

Da Vinci Smart Manufacturing

BRD S06.01 Reports Raw Material Consumption

Version	Created/Modified by	Description	Date
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This document describes the functional behaviour of the **Raw Material Consumption Report** module. It outlines how users can configure reports using filters and KPIs, save their configurations as variants, and generate detailed visual and tabular outputs. The system supports flexible workflows depending on whether the report is being generated from scratch, from a user's own saved variant, or from a public variant shared by another user.

1. Overview

The Material Consumption Report is designed to help users track and analyze the usage of raw materials across furnaces. Users can apply filters, select KPIs, and visualize key metrics. The interface supports saving report setups as **variants**, sharing them with others, exporting data, and printing insights.

The Raw Material Consumption Report module consists of:

- **Report Configuration Interface** – where filters and KPIs are selected.
- **Report Output View** – where the results are displayed and further actions can be taken.

2. Report Configuration Interface (Setup View)

When entering the configuration interface, users can optionally choose from previously saved report setups known as **variants**. These variants can either be **created by the user**, or **public variants shared by others**.

2.1 Variant Name Selection

- A dropdown labelled “**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.
- If no variant is selected, configuration starts blank.
- On selecting a variant, filters and KPIs are auto-populated.
- Only the creator of a variant can edit or delete it.

2.2 Report Filters (Mandatory fields marked with *)

Filter	Type	Description
Furnace ID*	Multi-select dropdown	Lists all furnaces assigned to user or organization.
Material Type*	Multi-select dropdown	Options: Quartz, Coal, Charcoal, Wood, Coke.
Material ID*	Multi-select dropdown	Dependent on Material Type. Lists valid material IDs.
Date Range*	Calendar picker	From and To date selectors.
Granularity*	Single-select dropdown	Options: Daily, Weekly, Monthly, Quarterly. No dependency between Date Range and Granularity field.

Supplier ID	Multi-select dropdown	Suppliers associated with selected Material ID.
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Filter Behaviour:

- Filters cascade based on prior selections (e.g., Material Type → Material ID).
- Default values are empty; required fields must be selected to proceed.
- All Filter drop downs should be sorted alphabetically / numerically
- Filters are editable unless restricted via variant behaviour

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**
 - If a previously selected KPI (from a variant) is now unauthorized:
 - It will not be visible

The screenshot displays the 'Material Consumption Report' interface. At the top right, the user 'SB Sahana Badal' is logged in. The main section is titled 'Material Consumption Report' and includes a 'Variant Name' dropdown set to 'New Report'. Below this is a 'Filters' section with five input fields: 'Furnace ID*' (with a '1 x' indicator), 'Material Type*' (with a '3 x' indicator), 'Material ID*' (with a '3 x' indicator), 'Date Range*' (showing '13/09/2023' to '17/10/2023'), and 'Granularity*' (set to 'Daily'). Under the filters is a 'Supplier ID' field with a '1 x' indicator. The 'KPIs' section at the bottom contains three toggle switches: 'Material Consumption (ton)' (which is turned on), 'Material Variance (\$)' (turned off), and 'Material Variance (Qty)' (turned off). A 'Generate' button is located at the bottom right of the interface.

- **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.

3. Report Output View

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

3.1. Header Section

- Format: Material Consumption Report : <Variant Name>
- **Untitled** if no variant is selected
- Variant Name (default: *Untitled* until saved)

- Min - 1 and Max - 30 characters, alphanumeric, Only '-' and '_' is allowed, Single space is allowed in between the words, No leading spaces allowed.
- **Edit Icon (🔗):**
 - **Visible** only if the variant belongs to the current user
 - **Hidden** for public variants not owned by the user
 - Enables inline editing of Variant Name and Access Modifier (Private/Public).
 - A **Save** button confirms updates.

