CAPS-2

User Manual ver. 1.0

Internet Support
E-mail: caps2support@spxflow.com
Web: www.spxflow.com/johnson-pump/

Address
SPX Flow Europe Limited Belgium, Evenbroekveld 2-6, BE-9420 Erpe-Mere. Belgium

Contents

About this manual

This manual is a user guide to the CAPS. It contains a concise description of the software.

Structure of this manual

The structure of the CAPS - user manual is described below:

Chapter 1 – Introduction to the CAPS, contains a brief introduction of the software.

Chapter 2 – Using of the CAPS, gives step-by-step instructions for operating the software.

Chapter 3 – CAPS Maintenance Screen contains information to keep the application DB up to date.

Recommended settings to use CAPS-2 Web Application

Resolution - Full HD (1920x1080)
Scale - 100%
Browser Zoom - 100%

Note - Change in recommended settings cause the UI looks odd. To make use of better experience use the recommended settings.

Guidelines to use this manual

The conventions used in this manual are given below:

Bold	Bold Text denotes User Roles, the names of Buttons, Tabs or Screens.
Paths	Paths in this manual are denoted using backslashes (\) to separate drive names, directories and files, as in

```
C:\dir1name\dir2name\filename
```

Chapter 1 - Introduction to CAPS

1.1. Introduction

1.1.1. CAPS-2

CAPS-2 is the web-based test records maintenance software for Johnson pumps. Using this application, it is possible to select a graph which complies with all the specified criteria.

Following product lines are covered in CAPS-2:

Johnson Pump Internal Gear Pump Series:

- TopGear GS/GP/GM/H
- TopGear MAG
- SRT 150/200
- TopGear Bloc

Johnson Pump Rotary Lobe Pump Series:

- TopLobe
- TopLobe Plus
- TopWing

Chapter 2 - Using the CAPS

2.1. Application URL and Login Screen

Url: https://capsapp.spxflow.com. Use this URL to launch the application. Which will take you to the screen below.
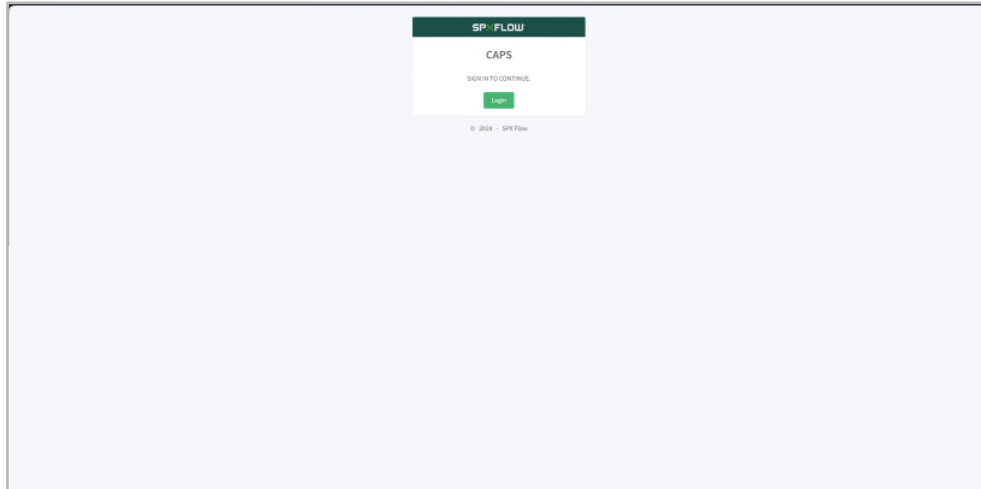

Figure 2.1: Entry Screen

Hitting the login button gets you to the SPXFLOW login page as shown below, where the user is supposed to enter his login ID and password. Based on the User Login type the software accessibility will differ as explained in chapter 1.
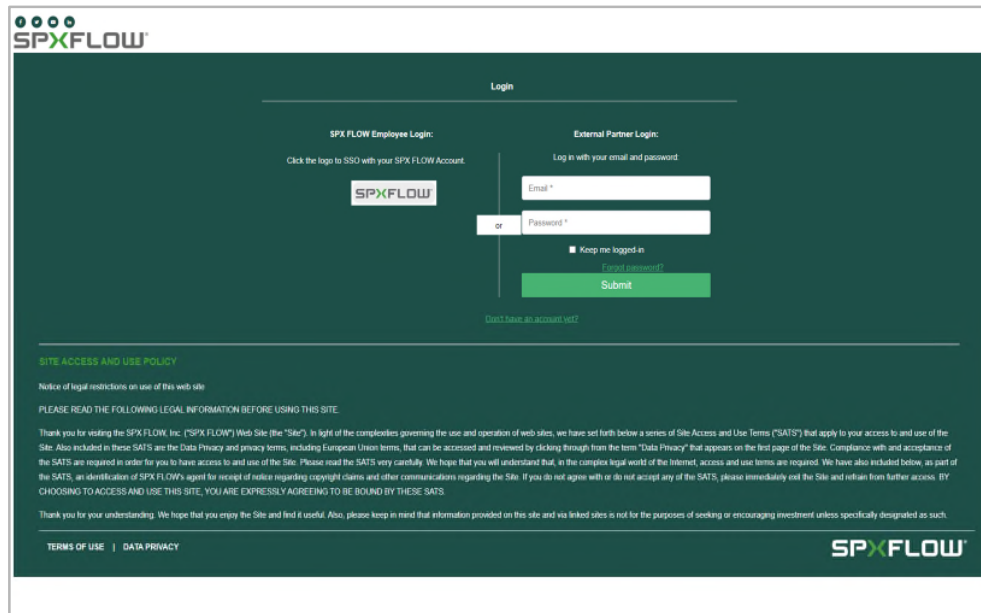

Figure 2.2: Login Screen

Note: *If the user has no Login ID then he needs to create a new Login ID and password by clicking "Don't have an account yet?"*
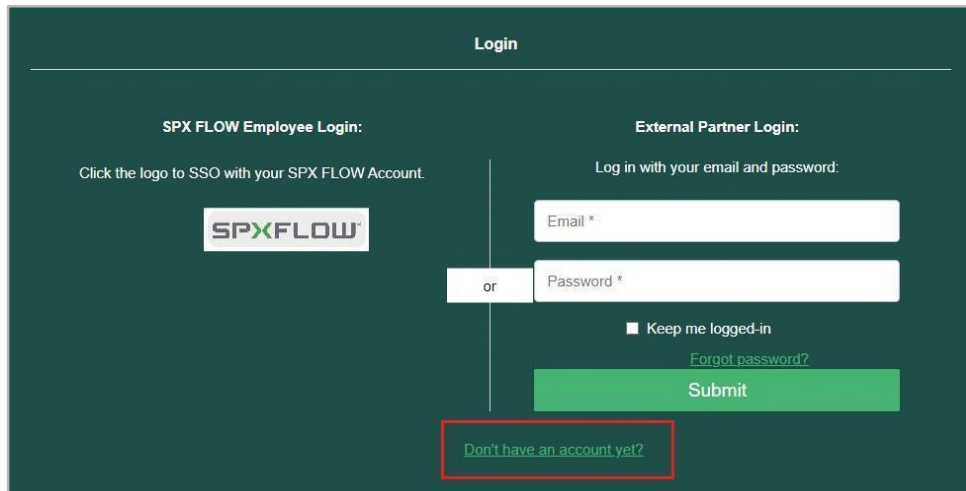
Figure 2.3: Create new Login ID

