# Contents



# Installation:

(Pending finalisation of the installer).

# How to use the program:

This section explains the various windows that the user will encounter in the program and how to use them.

## Home window.

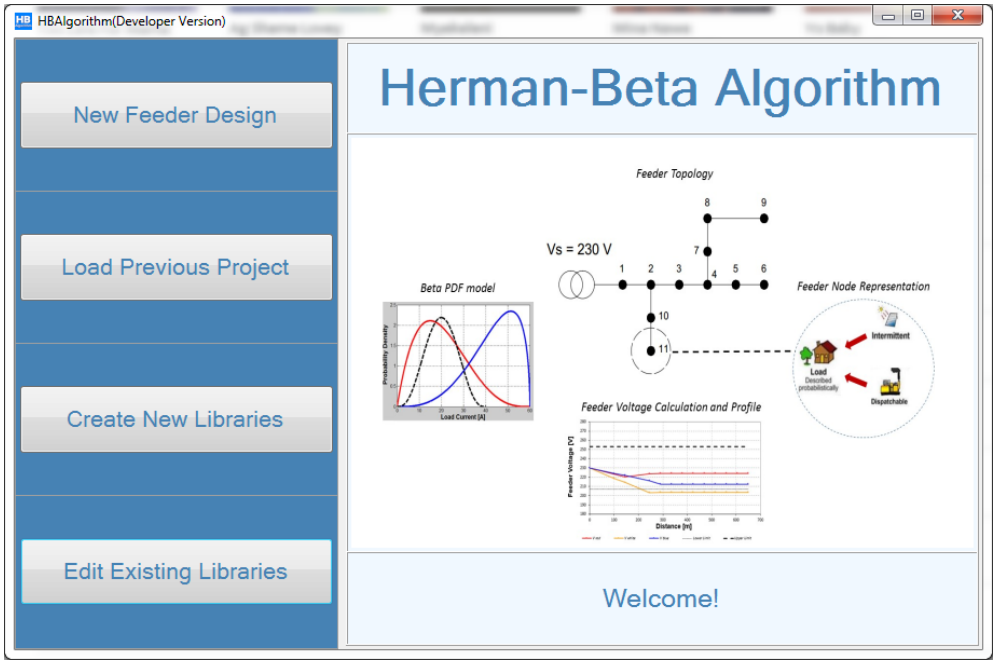



*Figure 1 Home form*

After the application is finished installing, the home form shown in Figure 1 is displayed. It contains 4 buttons, namely;

(i) New Feeder design.
(ii) Load Previous Project.
(iii) Create New Libraries.
(iv) Edit Existing Libraries.

### New Feeder design.

This enables the user to create a new project. Prior to creating to new project, a user must define and select at least one type of load. Loads can be edited from the Libraries section.

### Load Previous Project.

This allows to user to load a previously saved project. HBAlgorithm files contain the extension *.hba

### Create New Libraries.

This will open the library editor so that user can create a new library.

Note: This will erase any user-defined conductors, loads, and generators.

### Edit Existing Libraries.

This will open the library editor so that the user can edit the existing library.