3.2. Filters Summary Section

- Displays all selected filters and metadata

Fields include:

1. Furnace ID - view only
2. Date Range (From - To) - view only
3. Granularity - view only
4. Supplier 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
7. Material Type - view only
8. Material ID – Concatenated – Material ID_Material Name - view only

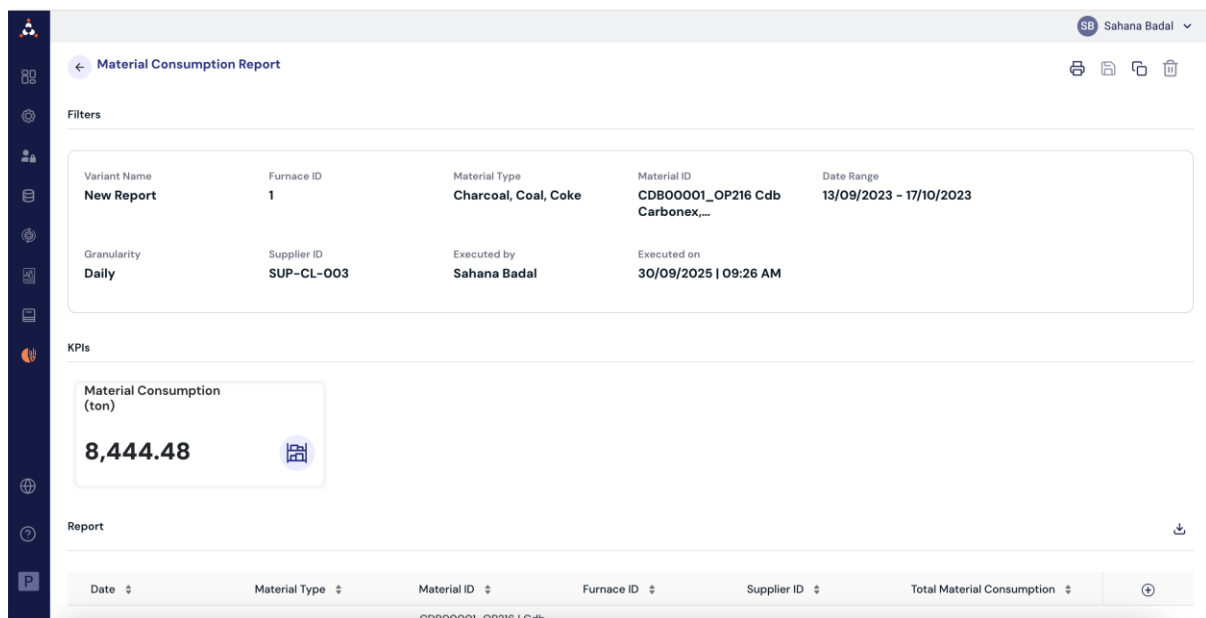
The screenshot displays the 'Material Consumption Report' interface. At the top, the user 'Sahana Badal' is logged in. The report title is 'Material Consumption Report'. Below the title, there are filter settings for Variant Name (Untitled), Furnace ID (2), Material Type (Charcoal), Material ID (CDB00001_OP216 Cdb Carbonex), Date Range (01/05/2025 - 31/05/2025), Granularity (Monthly), Supplier ID (--), Executed by (Sahana Badal), and Executed on (30/09/2025 | 09:27 AM). Below the filters, there are three KPI cards: Material Consumption (ton) with a value of 5,429.04, Material Variance (\$) with a value of 6,675.81, and Material Variance (Qty) with a value of 5,849.73. At the bottom, there is a report table with columns: Date, Material Type, Material ID, Furnace ID, Supplier ID, and Total Material Consumption. The first row of data shows 'CDB00001_OP216 | Cdb'.

3.2 KPI Visualization Section

- KPIs selected are shown in graphical format.

