Tas Version 9.3.1

UK Building Regulations 2013 Studio
- Validation process completed. The UK Building Regulations 2013 Studio is now approved.

Systems
- Added External Controller Type and removed Average, Minimum and Maximum Controllers
- Replaces the Lua code control with scintilla control.

Building Simulator
- Summary Checks HTML now outputs UTF8 HTML files.

Tas Version 9.3.0

UK Building Regulations 2013 Studio
- New utility added for Part L and EPC

3D Modeller
General
- DWG/DXF import has been upgraded such that files up to 2014 format can now be imported.
- It is now possible to use the 3D View Setup dialog with a 3D Plan Window to define a view for a standard 3D window or a daylight view window ie this is applicable for gbXml imported models.

gbXml
Export
- Exported spaces now reference a Building Storey
- Sets wall to be of type UndergroundWall if Building element has the ground flag set
- Exports Frame enity for Opening type, with frame width defined.

Import
- Uses name of Construction if available, referenced by Surface, instead of Construction ID for name of Building Element after import.
- Uses name of OpeningType if available, referenced by Opening, instead of Opening ID for name of Window Type after import.
- Sets frame width of window type if OpeningType has a Frame entity.
- Uses existing Building Element as defined with associated flags set eg transparent.
- Uses existing Window Type as defined with associated data other than height and width which is still imported from the gbXml file.

Bug Fixes

- No longer crashes if a gbXml file is imported that has a Building Storey with the name "Ground Floor".
- Corrected calculation for normal of imported polygon, when the polygon has many collinear edges.
- Corrected setting construction normal – it was reversed if adjacent spaces defined in non-ascending order.
- "Reverse geometry" option sometimes caused invalid 3D display.
- Spaces with long names caused crash when adding to gbXml import report.
- A zone would be deleted after import if a space was defined with the same name.

Results Viewer
- New option is 3D Visualisation context menu: Colours | Out of Range Colours. When enabled, surfaces with data values beyond the scale range will be coloured to distinguish them from surfaces with data values within the scale range.

Tas Version 9.2.1.7
- German language option added to Tas. This is selected in the Language tab of the Tas Manager Settings dialog. Several windows have been slightly re-organised to allow German language to substitute for English.
- Old files that are opened through automation (e.g. through macros or Studios) are now evolved automatically, rather than prompting the user to do so manually.
- Remote desktop sessions can now use a dongle on the remote machine for licensing.

3D Modeller

General
- There is now a Dimensions… option on the right hand button menu for selected window to adjust the position of the window.
- Shade fin surfaces may now be defined for analysis as Exposed, rather than always being Internal to a zone, dependent on the fin angle. A fin that is perpendicular to the containing surface will generate Internal surfaces whilst one that is parallel will generate Exposed surfaces. Fins with angles in between will generate both with the surface areas being apportioned appropriately.
- The grid is not displayed by default **in** 3D views.
- Windows (frames and pane if displayed) are now coloured as its containing wall or roof with colour by analysis option.
- Improvements to picking in a 3D view.
- In Colour By Analysis mode, the new default colour for Null Link surfaces is now lavender, to distinguish it from the inner side of surfaces (grey). This will only affect new files.
-

gbXml Import
- Frame width set by default to 50mm for imported windows
- New option (available on right hand mouse button menu for selected surfaces) to "Set Exposed" for imported surface when the surface has "unknown adjacency". These are

usually surfaces exported from Revit which may either be exposed or adjacent to an undefined space. An attempt used to be made to identify surfaces as Exposed when imported, but this calculation has been removed. This exposed status is kept if the gbXml file re-imported.

- New option to "Reverse" for imported surface. It is only available for spaces that have a "gap" error or "incorrect orientations" error where the gbXml surface has been defined with incorrect geometry. This reversed status is kept if the gbXml file re-imported.
- New option to "Reverse BE" for imported surfaces. This is similar to the "Reverse" option for walls in standard floors.
- For easier use of the above options, it is now possible to view by zones and colour by analysis in 3D views in non-analysis mode. This is only for imported models and if no standard floors have been created.
- Also colour by BE in 3D views in non-analysis mode, now colours only first side of the surface with respect to the construction applied in TBD
- Messages in Import report and Errors/Warnings dialog have been revised and some messages are indicated as INFO
- It is now possible to set the type of an imported window to be a group window type.
- If importing to create 2D floors, it is now ensured that a window created from full height glazing fits above floor and doesn't vanish in analysis view**.**
- Improvements for importing large GBXml files.

Daylighting.
- The resulting lux levels on the surfaces from the current daylight calculation can be shown in the daylight view.
- For new models the default ground reflectance is now 0.2 and the default glass transmission is 0.8
- A warning is now displayed if a building element has secondary elements and either primary or secondary element is transparent as the daylight calculations will not allow for this.
- A warning is now displayed if the building or latitude has changed and there are daylight calculations saved for the t3d file.
- The check box to get saved analysis parameters for daylight calculations has been replaced with a button.
- Camera movement options for daylight view now have the same behaviour as standard 3D views.
- Previously the daylight calculation became more inaccurate the larger the dimensions of the model. This has now been fixed to be consistent no matter the model size. However calculations may take longer for larger models.
- There is now an option for the calculation grid for daylight to be oriented as the current building grid.
- There is also an option to disregard the reflectance of surfaces on the outside of a building or other surrounding buildings to improve calculation performance, but with some loss of accuracy. This gives the greatest benefit when calculating for a small part of a building.
- The daylight results dialog now has a Copy Results button. This will copy the contents of the displayed grid to the clipboard, ready to be pasted into a spreadsheet program such as Excel.

Building Simulator

- Added Sizing only option to perform only the heating and cooling design sizing calculations without performing a full hourly simulation. The maximum loads will then be available for each of the zones.
- Pollutant can now be displayed in PPMW (parts per million by weight) or PPMV(CO2) (parts per million by volume, assuming pollutant is CO2) to give a better estimate of air makeup.
  - ○ Pollutant generation similarly changed to allow volumetric generation.
  - ○ This option is selected in the Units page of the Tas Manager Settings dialog.
- External pollutant value now defaults to 600ppmw (~400ppmv(CO2)).
- Browser buttons – much like an internet browser, a limited history is now maintained while a file is open, allowing you to navigate back and forward to recently-viewed items.
- Optimisations for links between items to speed up browsing – e.g. clicking view construction from a building element.
- Taskbar button now gives simulation progress feedback.
- Frost protection temperatures default to -50°C to ensure they are not being used unknowingly.
- New option on simulate dialog: Output surface solar data. This option ensures all exposed surfaces are output to the results file with internal and external solar gain data.
- Zone data groups created in the results file during simulation now include all surface data relevant to zones in that group. This will only happen if any surfaces are output – i.e. using Output aperture data, Output surface solar data, or using surface output specifications.

Result Viewer

- Visualisation
  - ○ Surface colour options now chosen by drop-down list instead of right-click menu.
  - ○ See below for universal visualisation changes.

Systems

- Changed the way flow is calculated to be instep with the temperature calculation. This should help with VAV and complex water-side systems.
- Added If Controllers.
- Added Cont Controllers.
- Added Offset to Passthrough Controllers.
- Added MinFlow sensor for controllers to act like a thermostat sensor but for fresh air rate and current flow.
- Added PerPersonAndArea option for all flow sizing.
- Added ability to size flows for all fans, dampers and optimisers from nearest/attached zones separately from the zone flow and fresh air options.
- Added hourly per person and hourly internal condition options for minimum flow rates. These vary on an hourly basis.
- New a LoadComponent for adding miscellaneous loads.
- New direct absorption chiller components.

- Min and Max Offcoil temperature profiles added to Heating and Cooling Coils.
- Ancillary load profiles added to several plant components.
- Electrical load profiles added to desiccant wheel and airside exchanger.
- New simulation event for flow though the zone less than fresh air rate.
- Optimisers now have a design pressure drop that can be specified.
- Added No Minimum Flow option for Optimiser schedule mode. The minimum flow is counted as 0 when the schedule is off, otherwise it behaves normally.
- Evaporative precooling option for dry coolers.
- New option to turn off the simulation events during simulation.
- Improved group properties for zone components.
- Added Open TSD and Open TBD options to the tree.
- Support for 90.1 2010 methodology in ASHRAE Fan Power tool.
- Improved copying from the results window.
- Many fixes and other minor improvements.

Systems Wizard (TPDx)
- New setups and control logic for 90.1 2007 baseline systems.
- New systems available: Fancoil with grouped mechanical ventilation, baseline systems 9 & 10.
- Improved VAV systems logic with better handling of dampers and fan turn down.
- SFPs, fan heat gains, exchanger efficiencies, and terminal flow rate are retained when switching between different system types. Selecting "Occupied and Unheated" or a baseline system deletes this stored data.
- PV and SHW Panels can be specified without zone surfaces.

Visualisation
- Many optimisation changes, improving performance (especially during interaction) and reducing memory used.
- Surfaces can now be coloured by surface type, similar to "Colour by Analysis" in the 3D Modeller. Accessible by right-click menu in the Building Simulator and by the Display drop-down list in the Result Viewer.
- Surfaces can now be coloured by zone daylight factor. Accessible by right-click menu in the Building Simulator and by the Display drop-down list in the Result Viewer.
- Surfaces can now be coloured by sun availability, as seen in "Display shading information" dialog from the surfaces table of the Building Simulator. In the Building Simulator, this will be an average value for the whole year; in the Result Viewer this will be the value used for the currently displayed simulation hour. Accessible by right-click menu in the Building Simulator and by the Display drop-down list in the Result Viewer.
- Surfaces can now be coloured by Annual Insolation. Accessible by right-click menu in the Building Simulator and by the Display drop-down list in the Result Viewer. This is the amount of energy absorbed by an external surface throughout the year. This data is calculated on the fly rather than using simulation data. It does not account for feature shades, but does incorporate shading calculations as output by the 3D Modeller. If a building has less than a full year of shading calculations, insolation cannot be displayed. Surfaces with no construction applied are assumed to have an absorptance of 100%.

- Building Simulator only – selecting inter-zone air movements will highlight respective zones and also show arrows on the visualisation showing their start and end points (if one of these is external, and arbitrary outside point will be chosen). This replaces previous highlighting functionality. Please note that the arrows show only positions, not magnitude or schedule.
- Visualisation Options dialog now added for overlay data.
    - This is now where the wind rose options are located.
    - In the Result Viewer, the flow and wind arrow options are now located here also.
    - Sun arcs show the position of the sun throughout select days of the year as projected onto a sphere surrounding the building. An analemma is the path plotted by the sun as seen at the same time of day throughout the year.
    - In the Result Viewer, the sun position for the current hour can be shown, along with the sun position as used for calculating shading for the current hour.
    - The solar map colours areas of the sky dome according to the amount of direct solar radiation that originates from the angle they face.
    - The sky dome is simply an option to gain a sense of position when using other sun display options.
- Please see the Building Simulator and Result Viewer manuals for full explanations of the new features.

UKBR Studio

- Sub-systems with different cooling efficiencies now separated on BRUKL document.
- When opening a TPLP file, if the source TBD file(s) cannot be located, the user is given the option to specify their location.
- External zones that are changed to non-external are now updated correctly when the source is updated.

Utilities

- Support added for a wider range of inputs for the IDF Importer.
- NHER Plan Assessor XML export can now produce version 5.4 files.
- Added Batch simulation for TPD files.

Tas Version 9.2.1.6

- The first version of our Chinese language interface has been added. Choice of language is accessible through Tas Manager -> Settings -> Language.
    - Your computer must be set up to display Chinese characters. In the Region and Language settings, accessible through Control Panel, you should ensure that the following settings are set to Chinese (Simplified, PRC).
        - Formats tab: Format
        - Administrative tab: Language for non-Unicode programs

        o   Other Chinese locales may work, but Simplified, PRC is recommended.

3D Modeller

- Daylight calculations. Calculate daylight factors and lux levels and display them graphically on 2D plan views. Output calculated daylight factors to the Building Simulator.
- Rendered 3D Daylight views. (Beta)
- By default, 2D Plan views in the 3D Modeller are now restricted to having one visible floor. This is the same as the input floor.
  - Selecting a different floor in the floors sidebar will make that floor the only one visible in the current 2D Plan view.
  - Selecting a floor that has not been started will bring up the 'Create New Floor' dialog, allowing the user to copy walls from another floor #.
- The 'Enable multi-select' button in the floors sidebar will allow the user to view multiple floors on a single 2D Plan irrespective of the input floor, just like it behaved in version 9.2.1.5.
- All 'Copy to input floor' style commands have been replaced by 'Copy to floor(s)' commands. The user will be presented with a dialog that allows them to choose one or more floors to copy to.
- The 'Purge Unused' command in the Zones dialog no longer removes empty zone sets.
- During export from the 3D Modeller, the default shading period is day 1 to 365.
- A new building element in the Building Elements dialog will now always have a unique name.

