

# What's new in ReticMaster Version 11

## 1. New Security Functionality

### Bulk Server Licence to/from Dongle checkout ability

It is now possible to check Bulk Server licences out to dongles for off-site work. The licences can be checked out for a maximum of 60 days, after which it will automatically expire and be restored back to the server. Alternatively, the user can check the licence back at any time prior to the automatic restore date. Note the Server User Licence is still a valid licencing option and allows the checking in/out of licences from one server to another.

### Single Unlock Text Box

The multiple text boxes for the unlocking mechanism has been replaced by a single box for easy Copy/Paste functionality.

## 2. Data Library Changes

### 2.1 Data Library Log File

During the Data Library OLE function calls, "AddConductor" and "AddTransformer", a log file of all added and/or changed Conductors and Transformers is maintained. This log file is located in the same folder where ReticMaster.exe resides. This text file is named "**Data Library.log**" and each record contained therein will indicate whether the data was Created or Changed and Date\Time stamped with the User Name if it is a Server Licence. If the file is marked as Read-Only then ReticMaster will warn the user once only, or every time immediately after a File\New or File\Open instruction is given. The log file can be viewed and cleared via the Data Library interface, see:

- 1) File\Data – "Notes" Tab and "Data Library Log" Tab at bottom
- 2) File\Data and then File\Clear Data Library Log

### 2.2 Conductor Data Update enabled for Temperature

When a user opens an existing ReticMaster Study File (\*.rmd), with Conductor data details that differ from the Conductor data details as defined in the Data Library, ReticMaster has the ability to either use the Data Library Conductor information, or alternatively the ReticMaster study file Conductor information. The default behaviour is to use the ReticMaster study file Conductor information, and is controlled by the "Update Data Library" checkbox (See Tools\Options\General).

ReticMaster therefore temporarily updates the Conductor Data information in the Data Library if the "Update Data Library" checkbox is checked. (See Tools\Options\General)

In previous versions, the Data Library Conductor Impedances (R, X, B) and Ratings are updated but the temperature details remained unchanged, which is not correct. Version 11 corrects this behaviour.

### **2.3 Improved Data Library default behaviour**

The Data Library files (\*.mdb or \*.ii) can be changed and set to new database file names and/or locations via the File\Data and the Tools\Options\General interfaces. The behaviour of this functionality is improved in ReticMaster v11. For instance, any opened study file will be re-opened once the data library file has been updated. Study files that were changed in any way will be saved (prior to reloading the data library) via an appropriate prompt to allow the user to either:

- a) Overwrite the existing file,
- b) Discard changes, or
- c) Save the changed system into a new study file

### **2.4 Improved SQL Server User Option saving**

For User Server licenses, the user Options (as in Tools\Options), and the Default Library path is saved in the PowerOffice database server instead of the Windows registry (as is the case with Dongle based licensing). Previous versions of ReticMaster using MSSQL servers did not handle the Data Library path adequately and this aspect is fixed in v11

### **2.5 Data Library Notes Tab**

A new Notes tab has been added to the data library providing a few comments on the supplied data libraries

### **2.6 Improved Conductor Selection Interface**

During OLE calls and in cases where the selected Conductor is not found in the Data Library, ReticMaster will provide a list of Conductors to allow the user to choose an alternative Conductor. This functionality now provides two Combo boxes, one for the User Code and another for the Full Description. An OK button is also provided to allow the user to carefully choose the correct Conductor first and once satisfied to end the process by selecting OK. Any key can be pressed to quickly search the Conductor data, e.g. in the Conductor Code Combo, the user may press "F" a few times to find occurrences of Fox.

### **2.7 Clearing of Replacement Conductor List when changing the Data Library**

During OLE calls and in cases where the selected Conductor is not found in the Data Library, ReticMaster will provide a list of Conductors in the Library and the user has to choose an alternative conductor. This conductor choice will remain in memory if File\New is called and ReticMaster will continue to replace the previously unknown conductors with the user choices made for new write-outs until the OLE link is broken and ReticMaster re-started or re-linked. Build 1412 will also clear the list if the Data Library file is changed.

## 2.8 Display Data Library and Version in Status Bar

The Data Library Version and Data Library Path will be displayed in the 5th tab found in the Status Bar.

## 3. Conductor User Code Modification

Previous ReticMaster versions up to, and including version 2008 have Conductor & Cable data with unique Descriptions and non-unique User Codes. Whenever a User Code was assigned to a Conductor, ReticMaster would display the complete Description, followed by the User Code in brackets.

A new user requirement to only show either:

a) User Code, or b) Description, was requested.

