VECTO 2.2
22.07.2015

Vehicle Energy Consumption Calculation Tool

Release Notes

VECTO 2.2

Main updates

- **Moved gear-specific Full Load Curves to Gearbox File**

- **Combined Drag Coefficient * Cross Sectional Area in one input parameter**

- **Removed WHTC Correction Factor Calculation.**

- **Added link to CITnet / JIRA**

Gear-specific Full Load Curves

Gear-specific Full Load Curves are now defined in the Gearbox File

- **Used for torque limiting**

- **Basis for generic shift polygons***

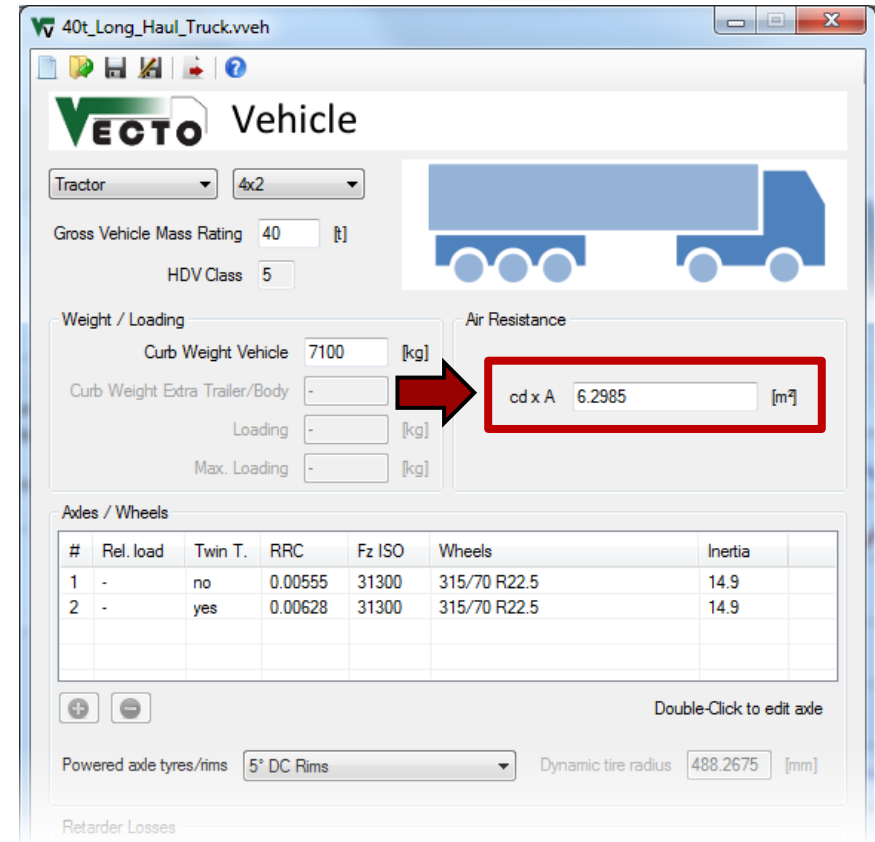- **If no file is defined, the engine full load curve is used.**

*If the engine full load torque is lower than the gear full load, then the engine full load is used to prevent unreasonable shifting with small engines.
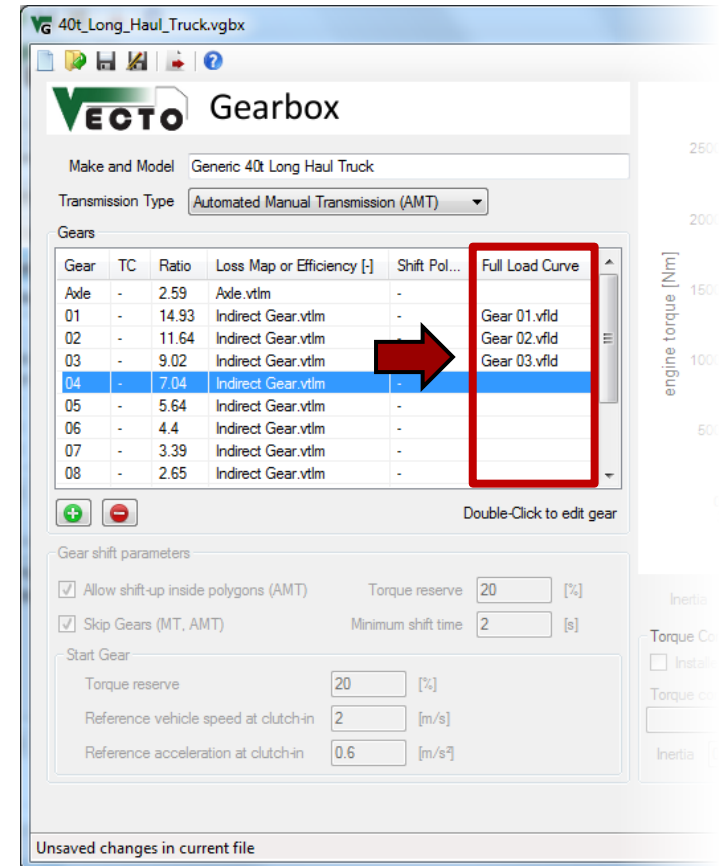
Combined Drag Coefficient * Cross Sectional Area