Building Simulator

- 3D Visualisation changes
  - Tooltips now pertain to whichever surface is directly under the mouse pointer, whether it is transparent or opaque.
  - New right-click menu option: Show/Hide -> Show Transparent. Enabled by default. If disabled, all transparent surfaces are not drawn, and hence do not trigger tooltips.
  - New right-click menu command: Reset to Defaults. Resets all visualisation preferences to the defaults.
  - Compass now a nicer shape, not anti-aliased, scale calculated taking into account building height for a more appropriate size.
  - TBD files created by an older (~9.1.1) version of Tas had surfaces displaying the wrong way round in the visualization, and the North arrow off by 180°. This is now fixed.
- Substitute Elements can now accept values between 0 and 1, rather than treating all non-zero values as 1.

Results Viewer

- 3D Visualisation changes

- Tooltips now pertain to whichever surface is directly under the mouse pointer, whether it is transparent or opaque.
- New right-click menu option: Show/Hide -> Show Transparent. Enabled by default. If disabled, all transparent surfaces are not drawn, and hence do not trigger tooltips.
- New right-click menu command: Reset to Defaults. Resets all visualisation preferences to the defaults.
- Compass now a nicer shape, not anti-aliased, scale calculated taking into account building height for a more appropriate size.
- Colour scales have been altered for the display of results data.
  - The blue>black>red scale (used for displaying positive/negative variables such as relative pressure, building heat transfer, air movement gain…) has been enhanced to make the colours easier to read.
  - The previous pink scale (used for displaying magnitude variables such as solar gain, ventilation, aperture opening…) has been replaced with a blue>pink>yellow scale, making the values significantly more distinguishable.
- % signs now displayed correctly in tooltips.
- Export CSV now works correctly when commas are included in column headers.

Systems

- PV and SHW panels can be added without needing an associated zone surface.
- New pipe heat loss component for heat exchange between fluid in a pipe and the ground or air.
- New surface water exchanger component for heat exchange between fluid in a pipe and a body of surface water e.g. a lake or pond.
- New Mitsubishi heat pump operation type, HVRF with BC box.
- New indirect absorption chiller type with additional heat rejection circuit.
- New ASHRAE fan power tool for setting fan power for baseline systems.
- Flow rate per m^2 option on SHW panels to allow pump sizing.
- Water use reported in the results added for humidifiers and cooling towers.
- Manufacturer Data Import Wizard. Additional Mitsubishi Electric components added. The range now includes Mr Slim, City Multi, HVRF, CAHV, Ecodan and Lossnay. The most recent catalog data is in the "Manufacturer Plant Data 2013.tpdi" file.
- Manufacturer Data Import Wizard. Frenger chilled beam components added.
- The Edit -> Options dialog now allows the user to specify the paths used for the Manufacturer Data Import tool and the Borehole G-Function Import tool (see below).
- Vertical Boreholes include an 'Import' function on the 'G Function' tab. This allows the user to select from a number of pre-determined G Function curves based on the borehole configuration.
- Water Source Chillers have a new icon.
- New horizontal ground heat exchanger component for heat exchange between the ground and fluid in a field of parallel pipes.
- New water to water heat pump component.

- Free cooling option for water source chiller.
- New chilled beam with heating zone component.
- New water source ice storage chiller type.

UK Building Regulations Studio

- HVAC section of the BRUKL document now displays correct notional auxiliary demand.
- Slinky Coils and Heat Pump components can no longer be selected.
- Criterion 3 report shows user-defined daylight factors, if applicable.

Utilities

- Support added for wider range of inputs for the DOE (.inp) importer.
- New utility to allow BASF Micronal phase change material products to be modelled.

Report Generator

- The Report Generator now includes a CIBSE Adaptive Overheating report that follows TM52:2013.

Tas Version 9.2.1.5

- Windows 8 now supported.

Building Simulator

- Summaries report takes occupant sensible gain into account for calculating maximum occupants

Results Viewer

- Condensation units are now shown as g/m^2 instead of $kg/^2$ - value is same, unit now correct
- External radiation now shows as W/m^2 instead of W

Scottish Building Regulations

- Macro is using EPCgen and BRUKL version 4.1.e which means it can produce EPCs that can be lodged.

UKBR Studio

- Studio is using EPCgen and BRUKL version 4.1.e which means it can produce Northern Ireland Part F and EPC documents
- Fan powers now calculated correctly for grouped systems (use correct peak heating and peak cooling values)
- SBEM Auxiliary Calc report now shows correct fan power density for grouped systems
- Chiller results now correctly retrieved for purposes of cooling SEER calculation on BRUKL report
- Auxiliary results now averaged correctly for aggregation on BRUKL report
- AHU-side heating and cooling coils now included for aggregation in BRUKL report
- Efficiencies on BRUKL report now correct when demand or consumption is 0

Systems

- Steam humdifiers results graph report load correctly (previously showed RH reported as load)

Systems Wizard (TPDx)

- Some component heating and cooling duties would not accept set values, only "Sized" – this has been fixed.
- Using the wizard to alter an open TPD document no longer reports the file as locked

Report Generator

- Frequency and BB101 reports now use correct results periods regardless of which days were simulated

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Tas Version 9.2.1.4

3D Modeller

- Building Elements with a circular secondary element are now spotted and the chain is broken.
- Previously some documents were unable to be opened after running an operation on them through automation. This no longer occurs.
- Auto-assignment no longer happens for building elements already having a construction applied, or zones already having an internal condition applied.
- Active selections in sidebars forced into view so the user can always see their current Building Element, Zone, etc.

Building Simulator

- 3D Visualisation

- Building Element and Zone colours can now be changed in TBD by clicking the colour box.
- Equipment gains now use Watts by default when using US units. As ever, they can be forced to Btu if desired using the option in Tas Manager.

Results Viewer

- 3D Visualisation

Systems

- Tas Systems has moved from being a beta version to a full release version. The file format is now fully supported.
- Manufacturer Data Import Wizard. Import Mitsubishi Electric components from the Mr Slim, City Multi and CAHV ranges.
- Project Wizard now allows users to create systems that use refrigerant circuits. The 90.1 Baseline systems can also be created.

UK Building Regulation 2010 Studio

- Direct Electric systems no longer display an efficiency of 0 on the BRUKL report.

90.1 Studio

- Framework for undertaking the Performance Rating Method outlined in ASHRAE 90.1 Appendix G.

Utilities

- New version of the IDF Importer utility.
- New DOE Importer which allows .INP files to be imported into Tas as TBD files. An example .INP file is included in the "sample projects" directory.
- New HP SSEEF SSEER Calculator. This utility calculates seasonal efficiency values for Air Source and Water Source Heat Pump systems. These values can then be used in the UK Building Regulation Studio. This allows manufacturer imported data to be included in Part L and EPC calculations.

Licensing

- New dongle drivers must be installed. (Sentinel Protection Installer 7.6.5.exe)
- Network licensing now possible using existing Sentinel SuperPro dongles, provided they have network keys.
- Network licensing via HASP dongles implemented.

Tas Version 9.2.1.3

3D Modeller

- The user can hold down the Alt button when using the 'Set zone' button. By doing this, the zone name selected in the zones table moves down by one. This allows the user to quickly apply multiple zones without the user having to select the zone name each time.
- The Building Elements table now has a Type column. If one of the default templates are used and the auto-assign option for constructions is used then constructions that share the same name as the type will be applied to the appropriate building elements.
- There is a new option on export to auto-assign constructions. If the default templates have been used and this option has been selected, constructions will be assigned to building elements as per the table below.

Element	Type
Items in Building Element table	<User Defined>
Shades	Shade
Transparent Wall Windows	Glazing
Opaque Wall Windows	Door
Transparent Roof Window	Rooflight
Opaque Roof Window	Solar/PV Panel
Shade or Window Frame	Frame

- The auto-assign constructions option will also generate and assign surface output specification containing solar gain to Solar/PV panel surfaces.
- There is also an option on export to auto-assign internal conditions. If the default templates have been used and this option has been selected, internal conditions will be assigned to zones based on their zone set.
- Show 2D zones 'names' and 'fill' options now work globally.
- Moving a DWG file while it was being used in the 3D modeller no longer causes the software to crash.
- An "unrecoverable error" no longer occurs when exporting a model with shadows where there is a window which equals the size of the wall or roof it was applied to.

Templates

- The constructions in the default template names have changed to match the surface types in building elements. New constructions have been added.

UKBR Studio

- Resolved an issue with "Mech vent with recirc" not simulating for very large zones.

Report generator

- The report generator now checks to see if the TBD and TSD are open before running the calculations.
- Fixed an issue in some reports erroneously reporting an error when choosing a start and end day other than the TSD start and end days.
- Using "peak data" in frequency macro no longer causes an error.

Tas Version 9.2.1.2

Databases

- There is a new NCMActivities database called "NCMActivities_v4.1.4.tic".
- Internal condition 'Unoccupied and Unconditioned_v4.1.4' has been moved to the 'Misc' folder of "NCMActivities_v4.1.4.tic".

UKBR Studio

- The UKBR studio will not accept source TBD files that use "NCMActivities_v4.1" internal conditioned. The user should open the source TBD. Delete these internal conditions and replace them with ones from the "NCMActivities_v4.1.4.tic" Database.
- The heat recovery algorithm has been improved to prevent heat recovery turning on if that would increase the cooling load.
- Fixed issue where copying the HVAC Configuration for a system with SHW 'deletes' the SHW surfaces.
- 'Design Flow Rate' is now hidden for Supply Fans and cannot be changed.
- Speed for retrieving results from models with larges number of zones using natural ventilation or extract only has been improved.
- Displaced Electricity displays correctly in charts.
- Issue with Building Address disappearing in certain cases is resolved.
- Zone names appear where appropriate on coils in Heating Circuit Configuration.
- The 'Retrieve Results' step is now *significantly* faster for large projects.
- Shades can no longer be assigned a building element type and so cannot affect average/max U-value checks.

3D Modeller

- Fixed issue caused by copying a window to another floor when the receiving wall was created in the opposite direction to the original wall.
- 'Export to Lightscape' option has been re-introduced.
- Gridlines are now solid by default, which increases drawing speed on some computers. The option to change them back to dotted lines can be found in the Grid Setup dialog.

Tas Building Designer

- "A surface accounts for >49.5% of zone surface area" error will display zone number.
- Files evolved from the previous versions of Tas retain their daylight factor data.
- 'Optimum start' sizing option works if zones are set to 'design sizing'.
- Reintroduced the ability to drag a weather year over a design day to add weather data to the design day.

Templates

- Templates use internal conditions from "NCMActivities_v4.1.4.tic".
- Telephone Exchange template has been removed as the NCM activity for Telephone Exchanges has been removed.
- Template 'Indust' has been renamed 'Industrial Process Building'
- A construction called 'SHW \ PV Panel' has been added to all templates.

Report Generator

- Some reports did not work correctly when the TSD files involved contained less than a year's worth of data. This has been resolved.

Tas version 9.2.1.1

Tas Manager

- The TBT Template wizard is a new feature and accessible by clicking on the "Create Building" button.
- The "Create Building" button in Tas Manager, as mentioned above, no longer opens the 3D Modeller, which is has done in previous versions. The button now allows the user to select a template from which to create your building and also select a weather file.
- Currency unit now customisable through Tas Manager and uses system default unless specified otherwise.
- Essential Tas file types now forced into filter (though can be disabled if wished).
- The settings have a tab for selecting the template and database directories.
- Vista / 7 style folder browser added
- Folder dialogs now default to current folder selection when shown
- The Tas Manager is now resizable.

Report Generator

The Report Generator can be opened in Tas Manager by clicking on the Create Report button. It includes several reports:

- Frequency
- Peak loads
- Annual loads
- BB101
- Part L Solar Gain check

3D Modeller

General

- There is a new 3D Modeller workspace.
- There are new default building elements – Roof and Exposed Floor will be assigned by default to the exposed surfaces of a space and the names "Internal Floor" and "Internal Ceiling" will be used to create composite names.
- Errors and Warnings dialog now resizable, sortable, and groupable.
- Window type placement can no longer be changed once the window is used in the model.
- Imported windows now interact correctly with window groups.
- The façade length of a space is now calculated to be the length of exposed walls at a height of 1.1 m.
- A floor element is no longer required for 'floating' external zones. You can leave the floor surface of any external zone as <null>

Bug fixes

- Prevent crash in zones model creation when merging walls if a very small polygon is created and the walls have windows
- Prevent crash in zones model creation when there is a wall that is not connected at one end with different heights at each end.
- Prevent crash when a full length window is placed in a wall that is not adjacent to a space on either side.
- Shading calculations – fix for very large polygon behind glass to receive internal shading correctly.
- Fix to prevent a window being moved when a copy of the window is made to be placed in a wall that has been drawn in the opposite direction to the original wall.
- A shade group can now be created with overlapping shades – previously this was only possible if shades in the group had different z offset positions.
- Fix to shadow display of shades and window frames – sometimes incorrectly displayed if partially shaded.
- Fix to display 3D view after Print Preview or export to avi – occasionally view could not be refreshed.

gbXML enhancements

- Imported windows now behave like standard windows for editing ie changing type and setting dimensions. The behaviour is as follows:
  - Changing a window type via the Window Properties dialog will now also change the dimensions. For example selecting by type and then changing to another type will also change all the selected window dimensions.
  - Using the Assign tool bar button for a window type also changes the dimensions
  - Changing the dimensions of the window type in the Windows dialog will also change the dimensions of the instances of that window. Note that you cannot change the dimensions of an imported window type only a newly created one.
  - The "Level" of a wall window is applied as relative to the floor to which the imported space refers to. Be careful as the floor level (taken from the gbXml file) is not always where you expect it to be.
  - An imported window type does not have a level defined. Changing from one imported window type to another does not change the bottom position of the window.
  - IMPORTANT –the above is dependent on the imported window having the same dimensions as the window type created for the window. A window type is created with the dimensions of the first window found. A subsequent window will have a dimension set to override (i.e. non-default) the dimensions taken from the type. To replace these with a window type with the same dimensions you need to use

the "reset to default" button on the Window Properties dialog before changing a window type.

