USER MANUAL FOR

AiSLDPro

VERSION 1.0

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DATE	25-06-2025								

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REVISION STATUS

REV. NO.	DATE	DESCRIPTION
R0	25-06-2025	ISSUED FOR USE

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1. Overview

1.1 Purpose of Document

This document serves as a comprehensive roadmap, guiding users through the tool with clarity and confidence. It highlights key features and navigation paths, ensuring users gain a deep understanding of the site's capabilities. With stepby-step instructions it empowers users to unlock the full potential of the tool, enabling them to achieve their goals with ease and precision.

1.2. Scope of this Document

This document offers detailed explanations of key features, navigation flows, and user interfaces, giving users a clear view of how to interact with the platform. It also highlights any limitations or constraints users might face, ensuring transparency and preparedness. Overall, the document is designed to provide a thorough understanding of the tool, empowering users to efficiently create, manage, and optimize their SLD Drawings.

2. Project Description

A Single Line Diagram (SLD) is an essential element of the electrical power system in plants, industries, and buildings. It visually represents the power supply arrangements, distribution networks, and connection topology between substations to loads. One of its key components, the Protection SLDs, is traditionally developed across various business units in all projects using AutoCAD. However, this manual process is often time-consuming, repetitive due to frequent revisions, and prone to errors.

The AI-enabled SLD tool – AiSLDPro revolutionizes this process by offering an interactive solution to automatically generate Protection SLDs with minimal user input. By processing the provided data, the tool generates SLDs directly for AutoCAD without requiring a software license, ensuring efficiency, accuracy, and significant time savings.

3. Web Solution

The AiSLDPro web solution is a secure, high-availability portal, designed exclusively for internal use within TCE. The left-hand navigation panel features five distinct links, each directing users to a specific section of the platform.
Below is a detailed breakdown of each page and its purpose within the system.

4. Projects

This is the 1 st step for creating any SLD. The Project Page is where user will create a new project in the system, this project is referred to a Project for which these drawings are generated. Here you can see various projects which user have already created.

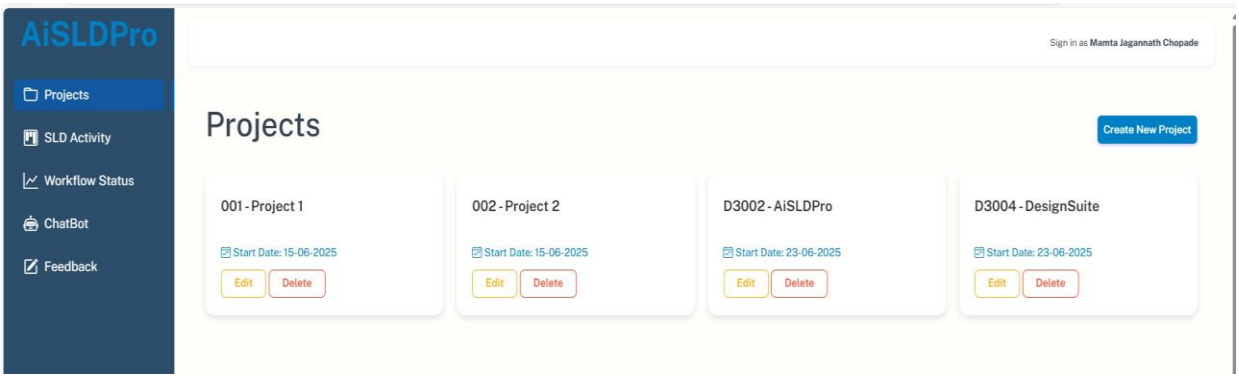
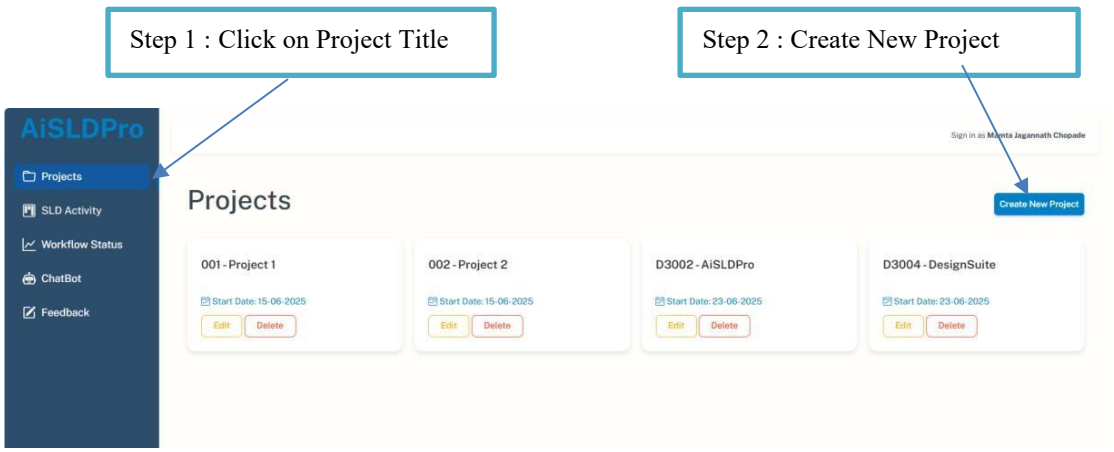
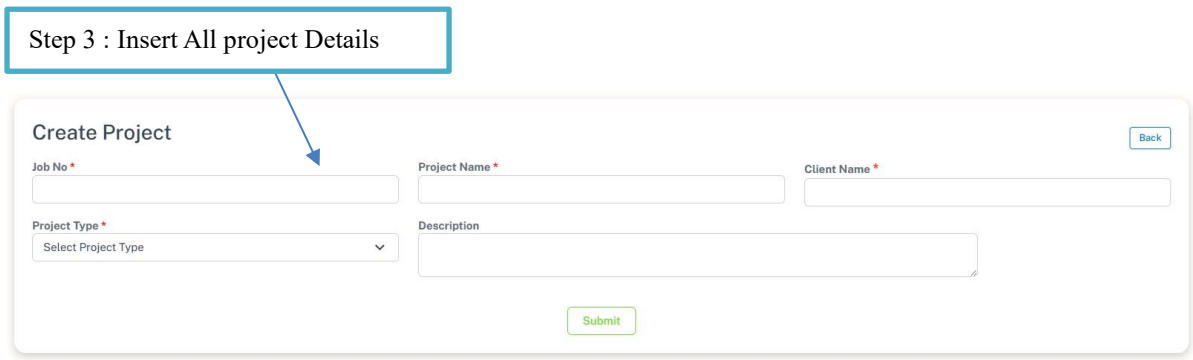