The Conductor User Code is now used for the purpose of displaying a shorter user definable Conductor Description. This will be the **default behaviour** and the user must de-select that option in "Tools\Options\Display – User Codes" to display the full Conductor Description. If the User Code is empty, then the Description will be used instead.

### Tools\Options\Display – User Codes

A new radio button labelled "**Display Conductor User Code only**", which is checked by default is now available. If this radio button is selected, then ReticMaster will first establish if the User Code is NOT empty. ***(If the User Code is empty, then the full Description will automatically be utilised)***

### Transformer User Codes included or excluded from Network Schematic

When the user selects to display "Node Rating" under the Node Text display Options, ReticMaster will display the Transformer Description without the Transformer User Code, unless the newly introduced Checkbox found in Tools\Options\Display – User Codes, "**Display Transformer User Code on Diagram**" is checked

### New Display Options

Two new Branch Display Selection options, also found under Tools\Options\Display\Branch Text.

"Conductor without User Code" and "Conductor with User Code" have been added and this will enable the users to display the full Conductor Description as before, if required.

## 4. Transformer impedance base modification

ReticMaster 11 uses the transformer secondary design voltage as the default reference for calculating the ohmic impedance of a transformer. Previous versions used the system nominal voltage instead.

### Tools\Options\Calculation

A new checkbox named "**Impedance based upon Nominal Sec Voltage**", which is unchecked by default is now available. If this checkbox is checked, then ReticMaster will use the system nominal voltage as per previous versions.

### Internal Operation

The impedance specification in % ( $Z\%$  and  $Z0\%$ ) would thus result in a slightly higher or lower ohmic impedance if the design voltage is used instead of the nominal voltage. Even though this impact is minimal, we do believe that it is a slight improvement.

#### **Example:**

100kVA, 5% impedance transformer:

Using Sytem Nominal Voltage = 400V

$$V_b = 400$$

$$S_b = 100000$$

$$Z_b = V_b^2/S_b = 1.6\text{ohm}$$

$$Z_{\text{ohm}} = Z_{\text{pu}} \times Z_b = 0.08 \text{ ohm}$$

Using Transformer Secondary Design Voltage = 415V

$$V_b = 415$$

$$S_b = 100000$$

$$Z_b = V_b^2/S_b = 1.722\text{ohm}$$

$$Z_{\text{ohm}} = Z_{\text{pu}} \times Z_b = 0.086\text{ohm}$$

The impedance is therefore adjusted by the square of the internal boost ratio  $(415/400)^2 = 1.0375^2 = 1.0764$

## 5. Force Phase Connection Change

Eskom requested new functionality for ReticMaster to correct phase connection data errors automatically. This requirement is for OLE calls that create ReticMaster networks from SmallWorld. It is however not practical to limit this functionality to particular interfaces and it is now a general new feature within ReticMaster.

In Tool\Options\General, two new checkboxes have been added:

- A) Force Phase Connection Change
- B) Show "Force Phase Connection Change"

### **A) Force Phase Connection Change**

This checkbox will be checked by default and it will allow ReticMaster to force the phase connection of Nodes if a conflict between From Node and To Node phasing exists.

A log file named "Force\_Phase\_Connection.log" will be created in the same folder where

ReticMaster.exe resides. Whenever File\New is called (or when a new file is opened) the log file will be cleared automatically to limit the logging to the current study file only. When a forced phase connection takes place, the New Phasing, Old Phasing, Node Name and Date + Time will be logged in the log file. For Server based licensing the User Name will be logged as well. This enables the user to inspect such changes afterwards. The log file can be viewed and cleared via the Data Library interface, see:

- 1) File\Data – “Notes” Tab and “Force Phase Connection Log” Tab at bottom
- 2) File\Data and then File\Clear Face Connection Log

### **B) Show “Force Phase Connection Change”**

This checkbox will be checked by default and it will allow ReticMaster to notify the user if a forced phase connection change occurred. This message will appear once only and then again after every call to File\New if required. It is possible to suppress this message via another OLE call: ShowMessages = FALSE

## **6. Feeder Phase Balancing Tool**

The existing phase balancing routine, found under the “Multiple Change Down Tool” {bmct ChangeD.bmp} has moved into the “Network Change Toolbar”, see {bmct ChangeP.bmp}.

