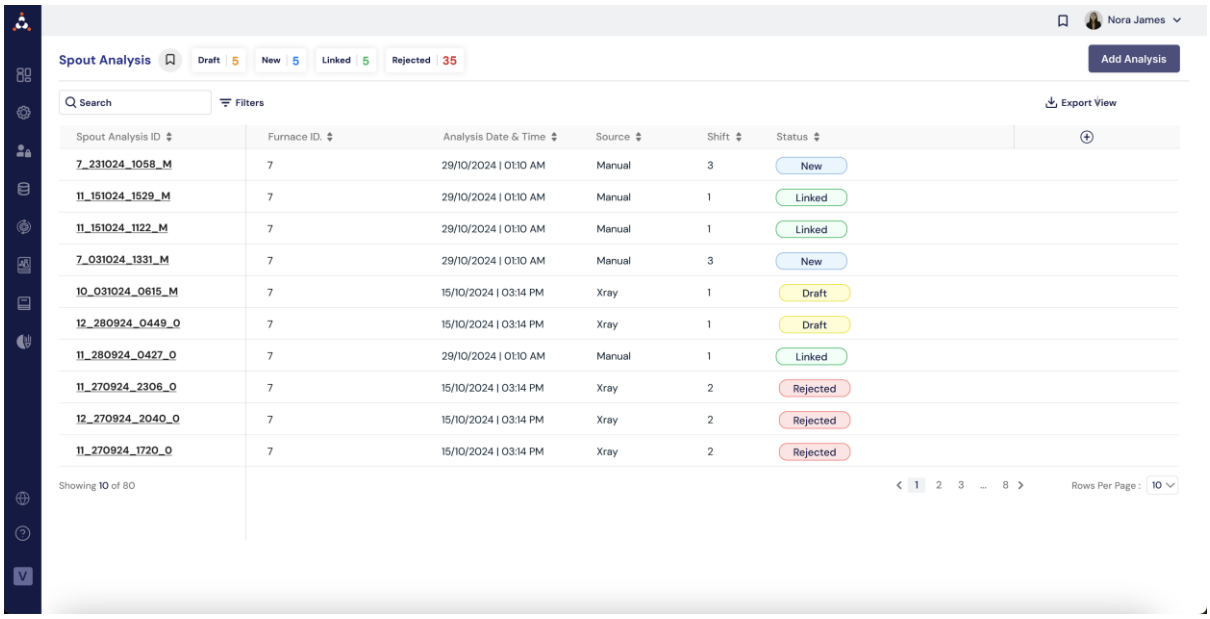
Export Function: The export function must extract ALL the information including chemical results of the list of records shown based on the combined results of filter selection, sort and search criteria. as the following example:

Spout Analysis ID	Furnace ID	Created At	Created by/ Modified by	Comments	Shift	Source	Status	Al (%)	Ca (%)	Fe (%)	Ti (%)	V (%)	Ni (%)	P (%)
101_190525_0246_M	101	19/05/2025 | 02:46 AM	UserID | First name + Last name	test	1	Manual	Rejected	1.9	1.9	1.9	1.9	1.9	1.9	1.9
101_160525_1025_M	101	16/05/2025 | 10:25 AM		test	1	Manual	New	1.9	1.9	1.9	1.9	1.9	1.9	1.9
9009_160525_0856_M	9009	16/05/2025 | 08:56 AM		test	2	Manual	Rejected	1.9	1.9	1.9	1.9	1.9	1.9	1.9

6_160525_0823_M	6	16/05/2025 | 08:23 AM			1	Manual	Draft	1.9	1.9	1.9	1.9	1.9	1.9	1.9

Exported File Name: Spout Analysis

Customize Columns: Users can enable or disable all columns based on their preference. Only the enabled columns will be visible in the list. Columns marked as 'frozen' will be enabled by default and cannot be modified.



1.2. Add Spout Analysis Screen

This screen will allow users to input and manage analysis records, organised into two sections: Basic Information and Analysis Values. Mandatory fields will be marked with an asterisk (*). Below is a detailed layout incorporating the requirements.