Fig. 3.1 Project Page

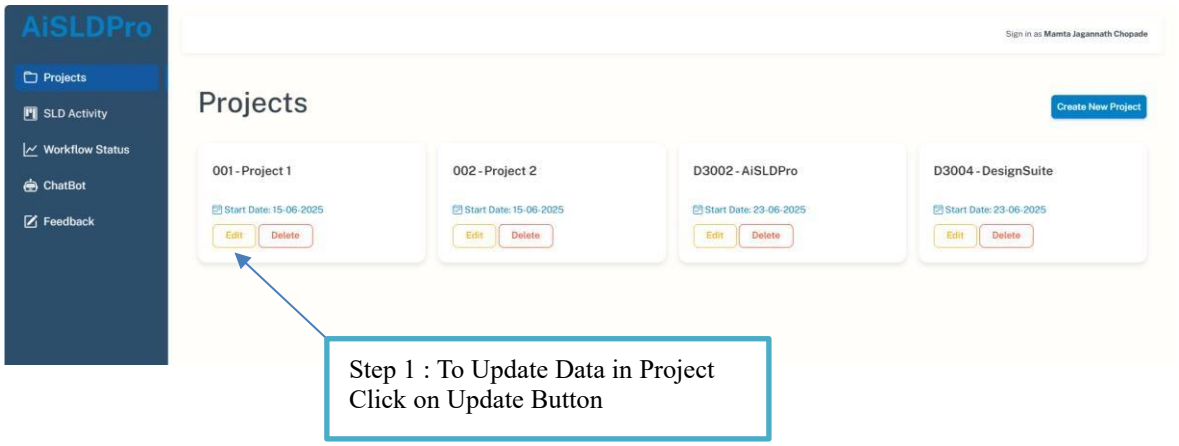
4.1 Create Project

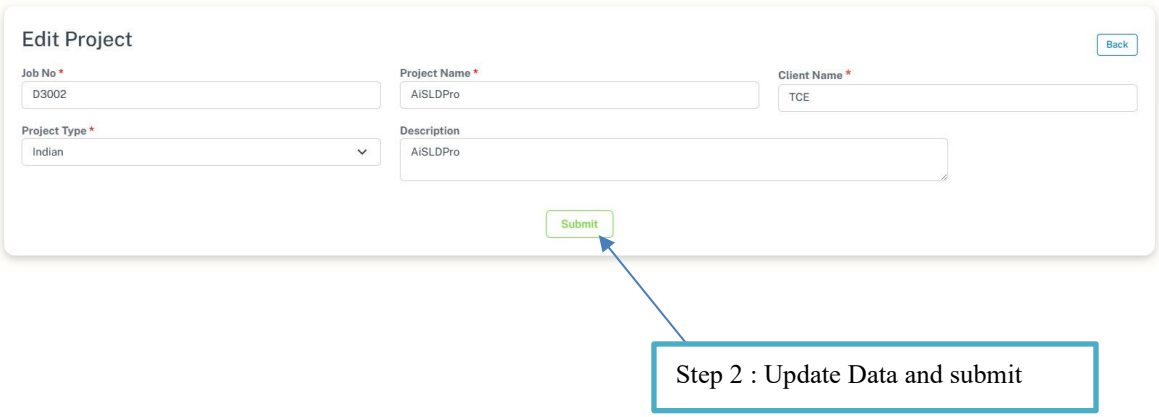
In the Create Project, user fill the necessary information to create project like Job No, project name. All the drawings belong to one project will be grouped in single cluster, and hence easier to manage, access and generate and keep track of progress.





4.2 Edit Project





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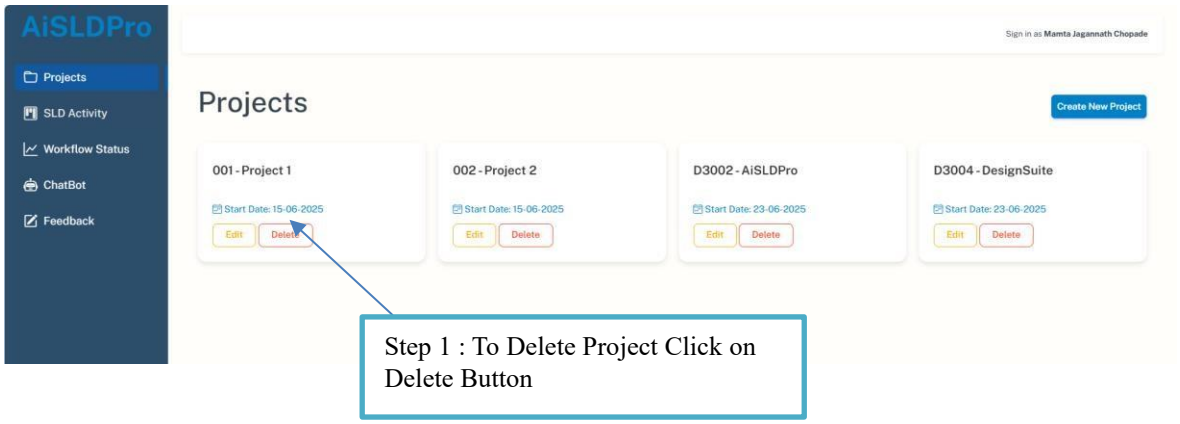
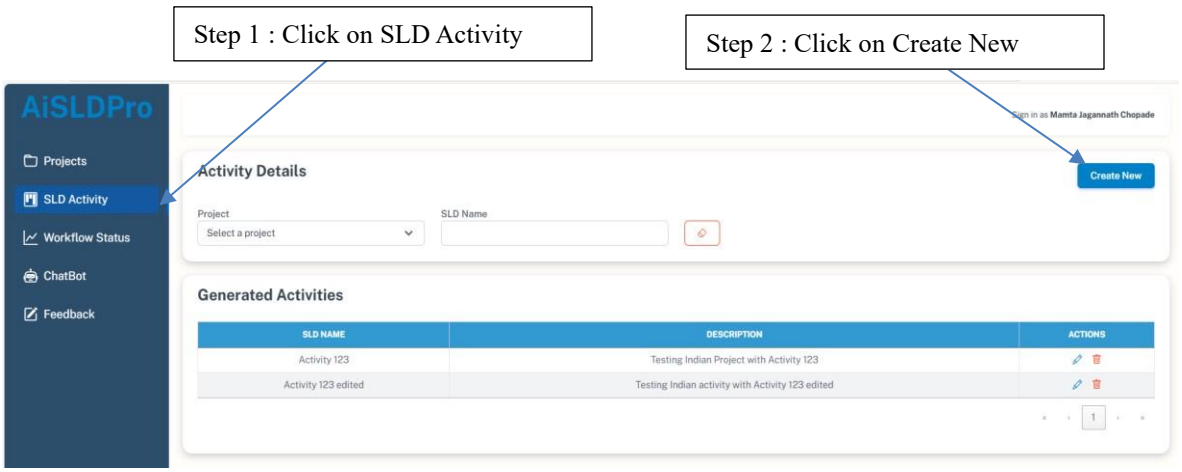
4.3 Delete Project



5. SLD Activity

After creating the project, next step is to create an activity. In each project, each SLD will be considered as an activity.

