

Da Vinci Smart Manufacturing

BRD S06.04 Reports Spout Analysis

Version	Created/Modified by	Description	Date
1.0	Leopoldo Rivera Sahana Badal	S06.04 First draft	6/06/2025

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This document outlines the detailed specifications for the Spout Analysis Report module. The module enables users to configure, generate, manage, and share reports that analyze spout analysis records across furnaces. This supports decision-making, efficiency tracking, and auditing through dynamic filters, KPI selection, and export capabilities.

1. Overview

The module consists of:

- Report Configuration Interface (Setup View)
- Report Output View (Generated Report)
- Variant Management System (for saved configurations)
- Export and Print functionalities

2. Report Configuration Interface (Setup View)

2.1 Variant Name Selection

- A dropdown labeled “**Variant Name**” is provided at the top.
 - User selects the Variant ID from a single select dropdown
 - Mandatory - No
 - Default value - No
 - Field Type - Single Select Dropdown Values: All Variants saved (Public and Private). **Dropdown Structure:**
 - **My Variants**

- Private
- Public (shared icon)
 - **Public Variants** (created by others)
- Validation - No
- **Permissions:**
 - Only the creator can edit, delete, or update their variant.
 - Other users can view or clone public variants.
- Upon selecting a variant, previously saved filters and KPI selections are auto-populated.

2.2 Report Filters (Mandatory fields marked with *)

Filter	Type	Description
Furnace ID*	Multi-select dropdown	Lists all active furnaces assigned to user or organization.
Date Range*	Calendar picker	From and To date selectors.
Element ID*	Multi-select dropdown	Lists the materials for which Analysis records are present

Filter Behavior:

- Default values are empty; required fields must be selected to proceed.
- All Filter drop downs should be sorted alphabetically / numerically

2.3 KPI Selection

- KPI checkboxes/toggles are listed for selection.
- Backend provides the available KPIs per report.
- KPIs are not mandatory and report can be generated without selecting any.
- KPI Permissions Logic
 - **Selectable KPIs:** A user can only **select** KPIs for which their role has explicit **permission**.
 - **Visible but Disabled:** KPIs outside the user's permission scope will still be **visible** in the interface but will appear **disabled** (e.g., grayed out) and **cannot be selected**.

- **Max 3 KPIs can be selected.**
 - If a user selects more than 3, an inline validation appears: *“You can select up to 3 KPIs only.”*
- Each KPI has a **default chart type** (bar, line, pie, etc.) configured by backend.
- In the **generated report screen**, users can change the chart type per KPI using a dropdown.

2.4 Action Buttons

Button	Function
Generate Report	Validates inputs and transitions to Report Output View.
Reset	Clears all filters and KPI selections to default state.

The screenshot shows the 'Spout Analysis' interface. At the top right, there is a user profile for 'Nora James'. Below the header, there is a 'Variant Name' dropdown menu. Under the 'Filters' section, there are three input fields: 'Furnace ID*' with a dropdown, 'Date Range*' with a date range selector, and 'Element ID*' with a dropdown. At the bottom right, there is a 'Generate' button.

3. Report Output View

Upon clicking **Generate Report**, the system transitions to a new screen with the following sections:

3.1 Filters Summary Section

- Displays all selected filters and metadata

Fields include:

1. Variant Name (default: *Untitled* until saved)
 - a. Min - 1 and Max - 30 characters, alphanumeric, Only '-' and '_' is allowed, Single space is allowed in between the words, No leading spaces allowed
 - b. **Edit Icon** (✎): Appears for saved variants created by the user.
 - c. Enables inline editing of Variant Name and Access Modifier (Private/Public).
 - d. A **Save** button confirms updates.
2. Furnace ID - view only
3. Date Range (From - To) - view only
4. Element ID - view only
5. **Executed On** – *Displayed only in print view; not saved in variant.* view only
6. **Executed By** – *Displayed only in print view; not saved in variant.* view only

3.2 KPI Visualization Section

- KPIs selected are shown in graphical format.