When the button above is hit, the screen below loads and asks the user to create a password for the newly created ID and enter his login information, which includes his email address.
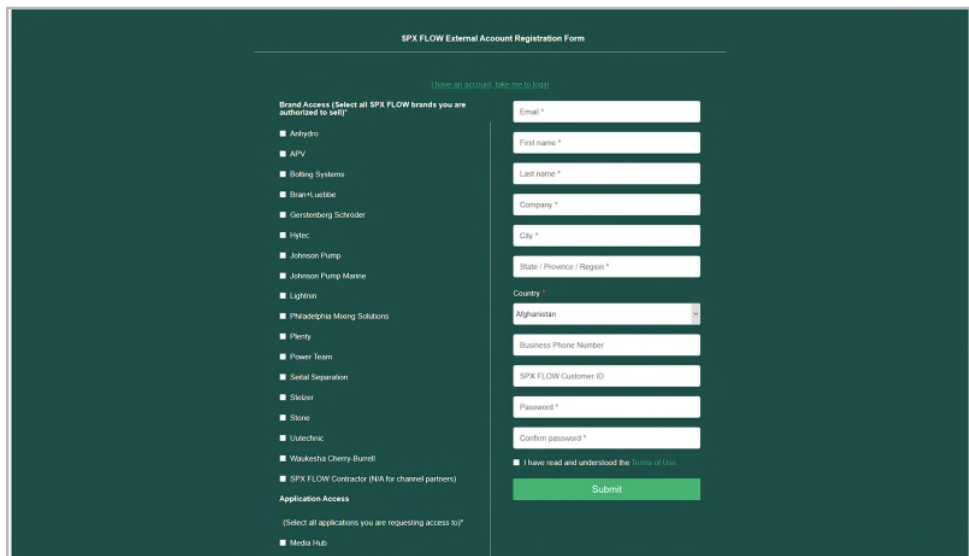

Figure 2.4: Creating login ID and password

After submitting, a second screen with the message "Account registration complete" appears for confirmation.
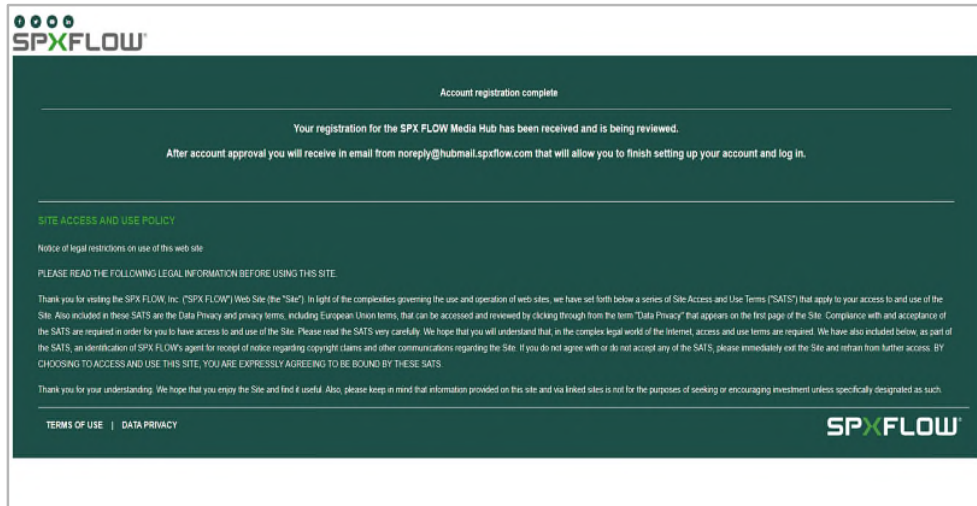
Figure 2.5: Confirmation Screen

Reloading the screen takes you to the entry screen. When you click the login button after creating a Login ID, you are immediately logged in and taken to the main screen.

In the unlikely event that the user forgets their password, they can reset it to a different one by clicking the "forgot password?", as seen below.
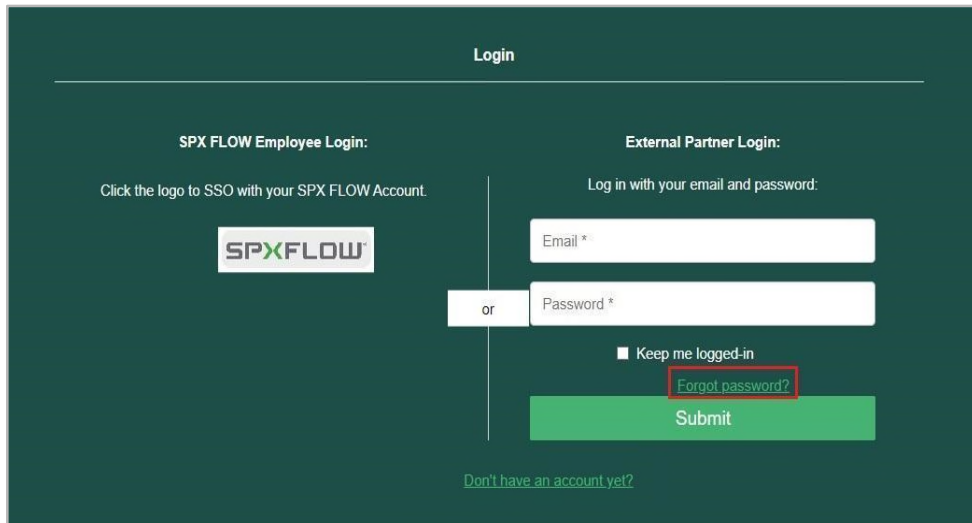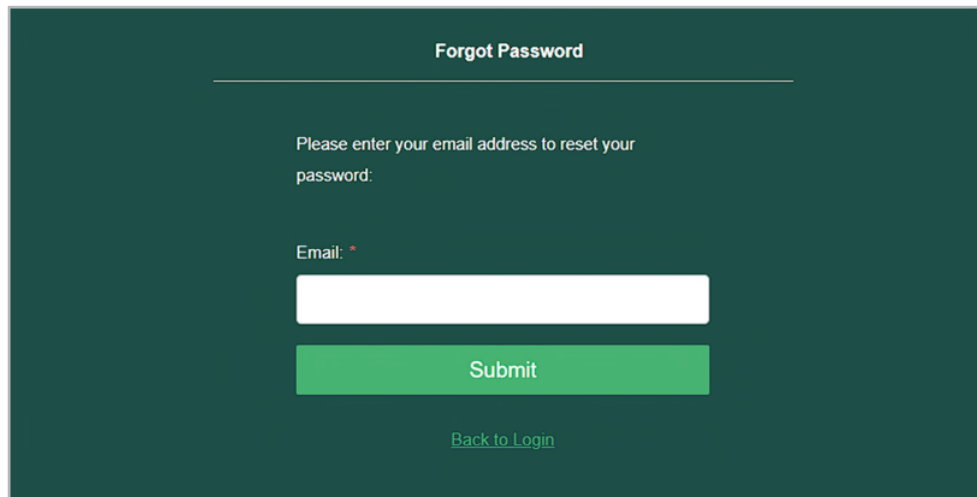

