Global Energy Associates Ltd

PipeCalc4 Pipework Pressure Loss Calculator User Guide

Table of Contents

Global Energy Associates Ltd
St Johns Industrial Estate
Dunmow Road
Takeley
Bishop's Stortford
CM22 6SP
United Kingdom

www.globalenergy.co.uk
Telephone: +44 (0)1279 870710

1. Overview

The PipeCalc4 Pipework Pressure Loss Calculator (PPLC) application is a tool to help gas engineers design pipework installations.

PipeCalc4 PPLC allows the user to input gas and pipework design criteria which it then uses to predict pressure loss, pipe velocity and volume metrics. These can be adjusted to allow for the effects of pipework fittings and change in height.

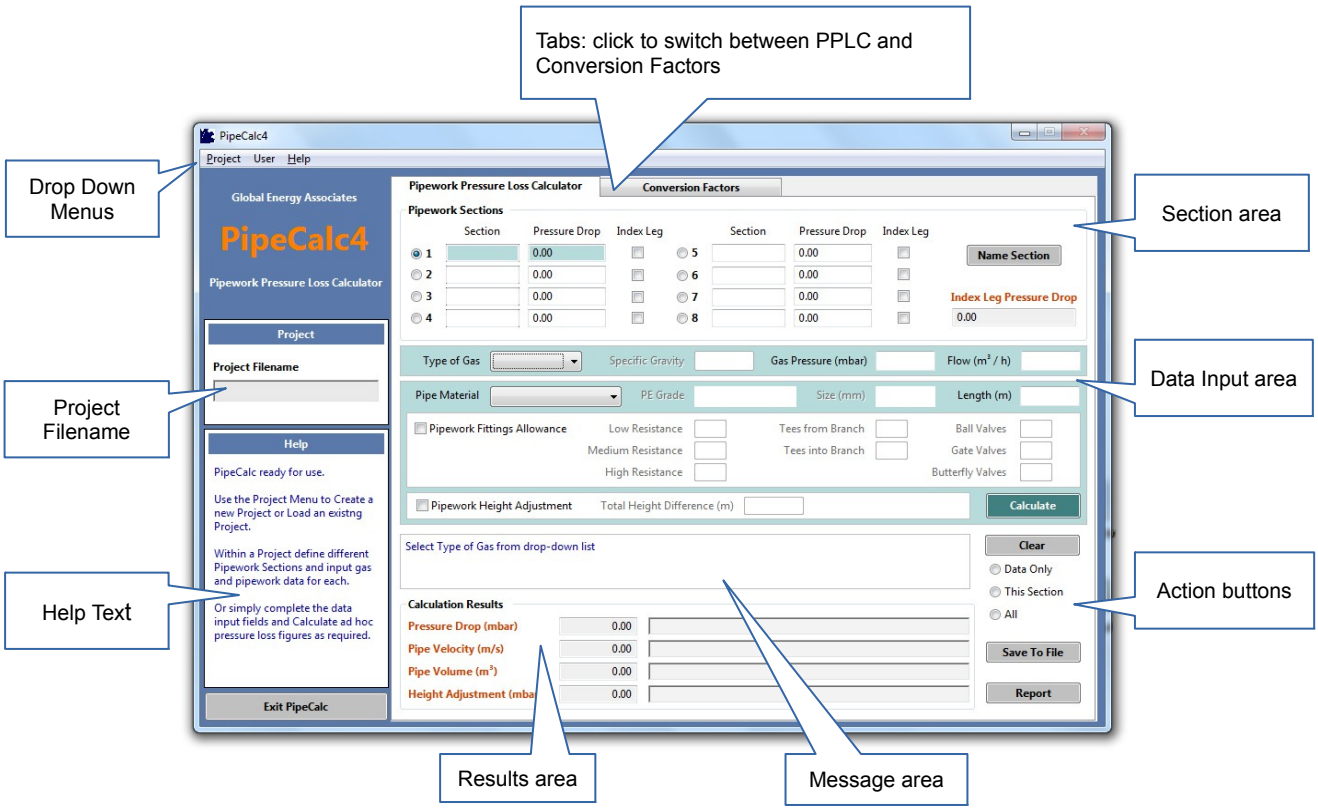
A gas installation project can be broken down into sections, each with their own set of gas and pipework data. Optionally, one or more sections can be included to calculate the Index Leg Pressure Drop which will show the highest pressure drop leg across the whole installation.

