



Austrics 23.1

Release Notes



TABLE OF CONTENTS

Contents

| | |
|--|----|
| INTRODUCTION..... | 4 |
| NEW FEATURES..... | 4 |
| EV – Fleet Optimisation | 4 |
| Crew Optimisation – Runs & Trips | 7 |
| Linux – Download results..... | 8 |
| UPDATES / IMPROVEMENTS..... | 9 |
| PLAN | 9 |
| AM-6799 – KML exports | 9 |
| AM-6520 – Network Planner saving | 9 |
| AM-5952 – Network Planner validation | 9 |
| AM-6464 – Creating a partial path..... | 9 |
| FLEET | 9 |
| AM-5458 – Adding connect and disconnect times | 9 |
| AM-5456 - Add Trips Tool display of SoC figures for electric vehicle runs | 10 |
| AM-5450 - Trip Editor validations/warnings of charging activities..... | 10 |
| AM-6673 – Automatic building of layout files for timetable printing is missing files | 10 |
| AM-6671 – Unable to edit the format file via the Trip Editor printing panel | 10 |
| AM-6610 – Multiple improvements with charge activities | 10 |
| CREW | 10 |
| AM-4876 – Optimisation to track SoC and build charge activities | 10 |
| AM-6381 – Matopt to handle EV-RUNS-and-TRIPS-style jobs properly when relinking. | 10 |
| AM-6844 - Address vehicle global cost inconsistency between Matcru and Matopt | 10 |
| AM-6490 – New configuration to handle portion lengths – New Zealand Clients..... | 11 |
| AM-6867 - Input data file editor in Windows client | 11 |
| ROSTER | 11 |
| AM-6220 – Roster Rules Sider | 11 |
| AM-6698 – Direct export to TIMS failing for one duty | 11 |
| Technical breakdown | 12 |
| Summary | 12 |
| Operational information | 12 |
| IT information | 12 |
| Conversion Information | 13 |

RELEASE NOTES:..... 14

INTRODUCTION

Austrics 22.3 introduced several significant changes to the platform to enhance the user experience including a new Windows client application with improved user interface, updated Network Planner graphics and an Optimisation Management tool.

Please refer to the [22.3 Release Notes](#) for more information on those new features.

Building on the evolutionary new elements introduced in the previous release, Austrics 23.1 provides significant advancements in optimising Electric Vehicle schedules, as well as a range of system enhancements and improvements to existing functionality.

So, what else is included in this release?

NEW FEATURES

EV – Fleet Optimisation

Austrics 23.1 includes the latest Electric Vehicle capability including the ability to run ‘Fleet’ EV optimisation. This includes having the option to configure Electric vehicle classes and compatible charger types. The vehicle and charger settings will be applied when optimising service work and recharging requirements for your battery electric busses.

Please find below some additional information on the functionality:

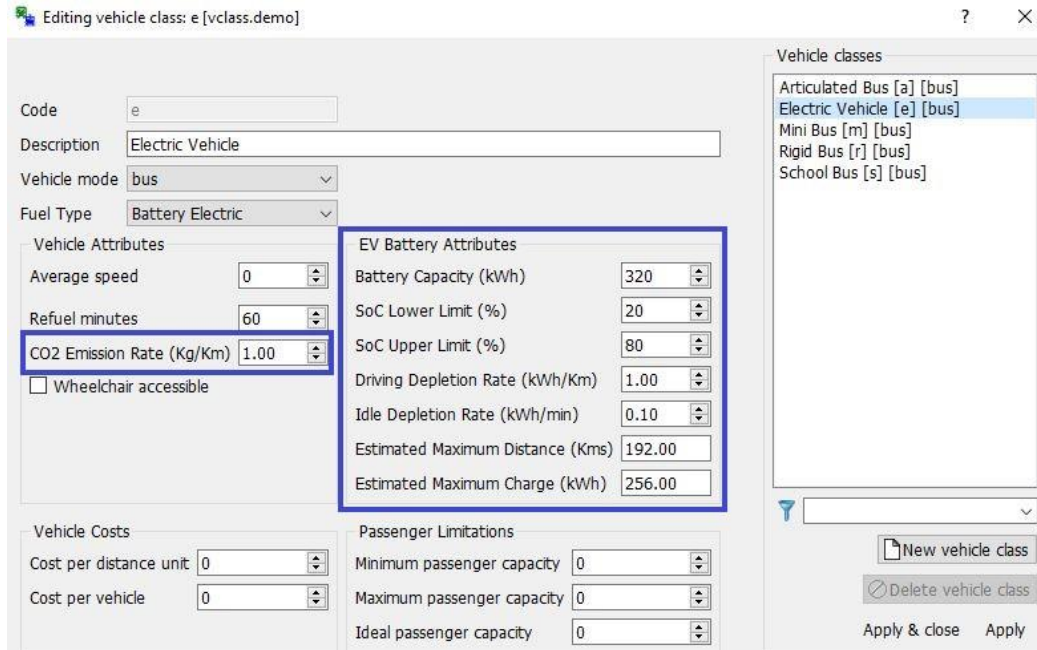
Electric Vehicle classes

The Vehicle Class editor has now been extended to give the ability to set EV Vehicle classes and configure the required battery parameters.

This includes the following settings:

- Maximum Battery Capacity (kWh)
 - Maximum kWh capacity of the specific vehicle class
- SoC Lower Limit (%)
 - Minimum % State of Charge (SoC) the vehicle class can reach before recharging is required
- SoC Upper Limit (%)
 - Maximum % SoC the vehicle class can be recharged to
- Driving Depletion Rate (kWh/KM)
 - Depletion rate of the battery charge per KM travelled while the vehicle is on the road, includes both driving and repositioning
- Idle Depletion Rate (kWh/min)
 - Depletion rate of the battery charge per minute while the vehicle is idle
- Estimated Maximum Distance (KMs)

- Calculation of the approximate maximum distance range on a full charge. $((\text{Battery Capacity} * (\text{SoC Upper Limit} / 100)) - (\text{Battery Capacity} * (\text{SoC Lower Limit} / 100))) / \text{Driving Depletion Rate}$
- Estimated Maximum Charge (kWh)
 - Calculation of the approximate maximum charge possible. $(\text{Battery Capacity} * \text{SoC Upper Limit})$
- CO2 Emission Rate (Kg/KM)
 - An optional field that is anticipated to be used for a future optimisation objective to aim to reduce emissions for your schedule, and for reporting purposes (TBC)



Charger types

The all-new Charger Type editor and file allows the user to configure charger types to the relevant Vehicle Class and Depot to ensure charging is factored into an operational EV fleet schedule.

It includes the following settings:

- Ability to create multiple different charger types
- Configure which Depots each charger types are available at
- Configure which charger types are compatible with specific vehicle classes
- Allow for connect and re-connect times as a part of the vehicle schedule
- Configure SoC re-charge ‘bands’ to allow for varying rates of charge per the manufacturer’s guidelines during the charging activity
 - This is tracked in kWh/min.

Charger type (1) file (chargertype.demo) ? X

Charger Types

Demo Charger (1)

Add Delete

Charger Type Attributes

Charger Type Code: 1

Charger Description: Demo Charger

Connect Time (minutes): 0

Disconnect Time (minutes): 0

Compatible Vehicle Classes: e

- Articulated Bus (a)
- Electric Vehicle (e)
- Mini Bus (m)
- Rigid Bus (r)
- School Bus (s)

Available Depots: city

City Depot (city)

Charge Rates

| From SoC | To SoC | Vehicle Class | Depot | Rate (kWh/min) |
|----------|--------|---------------|-------|----------------|
| 0% | 50% | e | city | 1.80 |
| 50% | 100% | e | city | 1.70 |