Figure 2.6: Forgot Password

On clicking "forgot password?", the user is directed to a page requesting the email address they used to create their Login ID. This is shown in the illustration below.
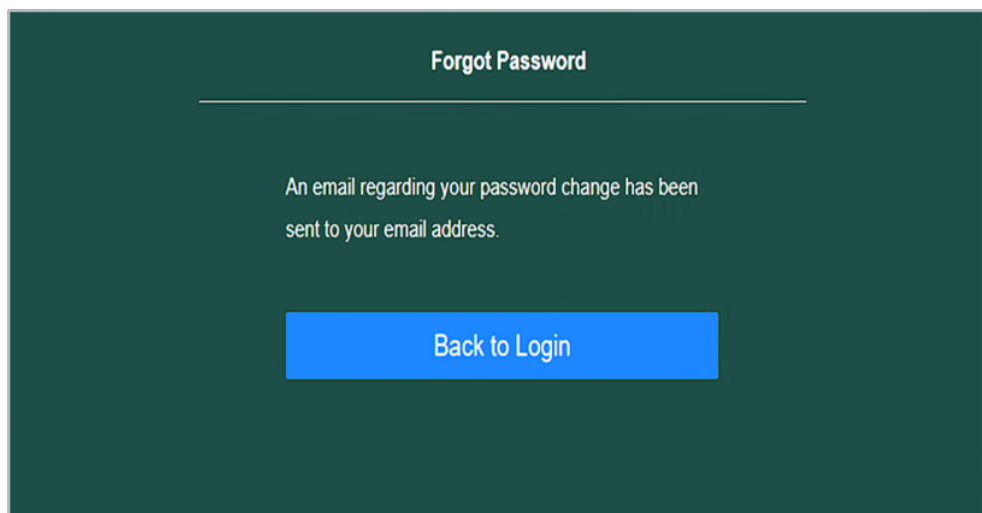
Figure 2.7: Provide email

An email regarding the password change is sent when the submit button is pressed.

Figure 2.8: Back to login page

You can access the login page by selecting "Back to Login" after updating your password. The user can now log in and utilise the application there.

Note - The user's login will be valid for 8 hours from the time of Login, Once the timeout occurs and the user seems active, the refresh token with a validity of 7 days will be generated automatically, and the session will be maintained. After this timeout the user will be taken to Login Screen.

2.2. Main Screen

Once the Login is valid, the Main screen will open with the Pump Selection screen as default. The Options available in Main Screen are explained below.

- **Pump Selection Screen -** The Pump selection screen is used to identify pumps that fall under the user's requirements.

- **Unit Converter Screen -** This screen is used for easy unit conversion which can be used for checking different values.

- **Pressure Loss Calculator Screen -** This screen performs calculations to identify the pressure loss between inlet pipe and outlet pipe that are added by the user.

- **Fullscreen -** To toggle between Fullscreen mode and normal mode.

- **Logout** - To logout from the CAPS application.

- **User profile -** To view the user details and change the Current Role of the User can be modified.
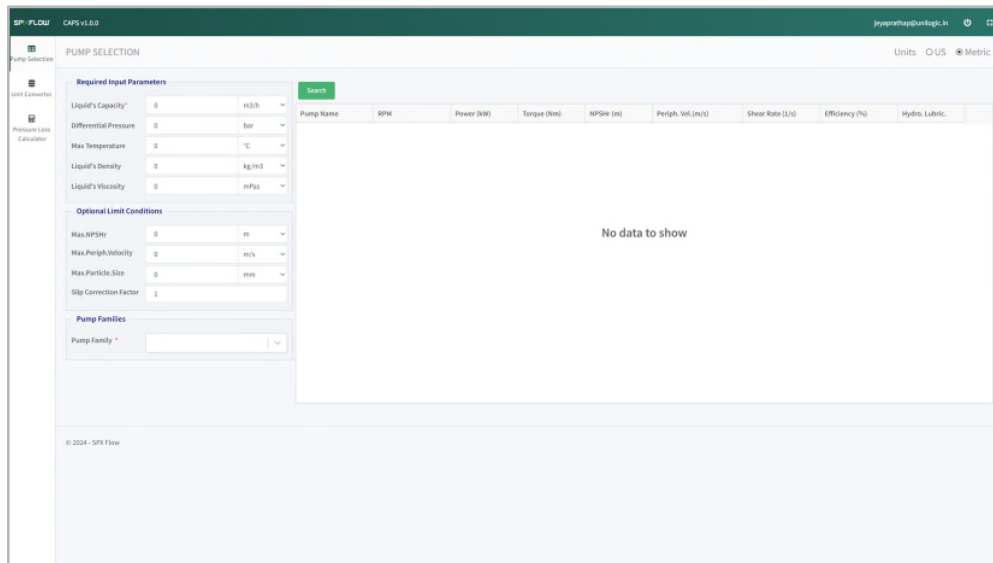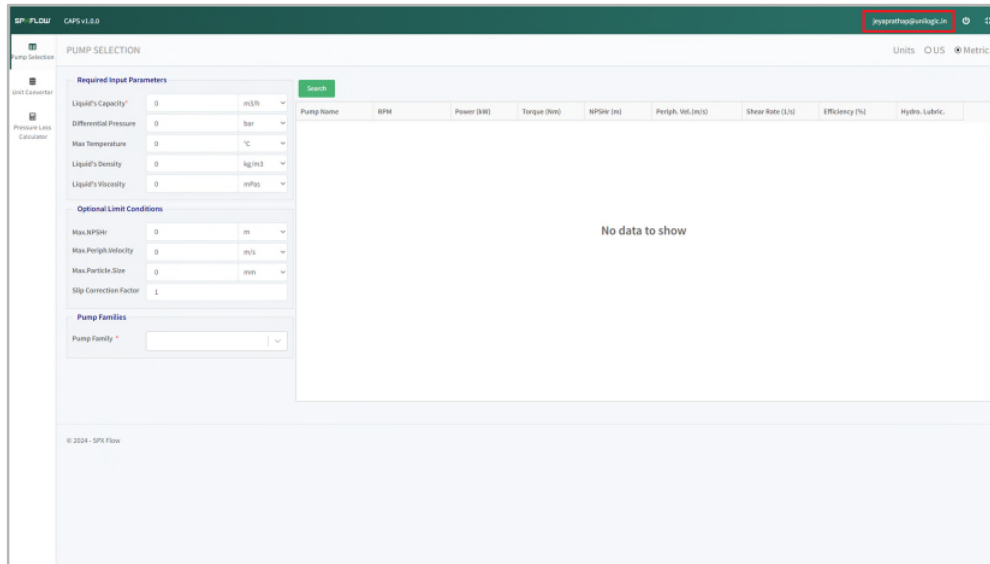