VECTO now uses the c_dxA product instead of separating the two parameters

- **VECTO CSE exports the c_dxA product, which can now be inserted into VECTO without separating.**

- **Old .vveh files are compatible.**

Removed WHTC Correction Factor Calculation

The WHTC Correction Factors are now calculated in an external tool, VECTO-Engine and have to be entered in the VECTO Engine file (.veng)

VECTO-Engine (distributed separately)

Engine Editor

Create JIRA Issue

Use the button in the Help menu to go to JIRA or open a Quick Start Guide.
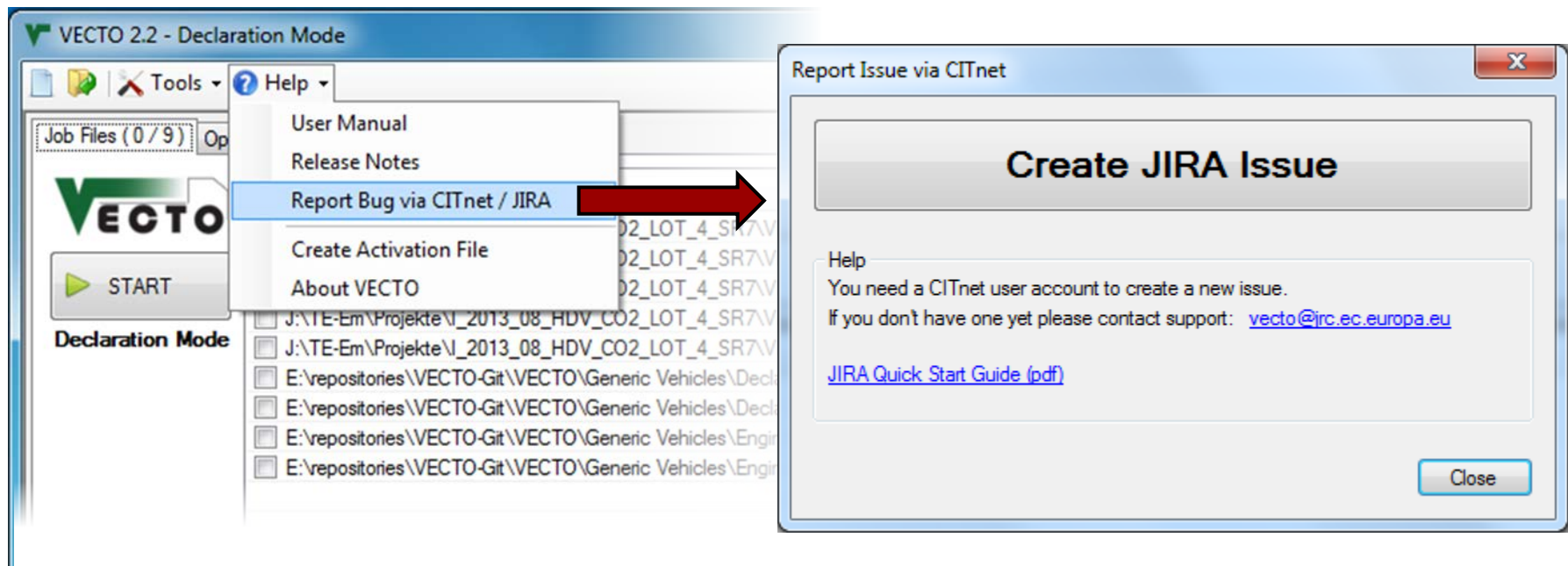
Full Changelog since V2.1.4