Features:

- KPIs can be **removed** via a close (x) button on hover.
- KPIs can be **reordered** via drag-and-drop.
- KPI metadata and units are displayed.
- Users can **change the chart type per KPI** via dropdown (Gauge, Bar Chart, Line Chart and Pie Chart).

3.3 Report Data (Tabular Format)

- Data displayed based on filters and granularity.
- It will have the following columns
 - Date
 - Furnace ID
 - Element ID
 - Element Concentration (%)

Table Features:

- Configurable columns via “Add Columns” menu
- Sorting and rearranging columns via drag-and-drop
- Pagination for large datasets
- Export to Excel (XLSX). File Name “MMDDYY_SpoutAnalysisReport”

Spout Analysis					
Filters					
Variant Name Untitled	Furnace ID 11	Date Range 15/10/2024 – 16/9/2024	Element ID Al, Ca, Fe, Ti	Executed by sbadal Sahana Badal	Executed on 15/10/2024 3:15 pm
Report					
Date ↕	Furnace ID ↕	Element ID ↕	Element Concentration (%) ↕		
1/1/2025	1	Al	10		
1/1/2025	1	Fe	1.5		
1/1/2025	2	Ca	15		
1/2/2025	2	Ni	10		
1/2/2025	3	Ni	10		
1/2/2025	1	Al	1.5		
1/3/2025	1	Al	10		
1/3/2025	3	Al	10		
1/4/2025	1	Ni	12		
1/4/2025	1	Al	10		

3.4 Notes Section

- Free-text input area for user insights. All (Including special characters), 100 characters
- Not saved with variant — intended for print inclusion only.

Nora James

Report

Date ↕	Furnace ID ↕	Element ID ↕	Element Concentration (%) ↕
1/1/2025	1	Al	10
1/1/2025	1	Fe	15
1/1/2025	2	Ca	15
1/2/2025	2	Ni	10
1/2/2025	3	Ni	10
1/2/2025	1	Al	15
1/3/2025	1	Al	10
1/3/2025	3	Al	10
1/4/2025	1	Ni	12
1/4/2025	1	Al	10

Showing 10 of 80

< 1 2 3 ... 8 >

Rows Per Page : 10 ▾

User Notes

Enter your notes

3.5 Navigation – Back to Configuration

- A **Back** button appears in the report view.

- Clicking it returns the user to the **Setup View**, retaining all previous filter and KPI selections.
- Ensures seamless editing without re-entering data.

4. Report Actions

4.1 Print

- Exports the entire report as PDF.
- User selects sections to include:
 - Filter section
 - Notes section
 - Specific pages of data

4.2 Save Variant

- Saves current report configuration.
- Required fields:
 - Report Name
 - Access Modifier (Private/Public)
- Only the creator can edit or delete saved variants.

The screenshot displays the 'Spout Analysis' interface. At the top, there's a navigation bar with a back arrow, the title 'Spout Analysis', and a user profile 'Nora James'. Below the navigation bar, there's a 'Filters' section with a table showing report configuration: Variant Name (Untitled), Furnace ID (11), Date Range (15/10/2024 - 16/9/2024), Element ID (Al, Ca, Fe, Ti), Executed by (sbadal | Sahana Badal), and Executed on (15/10/2024 | 3:15 pm). A 'Save Variant' button is visible in the top right. Below the filters is a 'Report' section with a table of data. A modal titled 'Save Report Variant' is open, showing a text input for 'Enter Variant Name', a 'Public' checkbox, and 'X' and '✓' buttons for confirmation. The report table has columns for Date, Furnace ID, Element ID, and a numerical value. The data rows show various dates from 1/1/2025 to 1/4/2025, furnace IDs 1, 2, and 3, and element IDs Al, Fe, Ca, and Ni. The bottom of the interface shows 'Showing 10 of 80' and 'Rows Per Page: 10'.

