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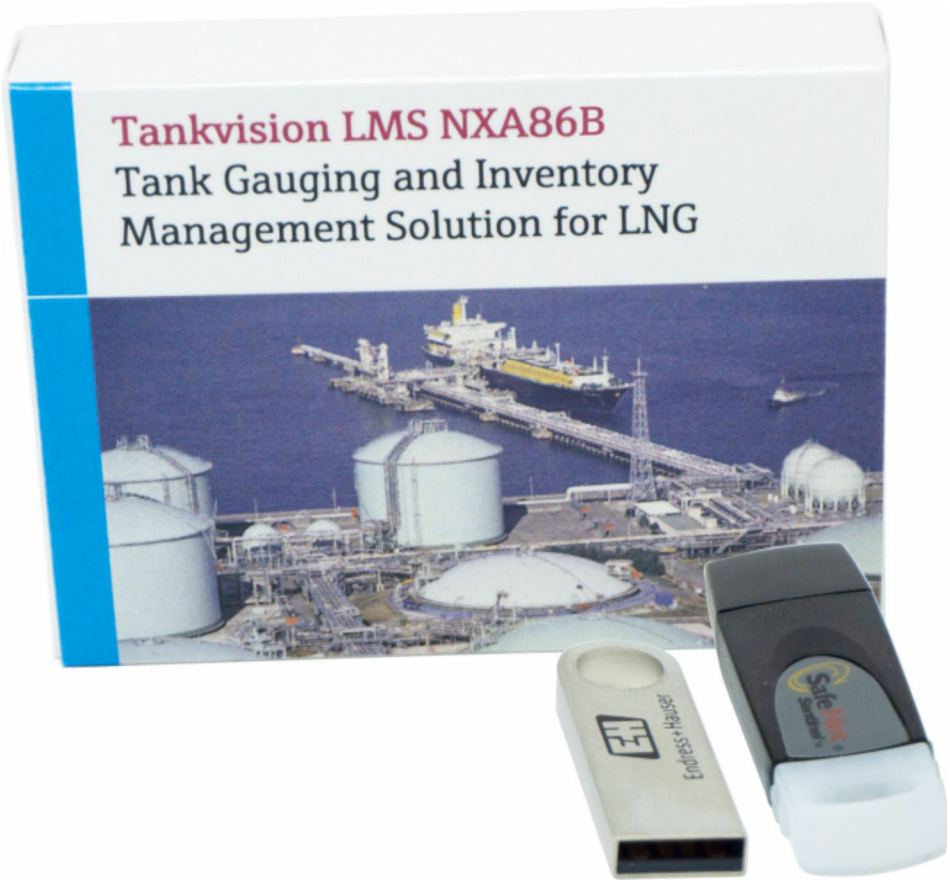
18.3.2

Special Documentation
Tankvision LMS NXA86B

LNG Web Client



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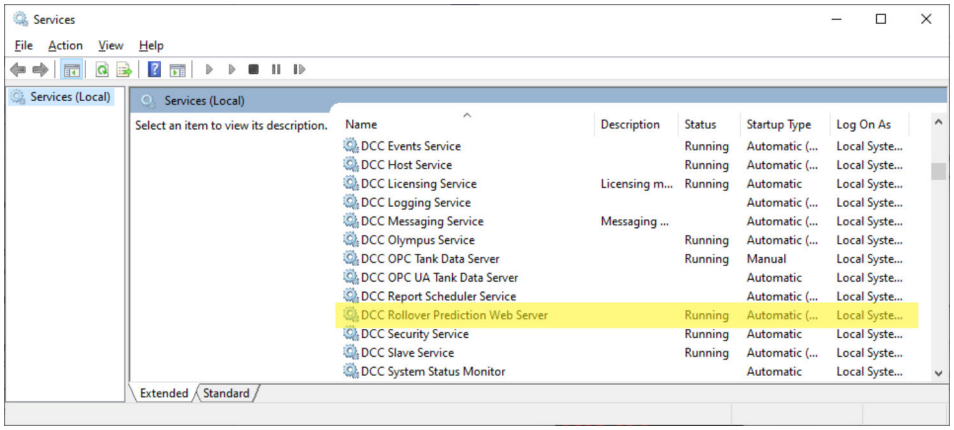
1 Introduction

The LNG Web Client allows the user to view basic stratification and rollover prediction information in a browser. In addition, it is also possible to maintain the Chemical Composition Sets which are used by the rollover prediction model.