5.1 Create Activity



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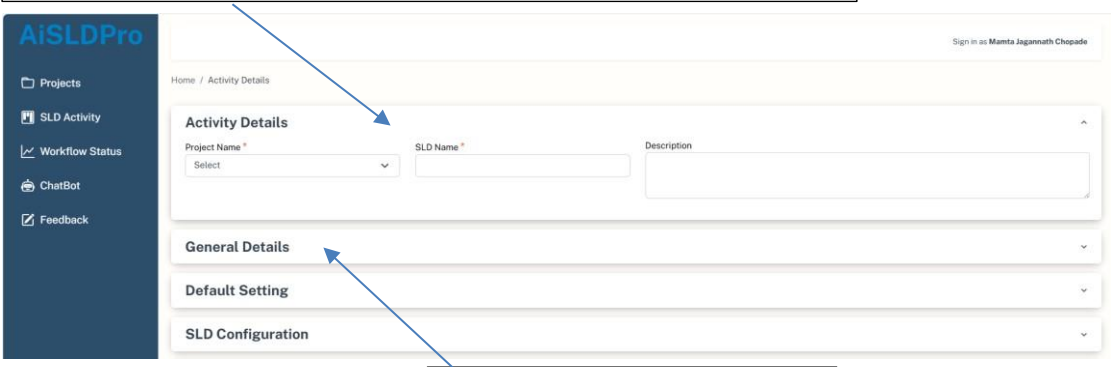
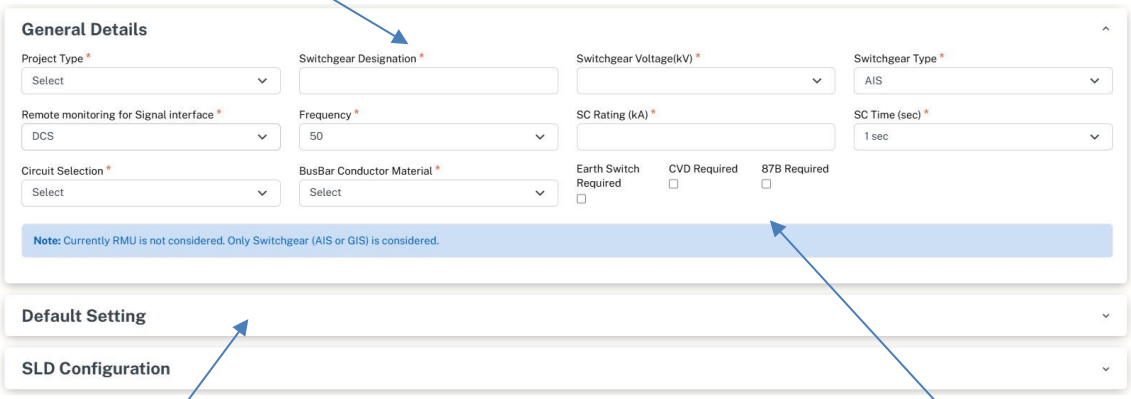
Step 3 : Fill All Activity Details which are required to create new SLD



Step 4 : Click on General Details

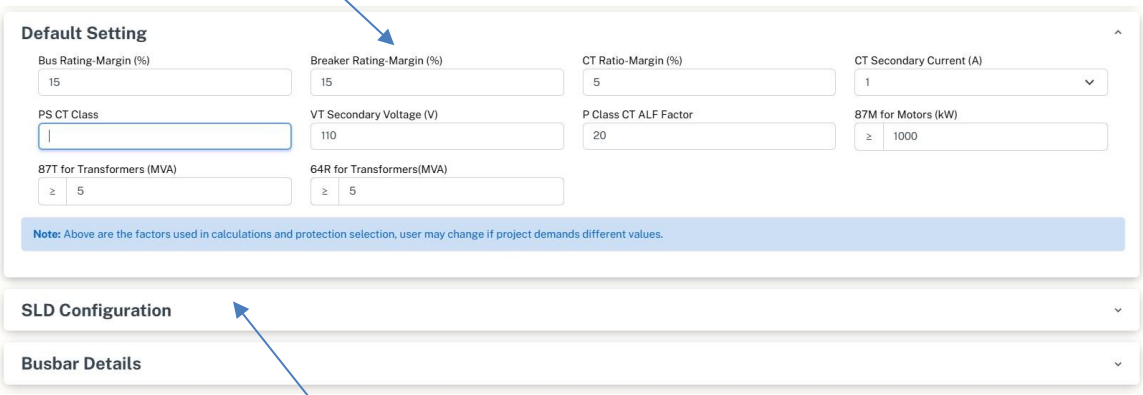
Step 5: Fill All General Details (like Project Type, Switchgear Designation, etc)



Step 7: Click on Default Setting

Step 6: CBCT, Earth switch, CVD and 87 B shall be selected based on the project requirements. If Earth switch is selected, CVD is automatically selected.

Step 8: These are the standard default values used in sizing of various equipment such as CB, Bus bar, CT and for protection selection. If any changes required as per specific project requirement, User may do it.