Header: Back Icon | Add Spout Analysis

1.2.1. Basic Details:

- **Furnace ID***:
  - User selects the furnace ID from a single select dropdown, from which the sample was taken.
  - Mandatory - Yes

    - Default value - No
    - Field Type - Single Select Dropdown Values: All active furnaces
    - Validation - No
- **Analysis Date and Time***:
    - Users select the date and time of the analysis using a date picker.
    - Mandatory - Yes
    - Default value- Current Date and time will be displayed as default.
    - Field Type Single Date and time picker
    - No Validation
- **Reprise:**
    - Auto populated as “M” for manual addition of records.
    - Mandatory - Yes
    - Default Value - “M” auto populated
    - Validation: It cannot be edited.
- **Source**:
    - Auto populated as “Manual” for manual addition of records.
    - Mandatory - Yes
    - Default Value - “Manual” auto populated
    - Validation It cannot be edited.
- **Analytical Device**:
    - Users selects from dropdown the device used for the analysis.
    - Mandatory - No
    - Default Value - None
    - Validation - No
    - Field Type - Single select dropdown (Xray)
- **Shift***:
    - Users selects the shift from a single select dropdown, during which the sample was taken.
    - Mandatory: Yes
    - Default Value - No
    - Field Type: Single select dropdown (1, 2, 3)
    - Validation - No
- **Comments**:
    - Users can input any additional comments.
    - Mandatory - No
    - Default Value - None
    - Field Validation - All (Including special characters), 100 characters
-

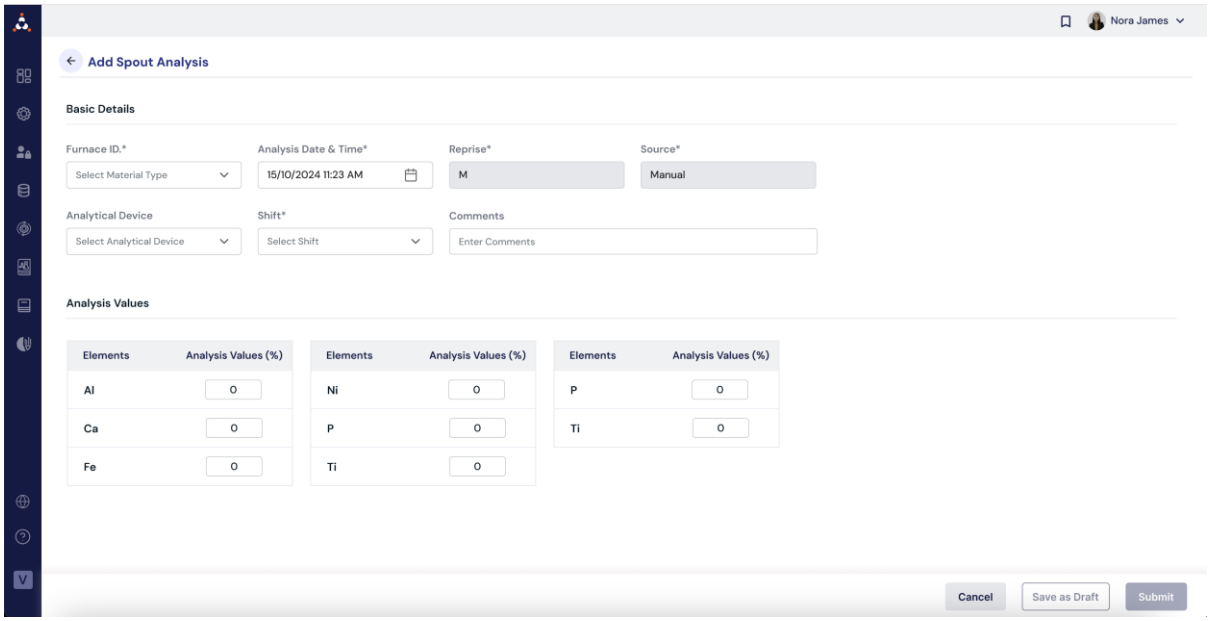
1.2.2. Analysis Values Section:

- This section allows user to input detailed analysis values, which include a standard set of elements.
- Mandatory - No
- Default value: 0.0000

- Field Validation - Max 100 as it is in %. upto 4 decimal points eg., 100.0000%
  - **Al (%):** Users input the percentage of Aluminum.
  - **Fe (%):** Users input the percentage of Iron.
  - **Ca (%):** Users input the percentage of Calcium.
  - **Ti (%):** Users input the percentage of Titanium.
  - **Ni (%):** Users input the percentage of Nickel.
  - **V (%):** Users input the percentage of Vanadium.
  - **P (%):** Users input the percentage of Phosphorus.

1.2.3. Action Buttons

- **Save Draft**: Saves the record as a draft (Status: Draft) and validates for a unique analysis ID.
- **Submit:** Submits the record as complete (Status: New) and validates for a unique analysis ID.
- **Cancel**: Cancels the current operation and returns to the list screen



1.3. Edit Spout Analysis

This screen provides interface for editing existing analysis records, allowing users to update editable fields while keeping essential identifying information non-editable. The ability to save edited records, view a change history log provides flexibility and transparency in managing the analysis process. Below is a detailed layout incorporating these requirements.

Header: Back Icon | Spout Analysis ID : “101_190525_0246_M”

1.3.1. Basic Details:

- **Furnace ID.**:

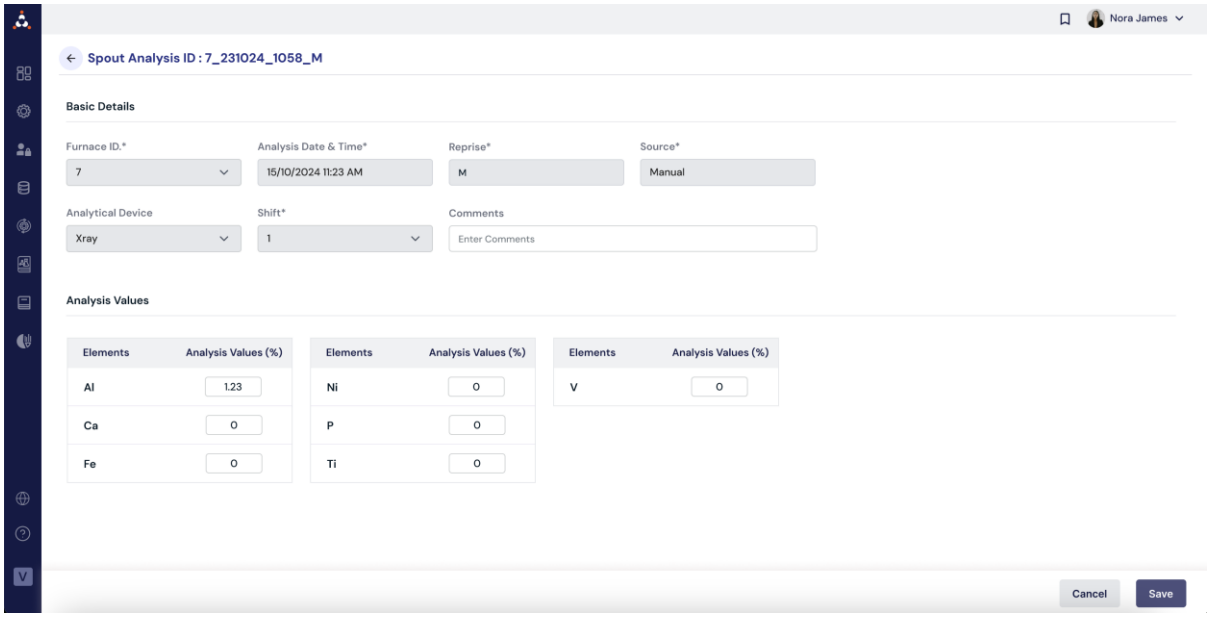
    - Non-editable and pre-populated with the existing value.
    - Default value - No
    - Mandatory: Yes
- **Analysis Date and Time**:
    - Non-editable and pre-populated with the existing value.
    - Default value- Current Date and time will be displayed as default.
    - Mandatory: Yes
- **Reprise:**
    - Non-editable and pre-populated with “M”.
    - Mandatory: Yes
- **Source**:
    - Non-editable and pre-populated with the “Manual”.
    - Mandatory: No
- **Shift**:
    - Non-editable and pre-populated with the existing value.
    - Default value - None
    - Mandatory: Yes
- **Analytical Device**:
    - Non-editable and pre-populated with the existing value.
    - Mandatory: No
    - Default value - None
- **Comments**:
    - Editable and pre-populated with the existing value.
    - Default value - None
    - Mandatory: No
    - Field Validation All (Including special characters), 100 characters
-

