

VECTO-AirDrag: Changelog

v3.3.0 (2025-03-14)

Release of the VECTO Air Drag tool adhering to the certification regulation EU 2017/1400 as amended by (EU) 2025/258 of 7 February 2025. The tool has been updated to export new XML files and new measurement segment validity criteria. More specifically:

Features

- Generate XSD v2.6 VECTO inputs
- Accept positive values for delta CFD
- Adjusts criteria and input to 3rd amendment updates:
 - Change v_veh_avg_max_HS and v_veh_avg_min_HS criteria for buses
 - Change v_veh_avg_max_HS and v_veh_avg_min_HS criteria for lorries
 - Change t_amb_min criteria
 - Change v_wind_avg_max_HS and gust criteria
 - Read new required value s_brake from .csdat input
 - Add column and values to .csdat input
 - Break simulation if LowSpeed test exceeds 25 minutes
- Create package during Release build

Refactor

- Do not hardcode VECTO references

v3.2.0 (2022-05-21)

TUG improvements:

- New version number
- DriftCheck implemented
- Drift corrected values in output files
- Adaption of gearbox types. Old gearbox types are also valid
- New vehicle classes added (MLr, MLvan, MB, HB)
- Change of criteria parameter tq_sum_float_delta_LS dependent of vehicle class
- Vehicle file corrected to new input data
- Info labels for tq_sum_float_delta_LS in declaration mode added
- New signal inputs and
- Bugfix output path in the result file. Now the correct file is written to the title
- Bugfix time sequence. Now the time is checked also with digits after the decimal separator
- Bugfix preferences. Now in the preference GUI the unit for Log-file size is written
- Update DemoData
- Update ReleaseNotes

v3.1.9 (2019-01-31)

TUG improvements:

- New version number

- Adaption of gearbox types. Old gearbox types are also valid
- Update DemoData
- Update ReleaseNotes

v3.1.8 (2019-01-04)

TUG improvements:

- New version number
- Adaption of gearbox types on new legalisation
- Adaption of GUIs to only show the logo from the European Commission
- Update DemoData
- Update ReleaseNotes
- Update UserManual
- Release candidate output

v3.1.7 (2018-06-26)

TUG improvements:

- New version number
- Correction of the result output for gearbox type AT if n_eng is not given

v3.1.6 (2018-02-15)

TUG improvements:

- New version number
- Hotfix for VECTO Input file
- Culture info is automatically set to [en-US] standard

v3.1.5 (2018-02-08)

TUG improvements:

- New version number
- Hotfix for rounding method

v3.1.4 (2018-01-22)

TUG improvements:

- New version number
- Bugfix for rounding method

v3.1.3 (2017-11-07)

TUG improvements:

- New version number
- Bugfix for speed criterium

v3.1.2 (2017-11-03)

TUG improvements:

- New version number

- License module deleted

v3.1.1 (2017-10-04)

TUG improvements:

- New version number
- Bugfix for direct start option (now the VECTO input files can be created)
- Correction version number (now the version number is generated over the assembly number)

v3.1.0 (2017-07-14)

TUG improvements:

- New version number
- Bugfix for correct detection of first/last datapoint inside of a MS
- Update VECTO input file generation
- Update VECTO hashing added
- Update ReleaseNotes
- Update UserManual

v3.0.8 (2017-03-22)

TUG improvements:

- New version number
- Correction calc vehicle speed stability criteria
- Update DemoData
- Update ReleaseNotes
- Update UserManual
- Update JobFile

v3.0.7 (2017-02-03)

TUG improvements:

- New version number
- Validity criterias for calibration run extended (see technical annex)
- New calibration criterias (v_veh_1s_delta_CAL, v_veh_ave_delta_CAL)

v3.0.5/6 (2017-01-13)

TUG improvements:

- New version number
- Change of needed digits after the decimal separator (DGPS: DD.DD[7]/MM.MM[5]; GPS: DD.DD[5]/MM.MM[3])
- Uneven numbers of datasets per heading in calibration test now allowed
- Correction of maximum allowed vehicle high from class 1 and class 2

v3.0.3/4 (2016-11-25)

TUG improvements:

- New version number
- Bugfix for the criteria detection in calibration and LS/HS run
- Correction of the output messages

- Correction of the DemoData

v3.0.1/2 (2016-11-25)

TUG improvements:

- New version number
- Bugfix for digit check by use of GPS
- Bugfix for measurement section detection for root point calculation

v3.0.0 (2016-11-16)

TUG improvements:

- New version number
- Update of needed signals in calibration run (t_{ground} no longer required as input)
- A license valid until 16th of March is distributed with the code.
- Update DEMOData

v2.0.7-beta8/9 (2016-11-09)

TUG improvements:

- Correction of rolling resistance criteria
- Correction of digit test for coordinates

v2.0.7-beta7 (2016-10-20)

TUG improvements:

- New version number
- Including Declaration and Engineering Mode to program and Job-File
- F_{veh} calculation update (now option 2 is the new preferred one) Option 2 is deleted from result file
- Uneven numbers of datasets per heading in HS test now allowed
- Calculation of F_{acc} changed due to wheels inertia deletion (now $F_{acc} = 1.03ma$)
- New design of criteria tab
- Update Standard criteria values + renaming
- Include of new variables for validity criteria (t_{amb} ; t_{ground} ; tq_{grd})
- gradient correction implemented
- Check of digits after decimal separator for all coordinates, transmission ratios (gear + axle) and altitudes (Values in vehicle file changed to string values)
- Vehicle file check included (For height and class code)
- Expand vehicle file with v_{VehMax} and $GVMM_{Max}$ value
- Change vehicle file configuration parameter from "Rigid/Tractor" to "No/Yes"
- Displacement of Genshape file into code
- Add reference vehicle high in genshape class
- Add minimum/maximum vehicle high in genshape class
- Control of min/max height with vehicle height only in Declaration mode
- Calculation of new Result values ($\Delta CdxA_{height}$; $v_{avg_LS/HS}$; t_{amb_LS1} , $CdxA_{H1/2}$, $\beta_{H1/2}$)
- Change of $CdxA$ and β calculation
- Output files in Declaration mode extended
- Output files adapted
- Expansion of the job-File due to new results
- $vehWidth$ and $wheelsInertia$ deleted from vehicle-file

- Deletion of unused variables (omega_wh; omega_wh_acc; omega_p_wh_acc; t_tire; p_tire; ...)
- Deletion of [ss.ss] coordinate input
- Update DEMOData
- Update of Excel DemoData file
- Update user manual and release notes

v2.0.6-beta6 (2016-01-21)

TUG improvements:

- New version number
- Bugfix control heading calculation in *.csms file
- Bugfix old functions for day changes deleted
- Update user manual and release notes

v2.0.5-beta6 (2015-11-25)

TUG improvements:

- New version number
- Renaming of VECTO-CSE into VECTO-Air Drag
- Bugfix dist calculation
- Bugfix calculation of a_veh_avg and omega_p_wh_acc
- Update of the ending message if an error during the calculation detected
- Update user manual and release notes

v2.0.4-beta6 (2015-10-13)

TUG improvements:

- New version number
- Updates by error/warning output
- Update user manual and release notes
- Free definition for list and decimal separators in the CSV-Files
- Variable definition of the coordinate unit (.csms and .csdat files)
- Update of the excel file
- Update error messages

v2.0.3-beta6 (2015-07-23)

TUG improvements:

- New version number
- Bugfix calculation without additional signals
- Update user manual and release notes (Now always the newest version will be opened)
- Deleted unused variables (FC from input data, t_amb_tamac from criteria)
- Add ground temperature as optional signal to input data ()
- Add new criteria parameter t_ground_max = 40C
- Set t_amb_max to 25C (old 35C)

v2.0.2-beta6 (2015-07-20)

TUG improvements:

- Bugfix heading control
- Update user manual

- Add "Report bug" option
- Add JIRA Quick Start Guide
- Delete valid_t_tire from output files and job-file
- Change t_tire from required input data to optional (like p_tire)
- Delete rho_air_ref from criteria and GUI

v2.0.2-beta6 (2015-07-01)

TUG improvements:

- New Version number.
- Update region and language settings: now it is regardless of the system which settings are used !
But the file definitions are still the same
- Update of the excel makro in terms of the system region and language settings

v2.0.2-beta5 (2015-06-24)

Mostly TUG improvements:

- FIX Job-save missing criteria (hack)
- Update of calculation of the CdxA value from measured drag forces
- Update GenShape File
- Update of calibration of vehicle speed and anemometer speed (high speed test instead of "claibration test")
- new criteria delta_n_eng for LS/HS included
- Option in VECTO-CSE to read in cardan speed instead of engine speed and gear ratios for HS and LS -> Update of the vehicle file
- Update calculation with cardan speed: Calculation only if engine speed is not given an automated transmission is used
- Program user friendly updates
- Update F_acc calculation
- Update r_dyn calculation for each test (HS, LS1, LS2)
- Update DemoData
- Update user manual and release notes
- Output folder will be now created automatically if its not existing without questioning
- Welcome form added for first application start
- Correction of welcome window
- Add the Excel-makro to generate the input data into the DemoData files
- New Version number.

v2.0.1-beta5 (2015-05-21)

TUG improvements:

- Handling of time steps where coordinates are constant over a certain time period (GPS accuracy issue) set gradient to 0 to avoid division by zero
- Allow also non-continuous input data in *.csdat files
- Direct start option included
- Anemometer instrument calibration removed from CSE calculation
- Update of definition of beta-signal (180 = air flow from front)
- Acceleration correction: true as default
- Control if heading and given direction is always the same
- set criteria to "standard" when CSE opens
- store information when switching between tabs
- ResetCriteria and ImportCriteria do not clear main tab