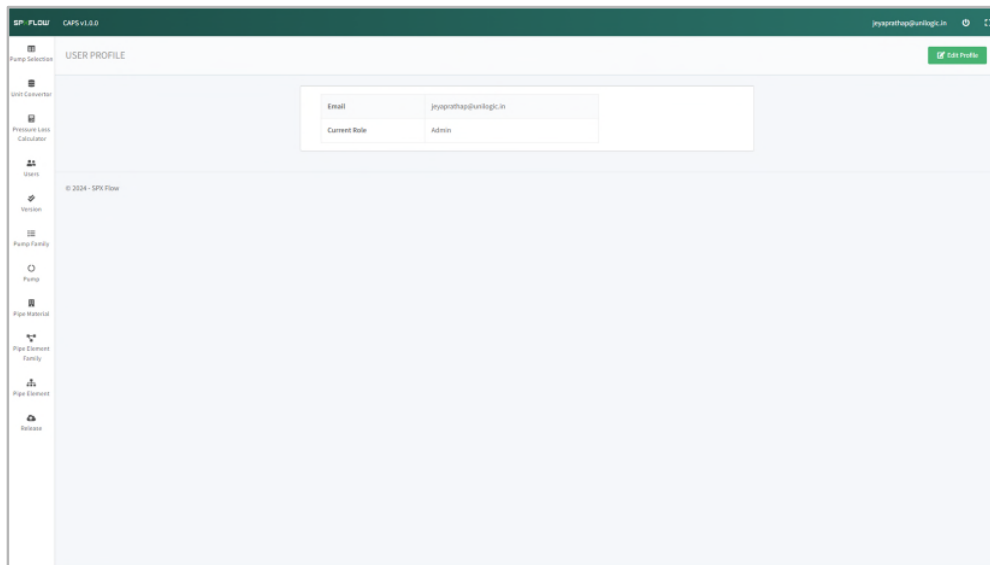**Figure 2.9: Main Screen**

Figure 2.10: User Email

Figure 2.11: Profile Screen

On clicking the User Email, the profile screen appears. Using the Edit user button on the top right corner, one can edit his own details.
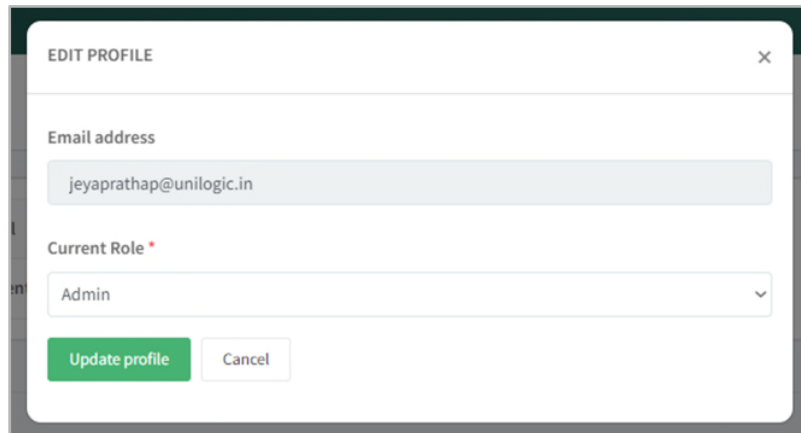
Figure 2.12: Edit Profile Pop-up

Note: *The administrator must enable each of the user roles before they become accessible to the user. Until then, the drop-down contains only 'User' as the only option.*

2.3. Pump Selection Screen

This screen is used by the user to enter the required pump parameters and limits, along with the pump family, and find the appropriate pump that satisfies their needs.
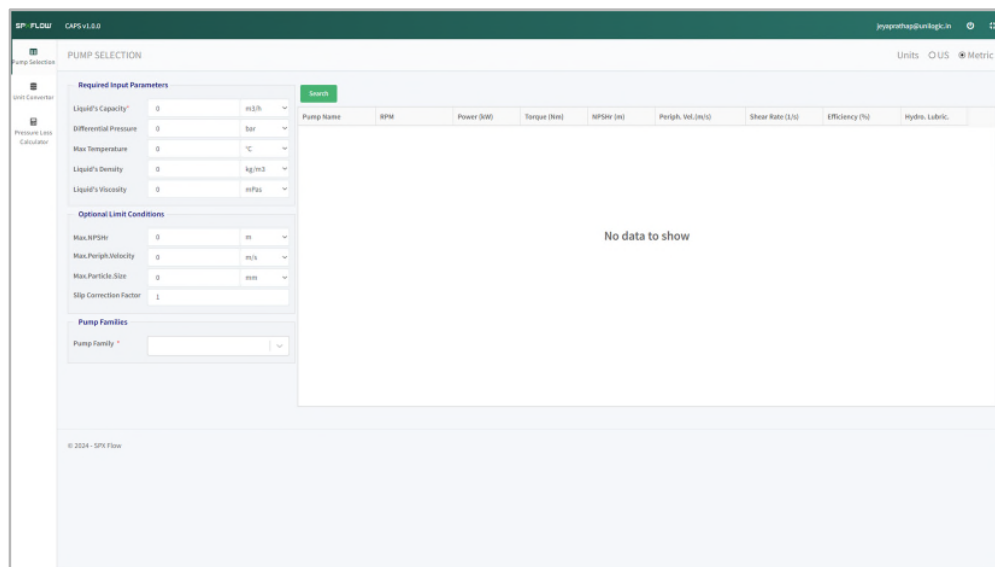

Figure 2.13: Pump Selection Screen

2.3.1. Procedure to choose a Pump

2.3.1.1. Selection Criteria

- There are choices for unit selection. The calculation will be performed in Metric units if Metric is selected, or in US units if US is selected.
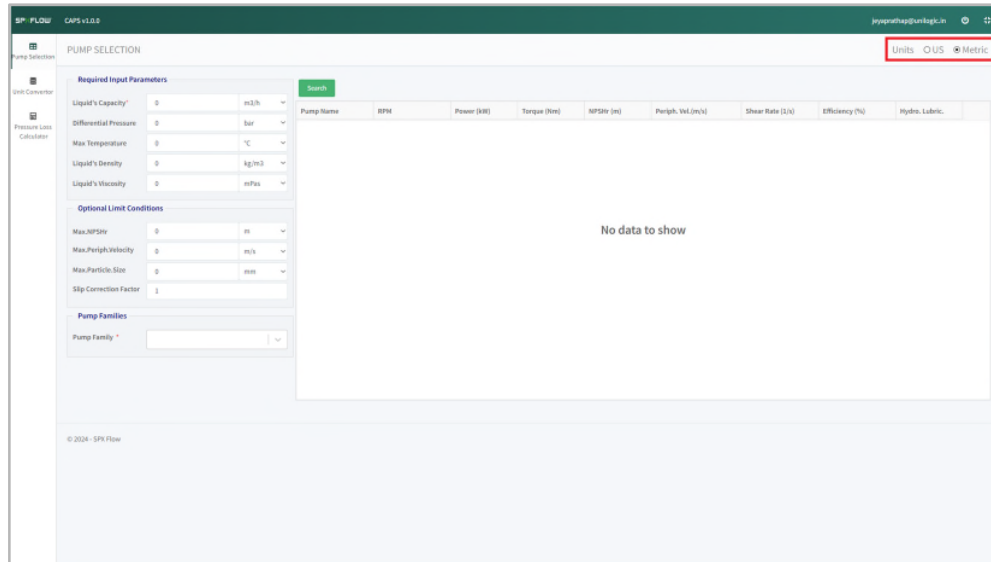