The LNG Web Client functionality is hosted on a web server which runs separately from the rest of the Tankvision LMS DCC Communications services. The web server should start up automatically when Windows is started. In the event that this does not happen, open the Windows Services application (by pressing the Windows key and then typing services) and find the **DCC Rollover Prediction Web Server** service:



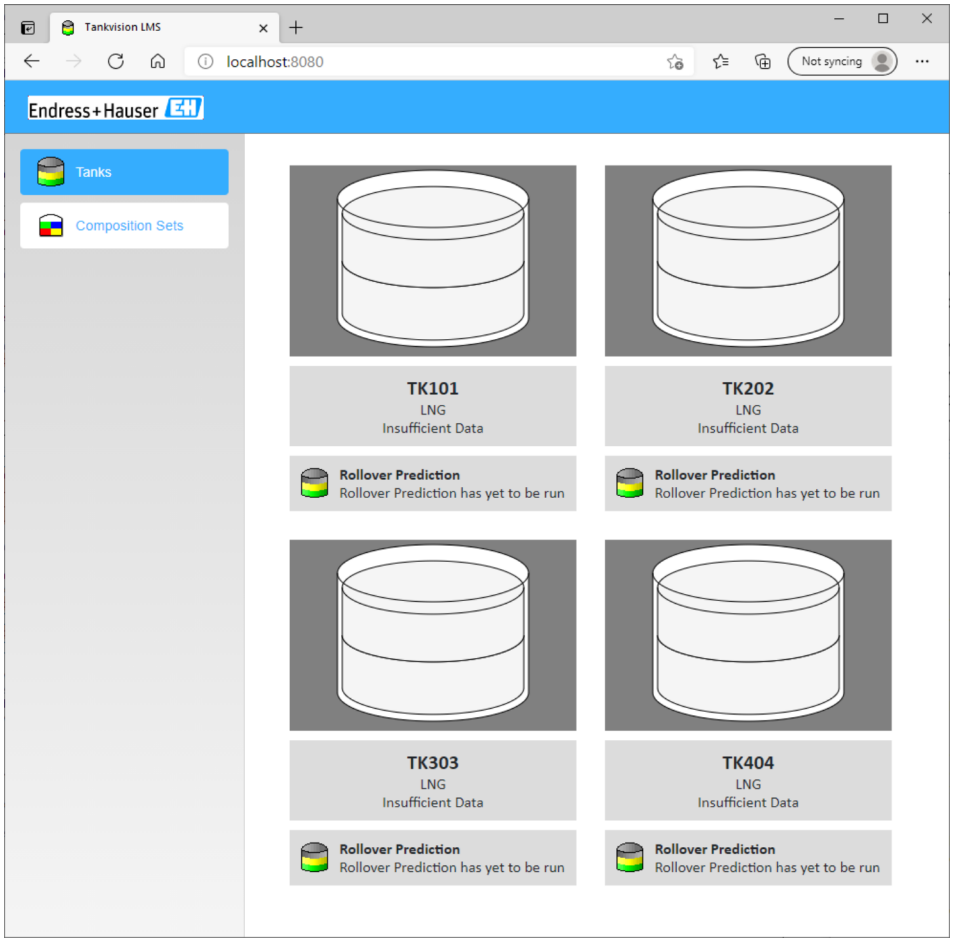
1 DCC Rollover Prediction Web Server

If the **Status** is not **Running**, select the entry for the service and client on the "Play" button.

To access the LNG Web Client functionality, open a browser and navigate to http://computer name:8080.

2 Tank Overview

The **Tank Overview** page in the web client can be viewed by opening a browser and navigating to http://computer name:8080. It displays an overview of the stratification status and the last rollover prediction run for each tank in the system:



2 *Tank Overview*

If the web client is already displayed in a browser, the **Tank Overview** page can be selected by clicking on the **Tanks** option.

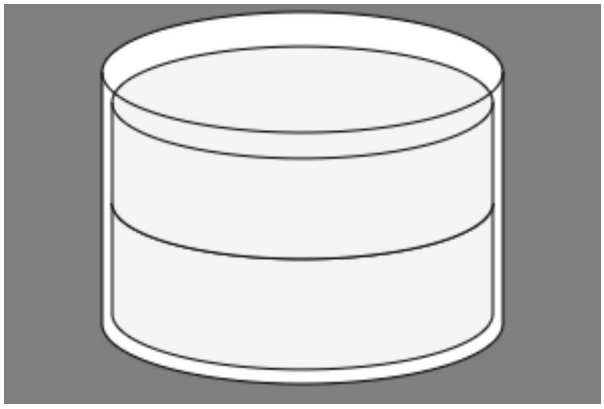
Each tank mimic has three parts:

2.1 Graphical Status

The top part of tank mimic shows the current stratification status and risk of rollover for the tank.