VECTO 2.2

- Bugfix: Error in Declaration Mode Pneumatic System aux power calculation ([kW] were interpreted as [W])

- Bugfix: Error in Declaration Mode Electric System aux power calculation

- Moved gear-specific Full Load Curves to Gearbox File

- Combined Drag Coefficient * Cross Sectional Area in one input parameter

- Updated .vgbx file format (Added gear-specific Full Load Curves)

- Updated .veng file format (Removed gear-specific Full Load Curves)

- Updated .vveh file format (Combined Drag Coefficient * Cross Sectional Area in one parameter)

- Updated Generic Vehicles (new file formats)

- Removed WHTC Correction Factor Calculation. Now in external tool, VECTO-Engine.

- Test Options are now only available in Engineering Mode

- Gearbox Editor now shows generic and user-defined shift polygons (if available)

- Various small updates in GUI

- Added 'Create JIRA Issue' dialog

For full changelog see VECTO Main Form > Help > User Manual or [CITnet](#).

VECTO Release Notes

Full Changelog since V2.1

VECTO 2.1.4

- Bugfixes in start gear and (A)MT shift model
- Updated Coach .vcdv file for higher speeds to avoid extrapolation
- Renamed output "FC" to "FC-Map" for better clarification
- Same header for g/h and g/km output
- Reduced minimum turbine speed for 1C-to-2C AT up-shift condition from 900 to 700rpm.
- Updated cross wind correction parameters to current White Book values

VECTO 2.1.3

- PwheelPos output in VSUM file.
- Implemented new Cd*A(v) method
- Bugfix in TC model
- Bugfix: Unit error in Cd(v) methods caused incorrect Delta-Cd value being used

VECTO 2.1.2

- Improved TC iteration for higher precision
- Extended possible TC speed ratio

VECTO 2.1.1

- Bugfix: Incorrect torque calculation in AT/TC model caused early up-shifts
- Updated C-to-C shift strategy with acc_min rule (see V2.1)

For full changelog see VECTO Main Form > Help > User Manual or CITnet.

VECTO Release Notes

VECTO 2.1
21.04.2015

Vehicle Energy Consumption Calculation Tool

Release Notes

VECTO 2.1

- **New AT/TC options:**

  - Limit engine rpm in torque converter operation acc. $\geq$ acc_{min}

  - Shift up (C-to-L, L-to-L) if acc. $\geq$ acc_{min} and next-gear-rpm > threshold

  - rpm limit [1/min] and acc_{min} [m/s²] parameters are currently user-defined

  - C-to-C up-shift condition based on N80h engine speed (instead of N95h)

- **P_{wheel} input (SiCo test mode)**

  - P_{wheel} as cycle input

  - Overwrites power calculation

  - VECTO only calculates power train losses, engine torque/rpm and fuel consumption