Features:

- KPIs can be **removed** via a close (×) 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 (Card, Gauge, Bar Chart, Line Chart and Pie Chart).
- If the user does not have permission to view a particular KPI at the time of generating the report, it will not be visible on the report generated screen
- Focus
 - On clicking the three-dots menu of a chart, a menu opens with “Focus” as one of the options.
 - When Focus is selected, the chosen chart opens in a zoomed-in mode for better visibility and analysis of data.
 - Supported chart types (Focus enabled): Line, Pie, and Bar charts.
 - Unsupported chart types (Focus disabled): Card, Gauge, and cases where no data is available.



3.3 Report Data (Tabular Format)

- Data displayed based on filters and granularity.
- It will have the following columns

- Date
- Material Type
- Material ID
- Furnace ID
- Supplier ID
- Total Consumption (Ton)

Table Features:

- Configurable columns via “Add Columns” menu
- Sorting and rearranging columns via drag-and-drop
- Pagination for large datasets
- Export to Excel (XLSX) “RawMaterialConsumptionReport_DD-MM-YYYY” using download icon

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Report

Date	Material Type	Material ID	Furnace ID	Supplier ID	Total Material Consumption
13/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	296.52
15/09/2023	Coal	COL00004_OP215 Colombia 1/7 Mm Coke	1	SUP-CL-003	119.03
15/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	180.31
16/09/2023	Coal	COL00004_OP215 Colombia 1/7 Mm Coke	1	SUP-CL-003	248.63
17/09/2023	Coal	HCO0001_OP217 Hc Clean Carbon 2/12	1	SUP-CL-003	330.52
17/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	285.86
18/09/2023	Coal	COL00004_OP215 Colombia 1/7 Mm Coke	1	SUP-CL-003	338.21
19/09/2023	Coal	HCO0001_OP217 Hc Clean Carbon 2/12	1	SUP-CL-003	226.03
19/09/2023	Charcoal	CDB00001_OP216 Cdb	1	SUP-CL-003	205.88

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1234>
Rows Per Page: 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.

Date	Material Type	Material ID	Furnace ID	Supplier ID	Total Material Consumption
15/09/2023	Coal	Colombia 1/7 Mm Coke	1	SUP-CL-UU3	119.03
15/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	180.31
16/09/2023	Coal	COL00004_OP215 Colombia 1/7 Mm Coke	1	SUP-CL-003	248.63
17/09/2023	Coal	HC00001_OP217 Hc Clean Carbon 2/12	1	SUP-CL-003	330.52
17/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	285.86
18/09/2023	Coal	COL00004_OP215 Colombia 1/7 Mm Coke	1	SUP-CL-003	338.21
19/09/2023	Coal	HC00001_OP217 Hc Clean Carbon 2/12	1	SUP-CL-003	226.03
19/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	205.88
20/09/2023	Charcoal	CDB00001_OP216 Cdb Carbonex	1	SUP-CL-003	307.75