Step 9: Click on SLD Configuration

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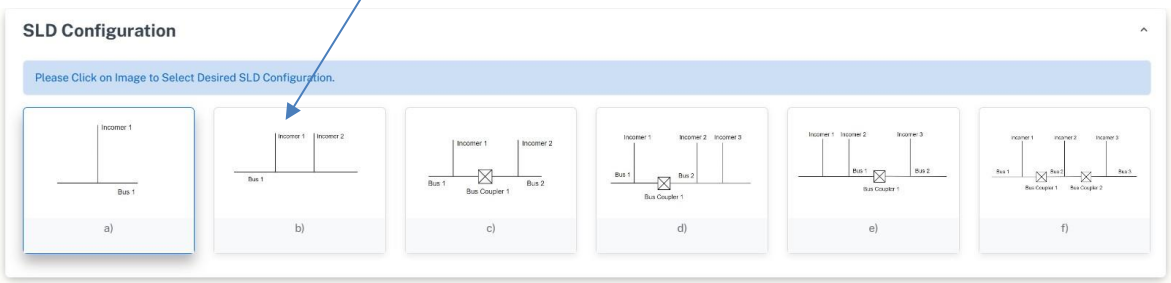
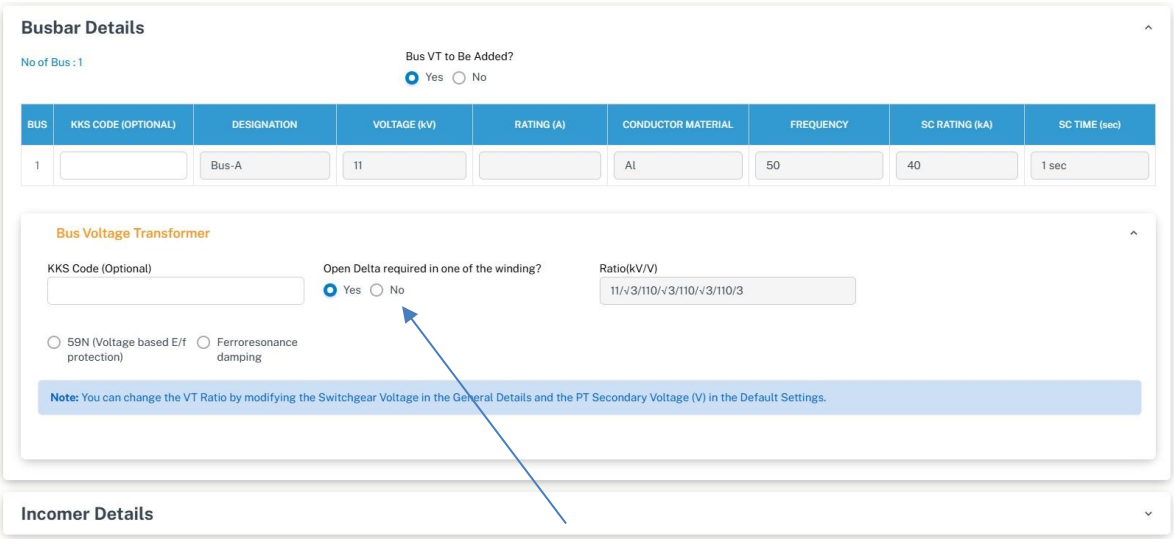
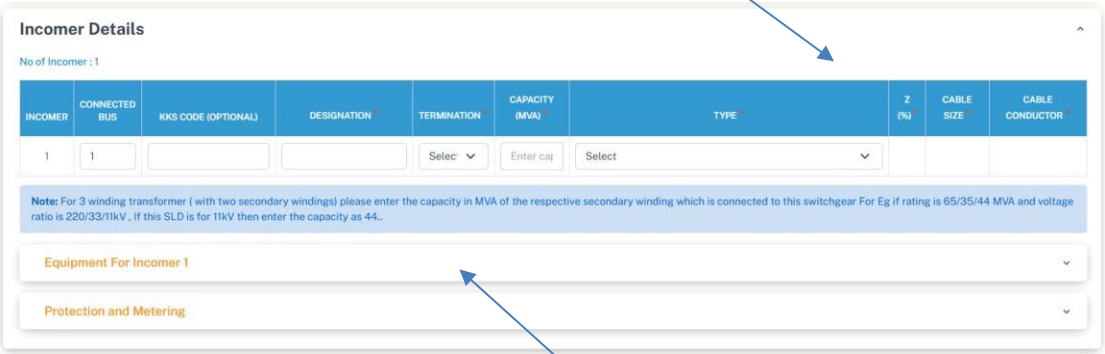
Step 10: Click on Any SLD Configuration as per the switchgear rrequirement i.e. no. of incomer and Bus coupler. Ensure that the clicked image is highlighted.





Step 11: KKS Code is optional based on Project requirement, same can be filled.
Open delta shall be selected for two reasons.
i) Voltage based earth fault protection. This is given only when the system is ungrounded.
ii) Ferro resonance damping of VT

Step 12: Fill all Details in Incomer as per requirement. In case of 3 winding transformers please read the notes below before filling the capacity.



Step 13: Click on Equipment for Incomer

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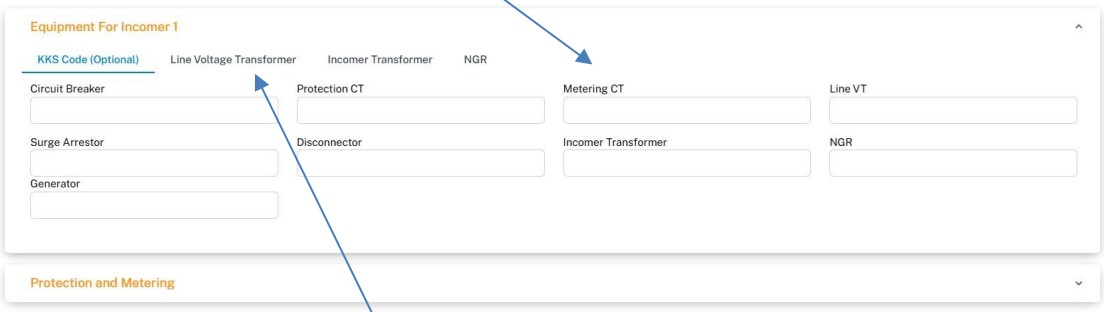
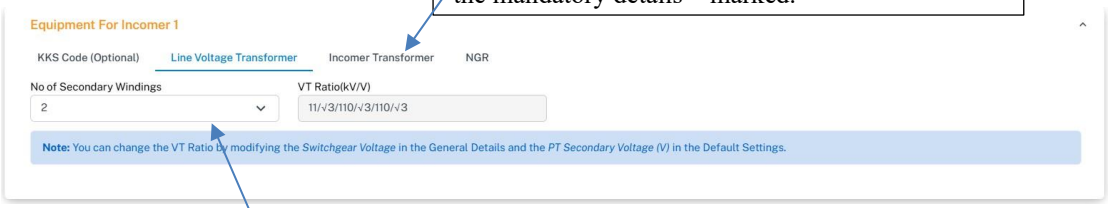
Note: Incomer Equipment's Details Tab should be shows as per incomer type selection.

Step 14: Fill all Details in KKS Code Tab if Required.



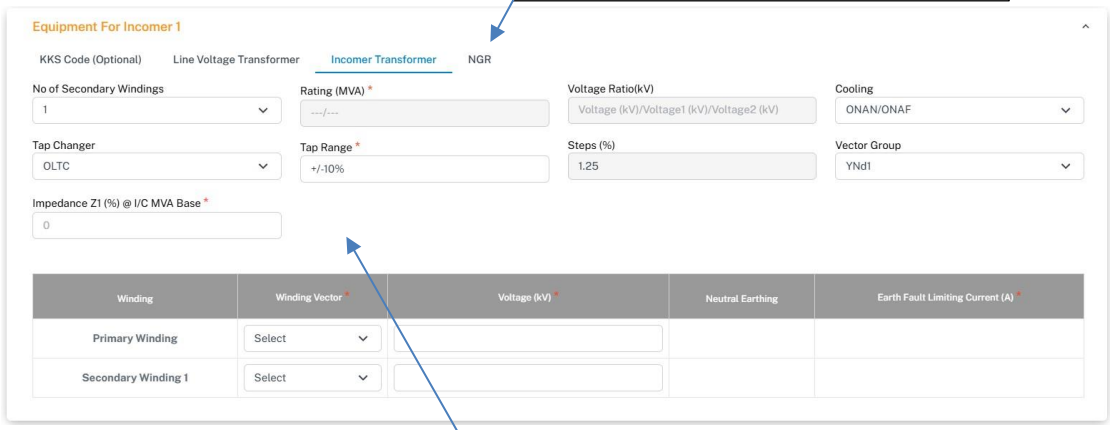
Step 15: Click on Line Voltage Transformer Tab

Step 17: Click Incomer Transformer Tab and fill all the mandatory details * marked.