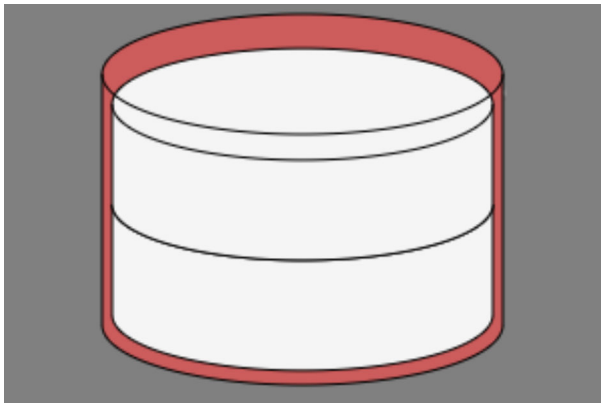
2.1.1 Risk of Rollover

The risk of rollover is indicated by the outer 'shell' of the tank. When no rollover prediction has been run for the tank, or the rollover prediction has failed then the tank is coloured white:



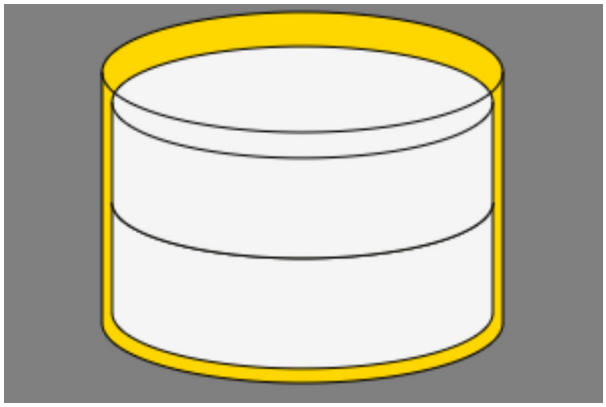
3 *Rollover not Calculated*

If a rollover is predicted for the tank, then the tank is coloured red:



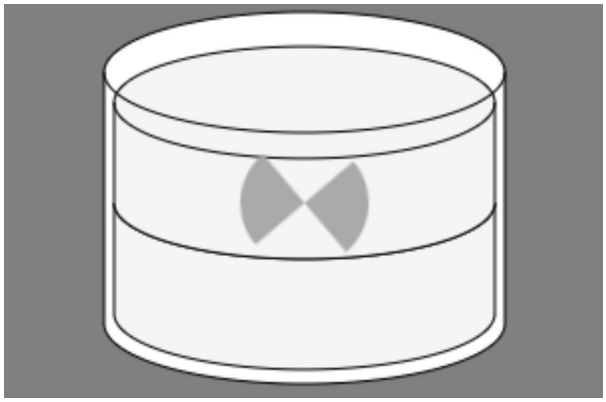
4 *Rollover Predicted*

If the rollover prediction model has been successfully run for the tank, and the result is that no rollover is predicted, then the tank is coloured yellow:



5 *Rollover Not Predicted*

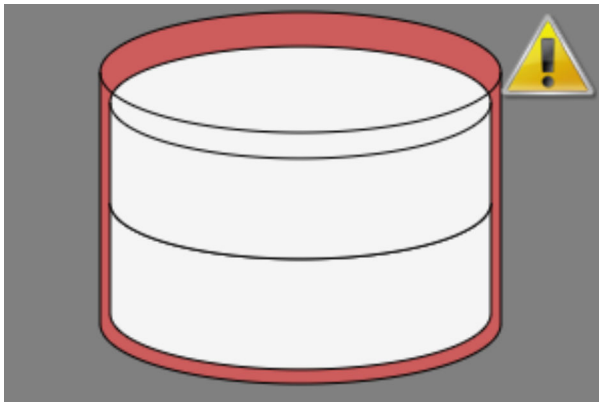
In addition, whilst the rollover model is being run for a tank, an animated indicator will be displayed on the tank:



6 *Rollover Running*

If the rollover model has been successfully run for a tank and the results of the model indicate that either:
- There is the risk of a rollover
- There is a risk of tank venting
- There is a risk of tank damage

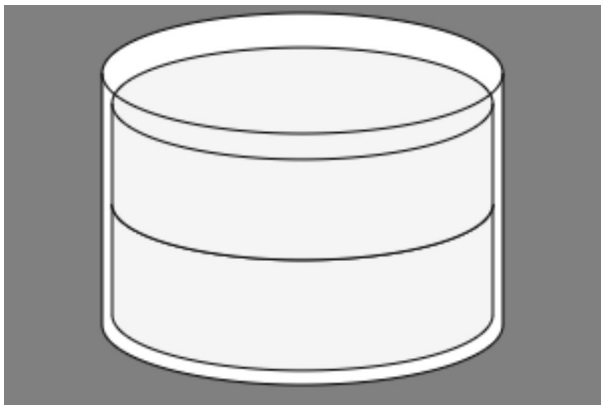
Then a warning indicator will flash on the tank mimic:



7 *Tank Warning*

2.1.2 Stratification Status

The stratification status of the tank is indicated by the 'contents' of the tank. When stratification cannot be calculated, the tank is coloured white:

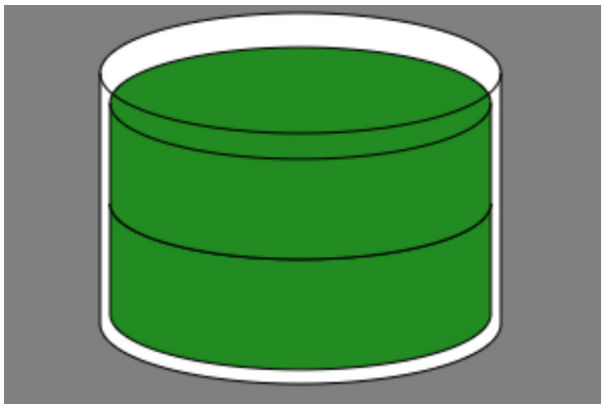


8 *Stratification Status Not Known*

When stratification is detected in the tank, the tank is coloured yellow and red:

9 *Stratified*

When stratification is not detected in the tank, the tank is coloured green:



10 *Homogenous*

2.2 Tank Information

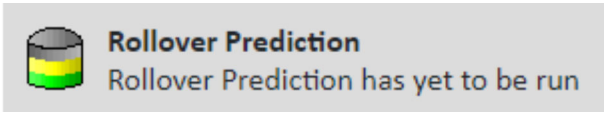
The middle part of the tank mimic shows general information about the tank and the current stratification status:

11 *Tank Information*

The information that is displayed is:
- Tank ID
- Product Name
- Stratification Status:
  - Stratified
  - Homogenous
  - Insufficient Data

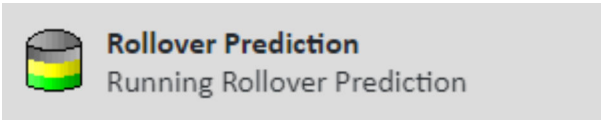
2.3 Rollover Status

The bottom part of the tank mimic shows information about the last rollover prediction that was run for the tank. If the rollover prediction model has never been run for the tank, the following will be displayed:



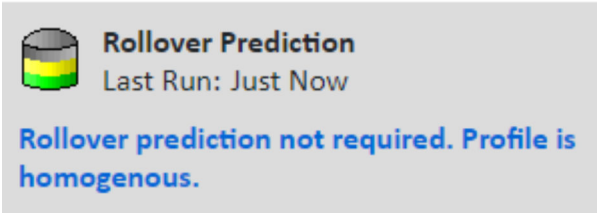
12 *Rollover Prediction Not Run*

If the rollover prediction model is being run for the tank, then this will be indicated:



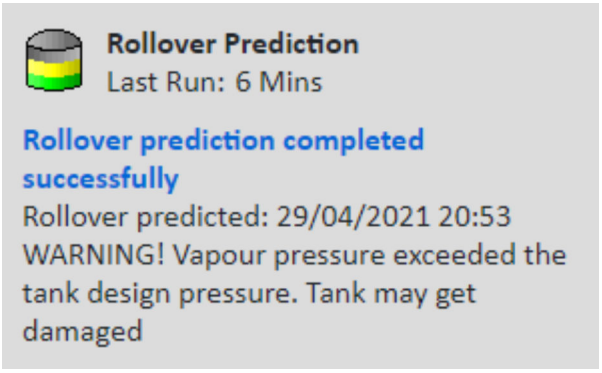
13 *Rollover Prediction Model Running*

If the model has been run for the tank, then details of when the model was run and the results are displayed:



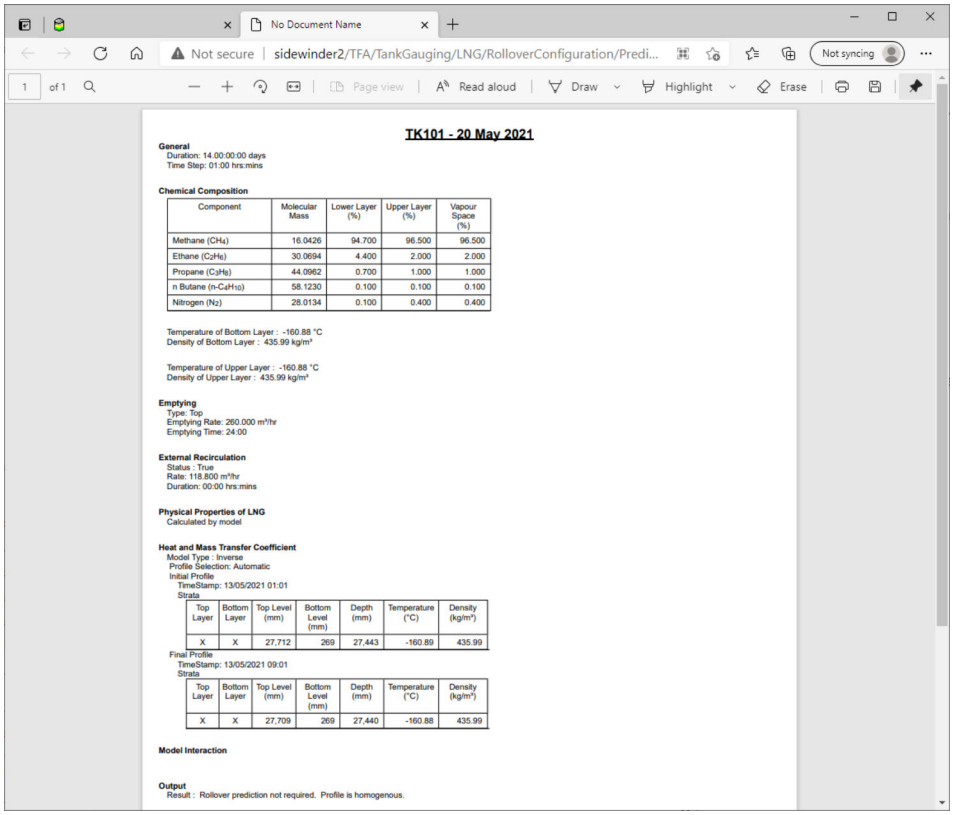
14 *No Rollover Predicted*

If a rollover is predicted, or there is any other information to be displayed about the result then this is included afterwards:



15 *Rollover Predicted*

To obtain further details of the rollover prediction model run, click on the summary (blue) text. The details will be opened as a .pdf file in a new tab in the browser:



TK101 - 20 May 2021

General
Duration: 14.00:00:00 days
Time Step: 01:00 hrs:mins

Chemical Composition

Component	Molecular Mass	Lower Layer (%)	Upper Layer (%)	Vapour Space (%)
Methane (CH_4)	16.0426	94.700	96.500	96.500
Ethane (C_2H_6)	30.0694	4.400	2.000	2.000
Propane (C_3H_8)	44.0962	0.700	1.000	1.000
n Butane (n-C_4H_{10})	58.1230	0.100	0.100	0.100
Nitrogen (N_2)	28.0134	0.100	0.400	0.400

Temperature of Bottom Layer : -160.88 °C
Density of Bottom Layer : 435.99 kg/m³

Temperature of Upper Layer : -160.88 °C
Density of Upper Layer : 435.99 kg/m³

Emptying
Type: Top
Emptying Rate: 260.000 m³/hr
Emptying Time: 24:00

External Recirculation
Status : True
Rate: 118.800 m³/hr
Duration: 00:00 hrs:mins