Figure 2.14: Unit Selection

- The minimum required values to filter the pumps are specified with an asterisk (*). If these are not entered, a warning message appears.
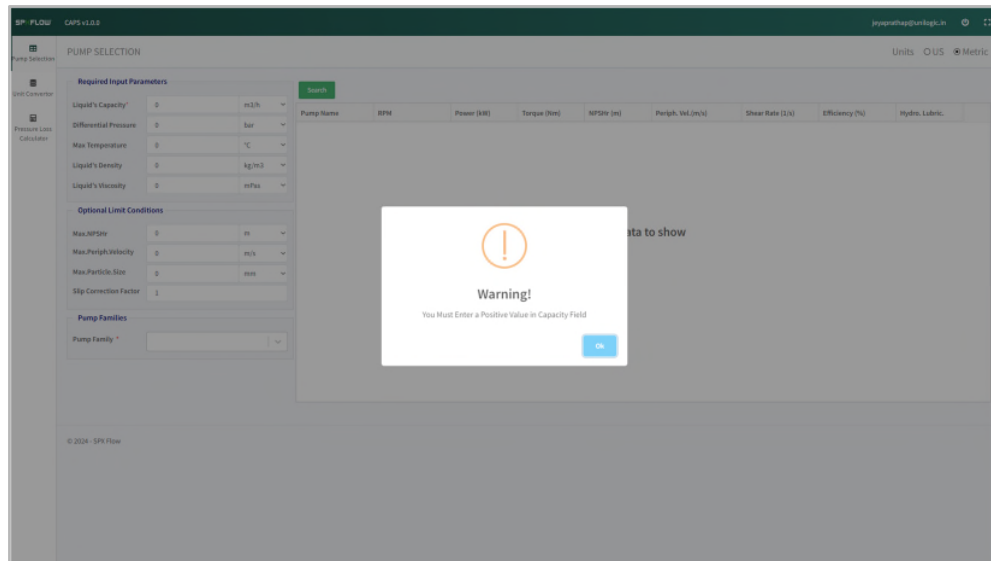

Figure 2.15: Required Fields Warning Pop-Up

- The pumps will be listed according to the Required Input Parameters.

- When there is a unit change, the values that are specified by the user are auto calculated according to its unit.

- Once all the required parameters are entered, the search button is used to fetch the pumps based on the input parameters.

- Each page can initially accommodate 100 pumps. It can be set up to 500 pumps per page according to the user's needs.

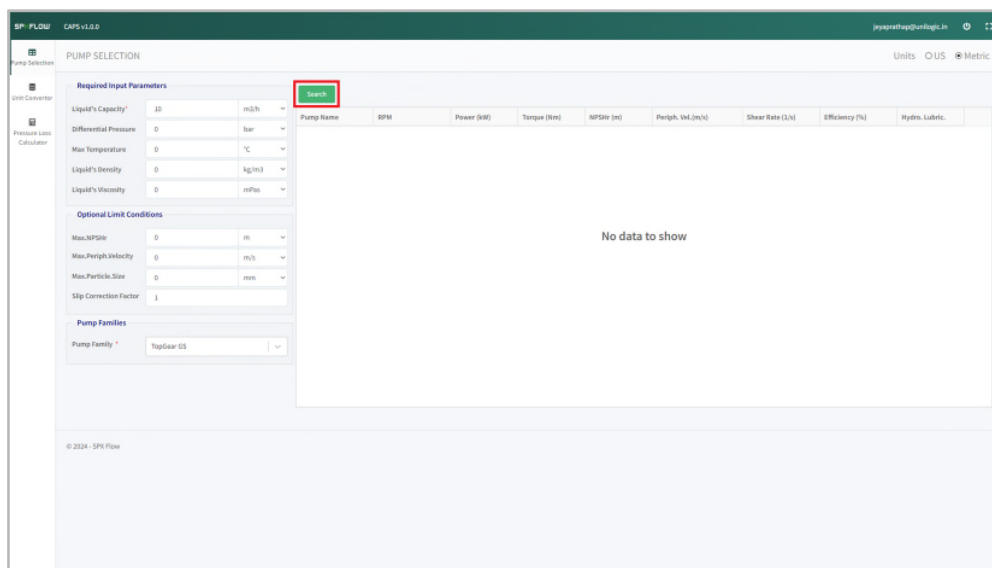- Movement between next and previous pages can be done using the buttons that are present at the right bottom.
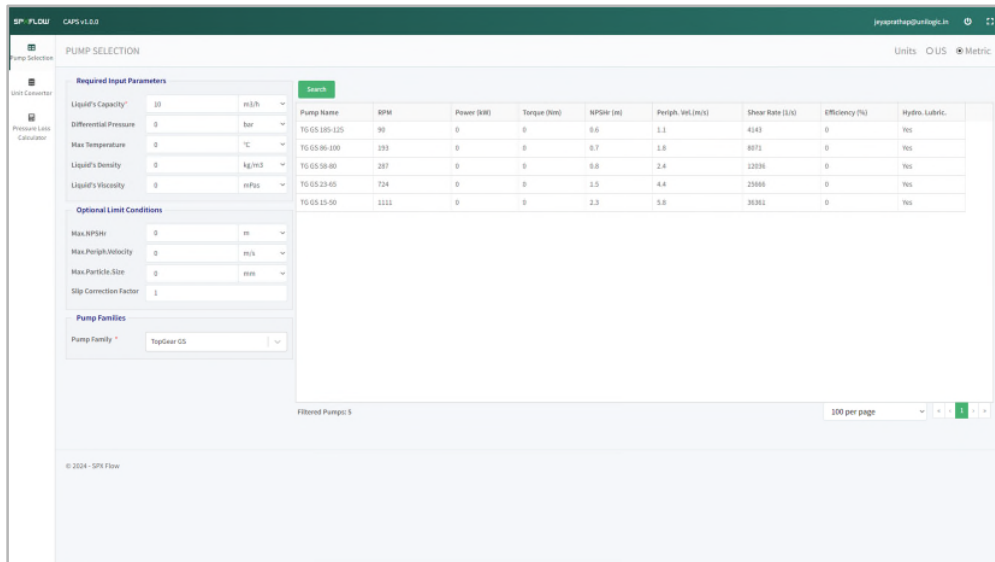

Figure 2.16: Search Button

Figure 2.17: After Searching

2.3.1.2. Graphs and Reports

- In order to view the graphs of the pipes, double clicking on a required pipe opens a screen with three graphs and calculated pump data based on the pump's RPM.