Step 16: Select No of secondary winding as per requirement.

Step 19: Click NGR Tab Tab and fill all the mandatory details * marked.



Step 18: Fill All Details as per requirement.

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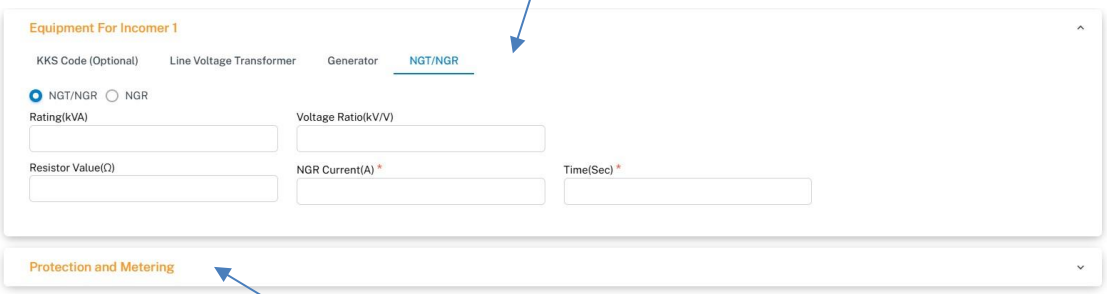
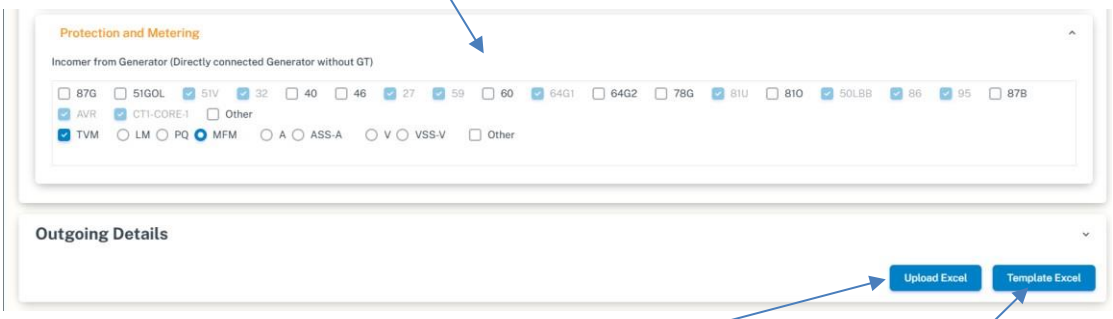
Step 20: Fill All Details as per requirement.

Step 21: check for NGR or NGT/NGR and Fill All Details as per requirement. This will be applicable for only Generator Incomer.



Step 22: Click on Protection and Metering Panel

Step 23: Default protection and metering as per the selected incomer type. If any additions required User may select after ensuring the requirement Incomer type.



Step 25: After filled all the details in the template Upload Filled excel sheet.

Step 24: Click on Template excel To Download Excel Template for uploading Outgoing Details.

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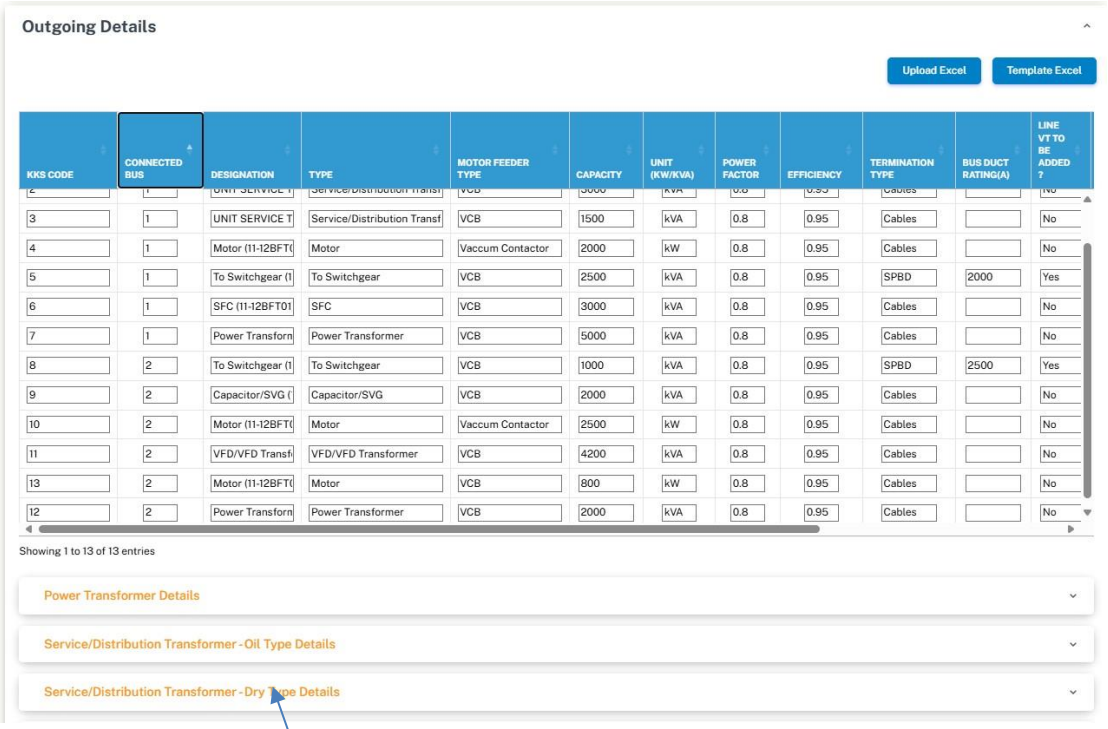
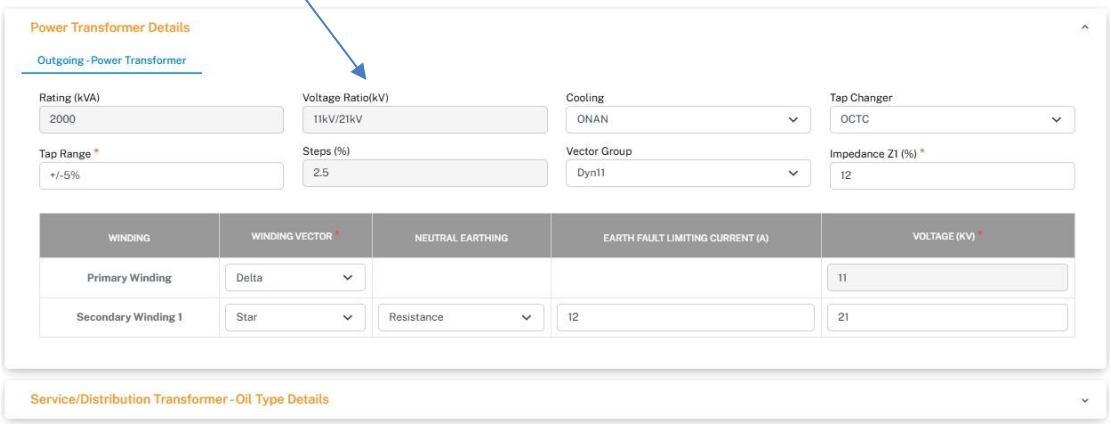
After Uploading Excel, it will look like this.