- Non-rectangular windows are now displayed correctly – note that a frame cannot be added to a non-rectangular window at present.
- Zone warnings indicate spaces that are not fully enclosed and highlights the edges where there is not a matching adjacent polygon. The errors distinguish between a space that has gaps between the surface polygons and spaces that may have incorrectly oriented polygons.
- Zone warnings indicate surfaces that have an unknown adjacency (when imported from a Revit gbXml file) and specify whether the surface have been assumed to be exposed or have a "NULL" adjacency with respect to the space.
- A non-ghost "Air-exposed" building element is created and assigned to exposed gbXml Air surfaces.

gbXML bug fixes

- Improvements to import – spaces with "holes" e.g. columns.
- Checks for exporting windows when containing surface has a small area and/or resulting pane has too small an area (can occur if a frame is added to an imported window type) or frames have too small an area to export but panes are link surfaces.

Building Simulator

- Ability to export and edit TBT templates.
- In previous versions of Tas, output groups were needed for buildings with greater than 300 zones in order to create multiple tsd files to avoid a single very large results file. Output groups are no longer needed, regardless of the number of zones and therefore should not be used for new projects.
- Files with output groups that are evolved from previous versions can continue to have output groups, if desired.
- Multiple constructions and internal conditions may now be dragged simultaneously from their databases into the tree view of the Building Simulator.
- Files are evolved 'silently' when opened by other programs (e.g. when Tas 3D exports and merges).
- Pre-simulation checks now all on one dialog rather than setup -> results
- Terminology fixes in summaries output.

Results Viewer

- File format changed to remove file size restrictions.
- The TBD Output Groups should not be used for new projects.
- Graph control updated.
- Improved graphs with interactive legend

Systems

- Psychrometric Chart now uses units.
- New results interface
- System generation wizard
- Generate a new systems project in the same fashion as in the UK Regs Studio
- Modify the active systems document by adding new systems and circuits

UKBR Studio

- Some customers had reported inconsistencies with address details not matching between BRUKL documents and energy performance certificates or not saving when the EPC checkbox was not enabled. This has been rectified.
- HVAC Monitoring and Power Factor Correction factors are now applied where appropriate to direct electric heating. They are no longer applied to displaced electricity in the reports. (The BRUKL document values never had this problem.)
- Chiller fuel type limited to Biogas, Grid Supplied Electricity, LPG, Natural Gas or Fuel Oil.
- Shell and Core settings checked - systems may not be defined as 'N/A' in a Shell and Core building, nor may all systems be marked as Shell in an As Built Shell and Core building.
- In the BRUKL document, the Supply/extract SFP column in section 2.b now includes both supply and extract SFPs. The Exhaust SFP column is now left blank except for extract only systems, where the extract SFP is input as exhaust SFP.
- Correct boiler efficiencies now used by Notional building when the Actual building has a Grid Supplied Electricity boiler.
- Multiple TBD source files can be used.
- Multiple system configurations can be saved within the project file.
- Task management grid on generation page with intelligent task selection
- Better task scheduling and improvements for multicore systems
- Fix for raw data dump when a solar panel is present
- Can now use multiple source TBDs
- HVAC monitoring now on a per-system basis
- Zone and system name now shown on cooling page for individual coils
- Improved import to avoid certain bad TBD configurations causing issues at generation stage
- Improved handling of drag / drop on heating / cooling etc. pages
- Fix for studio occasionally not completely exiting upon the main window being closed
- Improved fan curve for variable flow fans
- Added timestamp to events on generation page
- Increased default tank size
- Cleaned up data in input report
- Changes to how certain systems are generated which have terminal units
- Can now have multiple HVAC setups in one file [but only one active]
- Displacement vent now heats outside occupied hours
- When certain input is irrelevant, it is now hidden to avoid confusion
- Moved "apply" and "cancel" buttons to top of lighting pane

Databases

Changes to TCD include:
- The "Tools>Options" menu gives the user a choice of surface resistance to be used in the U-Value calculation. The options include the Tas default values, ASHRAE 90.1 and user defined.
- "Additional Heat Transfer" can be specified for the construction in terms of a percentage increase or decrease from the calculated resistance of the material layers. This change is reflected in the U-Value displayed for the construction. This factor can be used to allow for bridging effects or area effects.
- The "F-Factor" should only be specified for ground floor constructions. The exposed ground perimeter is calculated for each Zone. The first ground construction that has an "F-Factor" will be used to calculate the perimeter heat loss for the Zone.

Changes to 90.1 Constructions database include:
- 90.1 Constructions database including Appendix A and Baseline constructions.

Changes to TWD include:
- Wind Rose Tab
- Graph control updated.

90.1 2007 Baseline Generator

- The user can specify Climate Zone, Building Type and the 90.1 Construction database in the wizard and the constructions are assigned to the created Baseline buildings.

Utilities

- BRE Daylight Factor Calculation

Ambiens

- Undo/redo implemented. Undo marker made when items are added, moved, resized, deleted, or properties are changed. Also when items are pasted or domain properties are changed.
- Initialising the calculation clears undo markers.
- Vertices and gains can be moved by dragging them with the 'select' tool. This is only possible in design mode and is disabled when the simulation is running.
- When a wall is sub-divided with a new vertex, the properties of the old wall are copied to the new one.
- When an item or items are selected, they can be deleted with the delete key. (Exception: the last three vertices cannot be deleted.)
- Mouse wheel zooms in/out.
- Double-clicking middle mouse button does 'Fit All'.
- When an action will invalidate the initialisation a message box warns the user. The action can be reversed with 'undo' in all cases.
- When an item is pasted it is placed underneath the cursor's current position. Copied items may be pasted more than once.
- Gains no longer need to be drawn from top left to bottom right corner.
- Links between thermostats and walls/gains are drawn to the middle of the item instead of the corner.
- Option to specify domain's starting RH (resets to 50% when file is reopened).
- Inlet and outlet dialogs display total flow in/out.
- Overview window updates when main view changes.

Tas Release v9.2.1

UK Building Regulations Studio

- EPCs can now be produced according to 2010 regulations, using the Studio, and these can be lodged. All certificates will be watermarked, but an official presentation copy will be received once the assessor lodges the XML file.
- Zones using any of the following internal conditions are now not displayed in the Studio as they are not used for Part L:
  - Unoccupied and Unheated
  - Ware_IndProcess
  - Prison_IndProcess
  - C2_Uni_IndProcess
  - TM33

- o IEA 21c
- New "Multiplication Factor" for: air side systems; SHW; PV; and wind turbines
- New "Copy Runs" feature now included
- Re-colouring of zones in the T3D file, based on the system type applied to zone
- Updated NCM Activities database, v4.1.3
- "Fancoil Heating Only" system added
- Energain PCM support
- Improved validation throughout the Studio to reduce invalid configurations which would cause problems during generation
- New "Import Report" that logs progress on importing a TBD to a new project, including the new 'Best Guess' system that assigns building element and system types, at import, based on their name
- Improved file management resulting in faster responsiveness when working with large projects
- Tri-generational CHP added to Studio
- New reports added, including:
    - o Data input report
    - o System input report
    - o Full result data dump
    - o Solar gain check report
    - o Zones and system assignment report
- "Report view" no longer shows "report processing was cancelled" when a large report is being generated (e.g. hourly)
- Interface fix for users with a high DPI setting
- Fix for an error some users were encountering with the U-Value screen
- Option for "Direct Electric" now fixed – previously this option would cause an error on TPD generation, requiring the user to select "Radiator" instead.
- Building element list is now sortable
- Lighting zone list is now sortable
- Lighting zone list is now able to show just zones (rather than in zone groups)
- Lighting is now configured with a side panel rather than a dialog
- Can now export all reports from a run in one go (right-click on the relevant node of the file tree on the left hand side)
- Improved handling of aborting tasks
- Studio now scans for running Tas applications before generation/simulation that could previously cause conflicts while performing these steps
- Only one instance of the Studio may be open at any one time
- Boiler editor now shows an approximation of carbon emissions at varying part load
- New chiller editor which is functionally similar to the boiler editor
- New control strategy for boilers/chillers: "Staged: only first unit runs at part load". This options will allow the first unit to operate at part/full load while forcing all subsequent units to operate at full-load only.
- "Renewables" screen now shows building element and area on surfaces
- Option to export a re-coloured 3D model with zone colour based upon output group or HVAC system
- Surfaces from multiple zones are now allowed on PV and SHW panels

- Pressing F1 or selecting "Documentation" from the Help menu will now open the relevant page in the documentation help file
- Fixed issue some users were reporting when running on multiple cores
- Better handling of memory, eliminating the "wait to close" that some users have experienced with large models
- Minor bug fixes and typographical corrections made
- While re-exporting the 3D model for the notional buildings (if applicable), feedback is given on the stage of export/shading calculations
- Demand, consumption and CO_2 reports now include displaced electricity (and have had colours shuffled slightly)
- Reports comparing buildings now show the Reference building
- Save to/retrieve from registry options for certifier and employer details now work without requiring the user to manually edit each text field
- Lighting and equipment results now only retrieved for zones which have a (non-excluded) system applied to them
- Solar Conversion Efficiency is now named "Solar Conversion Factor". The default value is now 1 instead of 0.2 (Default efficiency curve now flat 20% instead of flat 100% to compensate)
- For PV panels, the AC inverter is now sized by the Studio – it is no longer an input parameter
- You may now add recommendations to an EPC (shown in additional PDFs)
- All numbers in INP files are now rounded to an appropriate number of decimal places (mostly 2dp, but 0dp for areas and solar gain check percentages)
- Page validation now only notifies you about the first error it finds

Macros

- The UK and ROI Building Regulations v3.5a macro and the Part L EPC 2006 Building Generator have been removed. If users modelled buildings for Part L2 at their design stage and want to use the same version for the "as built" stage, they must install that version of Tas, which can be found at:

    http://www.edsl.net/install

- Scottish Building Regulations Macro and Scotland 2011 Building Generator have been added to model buildings for latest Scottish Regulations.
- Some users have reported ActiveX or component licensing errors when running the macros. These issues have been resolved.
- Problem with opening WFL files in weather utility macro has been resolved.
- Air Distribution Files in the Plant Modelling macro now have two new options. One is "Demand Control Ventilation" which allows the minimum fresh air rate to vary in proportion to the occupancy. The other option allows the heating occurring outside of the occupied period to be provided by re-circulated air rather than by a radiator in the zone.
- On the "Project Selection" dialog box of the Plant Modelling and Scottish Building Regulations, there is a new checkbox in the bottom left corner; if this is enabled then the macro goes into "debug" mode.