There are facilities to generate a formal report and to store project data for retrieval at a later date. There is also a useful conversion factors facility.

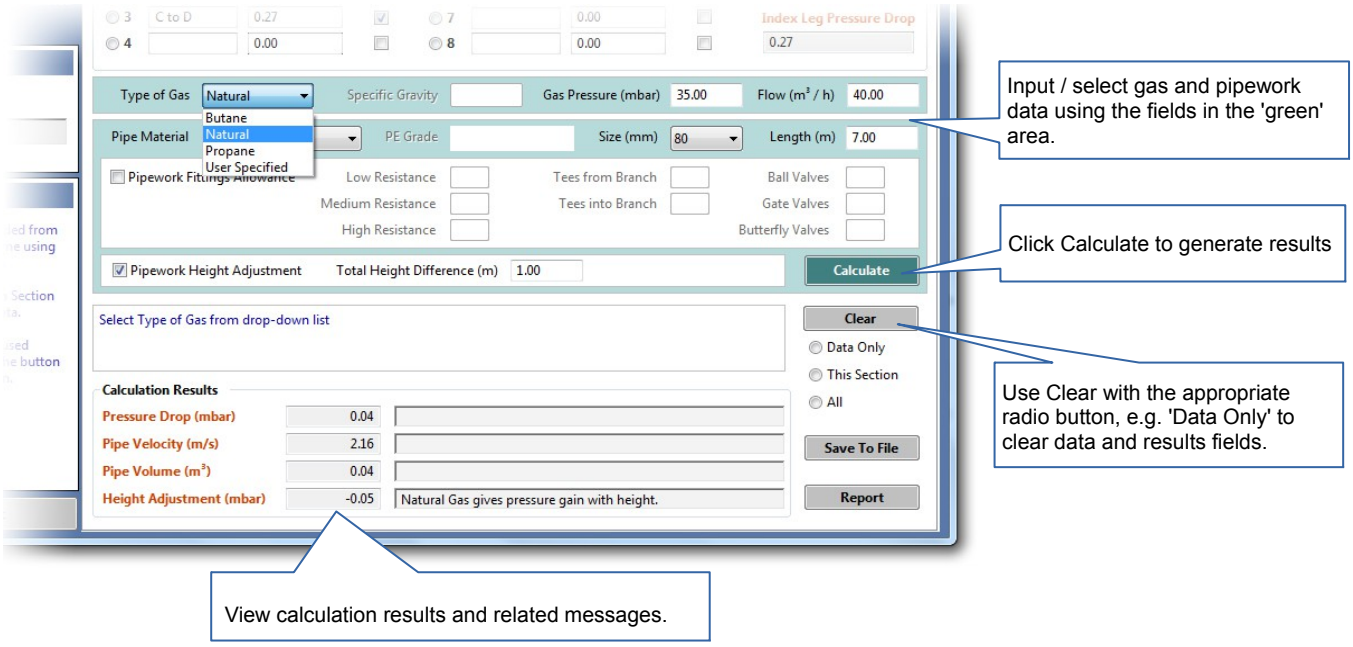
To assist the user, the application features comprehensive guidance text and messaging.

PipeCalc4 PPLC conforms to guidelines defined in Institution of Gas Engineers and Managers (IGEM) document UP/2 'Installation pipework on industrial and commercial premises' Edition 3.

On startup, PipeCalc4 PPLC will be displayed as shown below.