1.3.2. Analysis Values Section:

- This section has elements that are editable and pre-populated with the existing value
- Mandatory - No
- Default value: 0.0000
- **Al (%), Fe (%), Ca (%), Ti (%), Ni (%), V (%), P (%)**

1.3.3. Action Buttons

- **Save**: Saves the record as a draft (Status: Draft) and validates for a unique analysis ID.
- **Cancel**: Cancels the current operation and returns to the list screen



1.4. Add Details Screen

This screen provides interface for editing existing analysis records, allowing users to update editable fields while keeping essential identifying information non-editable.

This is only for Analysis Ids that are in draft status and not yet submitted

1.4.1. Basic Information Section:

This section captures the essential details about the material being analyzed.

- **Furnace ID.**:
  - Non-editable and pre-populated with the existing value.
  - Default value - No
  - Mandatory: Yes
- **Analysis Date and Time**:
  - Non-editable and pre-populated with the existing value.
  - Default value- Current Date and time will be displayed as default.
  - Mandatory: Yes
- **Reprise:**
  - Non-editable and pre-populated with “M”.
  - Mandatory: Yes
- **Source**:
  - Non-editable and pre-populated with the “Manual”.
  - Mandatory: No
- **Shift**:
  - Non-editable and pre-populated with the existing value.
  - Default value - None
  - Mandatory: Yes
- **Analytical Device**:

- Non-editable and pre-populated with the existing value.
- Mandatory: No
- Default value - None

- **Comments**:
  - Editable and pre-populated with the existing value.
  - Default value - None
  - Mandatory: No
  - Field Validation All (Including special characters), 100 characters

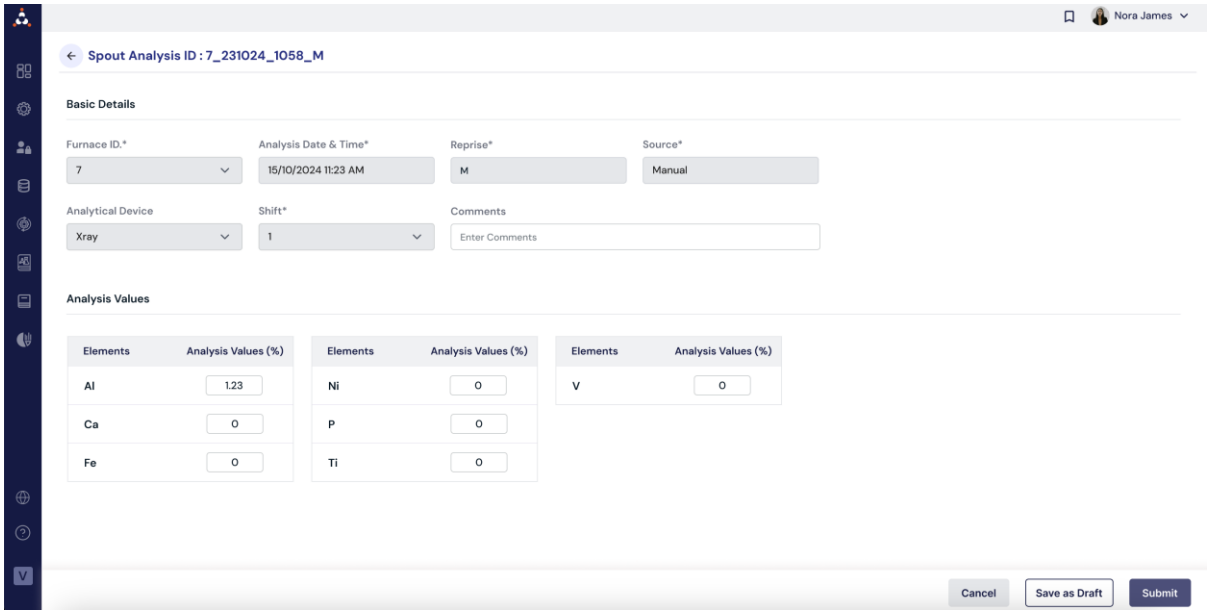
1.4.2. Analysis Values Section:

This section has elements that are editable and pre-populated with the existing value

- Mandatory - No
- Default value: 0.0000
- **Al (%), Fe (%), Ca (%), Ti (%), Ni (%), V (%), P (%)**

1.4.3. Action Buttons

- **Save:** Saves the edited record values (Status: Draft)
- **Submit:** Saves the edited record values (Status: New)
- **Cancel**: Cancels the current operation and returns to the list screen



1.5. View Spout Analysis

This screen allows users to **view details** of an existing analysis record. All fields are displayed in **read-only mode** by default. Users have access to additional utilities for editing, exporting, and viewing change history.

1.5.1. Header Section

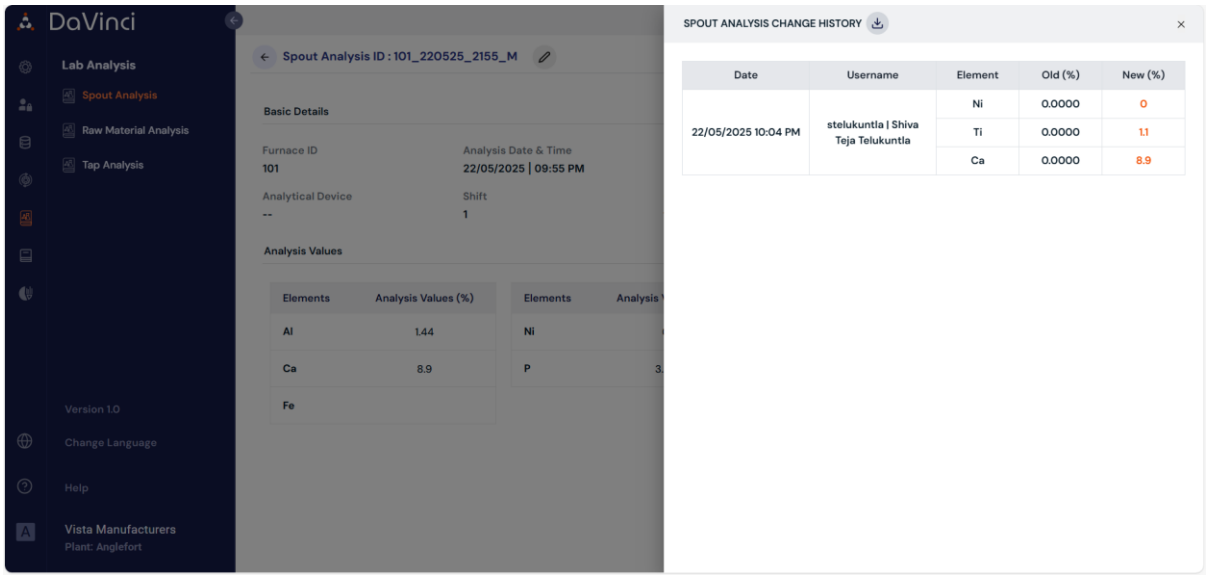
- Back Icon | Spout Analysis ID : 7_231024_1058_M | **Edit Icon**: Allows users to switch from view mode to edit mode to update the record.
- **Export Icon**:
    - Enables users to export the analysis details as a CSV file.
    - The tooltip should read “Download CSV”.
    - Downloads the record in CSV format.
    - This option is not available for records in Draft status.
    - The file must include the following headers and display the values as the following example:
    - **Export File Name:** Composed by the following elements:
        - Spout Analysis ID
        - “Results”