Scotland 2011 Building Generator

- Updated for the Scottish regulations Section 6, 2010. Only to be used for Section 6

Tas Manager

- Changed error message for Windows Vista / 7 users when application needs to be run as administrator

3D Modeller

- Full wall height windows now hide their 'height' field
- Window groups now always recalculate their size when modified, rather than only if they have been altered directly
- 'New Floor' now no longer requires a floor to be selected
- Secondary element can now be set to '<none>' successfully on elements which began with a secondary element
- Added selection of walls, windows and spaces in 3D Floors view and associated options on the right-click menu. Some menu options are not available in the 3D view as they are only applicable to the 2D view, i.e. for walls: Dimensions, Change/Attempt alignment, and for spaces: Display Heights and Edit Point heights
- New option on Select 3D Zones dialog – Highlight selected zones. If this option is set then the selected zones for the view are displayed with the rest of the model drawn in transparent grey, or solid grey if shadows shown.
- Model errors/warning dialog – added option to display errors/warnings in zoned areas only
- The zone name is now displayed in the model errors/warnings dialog (instead of repeating the text for each error or warning)
- DWG import/export libraries have been updated to handle DWG/DXF files generated by AutoCAD 2010
- There is a "Create" button on the Floors dialog that displays the Start Floor dialog so that multiple floors can be created by copying in one operation
- Select the floors in the Floors dialog list before using the Create button
- The Start Floor dialog now has an additional option to create an exact copy of a floor, i.e. not just the walls but the spaces and their attributes also. The "No initial copy" option has been removed and a Cancel button added. The Start Floor dialog is still displayed when a new floor is selected in the drop-down list
- In 3D zones view you can now highlight a space, wall or window and the building element, zone or window name is indicated in the status bar. Choose the relevant toolbar button as for selection in a non-zones view

Models generated from gbXml files

- Standard 3D Tas floors can be created to add additional geometry to an imported model, e.g. external zones with shading. The floors dialog shows both standard floors and the imported floor names. Select imported walls or spaces with a "Copy Null to Input Floor" operation to create the boundary on the new floor

- If a gbXml file has not defined any floors, a default floor is created for all spaces called <gbXml spaces>. This floor can be selected when using the "Select Floors…" dialog for a 3D view
- As described above, imported spaces and walls etc can now be selected in a 3D view. Available options for each selection type are as follows:
    1. Surfaces ie walls, floors, roofs etc
        i. Delete – imported shade surface only
        ii. Set Building Element
        iii. Copy Null to Input Floor – vertical surfaces only. This is used in the creation of new standard 3D Tas floors as described above.
        iv. Properties – this dialog allows Builing Element selection and also displays the imported surface name, the name(s) of adjacent space(s) and zones and also the orientation and inclination that will be exported for analysis.
        v. Edit menu –
            a. Select All
            b. Select by Type
            c. Select Perimeter – useful for identifying surfaces to "Copy Null to Input Floor". Note that a 3D View can be limited to display a single floor if floors are defined in the gbXml file.
    2. Spaces
        i. Set Zone
        ii. Copy Null to Input Floor – this copies the line of all vertical surfaces of the space. Note that this may not form an enclosed space on the Input Floor.
        iii. Properties – this dialog allows the Zone selection and also displays the space name and description (if set in the gbXml file), the space volume and floor area.
        iv. Edit menu – Select All
    3. Windows
        i. Delete
        ii. Type/Dimensions – this dialog allows the window type selection and also new height and width can be set. Note thatif a type is selected this does not change the dimensions of the window. Use the "Reset to default" button to use the dimensions shown in the Windows dialog. Note for an imported window these dimensions may not be the same as for the original imported window size if there are many windows of the same type but of different sizes.
        iii. Edit menu –
            a. Select All
            b. Select by Type

- When displaying a 3D zones view and colouring by Analysis, the side of the wall, floor etc facing into the space is now coloured grey. This is to indicate surfaces that have been imported with an incorrect orientation
- When highlighting an imported space, wall or window in a 3D zones view, the imported name is also displayed with the zone, building element or window name
- When a gbXml file is imported, there is now a check to determine if the space is fully enclosed by the given polygons. If not, an error is displayed in the gbXml import window and also in the model errors/warnings dialog. This does not mean that the space cannot be analysed but that the user should check the cause. The best way to do this is to display the zone in the 3D Zones view with no other zones displayed and colour By Analysis. This can be due to:

1. a very small gap, in which case the model analysis can continue correctly. If a gap cannot be seen in a shaded view, sometimes viewing in wireline shows polygon edges that are nearly coincident.
2. or to an incorrectly oriented surface. If the space is shown with no other spaces then all the surfaces should be coloured on the side facing away from the space, i.e. if a grey surface can be seen, then it is oriented the wrong way. This must be corrected in the originating software for the gbXml file.

- A gbXml file from Revit may generate an error for a surface indicating that "the same space is specified for both sides" and it is assumed to an exposed surface. This occurs when the gbXml file is generated for surfaces for which their adjacency cannot be determined. A surface may be exposed or it may be adjacent to another space. Looking at the surfaces in the 3D zones view and colouring by Analysis will determine any surfaces that are not exposed as assumed. Again this should be corrected in Revit

Building Simulator

- Evolution of a TBD file now works properly when the file is opened from explorer (as opposed to by File->Open)
- New Lighting Function dialog, similar in scope to the new Aperture Function dialog
- When profiles are copied (aperture controls, IZAMs, internal conditions, &c) the setback value is now always correctly copied (previously only worked if the main value was of 'value' type)

Internal Conditions

- When profiles are copied (aperture controls, IZAMs, internal conditions, &c) the setback value is now always correctly copied (previously only worked if the main value was of 'value' type).

Tas Converter

- Removed dependencies and added unregister - should no longer cause a problem registering on install, or unregistering on uninstall.

Passivent Airscoop & Sunscoop Builder

- This new utility allows Passivent's complete range of Airscoop, Sunscoop and Sunstract units to be modelled using Tas Building Designer.
- Currently, for the Sunstract unit only the light performance is modelled; the ventilation performance is not included.

Energain Thermal Mass Builder

- This new utility allows DuPont Energain phase change materials to be modelled using Tas Building Designer.

Tas Release v9.2.0

UK Building Regulations Studio

- A brand new tool for Part L2 2010 projects.

3D Modeller

New Features

- Option to resize windows to fit wall or extend to adjacent window. Available on right-click context-menu for selected windows.
- Option to have "Full height" window, i.e. like "Door" but to ceiling also, set when creating or editing window. The window shape is adjusted to meet the floor line and ceiling line of the wall; these may be sloping.
- The dimensions of placed window groups can now be changed in the Type/Dimensions dialog for selected windows. The width of wall group windows and both the height and width of roof group windows can be set.
- If a percentage of frame to a window is set, this percentage is now retained if the window dimensions are changed.
- The compressor for an AVI file can now be selected to get the best quality rather than using the default one.
- The DWG 3D export has been improved to output a single polymesh for a surface rather than many polygon fans and strips. This improves in particular the output for a wall or roof which has many windows.
- When opening T3D file and an error occurs when opening a referenced DWG file, the user is given the option to try again, e.g. to close the file if it is already open.
- The full DWG pathname is now displayed in the Drawings list.
- File dialogs now default to the current project directory: for open/save/import/export file dialogs.
- Menu: View | Remember dialog sizes -> Sizes of report list dialogs (floors, zones &c) and the columns within are stored in the registry and recalled by default. This menu item toggles this behaviour.
- Elements: Secondary element percentage now allows decimals, not just integers.
- Floors: New floors are now not ground by default - ground floors are after all a minority.
- Windows: New report dialog:
  - On the right side is a preview pane that should preview whatever you have selected or are dragging over.
    - If you have nothing or multiple things selected in the active report, nothing will be displayed.
  - Clicking 'New Window' will get you a default window immediately added to the list.
  - Clicking 'Edit...' will get you the traditional window editing dialog. This displays no extra information, but if many values need changing it may be easier to view this way.
  - Many columns in this dialog are hidden by default. The checkboxes at the bottom of the dialog will show/hide them as desired.
  - Clicking 'New Group' gets you a new blank group.
    - The old group creation dialogs are *no longer used* with windows.
  - You may drag a window or a window group to place it in a group. Simply drag one or more windows or window groups onto another window group (or one of that group's entries) to have it added.
    - By default all offsets will be zero, so there will often be overlaps before you change the values. In the preview, where multiple windows overlap,

an area of wall (or floor) will be shown instead. Move the windows to sensible positions and it'll be fine.
- If you drop something onto empty space in the groups report, a new group will be created automatically.
  - o The 'Delete' button (and if you press Delete on the keyboard) on the groups report can be used both for deleting groups and also for deleting entries in groups.
  - o 'Purge Unused' will delete all windows and window groups that have not been used in your model. See below for definition of 'used'.
  - o The text for a window or window group will be red (if not currently highlit) and italic if there is a problem with it. Check that values are sensible, children do not overlap, wall and roof windows are not mixed in a group, &c.
  - o The 'Used' value for a window or window group shows whether it is currently used somewhere in your model.
    - If the window (or group) is not itself used in the model, but is used in another window group which itself is used in the model, the 'Used' checkbox will have a small square mark instead of a tick. These items will not be deleted in a 'Purge' operation.

Bug Fixes

- There is now a check for empty groups when deleting child window types and an error message is displayed.
- The materials in a roof construction are no longer reversed when a NULL floor is placed on top, i.e. usually when the NULL floor is for an external space used for positioning a roof shade above the roof.
- The intersection of planes defined on different floors is now calculated correctly to create the construction line.
- Error messages corrected for when positioning wall windows in roofs and vice versa.
- Shadows are never displayed if any setting in the Select Display dialog is set to transparent or wireline. The setting for gbXml shades is ignored if not available
- A snap angle of < 5 degrees is no longer allowed on input.
- Display floor heights option is now disabled if selected spaces are external.
- Sun position checks now for maximum day 365.
- Roof shades placed between floors were incorrectly aligned in zones view, ie displayed differently from the floors view.
- Group shade is highlighted if type is set current (rather than the child shades being highlighted if type set).
- The select shade button now stays set after selecting shades by rectangle
- The current dimension settings are now retained when many windows are selected for Type/Dimensions option ie a type can be set and any non-default width or height values are not changed.
- Gbxml export - Added Storey name and level to exported file
- Fix to vertex highlighting and snapping for mapping to drawing and setting up grid for imported DWG/DXF file.
- Fixes for imported DWG/DXF files with rotated views.

Building Simulator

- HVAC groups now referred to by name, not number, in left hand panel of the HVAC group editor.
- HVAC group names can be changed in the right hand panel of the HVAC group editor.
- Zone groups have new sizing options - the zone group list views have changed to reflect this.

- Aperture function dialog: You can have functions not controlled by zone temperature that work correctly.
- You can now run heating and cooling design days and dynamic simulations simultaneously and output heating and cooling design day results to the Results Viewer.

Results Viewer

- You can now output heating and cooling design day results to the Results Viewer.

Tas Release v9.1.4.2

3D Modeller/Building Simulator

1. Fixed a shading bug where a transparent surface could not absorb solar gain at its external surface if positioned between an internal and external zone and exported with internal shadows calculated for that surface.

Plant Modelling v3.3

1. When working in Imperial (English) units, SFP values are now displayed in W/cfm rather than Btu/cfm. The user has the option of overriding this setting in Tas Manager.

2. Fixed a bug in the Flow_Sizing worksheet where the wrong temperature limit could be displayed if no room cooling was detected.

Energain Thermal Mass Builder (Beta)

1. The installation now contains a Beta version of the new Energain Thermal Mass Builder for adding Energain Phase-Change Materials (PCM) to a Tas model.

Tas Release v9.1.4.1

3D Modeller

User-interface changes

1. The view combination selection within the Display Settings dialog box now has combo-boxes instead of radio buttons.
2. In the Display Settings dialog box, you may now choose the view type of imported 3D shades (if you have any) in the same way as you are able to change the view type of walls, floors and ceilings.
3. In the Display Settings dialog, you have the old choices of "Shaded", "Wireframe" and "Not Displayed", plus the new choice of "Transparent".
4. On the top toolbar, in addition to the "Wireframe" and "Shaded" buttons, there is now a similar button, "Transparent". This makes all surfaces (not windows or regular shades) translucent.
5. The Analysis Colours dialog has a new section for changing the analysis view colour of imported gbXML shades (if the model has any). This is orange by default.

6. In Tas 3D, the shades dialog has been somewhat revamped - radio buttons to select number/spacing, rearrangement, controls hiding when not used (388)
7. In the 3D Modeller, in the new shade dialog: The labels for the 'offset' fields have been changed. Their functionality has also been changed. If the radio button is set to 'number of fins', when you change the offset the number of fins will stay the same and the spacing will adjust. If instead you have 'fin spacing' selected, the spacing will stay constant and the number of fins will adjust.

gbXML Import to create "Hybrid" 3D model

1) The gbXml Import dialog box has changed.
   a) Zones tab –
      i) The 2D floor creation is now available as a button on the zones tab.
      ii) There is no longer the option to ignore zones in a gbXml file and zone by space name.
         (1) If a gbXml file has zones defined, then their names are now always used to create/merge with zones in the 3D Tas file.
         (2) If a gbXml file does not have zones, then the space names are used to create/merge with zones in the 3D Tas file (e.g. a file from Revit Architecture).
         (3) The only reason for using the Spaces radio button when zones are defined is so that spaces can be selected in conjunction with display options on the Display tab.
         (4) There is no reason to select zones, hence the list box is greyed out when displaying zones.
   b) Display tab – the options have changed: space boundaries were added at Revit 2010 and can be displayed. Openings can be optionally displayed. These options exist predominantly for checking and debugging gbXml files.
   c) "Direct export to TBD" tab has been removed and is no longer available – the user should import to create a hybrid model instead.
   d) The "Create 3D Model" option on the zones tab is new and creates a "hybrid" model that can be saved to a T3D file, so that building elements and zones can be assigned (see picking/assignment in 3D views, below), views with shadows can be displayed and exporting with shading calcs is made possible.