## Libraries Editor.

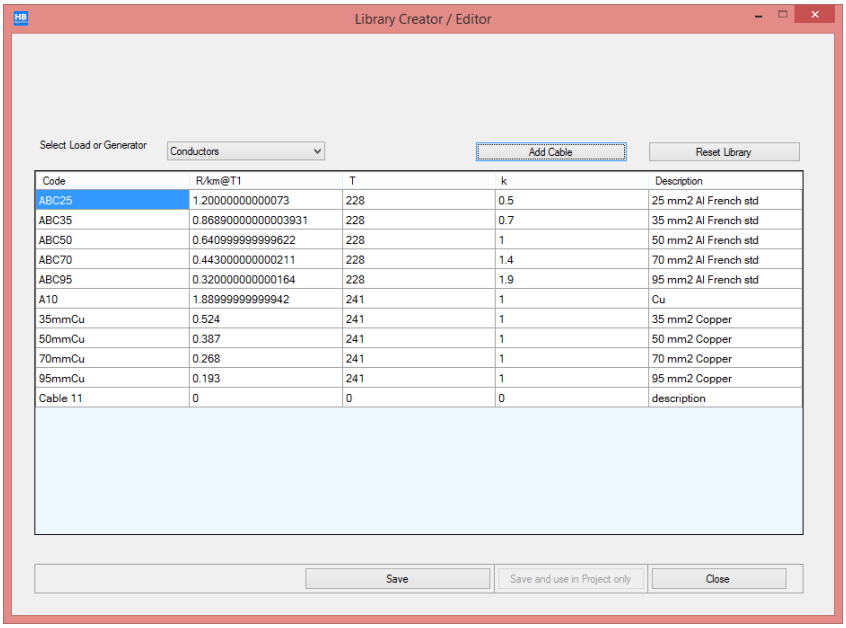



*Figure 2 Library Editor: Conductors*

The Library Editor shown in Figure 2 contains a drop-down menu that is used to select the loads, generators or conductors to be edited.

The "Reset Library" button in the top right corner allows the user to reset the Library. This resets the Conductors to the pre-defined values, and all the user's loads and generators.

**Note:** "Reset Library" will delete any user defined conductors, loads, and generators.

### Cables.

The program comes with a pre-defined set of cables that the user can work with. The "Add cable" button allows the user to add custom cables to the library.

## Loads.

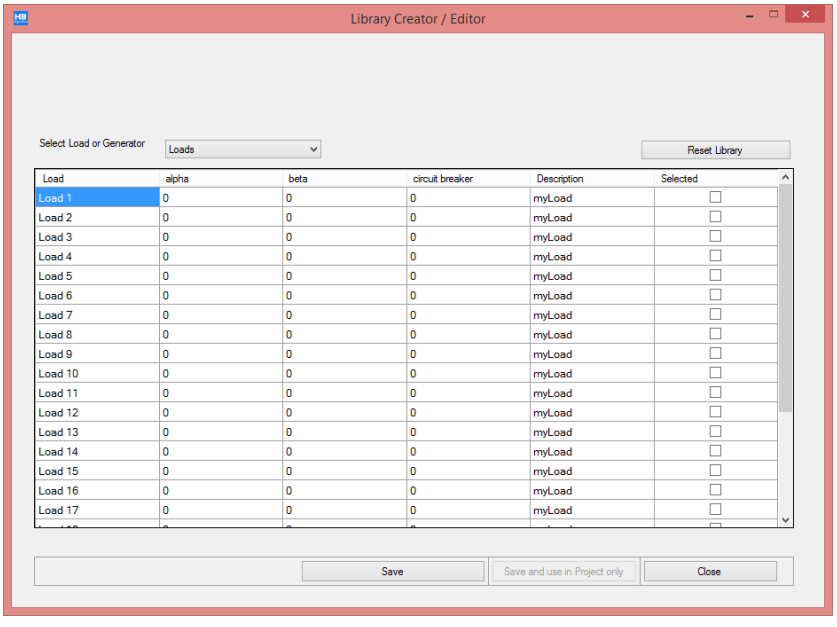



*Figure 3 Library Editor: Loads*

A user can create and select up to 25 types of loads.  To edit the load parameters, the user can edit the alpha, beta, circuit breaker and description columns. The check box in the “Selected” column is used to include a load among those to be used for the feeder design Generators.