2. Basic Data Input and Calculation

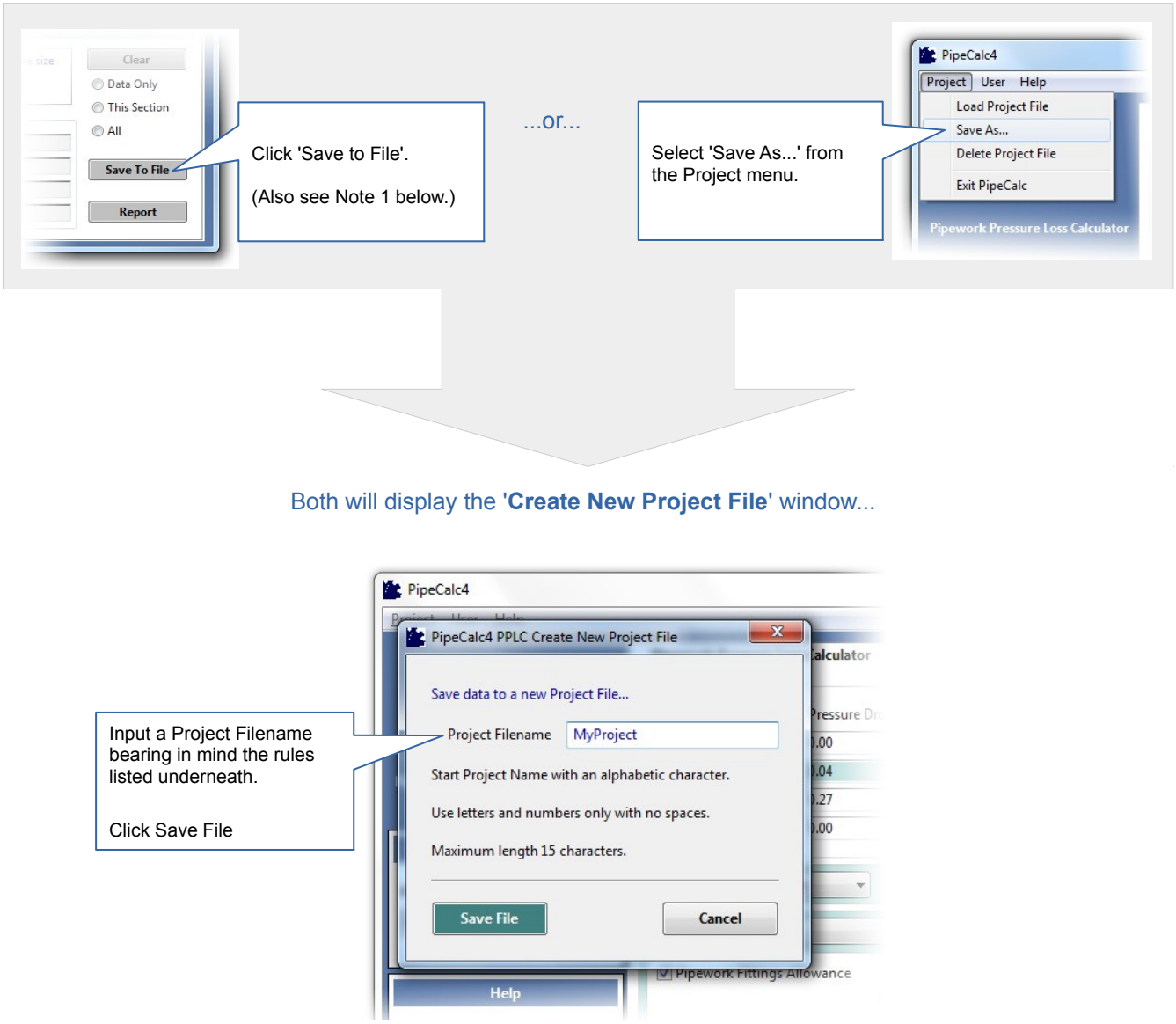


Notes

1. The Message area will display guidance on acceptable input values and highlight any incorrect input.
2. Input to 'Specific Gravity' is only possible when Type of Gas = 'User Specified'.
3. 'Pipe Material' lists the normal gas pipework material options. Note: CSST stainless steel flexible pipe is included although the associated diameter size options listed (under 'Size') relate to the manufacturers specified effective diameter, **not** the nominal pipe diameter.
4. Input to 'PE Grade' is only possible when the selected 'Pipe Material' is a PE material.
5. When checked, 'Pipework Fittings Allowance' will allow input to the adjacent 'resistance', 'tees' and 'valves' boxes. Input the number of fittings in each of these categories and the effect on pressure loss will be taken into account in calculations.
6. When checked, 'Pipework Height Adjustment' will allow input to 'Total Height Difference'. Input to this field will be used to adjust calculated pressure loss for the effects of altitude (e.g. pipes in high rise buildings).
7. Invalid input to any field will be highlighted when Calculate is clicked.
8. The Clear facility with 'Data Only' selected will clear all input data and results fields.
9. The Clear facility with 'This Section' selected will clear all input data and results fields plus section data for the current section only.
10. The Clear facility with 'All' selected will clear all fields in the PPLC window. i.e. it will be 'initialised' as when started up.
11. Using Clear will not delete any data saved to a Project File. See 'Deleting Projects' on how to do this.