- The graphs that are shown in this screen are listed below

  - ➢ Pshaft(n)
  - ➢ NPSH(n) / NIPR(n)
  - ➢ Qeff(n)
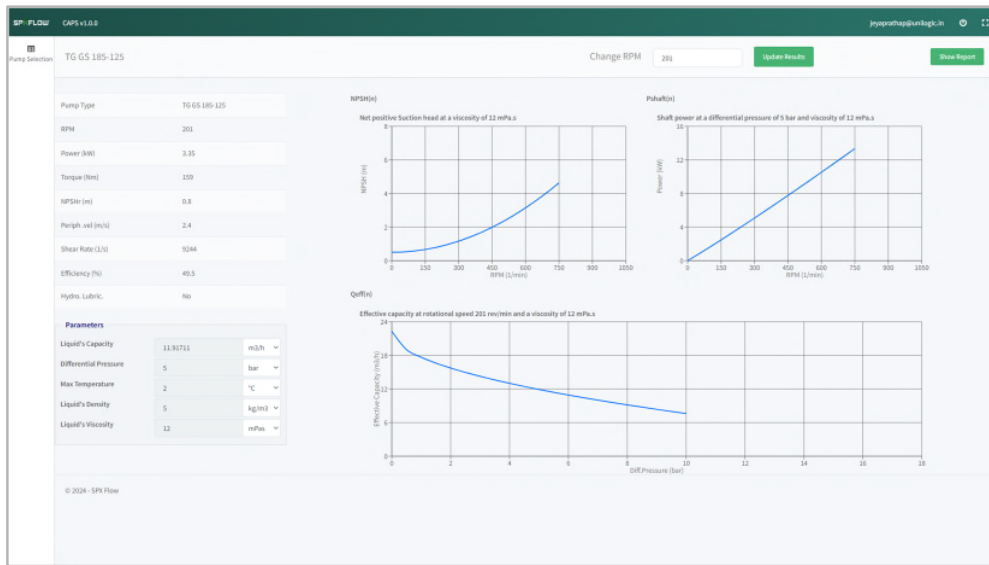
Figure 2.18: Graph Screen
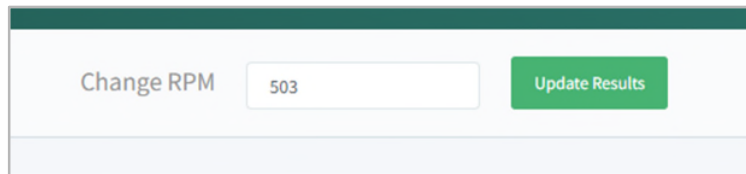
Figure 2.19: Change RPM and Update Results Button

- The RPM can be edited and updated by clicking the Update Results button at the top right corner, such that the change in values is reflected in the pump data and graphs.

- Even though the entered RPM changed the capacity over 10% from initial flow, it shows a warning popup, by clicking Ok the calculation proceeds.

- Each pump should have a maximum allowable shaft speed. If RPM exceeds, it throws a warning and stops the calculation.

- If the entered RPM leads to negative capacity, it throws a warning and stops the calculation.

- If entered RPM's NPSHr or Peripheral velocity is greater than the limit condition, it shows a YesOrNo popup if yes is pressed calculation proceeds otherwise calculation will be stopped.

- Negative values are not allowed in the "change RPM" field.

- Initially the RPM value will be with decimal values, but the user cannot enter the decimal values in that field.

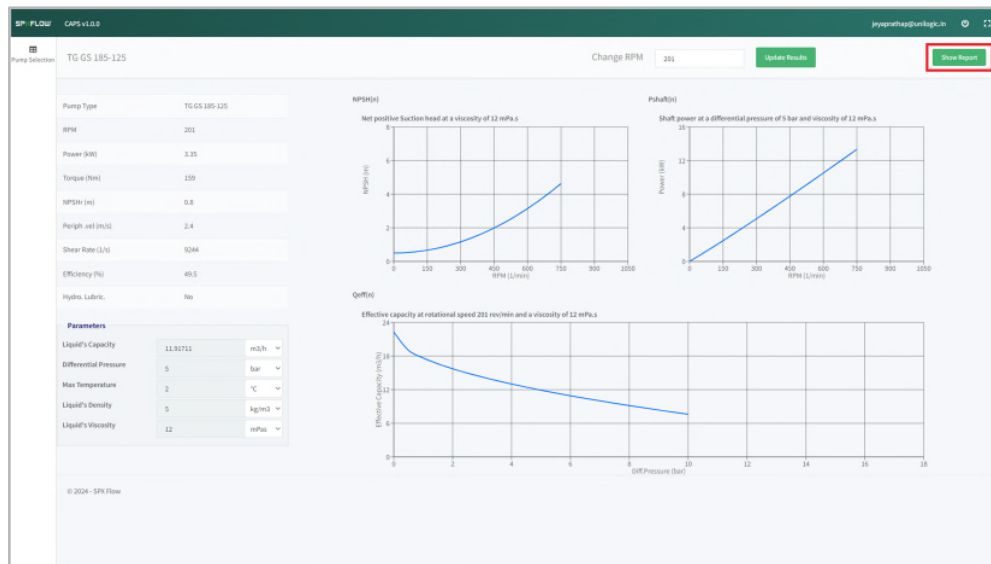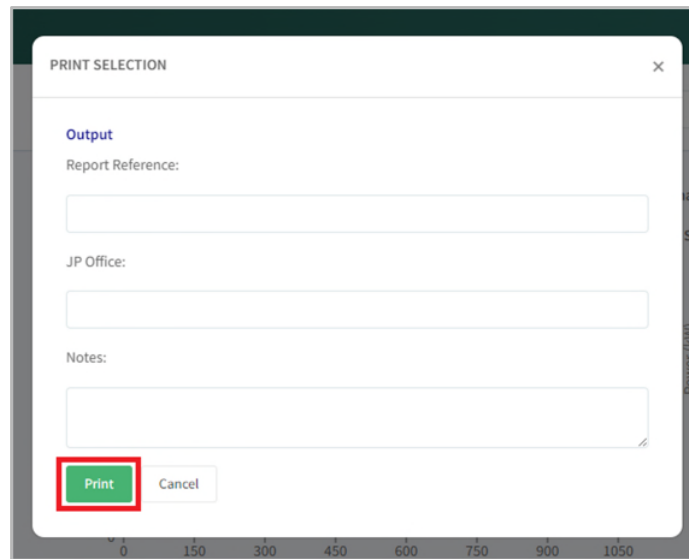**Figure 2.20: Show Report Buttons**

Figure 2.21: Report Print Button

- To generate a report, one must press the 'Show Report' adjacent to the update button that gives a popup to enter the required details. Once it is completed clicking the 'Print' button opens a preview of the report for verification.