Variant Name	Furnace ID	Date Range	Element ID	Executed by	Executed on
Untitled	11	15/10/2024 - 16/9/2024	Al, Ca, Fe, Ti	sbadal Sahana Badal	15/10/2024 3:15 pm

Date	Furnace ID	Element ID	
1/1/2025	1	Al	
1/1/2025	1	Fe	
1/1/2025	2	Ca	15
1/2/2025	2	Ni	10
1/2/2025	3	Ni	10
1/2/2025	1	Al	1.5
1/3/2025	1	Al	10
1/3/2025	3	Al	10
1/4/2025	1	Ni	12
1/4/2025	1	Al	10

4.3 Clone Variant

- Clones any saved variant (private or public).
- **Confirmation message appears:**

“Are you sure you want to clone this variant? The cloned version will open in edit mode and must be saved separately.”

- Opens the cloned configuration in edit mode with name defaulted to *Untitled*.

The screenshot shows the 'Spout Analysis' interface. At the top, there's a header with a back arrow, the title 'Spout Analysis', and user information 'Nora James'. Below the header, there's a 'Filters' section with a table of variant details. The table has columns: Variant Name, Furnace ID, Date Range, Element ID, Executed by, and Executed on. The data row shows 'Variant 1', '11', '15/10/2024 - 16/9/2024', 'Al, Ca, Fe, Ti', 'sbadal | Sahana Badal', and '15/10/2024 | 3:15 pm'. Below the filters is a 'Report' section with a table of analysis results. The table has columns: Date, Furnace ID, Element ID, and Element Concentration (%). The data rows show various dates and element concentrations. A 'Clone Report' dialog box is open over the report table, with the text: 'The cloned version will open in edit mode and must be saved separately.' and buttons for 'X' and '✓'.

Variant Name	Furnace ID	Date Range	Element ID	Executed by	Executed on
Variant 1	11	15/10/2024 - 16/9/2024	Al, Ca, Fe, Ti	sbadal Sahana Badal	15/10/2024 3:15 pm

Date	Furnace ID	Element ID	Element Concentration (%)
1/1/2025	1	Al	10
1/1/2025	1	Fe	
1/1/2025	2	Ca	
1/2/2025	2	Ni	10
1/2/2025	3	Ni	10
1/2/2025	1	Al	1.5
1/3/2025	1	Al	10
1/3/2025	3	Al	10
1/4/2025	1	Ni	12
1/4/2025	1	Al	10

4.4 Delete Variant

- Available for user-created variants.
- Delete via dropdown or trash icon with confirmation prompt.
 - “Are you sure you want to delete this variant “Variant Name”?”

The screenshot shows the 'Spout Analysis' interface. At the top, there's a header with a back arrow, the title 'Spout Analysis', and user information 'Nora James'. Below the header, there's a 'Filters' section with a table of variant details. The table has columns: Variant Name, Furnace ID, Date Range, Element ID, Executed by, and Executed on. The data row shows 'Variant 1', '11', '15/10/2024 - 16/9/2024', 'Al, Ca, Fe, Ti', 'sbadal | Sahana Badal', and '15/10/2024 | 3:15 pm'. Below the filters is a 'Report' section with a table of analysis results. The table has columns: Date, Furnace ID, Element ID, and Element Concentration (%). The data rows show various dates and element concentrations. A 'Delete Variant' dialog box is open over the report table, with the text: 'Are you sure you want to delete "Variant 1"?' and buttons for 'X' and '✓'.

Variant Name	Furnace ID	Date Range	Element ID	Executed by	Executed on
Variant 1	11	15/10/2024 - 16/9/2024	Al, Ca, Fe, Ti	sbadal Sahana Badal	15/10/2024 3:15 pm

Date	Furnace ID	Element ID	Element Concentration (%)
1/1/2025	1	Al	10
1/1/2025	1	Fe	
1/1/2025	2	Ca	
1/2/2025	2	Ni	10
1/2/2025	3	Ni	10
1/2/2025	1	Al	1.5
1/3/2025	1	Al	10
1/3/2025	3	Al	10
1/4/2025	1	Ni	12
1/4/2025	1	Al	10

5. Edge Cases & Validations

Scenario	Expected Behaviour
Required filter missing	Prompt user to complete all mandatory fields
Deleting a variant in use	Show confirmation and warn about unsaved changes when traversing to another module
Selecting public variant	Load values in read-only mode unless cloned
No KPIs selected	Section remains empty; no validation error
Selecting > 3 KPIs	Show inline warning and prevent further selections