2) Using the "Hybrid" model

   a) There is now an option to include gbXML shade polygons for shading analysis on export to TBD; available if polygons exist in imported model.
   b) For an imported model the building element width entry is currently disabled.
   c) An imported window can be edited to have a frame and an offset.
   d) If the offset is inwards, then the "wall" overhang polygons are shown. This is also included in the shading analysis.
   e) If you assign a different window type, then the geometry does not change but the type will be used in TBD.
   f) Non-rectangular openings are not drawn as such – they are imported to be the equivalent rectangular size.
   g) You can edit a window type and enable Internal Shading and define a frame but you cannot edit the width and height.
   h) Note that the imported walls, etc. will have a zero width so if you give a frame a depth it may protrude outwards relative to the wall.
   i) It is now possible to create a T3D file from an imported gbXml file, export to TBD and then subsequently re-import another gbXml file (e.g. with revised geometry) into the same T3D file, re-export to TBD and the settings for zones and constructions will be retained.

j) If the original gbXML file did not have zones, then any zone assignments to spaces in 3D Tas will be retained if the gbXml space ID is the same in the file.
k) Bug fixes for importing gbXml files from Ecotect. Window rectangular geometry is not included so dimensions were not being set on import for the window type. The dimensions are now calculated from the window polygon.
l) In Bentley Architecture, two types of gbXml file can be created. A "Bentley–Tas" gbXml file will import to create a model with "thickness" to the walls, whereas a "standard" gbXml file is treated the same as a Revit one, i.e. you do not see any thickness to the walls, etc. At the moment the export and shading calculations should produce the same results whichever gbXML format is used.
m) Export to 3D DWG now includes gbXml shade polygons

3D Views and using new Picking and Assignment feature

1) The toolbar assignment buttons – Set Wall Element, Set Floor Element, Set Ceiling Element, Set Zone, Set Window Type, Set Shade Type are now available in a perspective view for use with a standard 3D Tas model or an "hybrid" model.
    a) As in a plan view when in one of these modes, the entities that are assigned the current setting (RHS drop-downs, etc) are highlighted in red.
    b) You can pick only when a 3D viewing toolbar button is not depressed, i.e. pan, move camera, etc.
    c) You can use the middle mouse button for panning and Shift + middle button will do a "Move Camera".
    d) When moving the cursor, a wall, window, shade or space is highlighted. Note that the Set Floor element and Set ceiling Element modes also cause the space to be highlighted – this is consistent with the 2D plan way of doing it, where you select a space. When you move the mouse to highlight walls, etc. and windows and spaces, the current assignment is shown and also for hybrid model the imported gbXml "name" is displayed, corresponding to the name assigned in Revit, etc. (Revit seem to have devised a good naming scheme for this purpose).

2) Colour by zone in 3D view is now available in Floors mode.

Rotated Shade Fins - New/Edit Shade dialog has been changed

1) You can now enter a spacing value instead of the number of fins.
2) These values are related and entering one will update the other. This does mean that shades may no longer be symmetrical if a spacing value does not divide into the height for horizontal fins or width for vertical fins.
3) Rotation angle – by default this is 0 for horizontal fins and 90 degrees for vertical fins. This can now be se to between -45 and 45 for horizontal fins and 45 to 135 for vertical fins.
4) When the rotation is not the default, then the "Fit fins to shade dimensions" checkbox is activated. This option clips the fins to the rectangular area defined by the width and height and "wraps around" where fins are clipped, to add part fins.
    a) For horizontal fins this means that if there are clipped by the top of the shade then a part fin is added from the bottom. This means that if then placed adjacent vertically that the fins would align. Similarly if clipped by the bottom of the shade.
    b) For vertical fins the behavious is the same but dependent on being clipped by the left and right of the shade.
5) Adjust width/vertical fins for alignment: this adjusts the width of the shade so that the horizontal fins of a shade will be aligned when placed horizontally adjacent. If there are no vertical fins then there is no further effect.
6) Adjust height/horizontal fins for alignment: this similarly adjusts the height of the shade so that the vertical fins of a shade will be aligned when placed vertically adjacent

Zones Model creation

1. This now shows a message box so that the process can be cancelled. This means that the current zones model is used rather than creating a new one.

NHER Plan Assessor (Plan Assessor export utility) for SAP

1. The utility produces an XML file based on your 3D geometry for use with NHER Plan Assessor for SAP calculations.
2. The utility also produces a text file with basic details of each heat loss floor in the model for use with the NHER u-value calculator.

Building Simulator

1. When viewing a list of zones, sorting by Daylight Factor or Convection Coefficient columns can now be sorted properly.
2. When viewing a schedule, selecting cells and pressing "delete" now sets them to zero, just as if zero (0) was pressed.
3. When viewing a schedule, selecting cells and pressing zero (or indeed delete) now actually sets the cells to zero, rather than setting the displayed values to zero but internally setting the selected hours to one.
4. In the Aperture Function Wizard, in "choose functions by mnemonics" mode, choosing ZDWON now properly selects ZDWON.

Tas Manager

1. Liquid flow rate (only seen in the Plant Modelling macro) in non-metric mode is now gal/min instead of gal/s.

Plant Modelling v3.3

1. VAV fan now uses part-load fan characteristics, as described in Appendix of ASHRAE 90.1 2007.

2. There is now a temperature optimiser cut-off option for recirculation air systems. When the outside air temperature is greater than or equal to the temperature optimiser cut-off, then the temperature optimiser behaves as a standard mixing box. The cooling loads may reduce or increase, depending on the weather file.

3. There is now a VAV supply temperature reset option. The user may now enter a secondary temperature to heat and cool to when the calculated flow rate for a given hour is below the fan minimum turndown. These off-coil temperatures are closer to the room set-points than the standard off-coil temperatures. Calculated heating and cooling consumption should be lower when using this option. The fan power may increase as the flow rates increase and the delta Ts reduce.

Changed pump options

1. Constant flow pumps without bypass: this behaves the same as the "constant" option in previous versions of the macro.

2. Constant flow pumps with coil bypass: At peak demand behaves the same as constant flow pump without bypass. At part load, the pump rides the pump curve and consumption will vary. The results should be lower than when using the constant flow option.
3. Variable flow: This behaves the same as the "Variable" option in previous version of macros.
4. New parmeter: Flow Return Delta-T.
5. New calculations take into account the fact that the density of water changes at different temperatures.

Boilers and chillers

1. Boilers now have same part load options as chillers.
2. Hot Water Supply Temperature reset. When the outside temperature is at or below the design temperature, the boiler's efficiency is as entered by the user. When the outside temperature is at or above the reset temperature the boiler's efficiency is 1.5% more efficient than entered. If the outside temperature is between these two user-defined values, then the improvement to efficiency of the boiler is interpolated.
3. Chilled Water Supply Temperature Reset. When the outside temperature is at or below the user-defined design value, the chilled water supply temperature is set to the design value. When the outside temperature is at or above the user-defined reset value, the chilled water supply temperature is set to its reset value. In other cases, it interpolates the value. For every 1F difference between the design temperature and the chilled water supply temperature at a given hour, the COP of the chiller improves by 1% for the user-defined value.
4. The user has the option to enter the minimum return water temperature for water side cooling. A higher value means a lower cooling tower fan energy. The value does not effect the Condensor pump energy.
5. Condensor fan energy separate from cooling. The user enters the energy used by the fan as a proportion of the total chiller consumption at part load. The larger the part load percentages, the larger the Condensor fan energy. The cooling consumption will reduce by the same amount as the Condensor fan energy will increase.
6. Fixed issue with using electrical AHU and room in fixed load mode causing an unrecoverable error.
7. Changed the heat rejection calculation to include the consumption of the chiller.
8. Cooling towers: parameter Condensor fan power ratio has been replaced with Fan Power Performance.

Part L EPC Building Generator

1. There is now an option to model a Biddle Innovair system. If you click Biddle Innovair having pointed to Mechanically ventilated (Heating only), then you need to complete the Biddle Innovair Function Parameters dialog by entering:-
   - Occupied peak flow rate (l/s/m2)
   - Night flow rate (l/s/m2)
   - CO2 lower limit (ppm)
   - CO2 upper limit (ppm)
   - Previous day peak temperature (degrees C)
   - Delta T cut-off (degrees C)
   - Outside cut-off (degrees C)

UK and ROI Building Regulations v3.5a

1. Changed the default fuel for DHW to oil

2. Changed the Notional fuel type such that if the DHW uses gas, then the Notional heating and DHW uses gas.
3. Added a Biddle function in the list of air handling files. The Biddle is compared to a mechanical zonal heating system. The Biddle has a terminal fan and an extract fan but no fresh air fan. It does not ask the user for an air change rate as this is read from the results.
4. Fixed a problem with some of the details tabs not disappearing when selecting BRUKL only.
5. Fixed bug in reading Plant Simulation and Sizing project files. Pre-2008 files could not be opened or simulated
6. Fixed an issue with Building Type. Previously, it was setting the value back to "office" when the user re-opened their project or ran the calculations.
7. DHW now follows the occupancy pattern rather than the ventilation schedule. This will not change the DHW consumption or CO2 from results outputted in previous version. This change will ensure that the DHW does not turn on when the Biddle system is providing night cooling.

Tas Release 9.1.4

UK Building Regulations Macro

- Macro uses version 3.5a of EPCgen, BRUKL, BERgen and BRIRL generation programs.
- New sequencing option for heating unit. The user can enter a boiler that only operates at part load and have backup boilers that only operate at full load.
- New parameter in Details dialog called "Transaction type" when running UK EPCs.
- User now must selected from a range of options for the "related party disclosure" parameter in the Details dialog.
- Air Distribution system known as CAV has been renamed "CAV with recirculation Air"
- Air Distribution systems known as "Displacement Ventilation" has been renamed "CAV (all fresh air)
- New air distribution system for modelling displacement ventilation systems with recirculation systems.
- New air distribution system for modelling Weatherite systems

Plant Modelling Macro

- New options for cooling. User can now enter different COP for External Dry Bulb Temperature, External Wet Bulb Temperature or by Month.
- Cooling tower fans and condenser pumps can now be modelled.
- Wet or Dry side free cooling can be modelled.

Databases

- Version 3.5a of the NCM Activities database is installed as part of this release. The internal conditions from this database should be used for all new PartL2\EPC Projects.

- Version 3.5a of the NCM constructions database is also installed as part of this release. Please ensure that in Step 5, Part L2 EPC Building Generator, the utility is pointing to this new database.

Tas Release 9.1.3.1

General

- It is possible to evolve all previous, new generation (i.e. 9.x.x), files to the latest format using Tas v9.1.3.1. Previously, the evolution process evolved files only one file format version previous.

3D Modeller

- The bug that caused T3D files to become corrupt on deletion of one or more empty window groups (i.e. if each component, or 'child' window from a window group was deleted, then the window group would be classed as 'empty') has been fixed.
- Application opens faster in automation (i.e. through the Part L EPC Building Generator, for example). There is no longer a warning in relation to missing drawings, e.g. DWG files.
- There was previously an issue with gbXML import/export features; if the system was set to a locale using commas as decimal separators (e.g. most European locales), the process would not work correctly. This has been rectified.
- The thickness of external shades can no longer be set by the user.
- Shades now must have at least a frame or a single fin.
- The minimum width for any shade is now 0.1mm.
- Shading calculations, when using transparent building elements or windows with the 'internal shading' option selected in conjunction with external zones, have been updated.
- When 'default' walls are sandwiched between 'external' and 'non-external' zones, their orientation (i.e. side facing zone) is self-corrected to represent an 'external wall' building element.
- The user can no longer manually reverse building elements ('Select Wall' button > right-click wall) with respect to external walls or walls adjacent external zones; the outer side (represented by a red line) when using the "Set wall element option" will be always on the outside of the building and cannot be transformed.
- A bug has been fixed that was causing diffuse radiation to be incorrectly distributed between external zones.

Part L EPC Building Generator

- The utility now includes support for building regulations in the Republic of Ireland and can be used to create the Actual (which used to be called 'Design' prior to this new release), Reference (UK Notional), Notional (UK Reference) and Typical buildings.

UK and ROI Building Regulations v3.4a Macro

- The UK Building Regulations v3.4a macro is now called "UK & ROI Building Regulations v3.4a".
- The macro now includes support for building regulations in the Republic of Ireland. At the time of this release the software was going through the accreditation process for Ireland.
- Modelling of CHP now allows for sizing a CHP on the base load as well as Annual Load. It also allows the user to set the energy priority for the system.
- For CAV and VAV systems, the 'Central AHU Setpoints' have been renamed: "Off-coil temperature".
- Heating systems with their fuel type set to 'electricity' with an efficiency of 100% or less are now compared against a heating system using oil (i.e. with respect to the notional building), as required by the NCM Modelling Guide.
- Heating systems using electricity with an efficiency of greater than 100% (i.e. if you are modelling heat pumps) are still compared to a heating systems using gas, as required by the NCM Modelling Guide.
- An error now occurs if the user enters a central AHU flow rate that is less than or equal to the minimum fresh air requirement, as defined in the as-copied NCM internal condition.
- The macro will error if the user tries to select zones with 'inappropriate' internal conditions applied to them.
- FATVAV system has been removed from the Air Supply list in the Air Distribution File; VAV now has an option to have a terminal unit.
- Fancoil and radiant cooling have been merged into a single air supply type. There is now an option to model a terminal unit.
- Fixed issue with error when a zone is used in more that one Building Information File.
- The macro automatically uses the country regulation selected during the creation of the building files (TBD files for regulations buildings) within the Part L EPC Building Generator. It does this by reading from the XML file saved in your project directory the regulation that was selected.