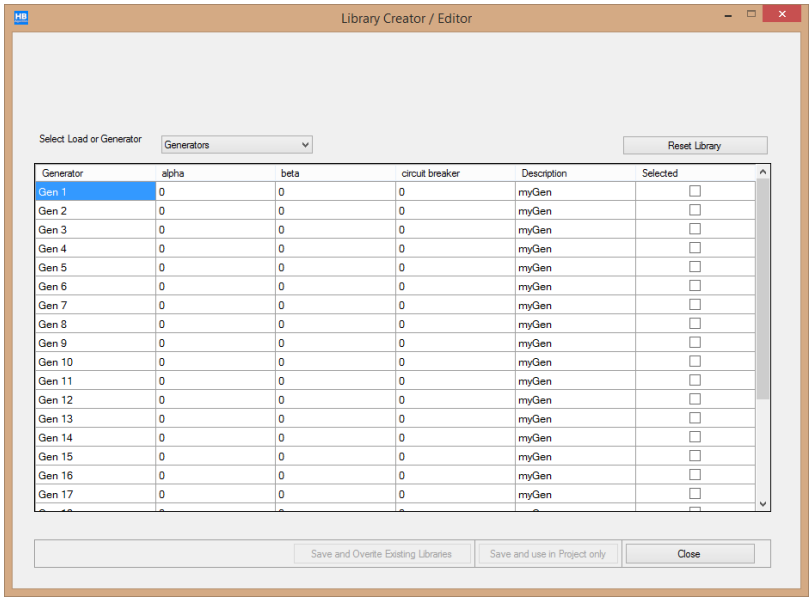



*Figure 4 Library Editor: Generators*

A user can selected up to 25 different types of generators. The alpha, beta, and circuit breaker, and description columns of the generators can be edited by the user. The check box in the “Selected” column is used to include a generator among those to be used for the feeder design.

## Saving Libraries.

A user is presented with two options when saving changes to the libraries. One may “Save and Overwrite Existing Libraries” or “Save and use in project only”.

*(Ask Alfred what these mean)*

# Designing your feeder.

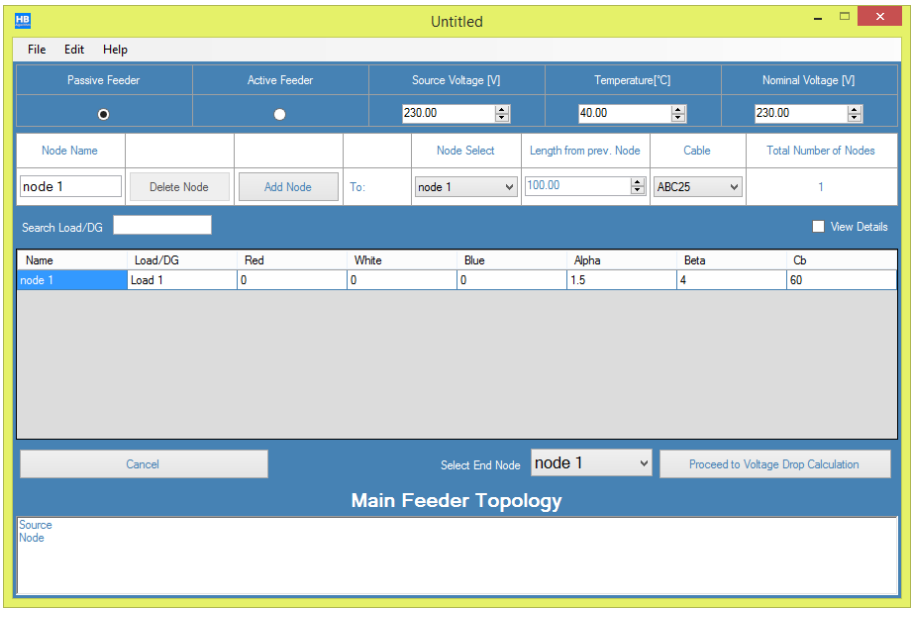



*Figure 5 Feeder design window*

After clicking the “New Feeder Design” button, the user in presented with a Node Feeder Design window. This is where the user defines the setup of the feeder.

### Selecting between a “passive” and an “active” feeder.

The user can select between a passive and an active feeder using the “Passive feeder” and “Active Feeder” option buttons.

### Setting the source voltage.

The source voltage can be set by editing the source voltage text box.

### Setting the operating temperature.

The operating temperature can be set by editing the temperature text box.

### Setting the nominal voltage.

The nominal voltage can be set by editing the nominal voltage text box.

