

**SUPPLEMENT 5: GasSim2 Release Version 2.00.0078**

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## 1. REVISIONS TO GASSIM2

This supplement to the GasSim2 manual covers revisions to the model in release version 2.00.0078. The previous version available from the GasSim web site was 2.00.0071. Interim versions 2.00.0072 - 0077 were internal test versions trialed before releasing this latest version. Revisions are associated with bug fixes identified during the last twenty one months and some minor improvements to the functionality of the model.

### Bug Fixes

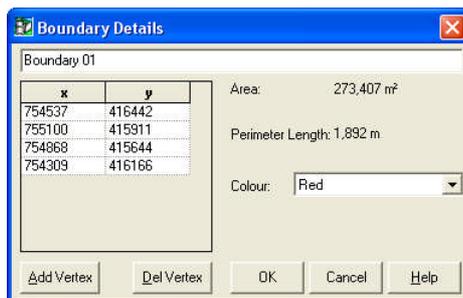
- GasSim was trying to calculate statistics for cells that were not included in the calculation. This resulted in file errors being reported, as the gas generation results for those cells were not present. This has been fixed so that the statistics calculation for such cells is now skipped.
- GasSim occasionally crashed when the user changed the DXF file used for the map. This appears to be due to a bug in the third party control used to display the DXF file, and a work around has been found to avoid the circumstances in which the problem occurs.
- The exterior edge length of a cell which is used for the calculation of lateral migration was not being calculated correctly when more than one boundary was present. This has been fixed.
- On the Gas Plant/Trace gas screen the destruction efficiency text on the first row was being validated 94 times and the remaining rows were not being validated. This has been fixed to perform the validation on each row of the table.
- There was a bug in the calculation code whereby composition ID's which are read from the project file were treated as if they were indexes into the composition table. This results in the error message "Invalid vector<T> subscript Out of memory. Try running the simulation again with lower simulation or operational periods, or decreasing the number of iterations". It also means that the wrong waste compositions may have been used during a simulation. This has been fixed.
- Fix for GasSim screen disappearing behind other open applications after finishing calculations etc.
- Fix for problem that appeared in Exposure module when a boundary has a repeated vertex, resulting in a runtime error 6. This may also fix similar problems in Tier1 screening etc. The error was a result of a divide by zero error occurring during the calculation.
- Fix for runtime error 75 appearing occasionally at end of an AERMOD run in tier 2. This appears to be because the temporary copy of the AERMOD executable is still locked for a short time after the AERMOD process has terminated, and when GasSim tries to delete the executable this results in a run time error, and GasSim then terminates. It seems to be happening on long AERMOD runs, on some machines some of the time. The fix applied is to trap the error, then wait 10 seconds and retry. This is repeated up to 10 times, after which an error is reported.
- Fix for bug in setup which was displaying an incorrect installation path (even though Gassim was being installed in the correct place).

- Fix for crash that occurs if one selects one of the export options from the results graph (or multi graph) screen and then presses 'Cancel'.
- Fix for Skellindsted\_landfill example which had no industrial waste defined and was generating error messages as a result.
- If the main GasSim window was made smaller by the user, the maximise button was not making the window any bigger. This has been corrected so that it returns the window to its full initial size.
- When printing the results to PDF, if the user cancelled the print this would make subsequent prints fail. This has been fixed. The way this error manifests itself may depend on the PDF print driver being used.