Step 26: Based on the outgoing excel template uploaded, Equipment tabs for unique outgoing feeder types will be displayed, click each tab, and fill all the mandate values.

Step 27: Fill All Details as per requirement.



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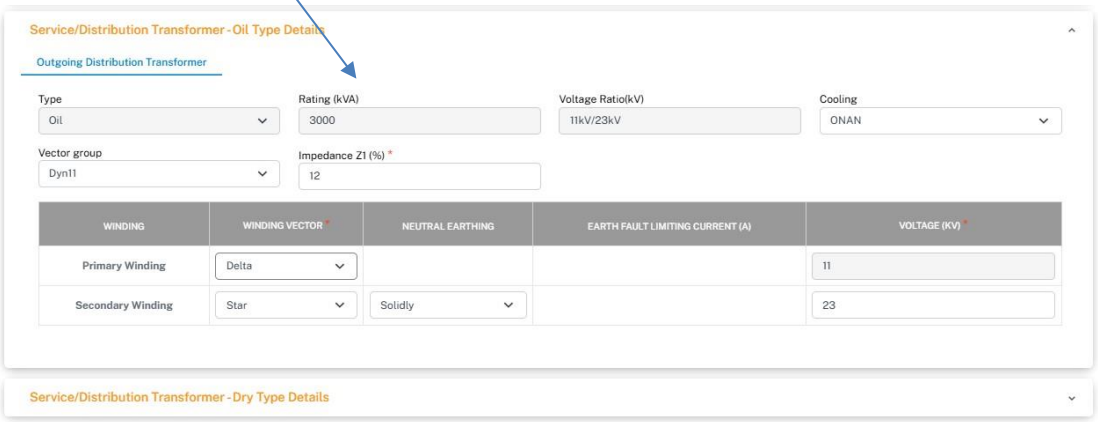
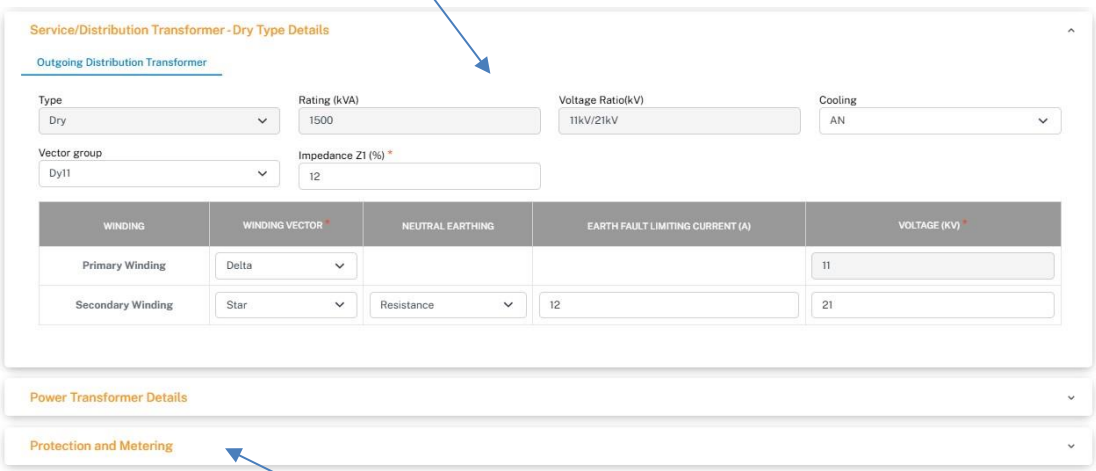
Step 28: Fill All Details as per requirement.

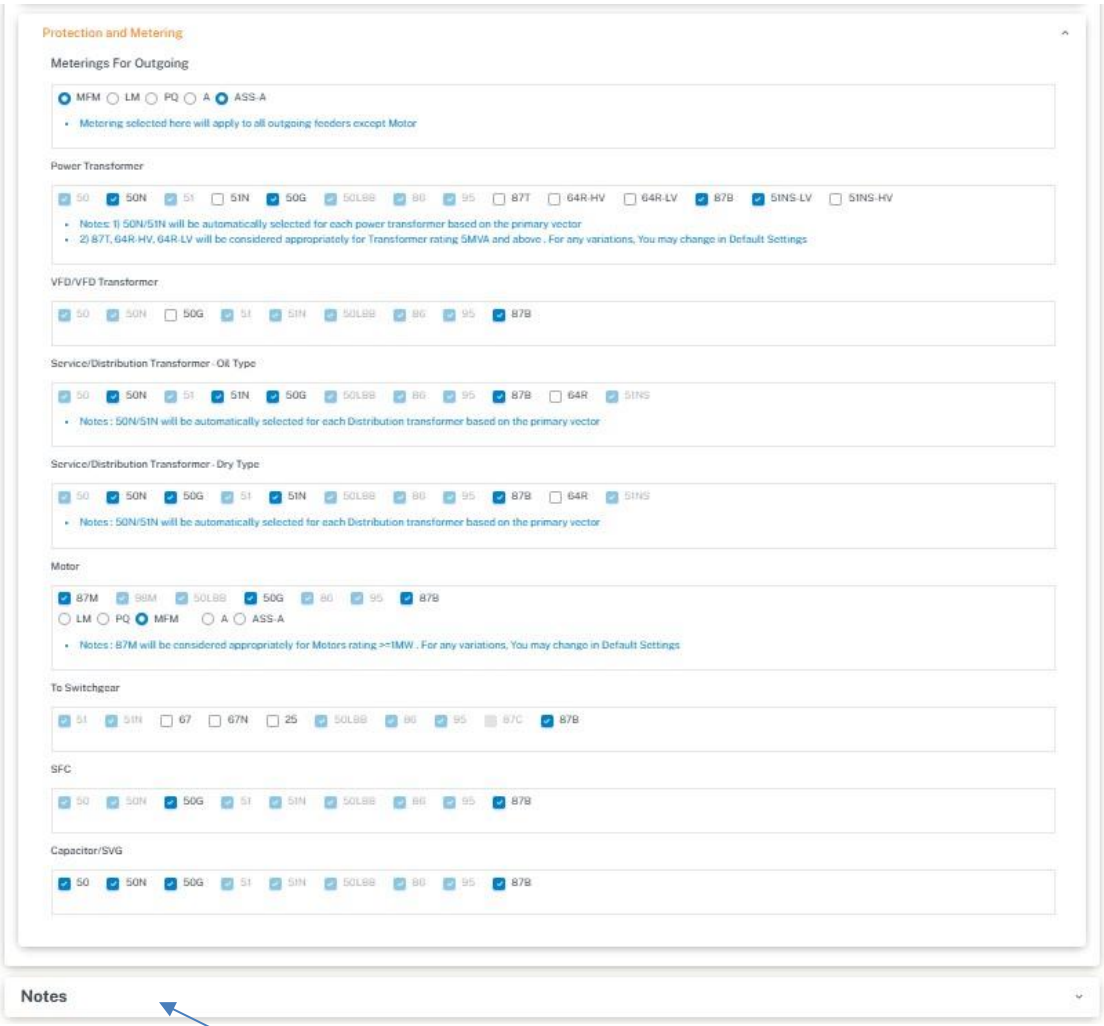


Step 29: Fill All Details as per requirement.