3. Projects: Saving Data to File

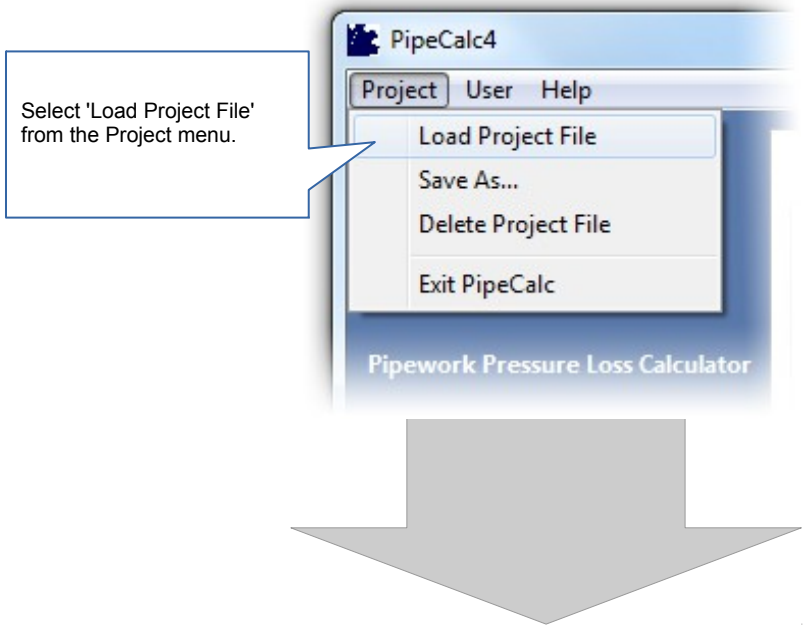
To save data and calculation results to a file for future use...



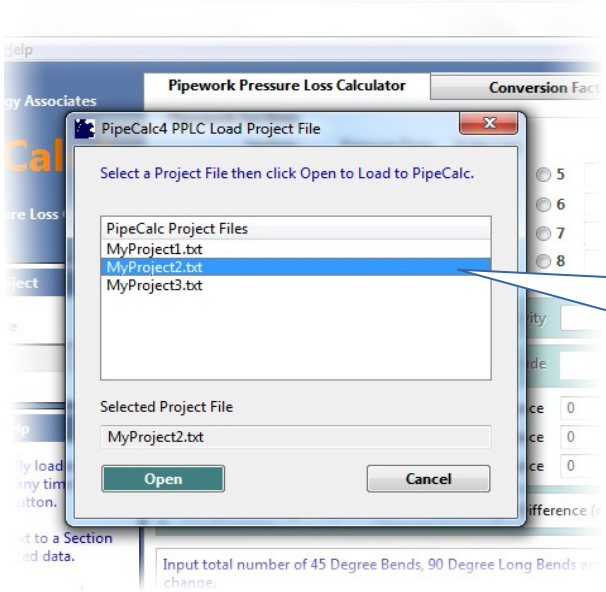
Notes

1. If data has already been saved to a file which is loaded to PipeCalc4 then clicking Save to File will just save the displayed data and results to the same file. The 'Create New Project File' window will not be displayed.

4. Projects: Loading Data from File



This will display the 'Load Project File' window...

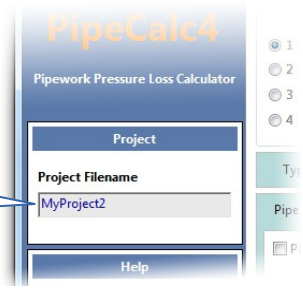


Highlight the Project File to be loaded and click 'Open'.

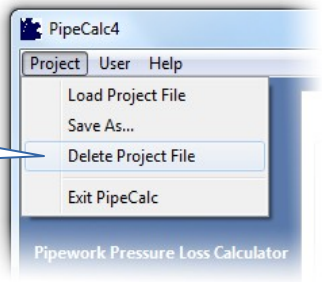
Project data from the file will then be displayed in the main PipeCalc4 PPLC window.