AT/TC model update

"Test" tab in main form includes new parameters.
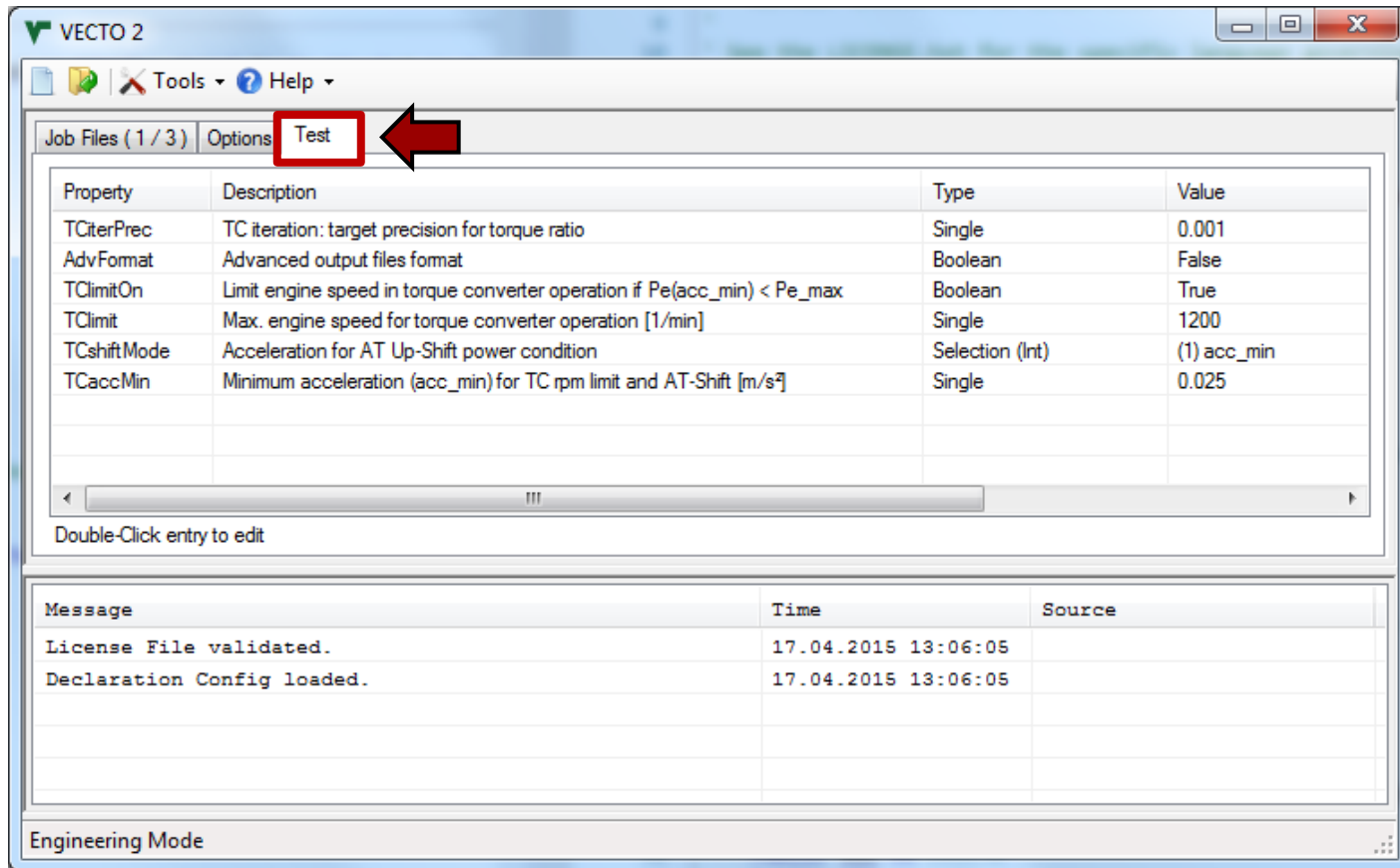
Note: This is a temporary solution until model and parameters are verified!

AT/TC model update

- **New AT/TC paramters:**

  - **TClimitOn (True / False)**

    - Enables engine rpm limit in TC operation

  - **TClimit [1/min]**

    - engine rpm limit (if TClimitOn = True)

  - **TCshiftMode (0/1)**

    - **Mode 0: acc_target** - Shift up if power demand with <u>target</u> acc. < power-max (pre-V2.1 default)

    - **Mode 1: acc_min** - Shift up if power demand with <u>min.</u> acc. < power-max

  - **TCaccMin [m/s²]**

    - Minimum acceleration for ShiftMode 1 and TClimit

Note: This is a temporary solution until model and parameters are verified!