- The report can be saved or printed directly using the print button.
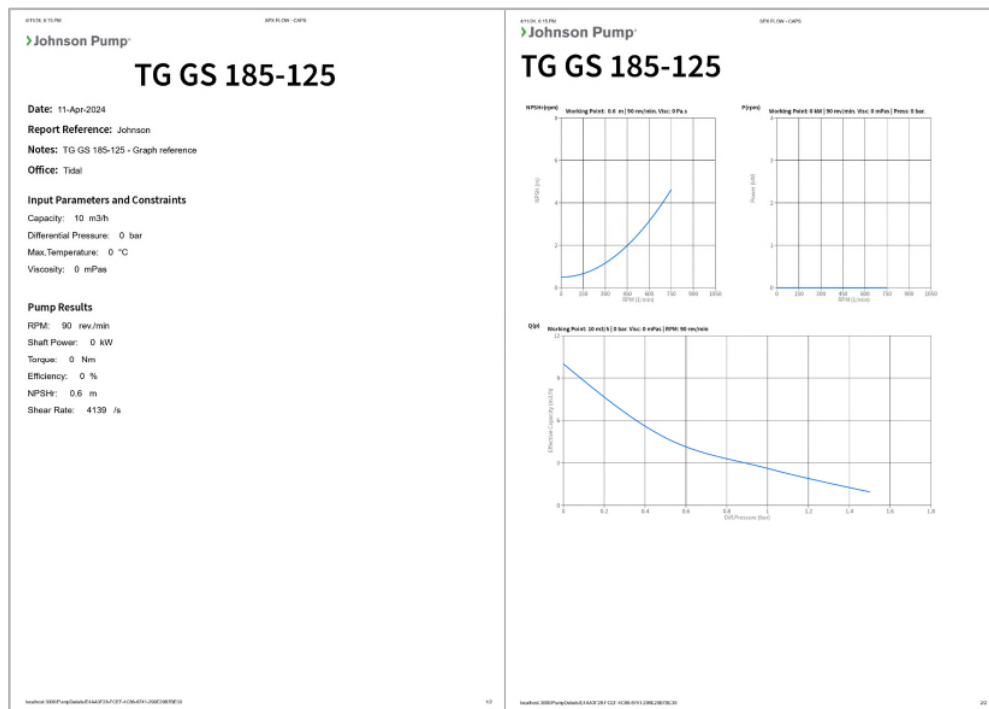
Figure 2.22: Report (pdf)

2.4. Unit Convertor Screen

- In the Unit Convertor Screen there are Ten parameters namely
    - Flow
    - Density
    - Pressure
    - length
    - Area
    - Temperature
    - Viscosity
    - Power
    - Volume

- Entering a value in any field of a parameter will automatically calculate and display the other values based on the units in the respective fields.

- To calculate Viscosity unit values, density value is needed.

- Entering Viscosity value without entering Density value, shows a warning pop-up as "Calculation of viscosity in cP needs the knowledge of Liquid density".

- Negative values are allowed only for the Temperature field.

Figure 2.23: Unit Convertor Screen

2.5. Pressure Loss Calculator Screen

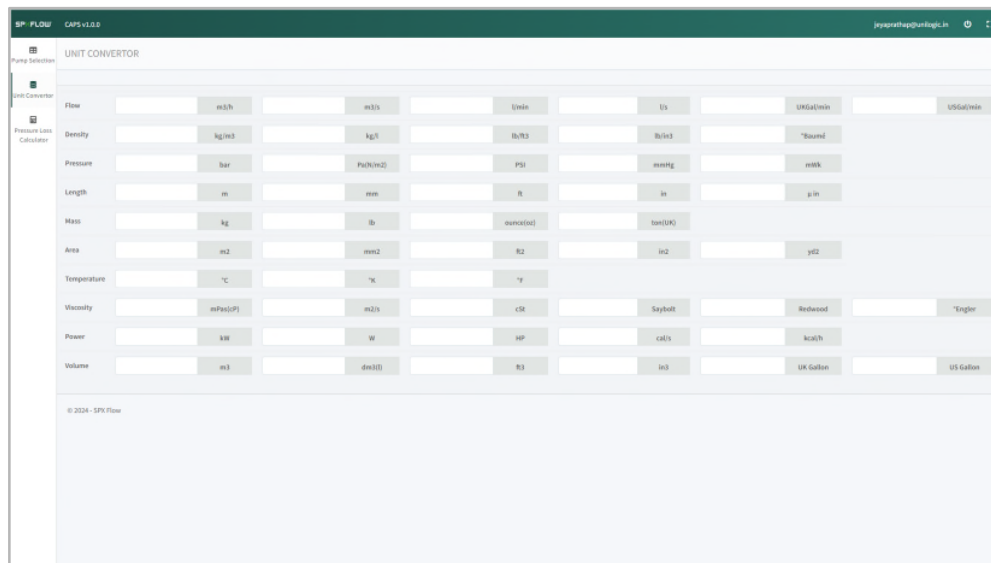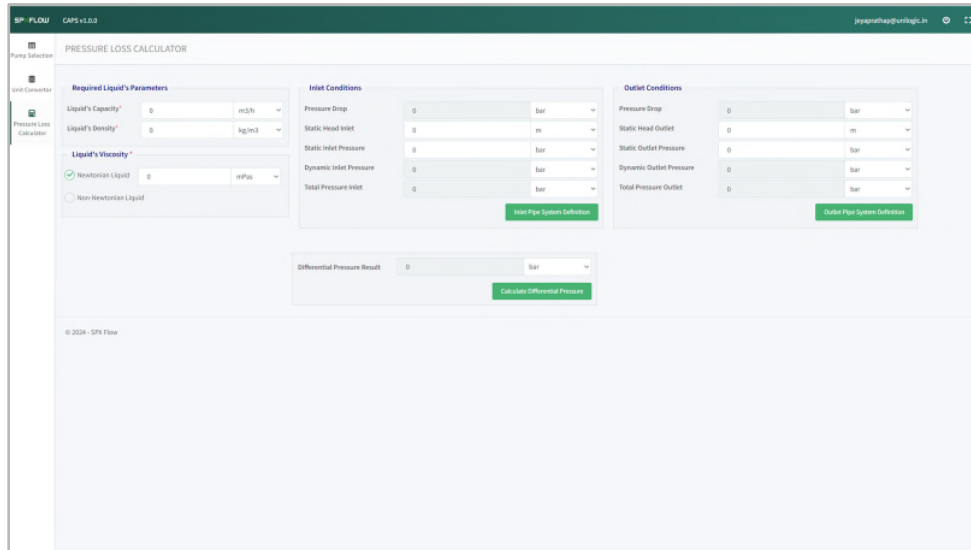**Figure 2.24: Pressure Loss Calculator Screen**

- In the Pressure Loss calculator screen, Liquid's Capacity, Liquid's Density and Liquid's Viscosity are required to calculate differential pressure.
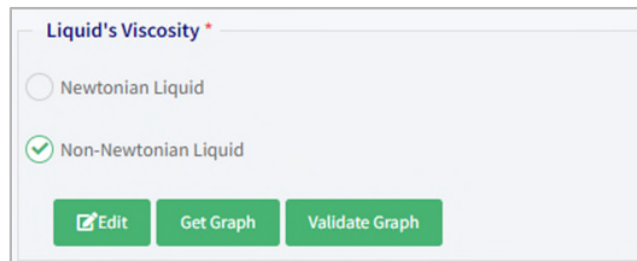
Figure 2.25: Liquid's Viscosity

- There are two radio buttons under Liquid's Viscosity namely:

  - Newtonian Liquid
  - Non-Newtonian Liquid

- **Newtonian Liquid -** Selecting Newtonian Liquid radio button, allows the user to enter Liquid viscosity with its unit.