5. Deleting a Project

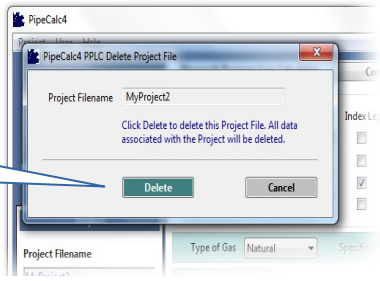
Ensure that the Project to be deleted is already loaded to PipeCalc4.



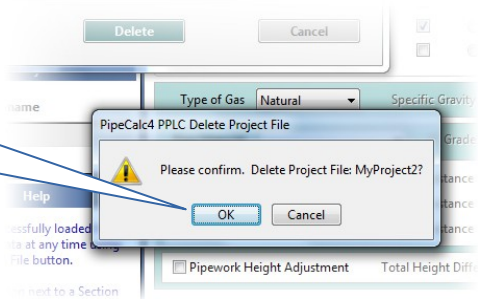
Select 'Delete Project File' from the Project menu.



Check that the correct Project File is shown then click Delete button.



Click OK to confirm Project File deletion.

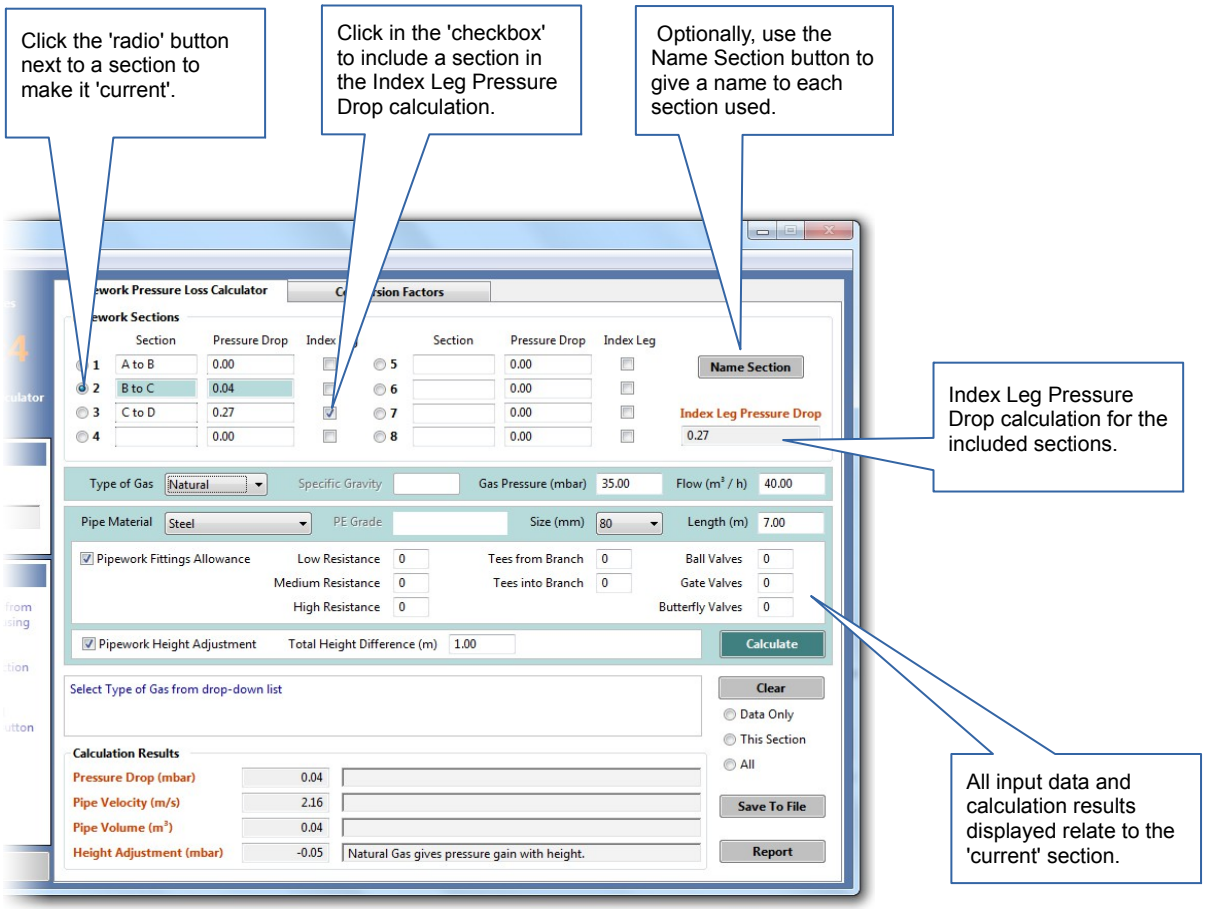


Notes

1. The Project File to be deleted must already be loaded to PipeCalc4 (see Section 4) before proceeding with the steps outlined above.
2. Once the confirmation to delete is given the Project File will be deleted and you will be returned to the Main Window which will be cleared of all data.

6. Using Pipework Sections

A gas installation Project can be broken down into Sections, up to 8 in total, each with their own set of gas and pipework data.