Example: SA_9009_050525_1215_M_Results

Element	Analysis Values (%)	Modified By	Modified At	Created By	Created At
Al	56.4645	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM
Ca	2.2323	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM
Fe	2.2323	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM
Ni	6.6765	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM

P	2.3453	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM
Ti	7.5464	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM
V	6.4564	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM	pchakwate | Pradnya Chakwate	16/05/2025 | 11:57 AM

- **View Change History**: This button opens a modal or section showing a chronological list of all changes made to the record, including:
  - Timestamp of change
  - Field(s) modified
  - Previous and updated values
  - Name of the user who made the change
  - **This option is not available for records in Draft status.**



- **Export Icon - Downloads the records in CSV format, the tooltip should read "Download CSV".**

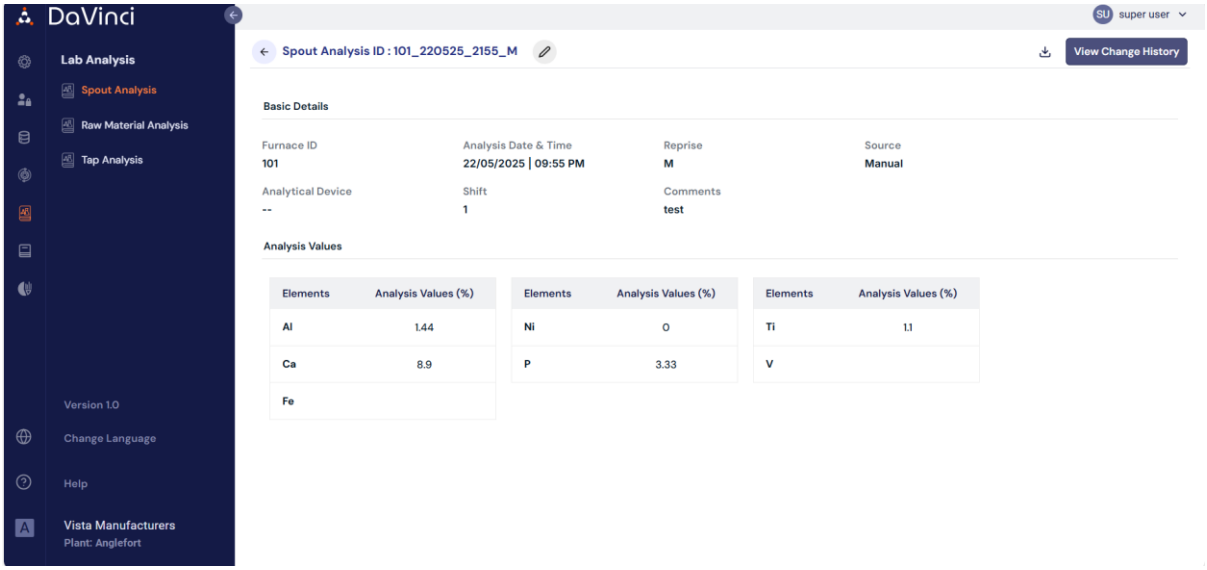
1.5.2. Basic Details (Read-Only)

- **Furnace ID**: Displays the selected furnace from which the sample was taken.
- **Analysis Date and Time**: Shows the timestamp when the analysis was conducted.
- **Reprise**: Displays “M” for manual addition.
- **Source**: Displays “Manual” | “Xray”
- **Shift**: Shows the selected shift during which the sample was taken.
- **Analytical Device**: Displays the device used for analysis.
- **Comments**: Displays any user-provided notes, supporting special characters (max 100 characters

1.5.2. Basic Details (Read-Only)

Displays a list of elemental analysis values as percentages. All values are formatted up to **four decimal places and three integers up to 100**, max value capped at **100.0000**.

Element	Value (%)
Al	3.4521
Fe	85.3200
Ca	0.4567
Ti	0.1234
Ni	2.3345
V	0.7854
P	0.1000



1.6. Mark Spout Analysis record as Rejected

Some records with the status **“New”** can be **manually marked as “Rejected”** using a designated icon in the list view.