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User Notes

Enter your notes

3.5 Navigation – Back to Configuration

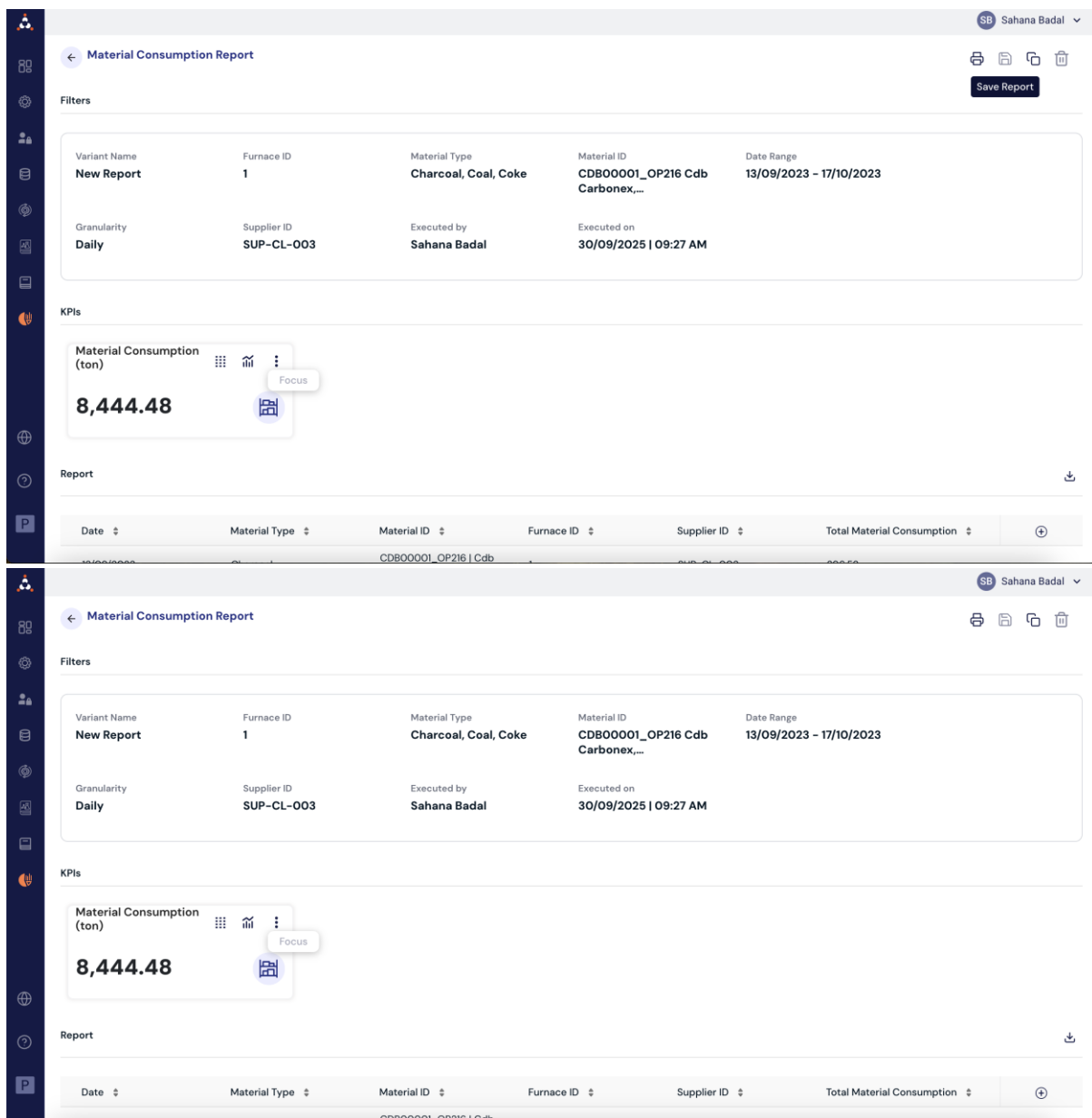
- A **Back** button appears in the report view.
- Clicking it returns the user to the **Setup View**, retaining all previous filter and KPI selections.
- Ensures seamless editing without re-entering data.

4. User Flows and Report Actions

Flow 1: No Variant Selected

- User starts with no variant; variant name field remains empty.
- Filters and KPIs are manually selected.
- Report is generated from scratch.
- Output view shows report as **“Untitled”**.
- The following report actions are enabled
 - **Print**
 - Exports the entire report as PDF.
 - **Save**
 - Saves current report configuration, including all filters and KPI settings
 - Required fields:
 - Report Variant Name
 - Access Modifier (Private/Public)
 - Only the creator can edit or delete saved variants.
- **Clone** and **Delete** are disabled.

- KPIs can be
 - Reordered
 - Removed
 - Change chart type
- Focus
 - On clicking the three-dots menu of a chart, a menu opens with “Focus” as one of the options.
 - When Focus is selected, the chosen chart opens in a zoomed-in mode for better visibility and analysis of data.
 - Supported chart types (Focus enabled): Line, Pie, and Bar charts.
 - Unsupported chart types (Focus disabled): Card, Gauge, and cases where no data is available.