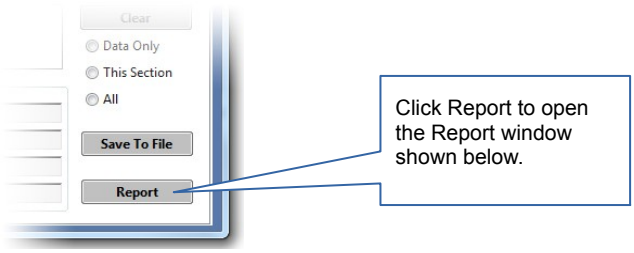


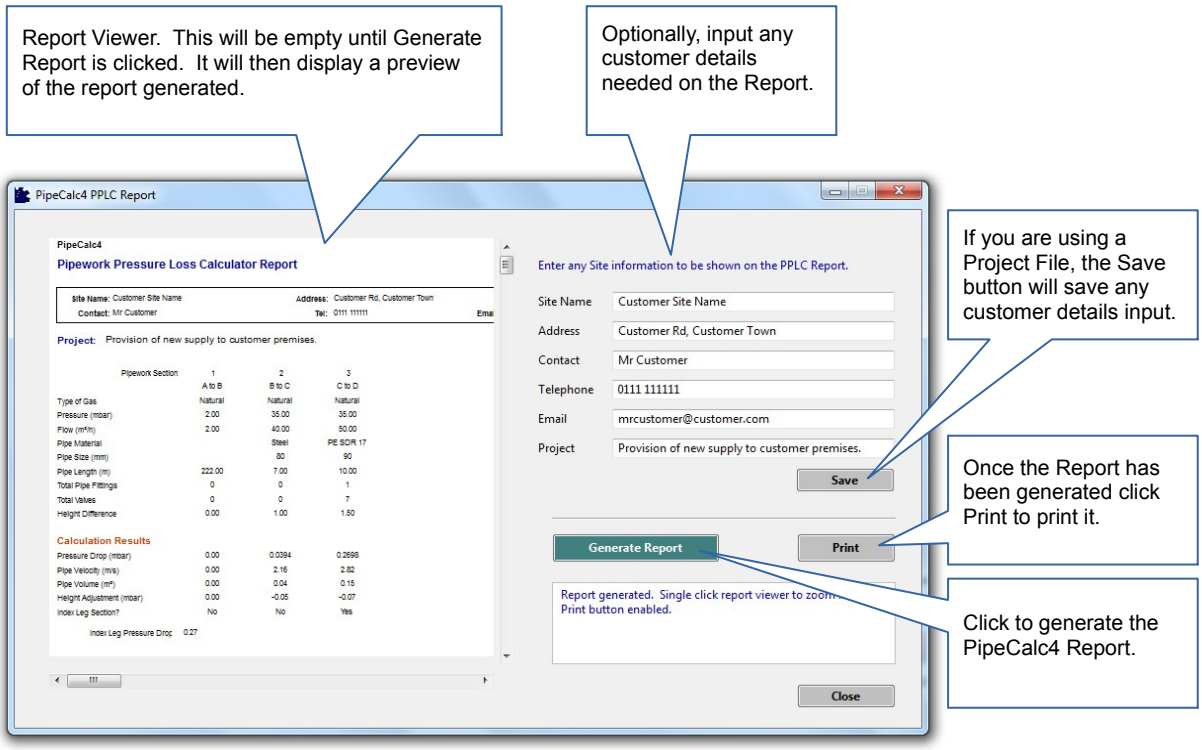
Notes

1. If you switch to another section using a 'radio' button, any data relating to the original section will be retained and will be redisplayed if you switch back again. Remember that if you want to keep data permanently you must save it to a Project File. Otherwise your data will be lost when you Exit PipeCalc4.
2. As well as assigning a name to a section, the Name Section button can also be used to change an existing name.
3. Pressure Drop as shown in Calculation Results is also displayed against the appropriate section in the Pipework Sections area.
4. Index Leg Pressure Drop is the sum of pressure drops for all sections selected for inclusion. The value is automatically adjusted when a section is included or subsequently excluded.