+ Add - Delete

Charge Rate Attributes

Rate of charge kWh per minute: 1.80

Applicable SoC Range: 0 % to 50 %

Vehicle Classes: e

Depots: city

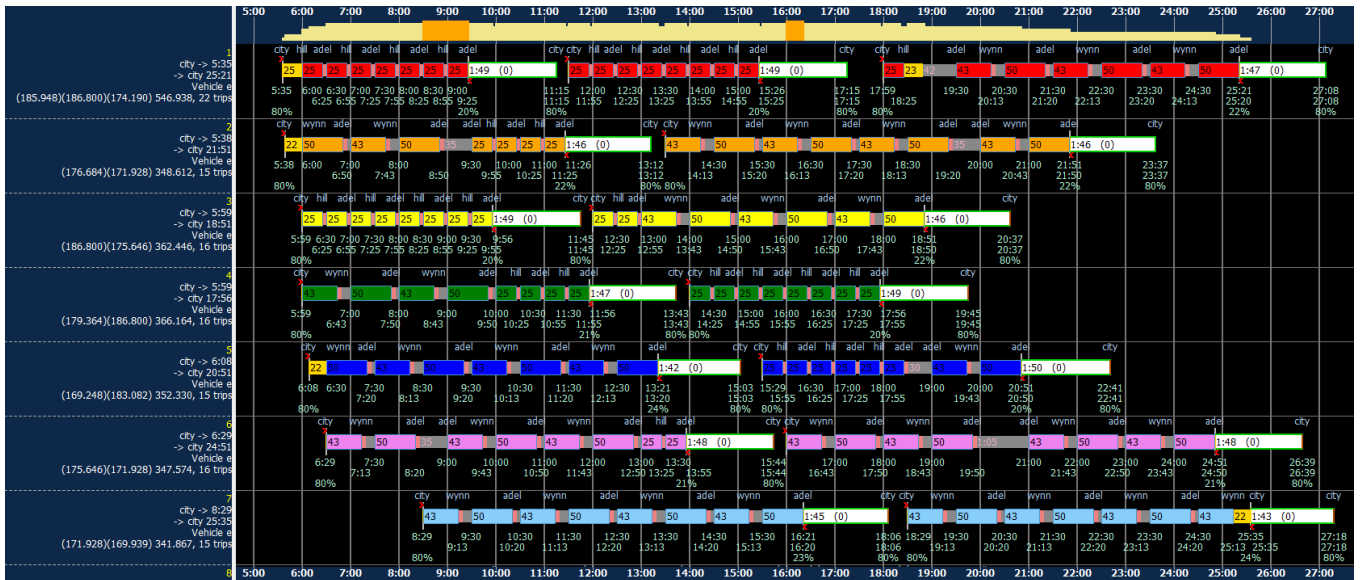
Electric Vehicle (e) City Depot (city)

Apply & close Apply

Fleet optimisation

Fleet optimisation now factors in the user defined EV vehicle & charger type parameters and creates an operational Electric Vehicle Schedule. It requires all charging to take place at the Home Depot, and all charging activities will return EV's to their maximum SoC by default. Users may subsequently adjust Charging Activities as required.

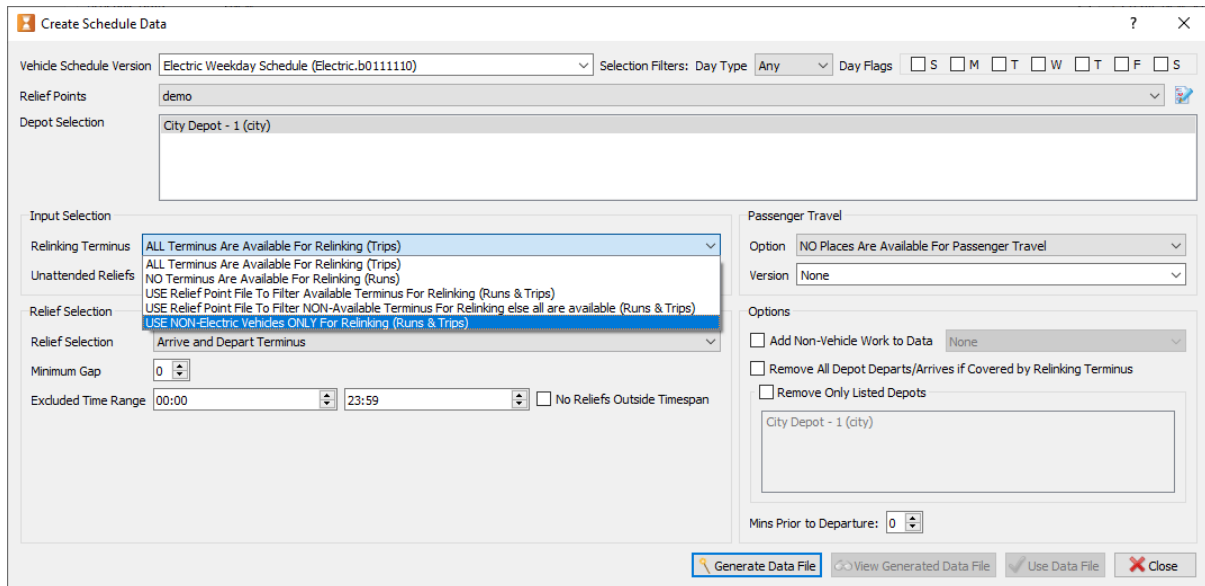
Please find below an example of the output in the Trip Editor:



Crew Optimisation – Runs & Trips

Crew optimisation now allows for ‘Runs’ optimisation on Electric Vehicle runs of work. There is also a new combined job type for Vehicle schedules with mixed EV & Diesel fleets. This allows a combined Runs & Trips optimisation solution and can be found in the Schedule Data Creation under the Relinking terminus drop down.