Step 30: Click the 'Protection and Metering' section to expand for each type. All required protections are auto selected. If any addition is required further, same may be selected,

You can select and check all the protection and metering options as shown below. Some options can be selected based on your requirements, while others are automatically filled based on predefined conditions.



Step 31: Click the 'Notes' section to expand.

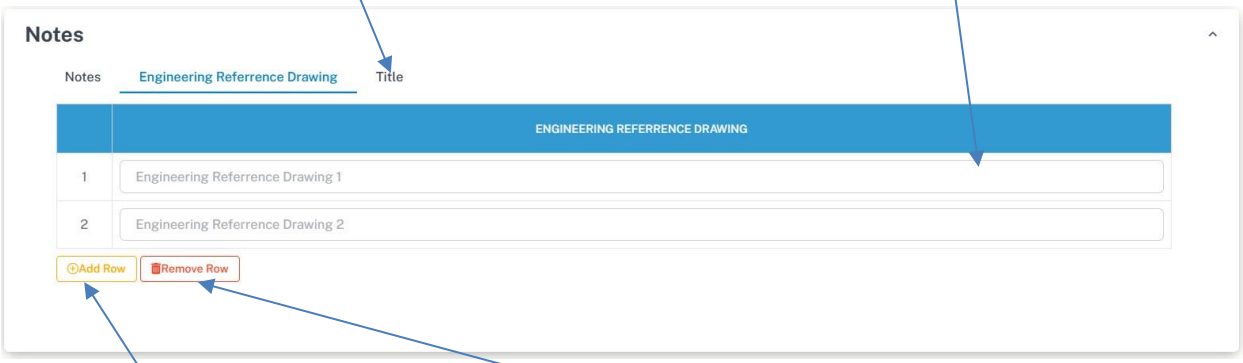
Step 32: Click the 'Engineering Reference Drawing' tab to open it.

Step 33: To add a new note, click the 'Add Row' button and enter the note.

Step 34: If you want to delete a newly added note, click the 'Delete Row' button.

Step 35: Click on Title Tab

Step 36: Fill all details as per requirement.



Step 37: To add a new Engineering Reference Drawing, click the 'Add Row' button and enter the note.

Step 38: If you want to delete a newly added Engineering Reference Drawing, click the 'Delete Row' button.

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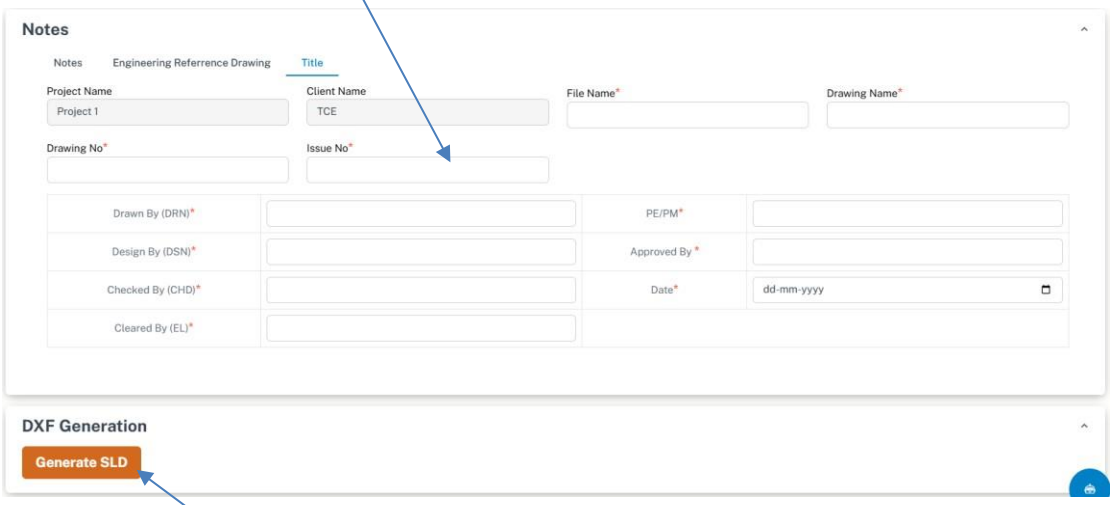
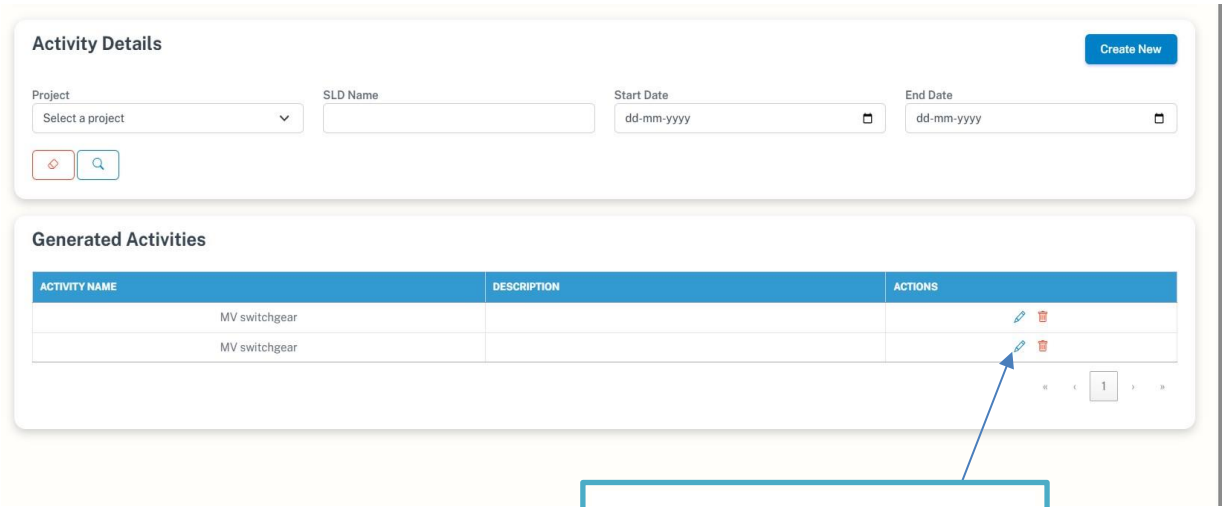
Step 39: Fill all details as per requirement.