7. Running the PipeCalc4 Report

The Report summarises input data and calculation results for all Project sections currently loaded to PipeCalc4.



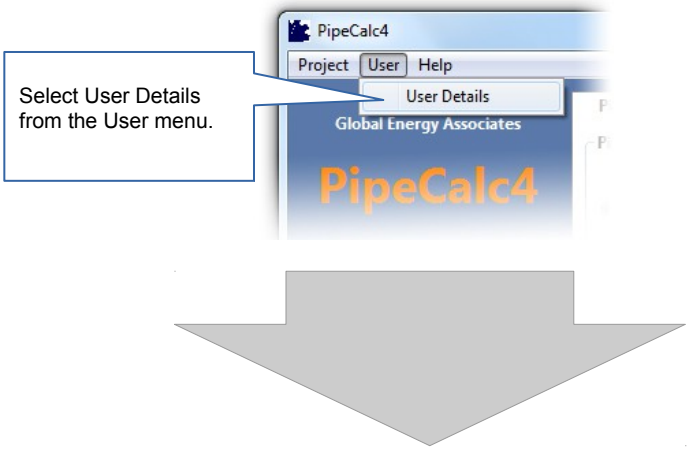


Notes

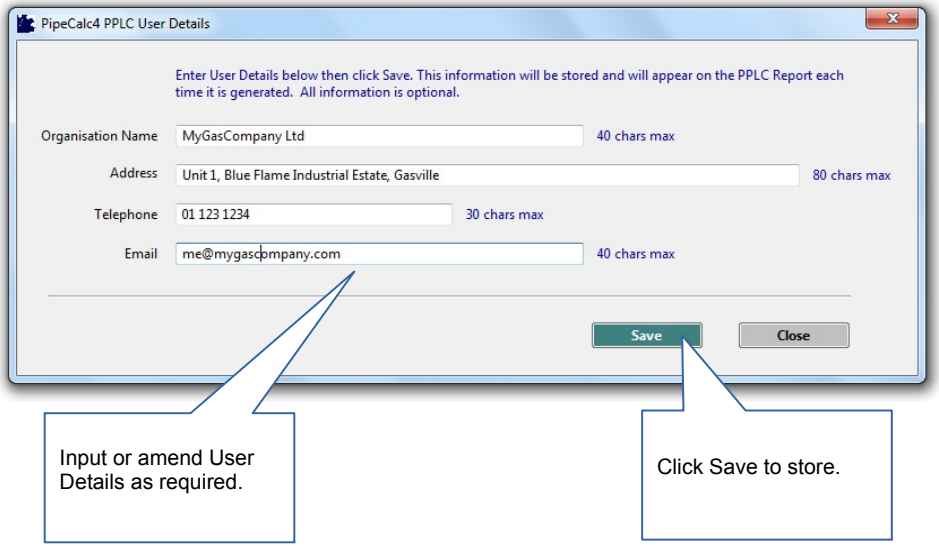
1. The Report will include your details if stored in User Details (see Section 8).
2. The Report will display a column of data for each section up to the last section used. Beyond the last section used any remaining columns will be blank.
3. Single click anywhere in the Report Viewer to zoom in / out.

8. Setting up User Details

You can store your own details for inclusion on the PipeCalc4 Report (see Section 7).



This will display the 'User Details' window...