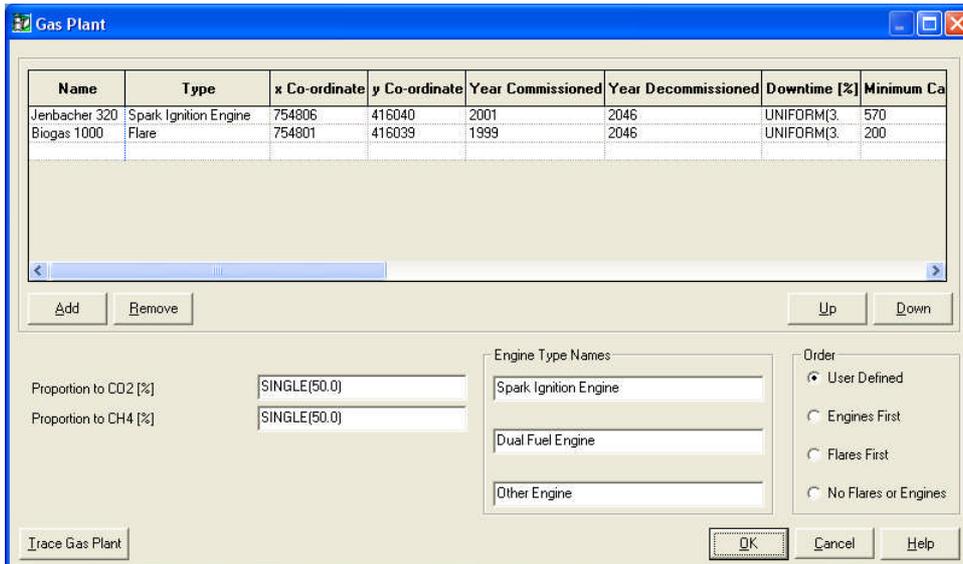
## Improvements to Functionality

There are a number of minor enhancements in this release of GasSim:

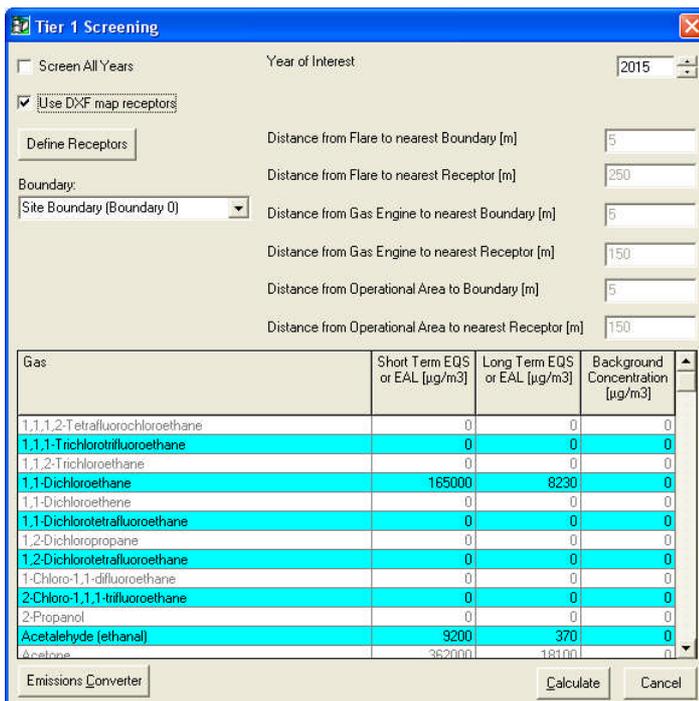
- When defining a new boundary GasSim2 now displays the boundary properties so that the user is prompted to change the name of the boundary and other properties. This is consistent with what happens when the user defines a new cell, and will encourage users to give the boundary an appropriate name.



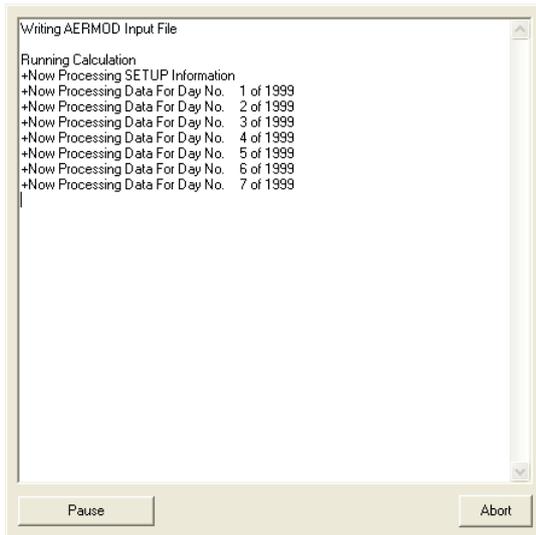
- The third party control used by GasSim2 to display DXF files for the map will refuse to load DXF files that specify AutoCAD 2004 as the database version. If a DXF file fails to load, GasSim2 now checks the AutoCAD database version number and if this is later than AutoCAD 2000 it creates a temporary copy of the DXF file which specifies AutoCAD 2000 as the database version, and attempts to load this instead. In many cases this is successful.
- GasSim 2 now allows the user to change the names 'Spark Ignition Engine', 'Dual Fuel Engine' and 'Other Engine' when displayed in the GUI, printed etc. This change is on a project by project basis, with the names being saved in the project file.