### Editing the node name.

The node name can be edited from the “Node Name” text box.

### Adding a node to the feeder.

A node can be added to the feeder by clicking the “Add node” button. This will add a node to the node currently selected in the “Node Select” dropdown menu.

### Deleting a node from the feeder.

A node can be deleted from the feeder using the “Delete Node” button.

Note: This will also delete any other nodes that follow, making the node that precedes the deleted node the last node on the feeder.

### Selecting a node to edit.

The “Node Select” dropdown menu allows the user to select the node to edit.

### Editing the length from the previous node.

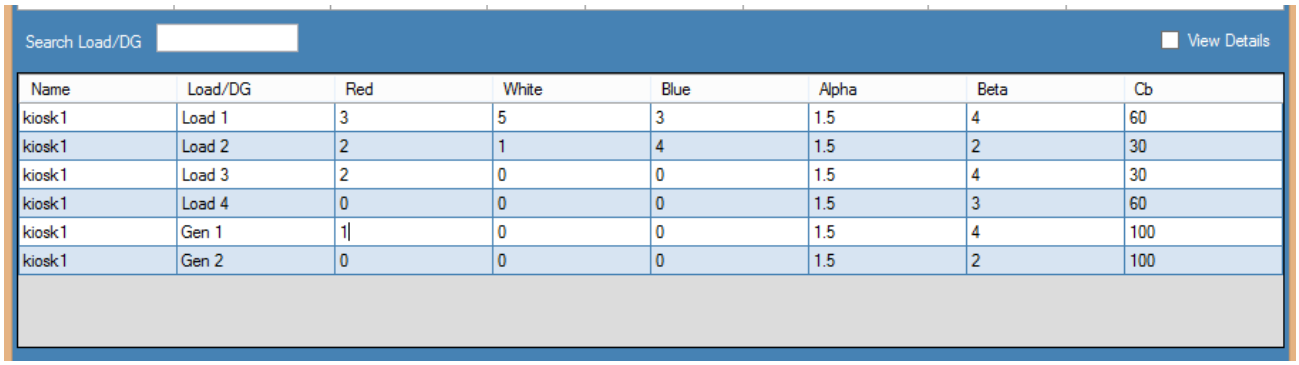
The user can edit the length from the previous node by editing the “Length from prev. Node”.

## Selection of the cable between the previous node and selected node.

The cable to be used can be selected from the cable dropdown menu.

Note: User-defined cables can be added to the project. Check here to see how to add user defined cables. *(add a link here)*

## Editing customers on the different nodes.




| Name | Load/DG | Red | White | Blue | Alpha | Beta | Cb |
|---|---|---|---|---|---|---|---|
| kiosk1 | Load 1 | 3 | 5 | 3 | 1.5 | 4 | 60 |
| kiosk1 | Load 2 | 2 | 1 | 4 | 1.5 | 2 | 30 |
| kiosk1 | Load 3 | 2 | 0 | 0 | 1.5 | 4 | 30 |
| kiosk1 | Load 4 | 0 | 0 | 0 | 1.5 | 3 | 60 |
| kiosk1 | Gen 1 | 1 | 0 | 0 | 1.5 | 4 | 100 |
| kiosk1 | Gen 2 | 0 | 0 | 0 | 1.5 | 2 | 100 |

*Figure 6 Load/Generator table*

The customers on the Red, White, and Blue phases of the different nodes and the different loads can be edited from the node table shown in the Figure 6 above.

Note: Loads and generator types can be added or removed from the project using Edit → Libraries, and then selecting “Loads” or “Generators” from the dropdown menu.

## To view the total number of nodes in the feeder project.

The total number of nodes is displayed under “Total Number of Nodes.”

## Branching.

The user is able to design a branched feeder by adding appending multiple nodes to a single node after which the user must specify the end node.

## Choosing the end node.

The end node can be chosen from the dropdown menu labelled “Select End Node”.

## Cancelling the project.

A user may cancel the project and return to the home form by clicking the “Cancel” button or clicking the ‘x’ in the top right corner of the window.