Constructions Database

- The International Glazing Database has been updated to version 17.1.
- The U-values and glazing parameters buttons have been removed. The U-values and glazing parameters now appear on the construction details window.
- The resistance of an opaque layer is now taken into account in the U-value calculation. Although there are opaque materials in the standard constructions database and NCM constructions, they are not classed as 'opaque layers'. Constructions that use materials from these databases will be affected by this change. Note, Tas does not use the U-Value in its calculation, so results from using constructions with opaque layers will not change.

Building Designer

- There is a new option in the Tools menu, called "Pre-simulation checks". The feature alerts the user to the fact they may have made possible mistakes in their model, which might otherwise have gone unnoticed prior to simulating.
- It is now possible to remove all internal conditions from multiple zones non-singularly and thus far quicker than in previous versions; this can be done in a zone list (either by selecting the 'Zones' folder or by selecting a particular zone group), select one or more zones and then right-click and select "Remove Internal Conditions".
- It is now possible to remove all IZAM multiple zones non-singularly and thus far quicker than in previous versions - in a zone list (either by selecting the 'Zones' folder or by selecting a particular zone group), select one or more zones and right-click -> Remove IZAMs.

- It is now possible to remove surface output specs from all surfaces in multiple zones non-singularly and thus far quicker than in previous versions - in a zone list (either by selecting the 'Zones' folder or by selecting a particular zone group), select one or more zones and right-click -> Remove Surface Output Specs.
- The information displayed in a "Summaries" output (Tools – Summaries) has been revised. Unnecessary data has been removed, such as daylight adjustment, while new information has been incorporated, such as for which days have had shading data calculated.
- It is now possible to drag-and-drop Zone Groups onto each other in the tree-view and the Zone Group Zone list view. Dropping one Zone Group onto another Zone Group will add the Zones contained in the source Zone Group to the target Zone Group, that is unless the target Zone Group is 'read only' (created and exported from the 3D Modeller as a 'Zone Set').
- The Zone Group list view allows multiple Zones to be removed from the group by selecting them and pressing the 'delete' key.
- A bug has been fixed that could potentially corrupt TBD files and which prevented the tree-view from correctly updating once a material was dragged between two different constructions (and then deleted from the target construction).
- The behaviour for changing the Start day on the calendar has been updated. Instead of shuffling all day types along, it now moves the surpassed day types in order to complete the calendar from the end of the year. The user may have to amend these day types when changing the Start day.
- Zones are no longer re-numbered upon simulation.
- There was previously an issue with aperture control functions evaluating to the 'ZDCEM' function; ZDCEM includes any controls that used external temperature or zone pollutant control. The function string was generated incorrectly in that the 4th parameter needed to be transposed with the second-to-last parameter. This has been rectified.
- Aperture control function wizard: the user can now set the openable proportion of a window (stored as the 'factor') in the same dialog as setting other parameters for the control.
- Inserting items in a building file, i.e. TBD file (e.g. new building elements, aperture types, IZAMS &c) can now be done regardless of which item is selected in the tree-view. This option is, as before, accessible via a right-click on the tree view or by the menu item Edit->New...
- In the 'surfaces' table, there was previously a column header: 'Reversed'. This is now headed: 'Side facing zone'. Note, 'internal' implies that the material layer marked in the table as 'Inner' is decreed to be facing the zone. 'Outer' means that the layer at the opposite side of the construction is facing the zone.
- The Zone Group list view now displays whether the zones within the zone group are output and whether their heating or cooling is sized.
- In the Building Simulator and Constructions Database, the U-Value (and also R-Value) and Glazing Parameter grids are now displayed on the Construction pane; buttons for separate dialogs have been removed.
- In the Heating Plant Room Controls, the 'Optimum Start' and 'Frost Protection' parameters appear only when optimum start or frost protection has been selected.
- If a wind pressure co-efficient file is used, then these data now do not need to include information for all apertures. If an aperture does not appear in the file, then Tas defaults to using its only calculation.
- A zone's upper limit schedule and setback value are now used by the calculations. Previously zone upper limit used the same schedule as the zone lower limit and the setback value for the upper limit was ignored.
- The 'factor' column for thermostat is no longer displayed.

- The 'Zones' table now includes a column displaying daylight factors.
- IZAM values now display to six significant figures.

Result Viewer

- It is now possible to drag-and-drop Zone Groups on to each other, both in the tree-view and the Zone Group Zone list view. Dropping a Zone Group onto another Zone Group adds the Zones contained in the Zone Group to the target Zone Group; this is true unless the target Zone Group is 'read-only' (i.e. created and exported from the 3D Modeller). The Zone Group list view allows multiple Zones to be removed from the group by selecting them and pressing the delete key.
- There was previously an issue with components that had long descriptions, i.e. descriptions over 2047 characters in length. Hovering over these in the tree-view meant that the program would unexpectedly terminate, as the tool-tip was not able to hold a large number of characters. This has been rectified.
- In the Results Viewer, the user can now manually change the TBD path.
- The "Export to Excel" feature now has an option to export in tabular sum data and an option for displaying the day and hour.

SHW

- Building elements or windows used to represent SHW panels no longer have to follow a pre-specified naming convention and thus do not have to begin with "SHW_". The user can assign an arbitrary name to such elements/windows.
- The SHW macro now allows the user to select which surfaces represent SHW panels. Only surfaces that have had their temperature and solar gain results calculated and output will appear in the list.
- Only zones that have been outputted to the results file appear in the zone list.
- In the SHW macro, an error will appear if the user selects only zones with no DHW load.

PV

- The name given to building elements or windows used to represent PV panels no longer need to begin "PV_". Any name can be used.
- The PV macro now allows the user to select which surfaces represent PV panels. Only surfaces that have had their temperature and solar gain results calculated will appear in the list.

Macro

- Fixed an issue with the weather utility macro not allowing the conversion of .wfl files.

Tas Release 9.1.3

UK Building Regulations Macro

- This is the new name for the "Plant Simulation and Sizing" macro when used for PartL2 and EPC generation. This version of the macro must be used for generating EPCs. You will not be able lodge EPCs created in earlier versions from 10th May 2009.
- When creating an EPC, this version connects to the Landmark website to check if you are valid energy assessor.
- There is a new section in "Details" for information regarding your Proxy Server. This is needed so that the EPC generator can check the Landmark Database
- There is a new section for the "Air Conditioning" questionnaire which part of the new XML file generated when the EPC is created.
- EPCs and BRUKL documents can be generated for Northern Ireland.
- VRFs are now modelled as fancoil systems with electrical heating. There is no separate VRF option.
- New fuel types for heating units, cooling units, domestic hot water and CHP.
- Option to mix heat pumps with back-up boilers.
- Air Distribution files have been simplified
- No longer outputs sizing data.
- No longer requires a Tariff file to be selected.
- Fixed Sizing is no longer an option.

Plant Modelling

- This is the new name for the "Plant Simulation and Sizing" macro when for purposes of sizing and simulation. It cannot be used for PartL2 and EPC generation.
- VRFs are now modelled as fancoil systems with electrical heating. There is no separate VRF option
- The older versions of the Plant Simulation and Sizing macro are there for legacy purposes and should be used for generating "As Built" BRUKL documents when the "As Designed" BRUKL document was generated using that version.

Building Simulator

- Function Wizards now work for Europeans - before there was a problem with different decimal point characters.
- Null elements may no long have constructions, apertures and substitute elements applied to them.
- You may now change the building element of a surface by dragging a building element onto it.
- You may now apply a surface output spec to a surface by dragging one onto it.
- New menu item - Tools | Summaries and Checks. This replaces the macro of that name - it outputs an html file which may be viewed in a web browser or Excel.

Results Viewer

- New menu item - Tools | Export to Excel. This generates a CSV file of selected results data that can be read by Excel.

3D Modeller

- When creating a window, one can now choose to set frame by percentage instead of by width. This calculates the necessary frame width to achieve that percentage.

Constructions Database

- Along with U Values, one can now see R-Values.

- Invalid constructions and materials now show the first apparent error on the same screen as their data, rather than only giving an error on simulation.

- Database may now be searched for constructions or materials by name or by property value.

Macros

Turbines:

- Turbines may now have minimum and cut-off speeds set. They may also be given a multiplier, rather than making several copies of the same turbine.

- **Peak Loads, Peak Zone Loads, Annual Loads, Frequency** and **Thermal Comfort Prediction** now support English units.

Tas Release 9.1.2

Tas Manager

- Batch simulation improvements to allow individual simulations to be cancelled and to give feedback on simulation progress.
- The settings dialog now has a Localisation tab allowing the user to set metric or imperial units.

Databases

- The "constructions.tcd" database has been updated.
- New NCM databases (NCM 3.3)
- Direct import of TMY2 and EPW files can now be achieved in the Weather database.

Building Simulator

- Output Groups can be created using the output groups dialog.
- During simulation Zones in different output groups will be output to different results files. This is useful for large models whose results could not be output to a single results file due to size constraints.
- There is now a simulation progress dialog to provide feedback and allow a simulation to be cancelled easily.
- The calendar now has a shading data radio button. This button displays the days of the year that have shading data.
- The shading proportions can be viewed for individual surfaces.
- The simulate dialog has an option to output weighting factors to the results file. These are now required to be output for Part L and EPC calculations.

3D Modeller

- Automation interface added.
- Feature Shades horizontal and vertical fins.
- Construction line building element renamed to null.
- The remove floor / remove ceiling options have been removed. Now to remove a floor or ceiling the null construction is assign. This change makes the assignment of building elements consistent.
- The context menu for a selected space in 2D plan view now has the options to "Set Floor Element", "Set Ceiling Element" and "Set Zone".
- gbXML import and export improvements including the option to import a gbxml file and create a TBD file without exporting from the 3D Modeller.
- Include building element plan surface area in zone area for sloped floor surfaces.
- "Null" check box in the Building Element dialog allows the user to create a user defined null element. This element is used to differentiate a particular null element when exposed to the outside.
- The longitude correction parameter has been removed and separate longitude and time zone parameters have been added to the building dialog.

Part L EPC Building Generator

- There is now an NCM Version number in the building generator xml file.
- There is now support for Northern Ireland.
- The building generator checks the t3d file to determine whether a Zone has the external flag checked. Zones with the external flag checked are not output in the results file.
- There is an additional step to allow the user to automatically rerun the shadow calculations for the entire year without External Zones and Shades. The newly exported file is then used for the notional, typical and reference buildings. There is also the option to select a tbd file to use for the notional, typical and reference. This can be set to the same as the source tbd file if rerunning the shadow calculations is not required.

90.1 Baseline Generator
- Rotates the model 0, 90, 180, 270 degrees and exports a tbd file for each without running the shadow calculations.
- Adds Baseline Building Elements.
- Reduces the proportion of vertical glazing to external wall area to 40% and rooflights area to roof area to 5% if required. The proportion is left unchanged for models that do not exceed these limits.

IDF Conversion Wizard

- Enables IDF files to be imported into Tas. Three example IDF files are in the "sample projects" directory.

Tas Release 9.1.1

Macros

- Thermal Comfort Prediction macro
  - This replaces the previously distributed PMV macro
  - Produces various breakdowns in tabular and graphical format of PMV (Predicted Mean Vote) and PPD (Percentage of People Dissatisfied) values based on simulation results and user-inputted parameters
  - Calculation compliant with ISO 7730
  - Also produces Green Star points values for New Zealand and Australia in compliance with section IEQ-10 of the Green Star Technical Manual
- Wind Rose macro
  - Can now take input from either a weather file or from a building file.
  - Gives choice of graph outputs – Surface, contour or radar.

- Frequency macro
  - Macro has been re-written to produce results quicker.