Step 40: Click the **Generate SLD** button to create the SLD. Make sure all mandatory fields are completed beforehand. Once generated, you can update the status in the activity workflow.

5.2 Edit Activity

Click the Edit button to modify the input data, then generate the SLD. Ensure that after editing the current activity, you do not navigate back to the previous activity.



Step 1: To Edit Project, Click on Edit

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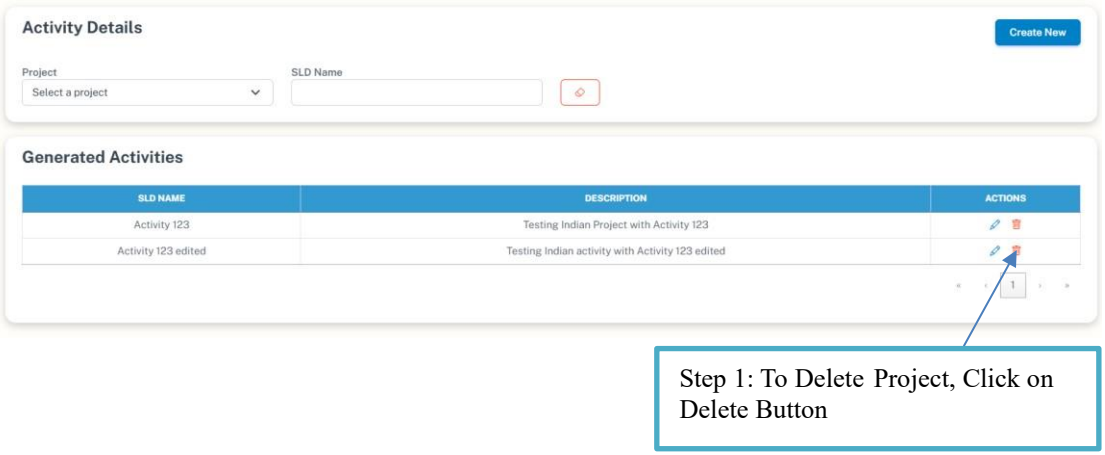
5.3 Delete Activity



6. Workflow Status

The generated SLD status can be viewed in this section.

7. Chatbot

The Chatbot is internal AI support. If any queries same may be submitted. The queries will be answered by referring the TCE design guides pertaining to Protection SLD, Codes and standards.

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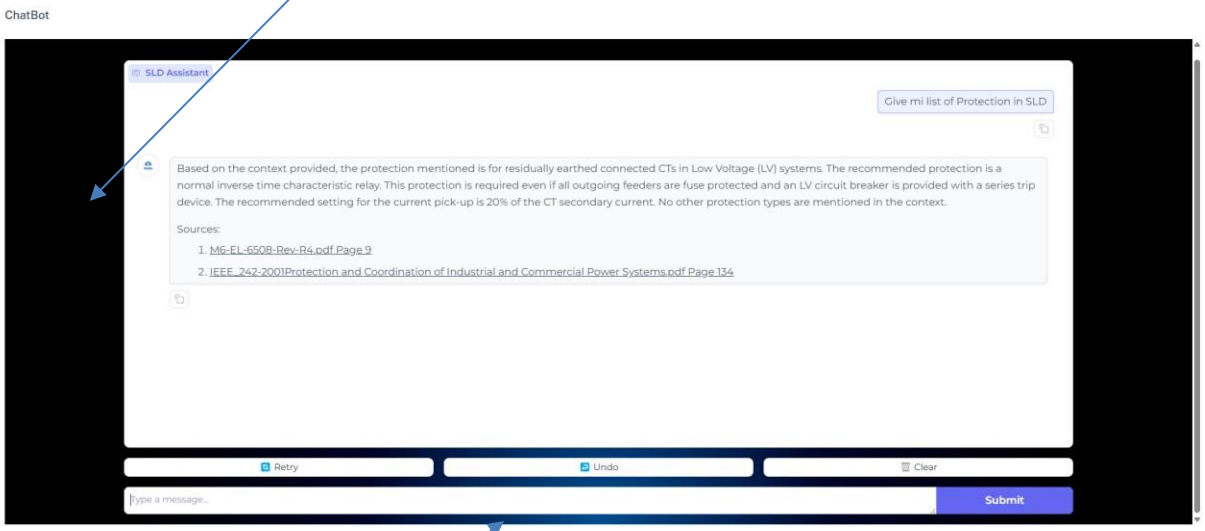
Step 1: Click on ChatBot to raise queries.

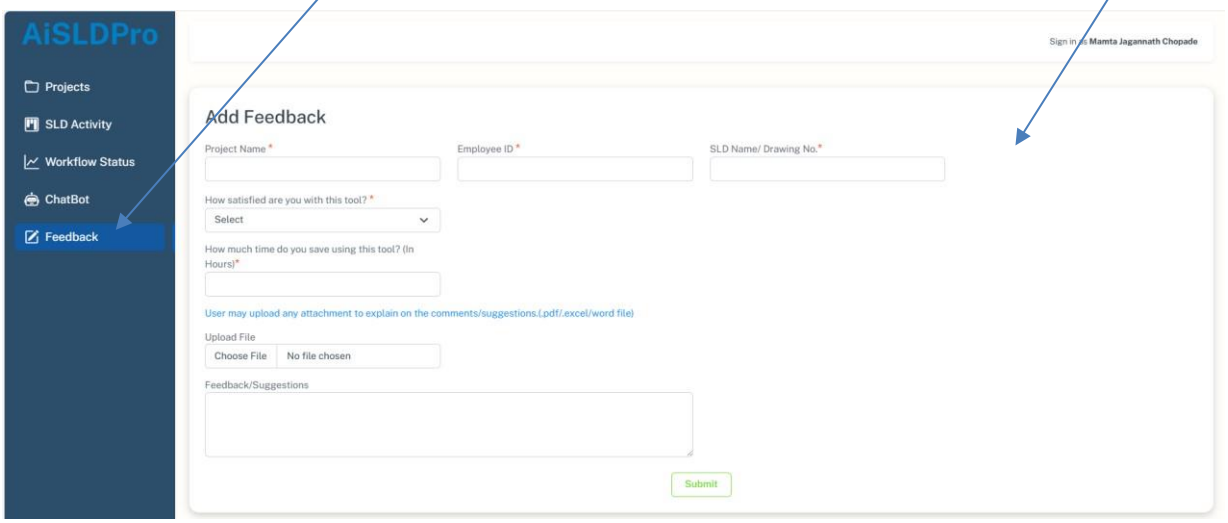


Step 2: Write the query and submit to find solution.

8. Feedback

Step 1: Click on Feedback

Step 2: Fill Feedback Form and submit.



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