## Calculating the voltage drop profile.

To calculate the voltage drop profile, click the “Proceed to Voltage Drop Calculation” button. This will produce a window like that shown in the figure below. *(the voltageCalculation form).*

## Voltage Calculation and Feeder profile.

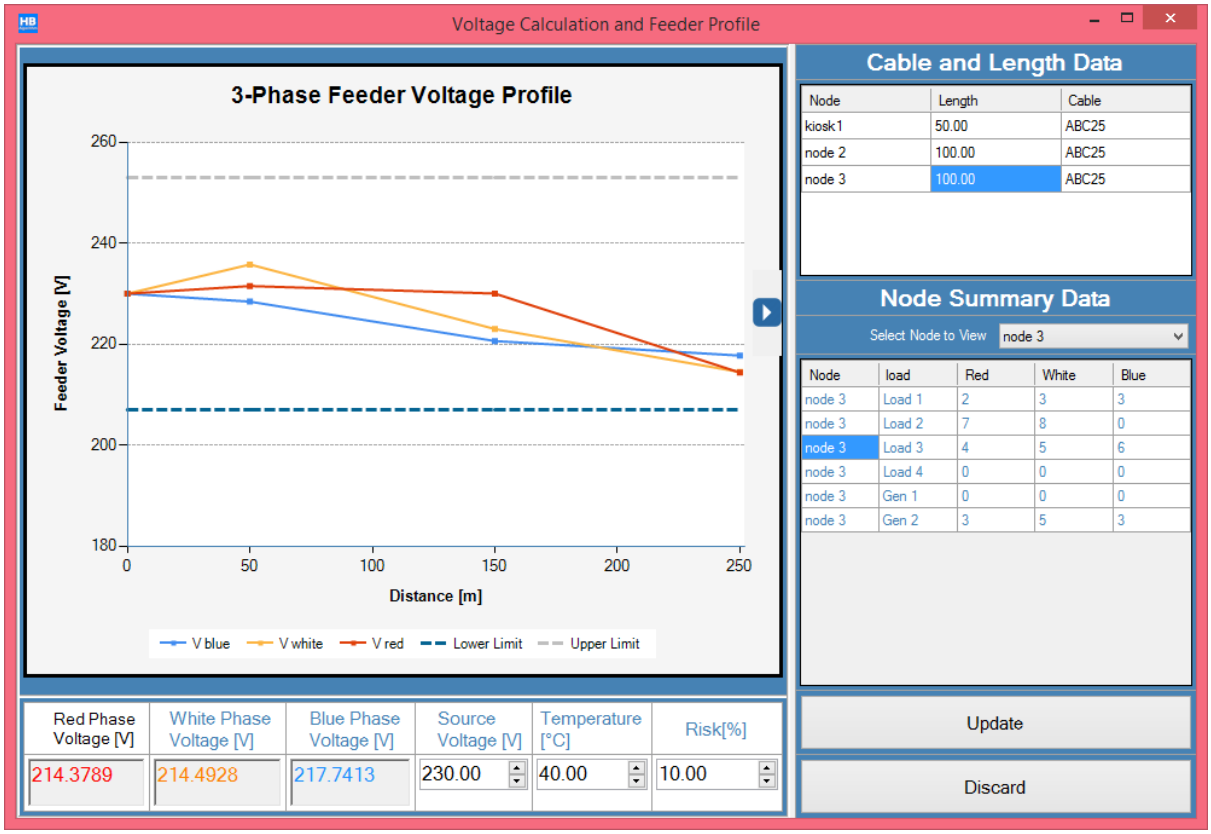



*Figure 7 Voltage Calculation and Feeder profile window*

The Voltage Calc/ Feeder profile window displays the voltage drop at the end node of each phase and also a graph of the feeder profile.

A user can edit the cable lengths, the node customers, the source voltage, the operating temperature, and the risk without returning to the Feeder design window. The user may then update the changes to the feeder design by clicking the “Update” button or revert changes by clicking the “Discard” button.