AT/TC model update

- **Change parameters in Test tab by double-click**

- **Parameters are saved on application level (..\config\DEVconfig.txt)**
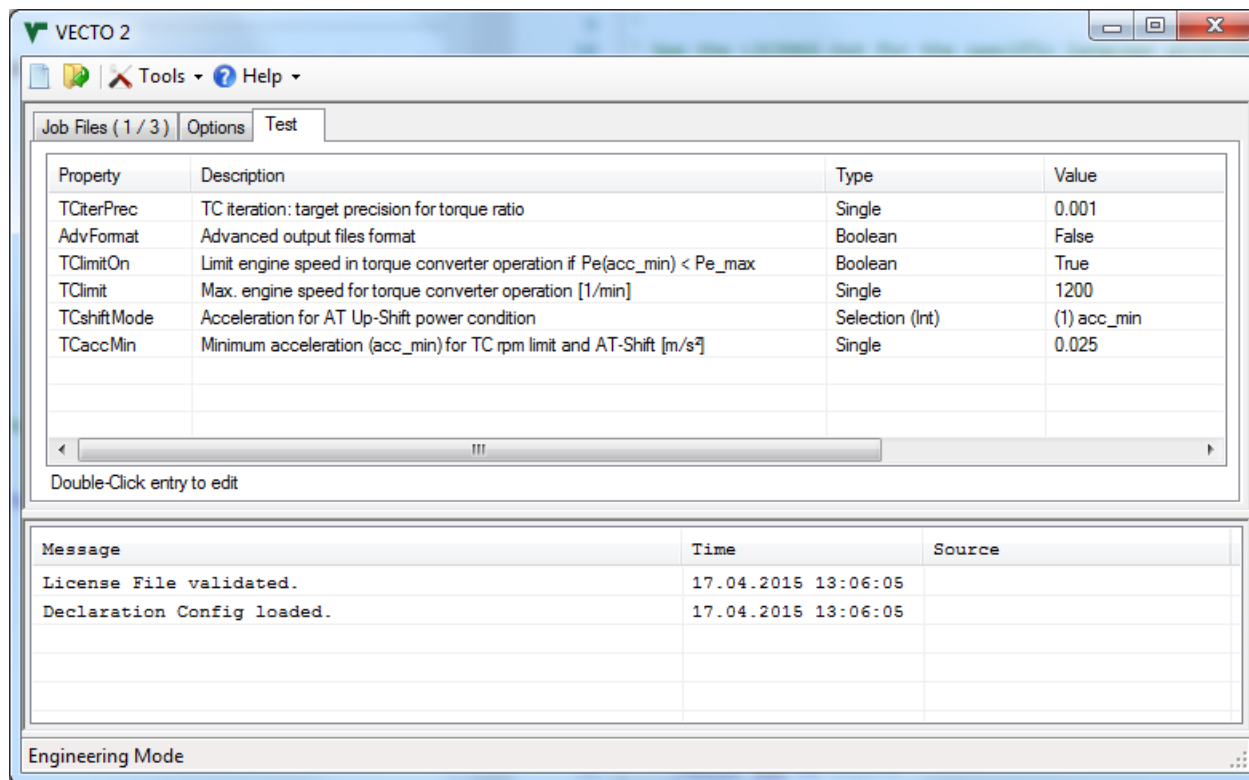
Note: This is a temporary solution until model and parameters are verified!

P_{wheel} Input (SiCo Mode)

- P_{wheel} can be defined in driving cycle to overwrite power calculation

- Requires **Gear** and **Engine Speed** input

- Cycle identifier: <Pwheel>

- Only time-based cycles are supported

- Distance Correction must be disabled (Options tab in main form)

Example driving cycle

<t>	<Pwheel>	<Gear>	<n>
1	0.0	0	560.0
2	0.0	0	560.0
3	14.0	1	593.2
4	51.9	1	705.5
5	60.0	2	690.0
6	85.6	2	868.4
7	92.0	3	820.0
8	112.3	3	897.6
…	…	…	…

VECTO Release Notes

P~wheel~ Input (SiCo Mode)

P_{wheel} Input (SiCo Mode)

- **Constant point calculation**

  - Define (at least) two identical times steps

  - (Optional) Add additional auxiliary power consumption with **<Padd>**

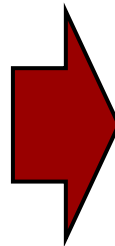 - It is suggested to define **one cycle per constant point** and use **Batch Mode**

Example: Calculation of two constant points tests

Cycle 1.vdri

<t>	<Pwheel>	<Gear>	<n>	<Padd>
1	50.0	3	980.0	3.0
2	50.0	3	980.0	3.0

Cycle 2.vdri

<t>	<Pwheel>	<Gear>	<n>	<Padd>
1	160.0	4	1020.0	3.0
2	160.0	4	1020.0	3.0

.vsum results

Cycle [-]	time [s]	Ppos [kW]	Pneg [kW]	FCh [g/h]
Cycle 1.vdri	1	57.4	0	11481.3
Cycle 2.vdri	1	172.0	0	31922.2

Full Changelog V2.1

- Limit engine rpm in torque converter operation acc. > acc_min

- Shift up (C-to-L, L-to-L) if acc. > acc_min and next-gear-rpm > threshold

- C-to-C up-shift condition based on N80h engine speed (instead of N95h)

- Pwheel-Input (SiCo Mode)

- FC [g/h] is always saved in output (in addition to [g/km]), not only in Engine Only mode

- GUI: Corrected air density unit in GUI

- Bugfix: Format error in .vmod header