Plant Simulation and Sizing

- The macro can produce EPCs for Scotland and Section 6 Documents.
- "% Improvement" values for groups on "Results" tab of excel output are now correctly displayed.
- Heating and cooling demand in is now displayed correctly on the BRUKL document when the VRF system is being used.
- An error message will now appear if an Activity that is not allowed to be used in Part L2 is used. This stops the BRUKL generation program from crashing. The following NCM activities are not allowed to be used by zones which are selected in the Plant Simulation and Sizing Macro:
  - Ware_IndProcess
  - Uni_Display
  - Uni_IndProcess
  - Hosp_CellOff
  - Stadium_IndProcess
  - Prison_IndProcess
  - EmgcySvc_IndProcess
  - Workshop_IndProcess
  - Dwell_DomToilet
  - Dwell_DomBed
  - Dwell_DomBath
  - Dwell_DomDining
  - Dwell_DomKitchen
  - Dwell_DomLounge
  - Dwell_DomCirculation
  - IEA 21c
  - Office_NoInternalGains5day

- o Office_NoInternalGains24/7
- o TM33
- o Office_HighDensIT

- There is a new parameter in the "BRUKL\EPC details" dialog box called Assessor Key. When the user becomes a Level 5 Energy Assessor, CIBSE will provide them with this key. This key will remove the watermark from the EPC and recommendations document.
- The EPC/BRUKL details screen will only display parameters that are needed for EPC or Part L2. E.g. "Building Stage" will only appear when doing Part L2 calculations.
- Removed the energy consumption of the heat exchanger from the VRF system. This used to be added to the Fan consumption.
- Fixed an issue with DHW being incorrectly calculated for sub-project containing zones on different occupancy patterns.
- Fixed an issue with the "The % of total capacity column of the boiler table must add up to 100" error appearing erroneously.
- Default Certifier Details are now stored in the registry. So the "certifier details" stored in the previous version will need to be re entered.
- Removed the option for "undefined" for the NOS level of building.
- Fixed an issue where the temperature optimiser that was increasing the room heating consumption.

Databases

- Calendar Database
  - o SEC Schools SBEM has be renamed NCM Schools
  - o University SBEM has be rename NCM University
  - o New calendar called "NCM Standard". When running PartL2/Section 6/EPC calculation, this calendar should be used instead of the standard or default calendar. Except in the case of schools and universities which use one of the calendars mentioned above. The difference between this calendar and the standard one is that this one includes public holidays.
- Constructions
  - o There is a new version of the NCM constructions database. It is V3.2. This database should be selected in the building generator when requested.
  - o There is a new version of the NCM activities database. It is Version 3.2.
  - o There is a new database called the "International Glazing Database". It contains glazing materials but not constructions or gas layers.
- Internal Conditions
  - o The NCM Activities 3.2 database should be used when applying internal conditions to models used in Part L2/Section 6/EPC. The main difference between this database and previous versions is that this one takes into account public holidays.

Tutorials

- The Getting Started Manual has been replaced by tutorials for 3D Modeller, Building Simulator, Results Viewer, Plant Sizing and Simulation and Macros.

Building Simulator

- Changes to 'Simulate' menu item:
  - To run a standard dynamic simulation, choose Simulate | Dynamic Simulation.
  - There is now the option of resetting heating and cooling loads to zero before simulation.
  - All user input (file location, option to merge files) now takes place before preconditioning, allowing the user to make choices and then leave the simulation going.
  - To run a design day simulation, choose Simulate | Heating Design Day Simulation or Cooling Design Day Simulation as appropriate. You no longer need to have a design day selected in the list pane as the button is pressed.
- In the Profile editing window, problems with the grid have been rectified – It is now safer and quicker to edit cells in the grid, and the graph now updates with each change made.
- Summary panes (for example when the Aperture Types folder is selected in the tree pane) have been improved to show more information.
- The Substitute Element view now allows the user to choose the substituted building element using a drop-down list. Drag and drop still works as before.
- The IZAM view now allows the user to choose the source zone using a drop-down list. Drag and drop still works as before.
- Surface list (on a zone pane) now links to other related information:
  - Double-click an item in the Building Element column to be directed to the details for that building element.
  - If a surface links to another zone, double-click the Type column (where that zone will be noted, e.g. ->Zone1) to be directed to the details for that zone.
- Many more changes now prompt a save query upon exit – in the previous version, one could make certain changes to a building, close the program and it would not ask if they wished to save.
- Function wizards have been added and amended:
  - The aperture control function wizard now gives the option of the ZDCEM function – a function to simulate mixed mode control with both pollutant and external temperature control.
  - There is now a wizard for lighting functions to represent manual and photocell control.
  - There is now a wizard for capacity control functions for heating and cooling emitters.
  - Function wizards now sanity-check parameters – upper temperature limits should be higher than lower temperature limits, for example.
- Day type selection boxes now have buttons Select All and Select None.

Building Designer (General)

- Drag and drop functionality has been improved in several places to be more consistent.
  - E.g. one can now drag an internal condition from the list pane of the Internal Conditions Database.
  - E.g. one can now drag a zone into the zones or surfaces table or a zone group into the zone group table in an output selection pane in the Results Viewer.

Tas Manager

- Batch simulation now works with TBD files using wind pressure coefficient files.
- Batch simulation now saves TBD files after simulation to preserve sized loads.

3D Modeller

- 3D graphics optimised for graphics cards supporting Open GL.

Tas Release 9.1.0

Macros

- Building Generator added for the creation of Design, Notional, Typical and Reference buildings.
- Plant Simulation and Sizing 2.0 macro for the creation on EPCs.

Building Designer

- Addition of Lighting, Pollutant and Ventilation functions

Tas Release 9.0.9e

Tas Manager

- Batch Simulation capability. Select the TBD files in the listview, right click and choose "Batch…" from the context menu. Choose the number of TBD files you wish to run simultaneously, then click run.
- Cut, copy, paste functionality.
- Settings dialog to allow the user to specify the file extensions that appear in the listview.

3D Modeller

- New option when importing drawings. The user can select to import an image drawing file (Bitmaps, Gif and Jpegs). It is recommended drawings inputted this way have a 10 metre line drawn on them to define the scale. Tas cannot snap to points on an image drawing file. A view cannot be printed with an image backdrop at present.
- A construction line can be merged with any wall type on another floor when creating the 3D zones model.
- Now checks for windows in walls with a "Ground" building element and generates a warning.
- Either or both name and fill can be selected for indicating zones.
- When in zone fill mode the spaces in the current zone to be assigned are highlighted, including if <none> is selected.
- All sets can be selected in zone selection for view i.e. all current zones in view can be cleared rather than going through each zone set.
- The "Select Floors…" option on the View menu now works when you are in Zones view mode; i.e. if you select one or more floors then the spaces on that floor are shown and the selected zones are ignored. To revert back to selection by zones just go to the option and select OK in the dialog (and vice versa for selection by floor).

- A new toolbar with buttons to create a new plan and a 3D view, switch between floors and zones in 3D view and corresponding accelerator keys ALT B and ALT F and toggle display of drawing CTRL H.
- ALT R accelerator key for Select by rectangle
- If a DWG file is not available in a run then the reference is no longer lost. It can only be removed using the Tools/drawings option and then a confirmation is required.
- Middle mouse button double click provides Fit All function for 2D and 3D views.
- Refresh in plan view will now update any corrected errors.
- Remove ceiling and remove floor options can be used on any group of selected spaces irrespective of their current setting. When removing a ceiling or floor, a tick will only appear beside "remove ceiling" or "remove floor" in the selection pop-up menu if all selected spaces have had their ceiling or floor removed. If no tick appears and then the option is selected then the ceiling/floor will be removed from all spaces irrespective of current setting. If a tick does appear and the "remove ceiling"/"remove floor" option is selected then the ceiling or floor will reappear.
- Various changes to gbXml Import including:
    - Messages and errors from import now displayed in a window
    - Allows for more than one ceiling surface for a space i.e. for pitched roofs
- gbXml export (primarily for import into Cymap)
- The DWG export now also allows for a DXF file to be created – this is determined by the file extension used.
- It can be a bit confusing to see the triangulated floor and ceiling polygons in an exported DWG/DXF file when then imported into an AutoCAD application, so you can now remove those surfaces from the export if you wish. If you use the dialog to select whether walls, floors or ceiling are displayed and request that floors and ceilings are not displayed; these settings are now checked in the export. You would need to be sure not to do this for an export to Lumen Designer.
- Minutes are now included to set the time on the sun position dialog
- There is an option on the View/Export menu to create a series of views for export to an avi file: changing sun position through a day, viewing from the sun position through a day, and circling a building.
- The user is now asked to confirm replacing a tbd file and lose current settings

Building Simulator

- Ventilation function wizard.

Macros

- The macros are now compatible with in Office 2007.
- There are changes to the automation interface to allow for the creation of schedules and internal conditions programmatically.

Frequency

- The "Display summary table" option has been removed. When the macro is run it will always create a summary table.
- If the user chooses to "display graphs", a message will appear before running the calculations, warning them that a workbook will be created for each zone.
- "Start hour" and "end hour" parameters have been replaced. The user now selects a schedule instead.
- Schedules can now be created within the macro. When they are created, they are saved

in the TBD file.

Lighting Control

- The macro no longer gives an error if the selected TBD file does not contain a schedule.
- If you attempt to run the calculations without selecting an internal condition, a message box will appear asking you whether you wish to continue.
- Schedules can now be created within the macro. When they are created, they are saved in the TBD file.
- Changed the way that the lighting gain is calculated so that when parasitic power is used without a time clock, the parasitic power is used on all hours of the year not just on the hours of the selected day type.

Part L2 / Plant Simulation and Sizing Macro

The PartL2 macro has been renamed. It is now called Plant Simulation and Sizing. The plant room, air distribution and tariff files are now stored in sub-folders in the current project directory. Any plant room, air distribution and tariff files that were stored in the \program files\Tas\macros subfolders are copied into the current project directory when the macro is run.

Project

- There is a new drop down list with 3 options: "Plant Sizing and Simulation", "Part L2a for England and Wales" and "Section 6 for Scotland".
- The "Plant Sizing and Simulation" option allows the user to obtain peak loads and total consumption without filling out data specific to Part L2a and Sections 6. Therefore the user does not have to select a notional building, assign construction details to building elements, fill out the BRUKL details, select the system types for the BRUKL document, choose management features that are specific to the British building regulations or pick a COSP air distribution file. The graphs will only display results for the design building.

Project Details

There is a new section called "Fixed Building Load Sizing". It has the following parameters:

- Heating/Cooling: if this option is checked, the zone heating/cooling loads are sized based on the "Zone maximum load" for heating/cooling in the TBD file rather than the peak heating/cooling load found during dynamic simulation. It also sizes the rest of the system based on fixed design criteria rather than based on the Peak values found when running the macro. If the sizing for heating/cooling is also outputted, it will display the peak values as calculated using this method rather than the peak loads calculated during the simulation run.

- Outside dry bulb Temperature: The central AHU heating/cooling will be sized based on this temperature.

- Outside wet bulb Temperature: This is used to calculate the humidity during the design day.

- Design Margin for central AHU (%): the size of the central heating/cooling AHU will be increased by this value.

Central Air distribution:

- The data can be entered now in one of two ways: clicking on the details tab and filling in the values or clicking on the description button, clicking on the "set" buttons and setting up each part of the system separately.

- The "set" buttons are red when you open a central air distribution file. When you click on them, enter the data in the dialog box and then click on the "OK" button, the "set" button will go grey.

- If you try to save the air distribution file with an illegal value, the "set" button for the part of the system with the error will turn red and all the other "set" buttons will be grey.

- The heating coil before the mixing box in CAV/VAV/FATVAV system has been renamed "frost protection".

- The air-to-air heat recovery has been split into two types: "with bypass" and "without bypass". If the "with bypass" is selected, the heat recovery not heat the fresh air beyond the bypass temperature setpoint. It will not cool the air even if the fresh air temperature is higher than the return temperature. This is how the heat recovery worked in previous versions of Tas. If the "without bypass" option is selected, then if the fresh air temperature is lower than the return temperature, the fresh air will be heated. If the fresh air temperature is higher than the return temperature, the fresh air will be cooled.

- The "heating", "cooling" and "optimise fresh air temperature" check boxes have been removed and replaced with a drop down list. If "Optimise fresh air temperature" is selected, the fresh air will be both heated and cooled. The cooling setpoint must be lower than the heating setpoint.

- The "CO2 based reduction" parameter used in Mechanical vent with recirculation has been moved from the supply air area to the fresh air area. It now reduces the amount of fresh air supplied by the percentage entered rather than the amount of supply air.

Plant Room:

- The boiler part load characteristics file has been removed. The efficiency of the boiler at 25%, 50%, 75% and 100% have to be entered instead.

- Multiple boilers with different efficiencies and different sizes can be entered. The user must enter the percentage of total capacity that is delivered by each boiler. This must total up to exactly 100%. The boilers are used in order. When boiler 1, reaches capacity, boiler 2 will turn on, when boiler 2 reaches capacity, boiler 3 will turn on etc.

- Different boilers can use different fuels. "Fuel type" is used in the calculation of CO2 emissions. The macro will use the appropriate CO2 factor for each boiler.

- The cooling part load characteristics file has been removed. The efficiency of the cooling unit at 25%, 50%, 75% and 100% have to be entered instead.

- Multiple chillers with different efficiencies and different sizes can be entered. The user must enter the percentage of total capacity that is delivered by each chiller. This must total up to exactly 100%. The chillers are used in order. When chiller 1, reaches capacity, chiller 2 will turn on, when chiller 2 reaches capacity, chiller 3 will turn on etc.