Flow 2: User Selects Own Variant

- User selects a self-created variant.
- Filters and KPIs are auto-filled and **fully editable**.

The screenshot shows the 'Material Consumption Report' form in the 'Variant Name' view. A dropdown menu for 'Variant Name' is open, showing 'My Variants' (Variant 1, Variant 2, Variant 3) and 'Public Variants' (Variant 1, Variant 4, Variant 3). The form includes fields for 'Material Type*', 'Material ID*', 'Date Range*', and 'Granularity*'. Below these are three radio buttons for 'Material Consumption (ton)', 'Material Variance (\$)', and 'Material Variance (Qty)'. A 'Generate' button is at the bottom right.

- Output view shows the variant name with an **edit icon**.
- The following report actions are enabled
 - **Print**
 - Exports the entire report as PDF.
 - **Save** – Updates the changes made to the Variant.

The screenshot shows the 'Material Consumption Report' form in the 'Variant 1' view. The title is 'Material Consumption Report : Variant 1' with an edit icon. A green notification bar says 'Report saved successfully!'. The 'Filters' section includes fields for 'Furnace ID' (11), 'Date Range' (15/10/2024 - 16/9/2024), 'Granularity' (Week), 'Supplier ID' (Supplier 1), 'Executed by' (sbadal | Sahana Badal), and 'Executed on' (15/10/2024 | 3:15 pm). The 'Material Type' is 'Quartz' and 'Material ID' is 'Mina Senia 30/120'. The 'KPIs' section shows two gauges: 'Material Consumption (ton)' and 'Material Variance (USD)', both at 89%. The 'Report' section is a table with columns: Date, Material Type, Material ID, Furnace ID, Supplier ID, and Total Consumption (Ton).

Date	Material Type	Material ID	Furnace ID	Supplier ID	Total Consumption (Ton)
1/1/2025	Coal	MB01_Serrabal	1	Mine 1	133
1/1/2025	Charcoal	MB01_Serrabal	1	Mine 1	3.5
1/1/2025	Quartz	MC02_Serrabal	2	Mine 2	1000

- **Clone**

- Saves current report configuration as a new Variant.
- Required fields:
 - Report Variant Name
 - Access Modifier (Private/Public)

The screenshot shows the 'Material Consumption Report : Variant 1' interface. The top section displays filters for Furnace ID (11), Date Range (15/10/2024 - 16/9/2024), Granularity (Week), Supplier ID (Supplier 1), Executed by (sbadal | Sahana Badal), and Executed on (15/10/2024 | 3:15 pm). Below the filters, the KPIs section shows two gauges: 'Material Consumption (ton)' and 'Material Variance', both at 89%. A 'Save Report Variant' dialog box is open, prompting for a variant name and access modifier (Public/Private). The report table below shows consumption data for various materials and furnaces.

Date	Material Type	Material ID	Furnace ID	Supplier ID	Total Consumption (Ton)
1/1/2025	Coal	MBO1_Serrabal	1	Mine 1	133
1/1/2025	Charcoal	MBO1_Serrabal	1	Mine 1	3.5
1/1/2025	Quartz	MCO2_Serrabal	2	Mine 2	1000

○ Delete

- 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 'Material Consumption Report : Variant 1' interface after a successful save. A green notification bar at the top right displays 'Report saved successfully!'. The interface layout is identical to the previous screenshot, showing filters, KPIs, and a report table.