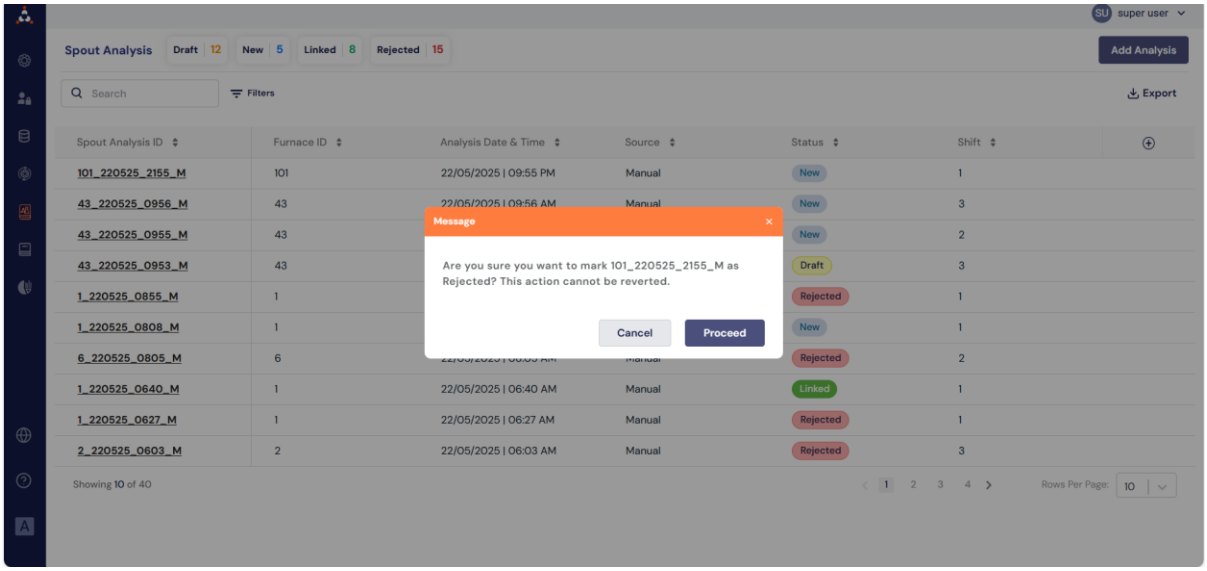
When selected, a confirmation popup will appear with the message:

“Are you sure you want to mark record 101_160525_1025_M as Rejected? This action cannot be reverted.”

Additionally, when one spout analysis (with the same Furnace ID, Date, and Time) is **linked** in the production screen, all other records with the same Furnace ID, Date, and Time—regardless of their **Reprise**—and in either **New** or **Draft** status, will be **automatically updated to “Rejected”**.

If the analysis is later **unlinked** from the production screen, those automatically rejected records will **revert back to “New”** status.

Only roles with delete option will be able to Mark an analysis record as rejected.


super user
Spout Analysis
Draft 12
New 5
Linked 8
Rejected 15
Add Analysis
Search
Filters
Export
Spout Analysis ID
Furnace ID
Analysis Date & Time
Source
Status
Shift
101_220525_2155_M 101 22/05/2025 | 09:55 PM Manual New 1
43_220525_0956_M 43 Manual New 3
43_220525_0955_M 43 New 2
43_220525_0953_M 43 Draft 3
1_220525_0855_M 1 Rejected 1
1_220525_0808_M 1 New 1
6_220525_0805_M 6 Rejected 2
1_220525_0640_M 1 22/05/2025 | 06:40 AM Manual Linked 1
1_220525_0627_M 1 22/05/2025 | 06:27 AM Manual Rejected 1
2_220525_0603_M 2 22/05/2025 | 06:03 AM Manual Rejected 3
Message
Are you sure you want to mark 101_220525_2155_M as Rejected? This action cannot be reverted.
Cancel
Proceed
Showing 10 of 40
1 2 3 4
Rows Per Page: 10