- New Version number.

v2.0.1-beta4 (2014-11-13)

TUG improvements:

- Bugfix linear regression calculation LS
- Add control for beta angle ≤ 360 and calculation to ± 180 if angle $> \pm 180$
- Update user manual
- New Version number.

v2.0.1-beta3 (2014-11-10)

TUG improvements:

- Correction HS calculation
- Correction length calculation for the first section in the dat-file when there is a gap between the first and second MS.
- Update length calculation in csms-file to check if specified length from user and coordinates are the same
- New Version number.

v2.0.1-beta2 (2014-09-30)

TUG improvements:

- Correction GenShape Check
- New Version number.

v2.0.1-beta1 (2014-09-15)

TUG improvements:

- IO: Data reading corrected for first data set in measurement section file, weather file and data files.
- New Version number.

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Mostly JRC contributions (see VECTO-29 & VECTO-35):

- IO: JSON-ize preferences, vehicle, job & criteria-files EXCEPT from Track-file.
 - IO: CSVize all the rest files with a single header line and use '#' for comment lines.
 - IO: Separate config/ from Declaration/ folders.
 - UI: Provide default-values and help-messages in GUI/files with infos fetched from JSON-schemas.
 - UI: Make the Log-window visible at all times (more necessary now that unhandled exceptions are appropriately reported).
 - Log: Gather all unhandled exceptions and report them into log-window and log-file.
 - Log: Improving error-reporting by including stack-traces and timestamps into the log-file, for post-mortem examination.
 - Translate all file-paths against `Prefs.WorkingDir`, so that i.e. Job-files can be ported to other computers.
 - Possible to specify any editor (not only notepad.exe) for viewing files.
 - Standarize versioning using [SemanticVersioning](#).
 - Welcome developers and users with README.md, CHANGES.md and COPYING.txt files. ###
- Internal:
- Implement an API for writing Header/Body json-files.

- Apply Object-oriented design with resource-management when I/O files.
- Sporadic fixes to work with filenames having 2-part extensions (ie `some_file.csjob.json`).
- Log: Improve logging-API so now a single log-routine is used everywhere (instead of 3 different ones).
- async: Stop abusing worker-Thread with Globals, use `DoWorkEventArgs` instead.
- async: Start using Exceptions instead of `CancelAsync()` and error-flags.
- General restructuring of the folders and names in the project.

More analytically:

v2.0.1-beta0 (2014-06-23)

Mostly TUG improvements:

- json: Store run-results within the Job-file.
- csv: Ensure result-files are valid CSVs.
- csv: Changed comment symbol in CSV files from 'c' → '#'
- csv: Unify units into header labels. ### Internal:
- Use Exceptions instead of `CancelAsync()` and error-flags in calc-routines and `input.vb`.
- Remove unused `distVincenty()` func.
- Added EUPL preamble on all source-files.

v2.0.1-pre2 (2014-06-04)

JRC contributions:

- Convert Job & Criteria files to JSON and possible to store them separately.
- Still supporting old format for reading.
- Use `WorkingDir` trick for all job-file paths, so that Job-files can be ported to other computers.
- UI: Make the Log-window visible at all times (more necessary now that unhandled exceptions are appropriately reported).
- UI: Setup criteria-infobox from JSON-schema. ### Internal:
- Log unhandled exceptions.
- Gather all infos related to Job-properties (type, description, units) in a single place, the JSON-schema for the job-file.
- async: Stop abusing worker-Thread with Globals, use `DoWorkEventArgs` instead.
- Sporadic fixes to work with filenames having 2-part extensions (ie `some_file.csjob.json`).
- More refactorings to simplify structure of source files and folders.

v2.0.1-pre1 (2014-05-30)

JRC contributions:

- Read/write Vehicle-file as JSON.
- `prefsUI`: Add Reload button.
- Remember window-location (use `.net Settings` for that).
- All logs (even those sent to msg-box) are written to log-file, with timestamps and stack-traces. ### Internal:
- Start saving stack-traces into the log-file.
- Enhance JSON-files with standard header/body behavior.
- Link JSON to GUI controls (labels & tooltips)
- json: Read defaults from schemas.
- Rework logging as a single routine, whether invoked from Background Worker or not.

v2.0.1-pre0 (2014-05-23)

JRC contributions:

- Separate config/ from Declaration/ folders.
- Remove the versioning infos from app-name (manual, project-name, folders) and use [SemanticVersioning](#) 2.0.0 instead.
- Possible to use any editor (not only notepad.exe).
- Added README.md, CHANGES.md, COPYING.txt files. ### Internal:
- Auto create config/ on the 1st run, converted to JSON with transparent error-handling.
- FIX leaking of file-descriptors by using VB's 'Using' statement (class 'cFile_v3' now implements IDisposable).

2014-05-14: CSE2.01

1st delivery from TU-Graz under Lot-3.