Date	Material Type	Material ID	Furnace ID	Supplier ID	Total Consumption (Ton)
1/1/2025	Coal	MBO1_Serrabal	1	Mine 1	133
1/1/2025	Charcoal	MBO1_Serrabal	1	Mine 1	3.5
1/1/2025	Quartz	MCO2_Serrabal	2	Mine 2	1000

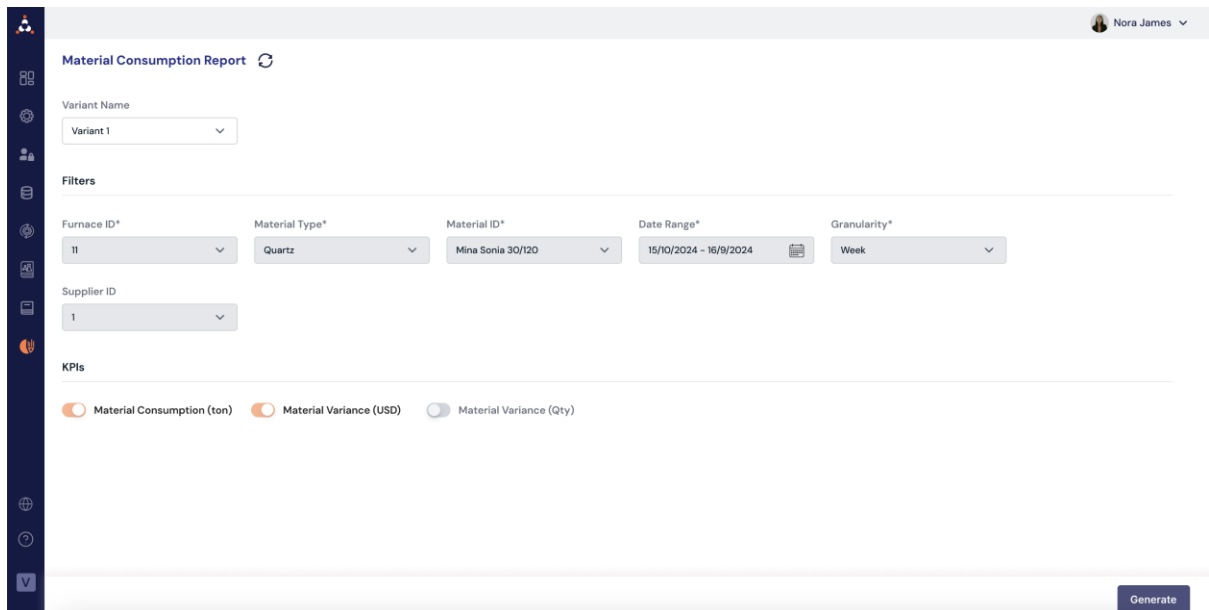
- KPIs can be

- Viewed based on permission
- Reordered
- Removed
- Chart types changed
- Focus
 - On clicking the three-dots menu of a chart, a menu opens with “Focus” as one of the options.
 - When Focus is selected, the chosen chart opens in a zoomed-in mode for better visibility and analysis of data.
 - Supported chart types (Focus enabled): Line, Pie, and Bar charts.
 - Unsupported chart types (Focus disabled): Card, Gauge, and cases where no data is available.