- **Non-Newtonian Liquid -** Selecting Non-Newtonian Liquid radio button, shows three buttons namely Edit, Get Graph and Validate Graph.

- Clicking the **Edit** button opens a pop-up which allows the user to enter shear rate and viscosity coordinates.

- Clicking the **Get Graph** button opens a pop-up with a graph plotted using the user entered shear rate and viscosity coordinates.

- Clicking the **Validate Graph** button shows a pop-up whether the graph is valid or not.

Figure 2.26: Edit Coordinates

- After filling the required fields in pressure loss calculator screen, there are two pipe systems namely:
    - Inlet Pipe System
    - Outlet Pipe System

- Differential pressure can also be calculated using user customized inlet and outlet pipes.

Figure 2.27: Inlet Conditions and Outlet Conditions

- The inlet and outlet pipe definitions are edited using the respective 'Pipe System Definition' button. Clicking the button opens a screen and allows the user to add or delete the pipes in the pipe system for the calculation.

- Once returned to the pressure loss calculator screen from Pipe system screen, a calculation is made for the added pipes and those values are displayed in the respective pipe system condition. That is **Pressure drop** and **Dynamic inlet\outlet pressure** are updated. And according to the Static inlet\outlet pressure total inlet\outlet pressure is calculated and displayed.

- After editing both systems, the '**Calculate Differential Pressure**' button is used to calculate the pressure loss. That is displayed in the Differential Pressure Result box.

- The differential pressure can be calculated by clicking the "Calculate Differential Pressure" button after providing the necessary inputs, including the inlet and outlet conditions.

  Note: *The differential pressure calculated in this screen will be auto filled in the selection screen along with Density and Viscosity.*

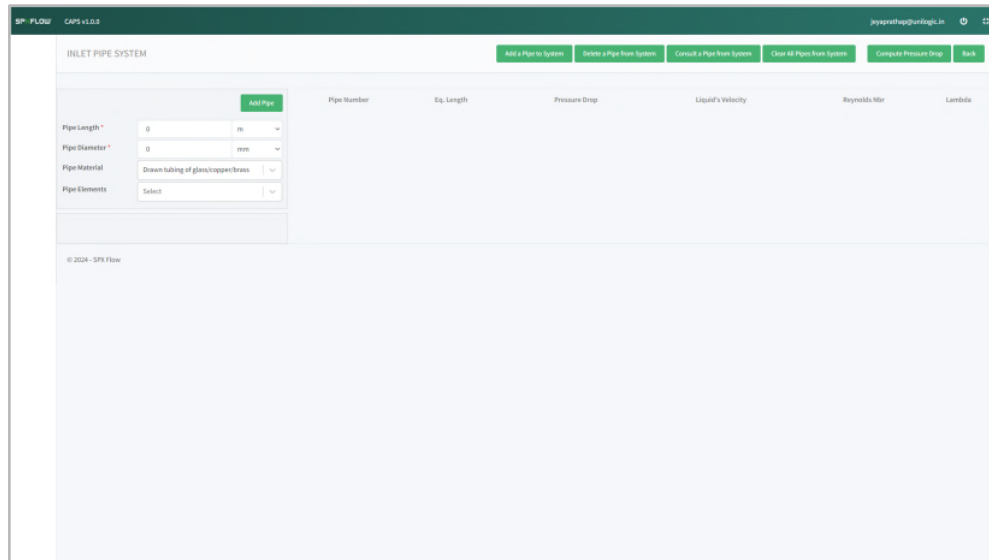### 2.5.3. Inlet and Outlet Pipe system
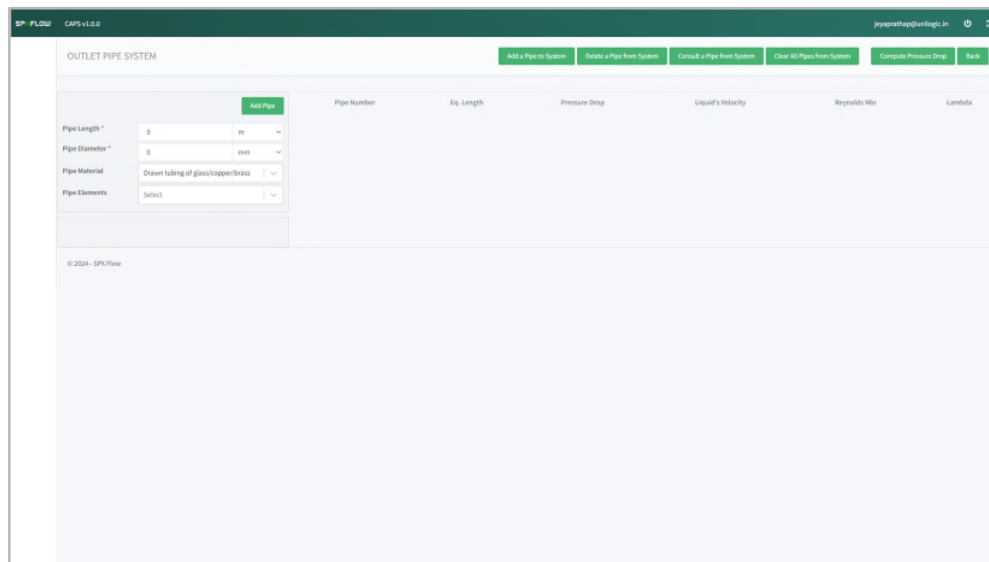

Figure 2.28: Inlet Pipe System Screen

Figure 2.29: Outlet Pipe System Screen

- Both Inlet and outlet pipes have options to add, delete, consult and clear all pipes from the system.

- They also have an option to compute pressure drop for all the pipes in the system. And the results for each pipe are listed below.

- Initially the system contains **no pipes**, the user has to add pipes to the system to perform pressure drop calculation.

- A total of **10 pipes** can be added to each pipe system. Both the inlet and outlet systems are not linked, so editing the pipes in one system doesn't affect the other.

2.5.3.1. Procedure to edit Pipes in the system

- Pipe Length, Pipe Diameter and Pipe Material are required for a pipe in the system.

- Additionally, the pipe elements dropdown lists the pipe element family. By choosing a pipe element family, list the pipe elements below it. The quantities of the elements can be entered into the respective fields before adding a pipe.

- Each element family holds all the entered details no matter what element is selected in the dropdown box.

- Once the add button is clicked, the pipe details are added into the system, and the fields are cleared, ready for the next entry.

- The added pipe can be deleted using the 'Delete a Pipe from System' button. Clicking this button pops up a dropdown that lists all the pipes present in the system choosing a pipe and clicking Delete will remove the pipe from the system.

- The added pipe can be seen by using the 'Consult a Pipe from System' button. Clicking this button pops up a dropdown that lists all the pipes present in the system, choosing a pipe will display the data on the left panel.

- The loaded values cannot be edited and can only be viewed.

- When these values are loaded the boxes cannot be used to add new pipes, so the 'Add a Pipe to System' button is used to reset the fields, for adding a new pipe.

- The 'Clear All Pipes from System' button is used to clear all the added pipes to the respective system. That is when clicked from inlet system definition then the pipes present in the inlet system will be deleted.

- Back button is used to return to the pressure loss calculator screen.