‘USE NON-Electric Vehicles ONLY for Re-linking (Runs & Trips)’



Linux – Download results

The Austrics 23.1 ‘Linux’ release allows for the output files to be downloaded locally for a single job. This will no longer be completed automatically, the reasoning for this is during the run cutting and linking process, we have now separated the running of these jobs from the ‘main server’.

In the future this gives the flexibility to send optimisation jobs to higher performance Linux machines with additional resources on demand. In turn reducing the need to have a ‘high spec’ machine running at all times to reduce costs. It also allows for only the required jobs output files to be downloaded, freeing up the amount of data in the work directory and reducing the need to clean out the directory as often.

Please find below where the output files can be downloaded for a specific job:

The screenshot displays the 'SHIFT OPTIMISATION' software interface. It is divided into several sections:

- Job Settings:** Includes 'Run Version' (set to 1) and 'No. of Auto Runs' (set to Single).
- Input Selection:** Contains fields for 'Input' (matcru.demo.b0111110.data), 'Optimisation' (matoptp.demo), and 'Constraints' (matcon.demo). It also features an 'ACTIONS' dropdown menu with 'Create New Schedules' selected and a 'Schedule File' field.
- Options:** Includes 'EDIT Global Award' and 'EDIT Tolerance' buttons, each with 'IGNORE' and 'APPLY' radio buttons. It also has 'Schedule Start Date' and 'Schedule Expiry Date' (OPTIONAL) fields, and checkboxes for 'Allow Buses to return to Other Depots', 'Max Gap Active', and 'Relief Points'.
- Data Files:** A grid of file selection fields for 'Award', 'Allowance', 'Relief Points', 'Relief to Relief (Portion)', 'Non Service Work Data', 'Renumbering Data', 'Close Reliefs', 'Avoid Times', 'Pay', 'Relief to Relief (Main Meal)', 'Relief to Relief (Extra Meal)', and 'Relief to Relief (Signoff)'.
- Actions:** A collection of buttons including 'Check Input Data', 'SUBMIT matcru job', 'VIEW Job running', 'DOWNLOAD Results' (highlighted with a blue border), 'PRINT Matopt Stats', 'RUN Statistics', 'RENUMBER Manually...', 'SELECT Defaults Files', 'SAVE Settings', 'EDIT Renumber Log File', 'Stop Job', and 'STOP Job'.

UPDATES / IMPROVEMENTS

A number of updates and improvements to existing functionality are also included in this release. These items have been broken down into the relevant Austrics module below:

PLAN

AM-6799 – KML exports

The KML export function in the Network Planner has been re-instated in the Austrics 23.1 release.

AM-6520 – Network Planner saving

When updating repositioning data, an edge case was discovered where, post saving, if additional changes were made to micropaths there could be an issue saving on subsequent occasions. This has been resolved.

AM-5952 – Network Planner validation

In the last Austrics 22.3 release, there was an edge case where paths may display with a validation error when they are actually plotted correctly. This has now been resolved.

AM-6464 – Creating a partial path

In the last Austrics 22.3 release, it was not possible to create a ‘partial path’ from an existing path. This has now been resolved.

FLEET

AM-5458 – Adding connect and disconnect times

EV vehicle ‘connect’ & ‘disconnect’ times can now be added and will be visually displayed in the Runs View.

AM-5456 - Add Trips Tool display of SoC figures for electric vehicle runs

The Runs view of the Trip Editor now has a visual SoC value displayed for Electric Vehicle Runs.

AM-5450 - Trip Editor validations/warnings of charging activities

Additional validations and warnings have been introduced to the Runs View of the Trip Editor relating to the tracking of SoC throughout the day, and validating any manual changes which are made by the user.

AM-6673 – Automatic building of layout files for timetable printing is missing files

When automatically building layout files, an edge case was discovered where it's possible that not all files are created. This has now been resolved.

AM-6671 – Unable to edit the format file via the Trip Editor printing panel

Unable to edit the format file via the Trip Editor printing panel. This has now been resolved.

AM-6610 – Multiple improvements with charge activities

There have been multiple improvements made with the creation and adjustment of charge activities. In the previous Austrics 22.3 overlapping activities, could in some cases provide incorrect warning messaging and visual display issues. This has now been resolved.

CREW

AM-4876 – Optimisation to track SoC and build charge activities

The optimisation can now track the SoC of EV vehicles and create the required home depot charge activities. In turn respecting the EV parameters set in regards to SoC, discharge and re-charge.