Flow 3: User Selects Public Variant Shared by Another User

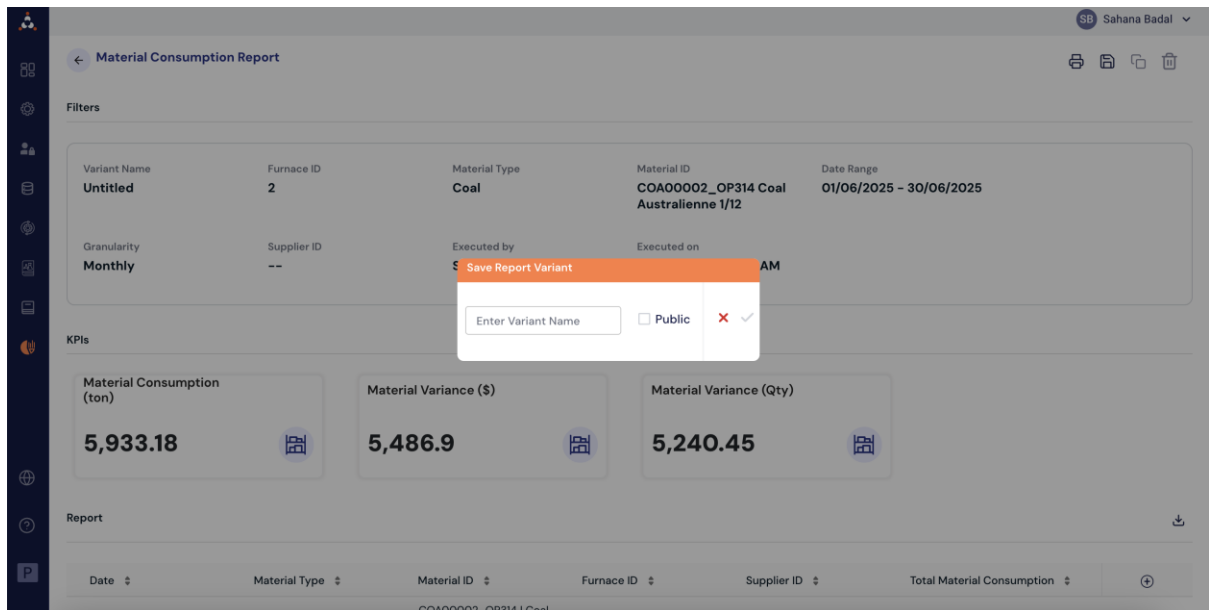
- Public variant is selected.
- Filters and KPIs are auto-filled and **locked** (read-only).

The screenshot displays the 'Material Consumption Report' interface. At the top right, the user 'Nora James' is logged in. The report title 'Material Consumption Report' is followed by a refresh icon. A dropdown menu for 'Variant Name' is open, showing a search bar with 'Vq', 'My Variants' (containing 'Variant 1' and 'Variant 2'), and 'Public Variants' (containing 'Variant 1', 'Variant 4', and 'Variant 3'). The 'Variant 1' under 'Public Variants' is selected and marked with an eye icon. Below the dropdown, there are four read-only filter fields: 'Material Type*' (with a dropdown arrow), 'Material ID*' (with a dropdown arrow), 'Date Range*' (with a calendar icon), and 'Granularity*' (with a dropdown arrow). At the bottom, there are three toggle switches for 'Material Consumption (ton)', 'Material Variance (\$)', and 'Material Variance (Qty)'. A 'Generate' button is located at the bottom right.



The image shows a web application interface for a 'Material Consumption Report'. At the top right, the user 'Nora James' is logged in. The main title is 'Material Consumption Report' with a refresh icon. Below the title is a 'Variant Name' dropdown menu set to 'Variant 1'. A 'Filters' section contains several dropdown menus: 'Furnace ID*' (set to '11'), 'Material Type*' (set to 'Quartz'), 'Material ID*' (set to 'Mina Sonia 30/120'), 'Date Range*' (set to '15/10/2024 - 16/9/2024' with a calendar icon), and 'Granularity*' (set to 'Week'). Below the filters is a 'Supplier ID' dropdown menu set to '1'. A 'KPIs' section has three toggle switches: 'Material Consumption (ton)' (checked), 'Material Variance (USD)' (checked), and 'Material Variance (Qty)' (unchecked). At the bottom right, there is a 'Generate' button.

- Output view shows the variant name **without edit icon**.
- The following report actions are enabled
 - **Print**
 - Exports the entire report as PDF.
 - User selects sections to include:
 - Filter section
 - Notes section
 - Specific pages of data
 - **Clone**
 - Saves current report configuration as a new Variant.
 - Required fields:
 - Report Variant Name
 - Access Modifier (Private/Public)



- **Save** and **Delete** are disabled
- KPIs can be
 - Viewed based on permission
 - Chart types changed. The change is **temporary** and does not affect the original Public Variant configuration.
 - **Cannot be removed**
 - **Cannot be reordered.**

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