- For Tier1 screening when 'Use DXF Receptors' is checked the user now chooses the boundary to use when calculating the minimum distance to the boundary (for engines, flares and area sources). This has meant some rearrangement of the controls on the Tier1 screen and the 'Emissions Converter' button is now at the bottom left of the screen.



- Trace.dat file is now flagged as read only, making it harder to overwrite this file by mistake.
- A 'Pause' button has been added to the Tier 2 AERMOD progress screen. This can be used to pause the AERMOD executable during the calculation, and then continue. This may help users who wish to hibernate the computer (pause the calculation, hibernated the machine, bring the machine back to its running state and click continue). It could also be used to pause the calculation whilst the user does some other work.



- The information presented on the PI reporting screen has been brought in line with the format used on the Environment Agency's Pollution Inventory reporting form, with regard to the order and names of the substances reported; the units for the reporting threshold (now in kg); and how values below the threshold are reported (now as 'btr'). These changes are also reflected in the print outs, and the text that gets copied to the clipboard.

PI Reporting

Year: 2008

Gas	CAS	Reporting Threshold	Value to Report	[25%]	[75%]
<b>Inorganics</b>					
Ammonia	7664-41-7	1000 kg	n/a		
Asbestos	1332-21-4	1 kg	n/a		
Carbon Dioxide - 'chemical'	124-38-9	10000000 kg	btr		
Carbon Dioxide - 'thermal'	124-38-9	10000000 kg	13,500.00 t	13,200.00 t	13,800.00 t
Carbon disulphide	75-15-0	1000 kg	btr		
Carbon monoxide	630-08-0	100000 kg	btr		
Hydrogen chloride	7647-01-0	10000 kg	btr		
Hydrogen cyanide	74-90-8	100 kg	n/a		
Nitrous oxide	10024-97-2	10000 kg	n/a		
Phosgene	75-44-5	10 kg	n/a		
Sulphur hexafluoride	2551-62-4	10 kg	n/a		
<b>Organics</b>					
Acetaldehyde [Ethanal]	75-07-0	100 kg	btr		
Acrolein	107-02-8	10 kg	n/a		
Acrylamide [2-Propenamide]	79-06-1	10 kg	n/a		
Acrylonitrile [2-Propenenitrile]	107-13-1	1000 kg	btr		
Aldrin	309-00-2	1 kg	n/a		
Allyl alcohol [2-Propen-1-ol]	107-18-6	10 kg	n/a		
Amitrole [3-Amino-1,2,4-triazole]	61-82-5	1 kg	n/a		
Aniline [Benzeneamine]	62-53-3	10 kg	n/a		
Anthracene	120-12-7	10 kg	n/a		
Benzene	71-43-2	1000 kg	btr		
Benzo(a)pyrene	50-32-8	1 kg	btr		
Benzo(b)fluoranthene	205-99-2	1 kg	n/a		
Benzo(g,h,i)perylene	191-24-2	1 kg	n/a		
Benzo(k)fluoranthene	207-08-9	1 kg	n/a		
Benzo butyl phthalate (BBP)	85-68-7	10 kg	n/a		
Benzyl chloride	100-44-7	10 kg	n/a		
Bromoethene	593-60-2	10 kg	n/a		
Butadiene [1,3-Butadiene]	106-99-0	100 kg	btr		
Butene - all isomers	-	1000 kg	btr		
Carbon tetrachloride [Tetrachloromethane]	56-23-5	10 kg	btr		

Buttons: Print, Copy, Done, Help