Physical Properties of LNG
Calculated by model

Heat and Mass Transfer Coefficient
Model Type : Inverse
Profile Selection: Automatic
Initial Profile
TimeStamp: 13/05/2021 01:01
Strata

Top Layer	Bottom Layer	Top Level (mm)	Bottom Level (mm)	Depth (mm)	Temperature (°C)	Density (kg/m³)
X	X	27,712	269	27,443	-160.89	435.99

Final Profile
TimeStamp: 13/05/2021 09:01
Strata

Top Layer	Bottom Layer	Top Level (mm)	Bottom Level (mm)	Depth (mm)	Temperature (°C)	Density (kg/m³)
X	X	27,709	269	27,440	-160.88	435.99

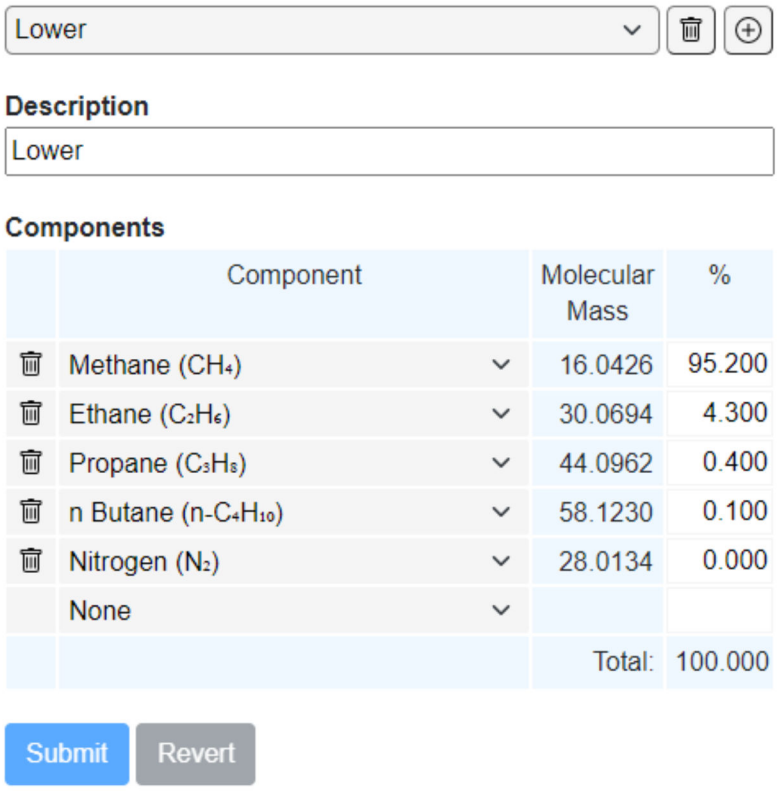
Model Interaction

Output
Result : Rollover prediction not required. Profile is homogenous.

16 *Model Run Details*

3 Composition Sets

The composition sets used during a rollover prediction model run can also be updated using the LNG Web Client. To get to the **Composition Sets** page, click on **Composition Sets** in the left hand pane. The following page will be displayed:



17 *Maintain Composition Sets*

To edit an existing composition set, select it from the list at the top of the page. The current details for that composition set will then be displayed ready for editing.

To delete the currently selected composition set, click the **Delete** ( ) button next to the selection list. To add a new composition set, click the **Add** ( ) button next to the delete button. A new, empty, composition set will be created.

3.1 Description

To edit the description of the composition set, click in the **Description** box and edit the decription.

3.2 Components

A composition set is made up of a list of components along with the percentage of that component that is found in a product represented by the composition set.

To delete a component from the composition set, click the delete ( ) button next to the component to be deleted.

To change the component for an entry, click on the component name. A list will be displayed showing the available components. Click on the new component that is to be used.

The molecular mass cannot be edited since it is a fundamental property of the selected component.

To change the percentage of a component in the composition set, click on the % field for the component and enter the new percentage. The total percentage of all components in a composition set must add up to 100%.

Unless the maximum number of components allowed for a composition set has been reached, there will always be a dummy entry at the end of the list of components. This entry will have a component name of None. To add a new component, simply click on the component name (None) and select the required component. Another new component entry will automatically be added to the end of the list.

3.3 Save Changes

To save the changes made to the composition sets, click the **Save** button.

3.4 Discard Changes

To discard any changes that have been made to the composition sets, click the **Revert** button.

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