It allows for feeder level phase balancing of SINGLE, DUAL, SWER and PH\_PH technologies. This is either limited to nodes with UNK phasing, or alternatively assigned to any node phasing (not limited to UNK)

For both methods the user starts by clicking on any node (selected node)

The initial phase allocation has load intelligence; in as far as ReticMaster calculates the existing PU phase currents for the selected node. It then determines the phase with the lowest load and second lowest load for the selected node. (It needs two phases for PH-PH and DUAL). ReticMaster then searches for the first branch with UNK phasing (If that option was selected.). It then moves to the top node in the found feeder, and calculates the PU phase currents for the feeder. In an empirical fashion, ReticMaster determines if the intended phase allocation will improve the load unbalance, and if an improvement is expected, it will then proceed with the phase allocation, otherwise it will retain the existing phase allocation. Please note that phase balancing starts at the most remote nodes of the network and works its way up - transformers will thus first balance the secondary part based on the optimal transformer secondary phase current prior to moving up into the primary network, until it finally balances the selected node currents.

### Example

Phase B has the lowest load and phase C has the highest load.

- for SINGLE and SWER technologies, phase B will be allocated if the phase change is expected to improve unbalance at the selected node.

- for PH\_PH and DUAL, phase AB will be allocated if the phase change is expected to improve unbalance at the selected node.

### Method 1: Quick balancing

Once the first load-intelligent allocation is completed, the Phase Balance routine will allocate appropriate phasing to the next branch with UNK phasing in a cyclic manner. No further load intelligent checks are carried out.

#### Method 2: Load intelligent

Once the first load-intelligent allocation is completed, the Phase Balance routine will repeat the process and re-calculate the loading at the selected node after each UNK phasing allocation is completed.

Note that Single phase and Dual phase transformers with UNK phasing and PH\_PH primary technology, connected to parent load nodes with PH\_PH technology and phasing NOT UNK (if that option was selected), will NOT be altered.

### **7. Protection Device Improvements**

The protection device data saving and reading is enhanced in v11.

The user may place any number of protection devices of the same or of different types, based upon the types defined in the Data Library. The settings of the placed devices can then be altered as required without affecting the default data definition as defined in the Data Library.

In previous versions, the Data Library's protection devices were temporarily altered when opening study files, which is not ideal, and it is now operating in a more intuitive fashion.

### **8. Voltage Regulator tap controller fix**

The voltage regulator tap change controller did not work satisfactorily when in "Boost" or "Buck" mode and has been improved / fixed in v11.

### **9. Bulk Load Rounding**

ReticMaster stores all loads in a per phase manner, and balanced Bulk loads in the "Load Node" editor interfaces are therefore the summation of the per phase loads. For instance a 400kVA balanced three phase load is  $400/3 = 133.33\text{kVA}$  per phase and  $133.33 \times 3 = 399.99\text{kVA}$  and not 400kVA. ReticMaster version 11 employs intelligence to overcome these problems.

### **10. ReticMaster.ini**

An optional ReticMaster.ini file is provided and must be installed in the root ReticMaster folder. Two flags are provided:

[ALLOW REGISTER]

0 - The Registration menu found under the Help menu will not be visible to the user

1 - The Registration menu found under the Help menu will be visible to the user

[ALLOW OLE SHOW LIBRARY]

0 - During OLE calls and in cases where the selected Conductor is not found in the Data Library, ReticMaster will not provide the user the option to launch the Data Library

1 - During OLE calls and in cases where the selected Conductor is not found in the Data Library, ReticMaster will provide the user the option to launch the Data Library

If the ini file is not installed then ReticMaster will set both these flags = 1 as default.

## 11. New OLE Properties

A new OLE property is added to allow forced phase connection changes via OLE. This provides the same functionality as the **Force Phase Connection Change** Checkbox found in Tool\Options\General.

See [OLE Automation](#) for more information.

### **ForcePhaseConnections property**

ForcePhaseConnections = True or ForcePhaseConnections = False

Two new OLE properties are available to enable the programmatic overriding of the ReticMaster.ini flags:

- 1) Property Allow\_Registration : Boolean
- 2) Property Allow\_OLE\_ShowDataLibrary : Boolean

Typical VBA usage:

```
Sub AllowReg()  
    ReticObject.Allow_Registration = True  
End Sub
```

```
Sub AllowShowDL()  
    ReticObject.Allow_OLE_ShowDataLibrary = True  
End Sub
```

## 12. General

### Bug fix : Node Dragging in Demo mode

ReticMaster crashed and closed down while performing Node dragging while in Demo mode (Unlicensed Mode) and if the study case had more than 10 nodes.

### Options Change

The Physical Taps Checkbox has moved from the General Tab to the Calculation Tab in Tools\Options

### Node Name Display Change

The user may choose NOT to display their Node Name on the diagram. See Tools\Options\Display – Node Text.