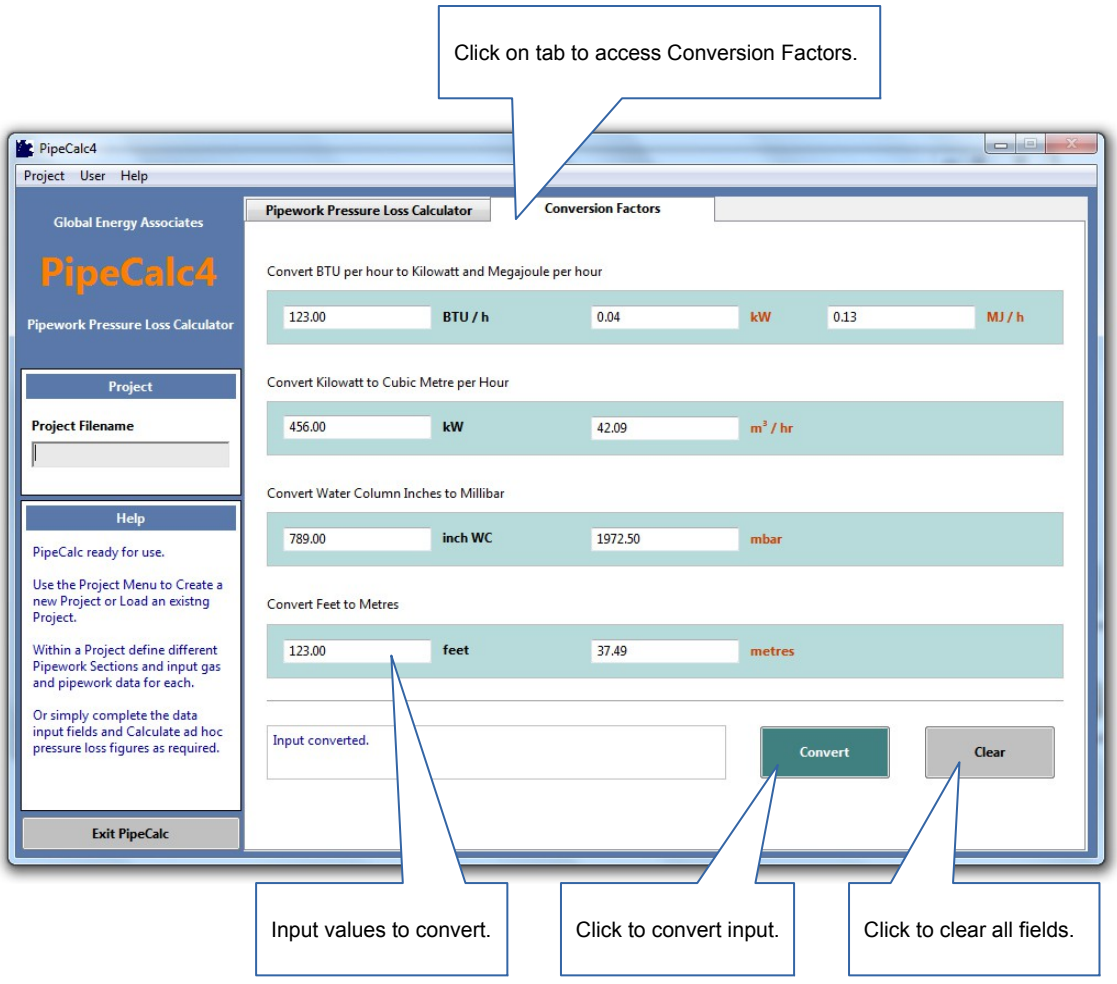
Notes

1. You only need to store details once. Clicking Save will store them permanently. Existing details can be amended as required.

9. Conversion Factors

Conversion Factors is a simple facility to convert units of measurement. Specifically:

- BTU per hour to Kilowatt and Megajoule per hour
- Kilowatt to Cubic Metre per Hour
- Water Column Inches to Millibar
- Feet to Metres



Notes

1. Any invalid input will be highlighted.

10. PipeCalc4 PPLC Technical Summary

- PipeCalc4 is compatible with MS Windows XP, Vista, 7 and 8.
- Installation requires 9MB disk space minimum. Additional space is required for data files stored by PipeCalc4.
- To operate effectively, PipeCalc4 requires a minimum screen resolution of 1280 x 720.
- Conformant to Institution of Gas Engineers & Managers (IGEM) UP/2 'Installation pipework on industrial and commercial premises' Edition 3.