AM-6381 – Matopt to handle EV-RUNS-and-TRIPS-style jobs properly when relinking.

Matopt has now been developed to allow for a mixed EV and Diesel optimisation solution. Allowing for the EV Runs to be treated as a 'Runs' job while the remaining runs are optimised as a 'Trips' job.

AM-6844 - Address vehicle global cost inconsistency between Matcru and Matopt

Improvements have been made to Matcru and Matopt in regard to the 'global costing'.

AM-6490 – New configuration to handle portion lengths – New Zealand Clients

New configuration has been developed to allow for the maximum portion length as per the award to be entered. There is no longer the requirement to reduce the portion length to allow for NZ Rest Breaks.

AM-6867 - Input data file editor in Windows client

Windows functionality has been added to allow the Input Data file to be edited. This file is no longer fixed as read only on Windows.

ROSTER

AM-6220 – Roster Rules Sider

When updating the Roster rule slide bars in the Roster tool, there was an edge case where the values would not update. This has been resolved.

AM-6698 – Direct export to TIMS failing for one duty

Direct export into TIMS was failing during the data transfer, with specific data. This has been investigated and resolved in this release.

Technical breakdown

Summary

- Austrics Enterprise Server (AES) added in 22.2 to provide ability to run Austrics client applications separated from the server
 - Extended in 22.3 to now manage optimiser jobs
- New Windows client installer introduced to allow Austrics client applications to be installed on Windows machines without the need to use NoMachine to access Austrics
- Self-update service (i.e. ‘Check for Updates’) to allow users to keep their Austrics windows clients up-to-date when new patches or versions of the Austrics server are installed
- Users of Austrics Windows clients will have a new ‘login’ prompt to access Austrics (see IT information for more details)

Operational information

- Austrics Enterprise Server (AES) provides more advanced job control than was traditionally used by Austrics in the past. When using Windows, users have less visibility of the load on the server as they are no longer direct users of the machine. It will be up to the user to manage this as they do today, making sure they do not overload the server with an excessive number of simultaneous optimisation jobs.
- For Windows users, there is a new optimiser job manager which lets users see the current job queue, see job progress and allow job re-submission.

IT information

- To maintain backward compatibility with Linux clients, Austrics Windows users will ‘login’ to Austrics for Windows using the same username and password as they use to login to NoMachine.
 - This means that new users must be setup as users of the Austrics server ‘Linux machine’ even if they exclusively use the windows clients
- The Windows PCs used to run the Austrics Windows software must have network connectivity to the Austrics server (either direct or via VPN). The clients must be able to connect to the following extra ports (in addition to either 22/tcp or 4000/tcp used by NoMachine) on the Austrics server through any intermediate firewalls:
 - 80/tcp: To allow users to download the windows installer
 - 443/tcp: For access to the self-update service (ie ‘Check for Updates’)
 - 23456/tcp: Dataset server

- 23458/tcp: Telemetry/logging server
- 23460/tcp: Austrics Enterprise Server
- 23466/tcp: Change notification (pubsub) server
- The Austrics working directory for a user is not shared between Linux and Windows.
 - This is a sub-directory of the user's home directory that holds files generated by Austrics during its operation for a user
 - If a user switches between Windows and Linux they may be confused that working files are 'missing'. This is because the files are physically stored on different machines
 - Working files need to be manually transferred if they are requested/required by a user
- At this stage we assume Austrics Windows clients will be installed on single user PCs rather than shared Windows servers accessed via remote desktop.
 - While it is possible to install Austrics centrally on a Windows server and have all the users share the one installation, it is recommended that the Austrics Windows clients be installed separately for each user.

Conversion Information

- Austrics Windows clients and existing Linux clients (accessed via NoMachine) can be used simultaneously on the same Austrics environment.
 - This allows users to be converted over time, or allows an adjustment period for a user where they can access Austrics via either method.
- The Austrics Windows installer needs to be executed on the user's PC to install the client applications the first time.
 - Patch updates to Austrics can be self-installed by users using the 'Check for Updates' option.
 - Installation of major new versions of the Windows client requires the Austrics Maintenance tool to be installed (or they can be installed by executing the original installer again).
- The Austrics Windows installer does not require local admin privilege to complete installation. Any user can execute the installer and install Austrics to a directory they have write privilege to.

RELEASE NOTES:

Online copies of all release notes are available at:

<https://releasenotes.trapezgroup.com.au/austrics/index.php>

For further information on any of the items in these notes, or if you have any questions or concerns regarding the Austrics software, please do not hesitate in sending an email to:

support@trapezgroup.com.au