PMV

There is a new macro used for calculating the Predicted Mean Vote (PMV) in accordance with ISO 7730 standards. It will output the percentage of the selected time period that each chosen zone is between a PMV of -1 and +1, -0.75 and 0.75 and -0.5 and 0.5. It will also output the percentage of time that the PMV averaged over the selected zones is between those values. For New Zealand users, it will also show the number of Greenstar points that zone has achieved according to "IEQ-10 – Thermal Comfort".

The input parameters are:

- **Zone**: The list of the zones in the TSD file. The shift and ctrl buttons can be used to select multiple zones. For each zone selected, a spreadsheet will be created with its results.
- **Zone groups**: The list of the zone groups in the TSD file. If the user selects a zone group, the member zones will become selected in the zone list box. The shift and ctrl buttons can be used to select multiple zone groups.
- **Metabolic Rate**: Metabolic Rate is a measure of the total amount of energy we produce when we perform different activities. There is a table of activities and their associated metabolic rates in the Appendix of the Ambiens Tutorial. This tutorial can be found in the "Tas->Tutorials" directory of the Tas Manager. The metabolic rate (met) is measured in metabolic units. 1 met = $58W/m^2$.
- **External Value**: Due to the inefficiency of our bodies the total amount of energy we produce (Metabolic Rate) does not equal the amount of work we get out (External work). The rest of the energy is transferred into bodily heat production and that is the value we are interested in when assessing comfort and calculating PMV. External Work is measured in W/m^2 and must be less than metabolic value when measured in W/m2. External Work is zero for most activities. For more information on External Work or Metabolic Rate see ISO 8996-1990: Ergonomics: Determination of Metabolic heat production.
- **Air Velocity**: The average speed of the air entering the space measured in metres per second (m/s).
- **Clothing Value**: The clothing value (clo) is a measure of the thermal resistance of clothes. 1 clo=$0.155m^2$C/W. There is a table of clothing ensembles and their associated clothing values in the Appendix of the Ambiens Tutorial.
- **Start day**: The first day for which results will be displayed. This start day must be between 1 and 365. By default this value is set to the first day that the TSD has values for.
- **End day**: The last day for which results will be displayed. This end day must be between 1 and 365. By default this value is set to the last day that the TSD file has values for. If the start day is after the specified end day, the calculation period will wrap around.
- **Day type**: The day type for which results will be calculated. This is a drop down list containing the day types used in the TSD file. Multiple day types may be used in the same run of the macro, but a day type may not be included more than once.
- **Schedule**: this determines the hours in the day that the results will be calculated for. There is a drop down list containing the schedule used in the TBD file. The user can create additional schedules in the macro by clicking on the "Create schedule" button and filling out the data. Any schedule created this way will be saved in the TBD file.

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3D Modeller

- The mouse wheel can be used to move around 2D and 3D views. Hold down the mouse wheel to pan, rotate the mouse wheel to zoom in and out.

- Windows and window groups can be copied in the Window dialog box (Ctrl-W). Select a window or window group then click on the copy button. If a window groups is copied, the windows that are a member of that group are not copied.

- GBXML files can be imported. Select "Import GBXML" from the "File" menu, pick a file to be imported and then follow the on-screen instructions. This new functionality is still in its early stages and we would be interested in any feedback. Please email any comments to support@edsl.net

- Added a new warning "Internal shading cannot be calculated unless adjacent to a zoned space". This means that the surface is using a building element that has the "internal shading" option checked and one of its sides is touching an unzoned internal space. To remove the warning, either uncheck "internal shading" option for that construction or zone both sides of the surface.

Building Simulator

- An "Output" option has been added in the "zone group" details window. If the option is checked, all zones within the zone group will have their results outputted into the Tas Simulation Data file when a simulation is run. If it is unchecked, all zones within the zone group will have their results omitted from the Tas Simulation Data file when a simulation is run.

- The table in the "Zone groups" details window now has columns to show the maximum heating and cooling loads, whether the zone loads are being sized and whether the zone's results will be output.

Databases

- The NCM activities database has been updated with the latest data provided by BRE.

- A new construction, "Notional External wall for section 6" has been added to the "EDSL recommended Part L2 constructions" folder of the NCM constructions database. It has a U-value of 0.30 and should be assigned to the "Notional Wall" element in the notional building when modelling for Section 6.

- A new construction, "Notional flat roof for section 6" has been added to the "EDSL recommended Part L2 constructions" folder of NCM constructions database. It has a U-value of 0.16 and should be assigned to the "Notional flat roof" element in the notional building when modelling for Section 6.

Notional Building Generator Section 6

- There is a new macro called "Notional Building Generator section 6". It is used to create the notional building when calculating CO_2 emissions for Scottish buildings. It works in

the same way as the "Notional Building Generator 2006" except the user selects those elements which represent "high usage entrance doors, display windows and similar glazing". This ensures that the notional building has the same surface area of these elements as the design building. The other difference is that external surfaces that are less than 10 degrees from the horizontal are replaced with "Notional flat roof" and external surfaces that are between 10 degrees and 70 degrees from the horizontal are replaced with "Notional sloping roof". All roofs then have 20% of their surface area replaced with glazing.

Part L2 Macro

- There are new management features in the VRV air distribution file and the Plant Room specification file. They are called "lighting voltage reduction management scheme" and "Natural ventilation control designed to achieve an occupied period temperature always less than 28C" These are specific to Scottish building regulations section 6 and should only be used if the building being modelled is in Scotland.

- The latest version of the BRUKL document is output. This version highlights in red any element that fails the U-value check and any system that fails the systems check.

- There are new parameters for the BRUKL details dialog box:

    - **Country**: If "England and Wales" is selected then a BRUKL document will be outputted. If "Scotland" is selected then the "Scottish Building Regulations Section 6 Guidance" document will be outputted.
    - **Building Type**: Select the appropriate type for the building being modelled. This option will change the target U-values for Check 2a of the "Scottish Building Regulations Section 6 Guidance" document. This option will only be enabled if "Scotland" is selected as the country.
    - **Building is designed and built following the guidance in Accredited Construction Details (Scotland):** Currently this option does nothing and only appears when "Scotland" is selected as the country.

- The "Fixed Building Services" section of the BRUKL document as changed. For each Sub-project using a central air distribution system, the fan power will be output. For each plant room, the heating, cooling and DHW efficiency will be output. For each sub-project using a VRV systems the fan power, heating, cooling and DHW efficiency will be output. They will be labelled so the user will be able to tell which plant room/ air distribution/VRV file is being checked.

- Systems using terminal fans will have the fan power efficiency for terminal fans checked as well as the central AHU fan power in the "Fixed Building Services" section of the BRUKL document.

LightingControl / DaylightAvailability

The DaylightAvailability macro has been renamed. It is now called "LightingControl". The macro can now be used to calculate the lighting gain when using automatic presence detection (PIR) as well as daylight control.

When running the macro, first select the TBD file. The weather data, internal conditions, calendar and schedule will be read from this file. Select the type of lighting control that is to be modelled and what internal conditions the lighting gain will be applied to. Select the time period when the lights could be on. The final section of the dialog box is called "Daylighting Graph setup" and only

appears if daylight control has been selected. Once the dialog box has been filled in, click on the "Run" option. Graphs and tables will be output displaying the hourly lighting gain. If daylight control has been selected then graphs displaying diffuse illuminance within the space will also be output. If an internal condition has been selected then the calculated lighting gain will be assigned to it.

The macro has the following parameters:

Automatic Presence Detection: Select the type of PIR system being used. The hourly lighting gain will be multiplied by a factor appropriate to the type of system selected as shown in the table below.

Automatic Presence Detection	Factor applied to lighting gain
None	1
Auto On/Dimmed	0.95
Auto On/Auto Off	0.9
Manual On/Dimmed	0.9
Manual On/Auto Off	0.82

Daylight Control: Select the type of daylight control being used. The four options are described in the table below:

Daylight Control	Description
No Daylight Control	The lighting gain behaves independently of the amount of natural light in the room
Manual Daylight Control	When the natural room diffuse illuminance is below the target room illuminance then the maximum lighting gain is used. When it is above, the minimum lighting gain is used.
Photocell Control On/Off	When the natural room diffuse illuminance is below the target room illuminance then the maximum lighting gain is used. When it is above, the minimum lighting gain is used. Parasitic power is then added to the hourly lighting gain.
Photocell Control Dimming	When the amount of natural room diffuse illuminance is zero, then the maximum lighting gain is used. When the amount of natural room diffuse illuminance is greater or equal to the target room illuminance then the minimum lighting gain is used. Between these two values the lighting gain is inversely proportional to the natural room diffuse illuminance. Parasitic power is then added to the hourly lighting gain.

Target Room Illuminance: when the natural room illuminance exceeds this value, the lighting gain will be set to the minimum lighting gain value. If the natural room illuminance is below this value and Photocell Control Dimming has not be selected then the lighting gain will be set to the maximum lighting gain value. If dimming has been selected then the lighting gain is inversely proportional to the amount of natural light in the room

Maximum lighting gain (W/m2): the maximum amount of lighting gain allowed during the specified period.

Minimum lighting gain (W/m2): the minimum amount of lighting gain allowed during the specified period. This parameter only appears when modelling daylight control.

Daylight Factor (%): The room's natural diffuse illuminance on the horizontal working plane as a percentage of the external diffuse illuminance on a horizontal plane. This parameter only appears when modelling daylight control.

Parasitic Power: The amount of energy used by the lighting control system not including the lights themselves. The default for digitally addressable systems is 1W/m2 and the default for stand alone sensors is 0.3 W/m2. Alternatively, the user can specify a value for the system used. This parameter only appears when modelling daylight control with photocell sensors.

Photocell sensor is on Timer Clock: if this option is checked, the parasitic power is only added to the lighting gain on the hours selected by the user in the "Time Period" section of the dialog box. If it is unchecked, the parasitic power is added to the lighting gain for every hour of the year. This parameter only appears when modelling daylight control with photocell sensors.

Internal Conditions: The internal conditions that the calculated lighting gain will be applied to.

Time Period

The user must set up which time period they want to see results for.

Start day: The first day for which results will be displayed. This start day must be between 1 and 365. By default this value is set to the first day that the TSD has values for.
End day: The last day for which results will be displayed. This start day must be between the start day and 365. By default this value is set to the last day that the TSD has values for.
Day type: The day type for which results will be displayed. This is a drop down list containing the day types used in the TBD file.
Schedule: The schedule for which results are displayed. This is a drop down list containing the schedules created in the TBD file.

Daylighting Graph Setup

This section sets up the general details needed for creating the daylighting graphs. This section will only appear when modelling daylight control.

Start Illuminance (lx): Sets the first value for which results will be displayed.
End Illuminance (lx): Sets the last value for which results will be displayed.
Show monthly graphs: If this option is checked then the outputted spreadsheets will contain monthly charts for each month over the selected time period.

Tas Release 9.0.9c

Macros

- There is a new macro called "Summary and checks" which allows the user to output the TBD file's inputs into an excel workbook.

- The annual load macro now displays lighting gain, occupancy gain and equipment gain separately as well as totalled together in internal gain.

- The annual load macro now displays the annual loads for each zone in tabular form.

- The annual load macro has a new option which allows users to compare the total loads from two TSD files.

- The summary table in the frequency table has a new tab. This tab shows the peak

temperature/RH for each zone over the selected period. It also shows the average temperature/RH difference between the zone and the outside over the selected period.

- The lighting control option in the daylight availability macro has been made easier to user. This is fully described in the "Getting Started" tutorial. The video has not been updated however.

- The Part L2 macro now outputs the latest BRUKL document which includes seasonal efficiencies. The users will now have to select the type of system they are using in each sub-project and plant room.

- If the TBD file is saved after the Part L2 macro is run, the user no longer has to re-assign construction types to building elements unless a new building element has been created.

- The Part L2 macro now has an option for modelling co-generational and tri-generational CHP. This feature is not documented yet but the parameters used are as described in the non-domestic HVAC Guide which can be found by going to this link:

http://www.communities.gov.uk/pub/148/NonDomesticHeatingVentilationandAirConditioningComplianceGuide_id1500148.pdf

- The Part L2 macro allows the user the option of not having Heating Water Pumps and Chilled Water Pumps in their design building when using a plant room. This allows for the modelling of systems such as DX split systems. The user will still have to enter a circuit length of these systems as the notional will have these pumps.

Tas Release 9.0.9b

All Tas

- Added a new folder in the NCMConstructions database called "EDSL recommended PartL2 constructions".
- Added new calendars in the Calendars database for use in PartL2 calculations.
- Removed infinite loop in notional building generator 2006 when selecting a building element that is used internally for a personal door.

Part L2 2006

- After discussions, it has been decided that the fresh air in the notional model should be heated and cooled to the same temperature as the zone's lower limit. Previously it had been heated and cooled to the same conditions as the design model.
- Problem with reading the correct TBD when "assigning constructions with building element". The information is now stored in a file named after the TBD and not the building name.
- Removed the management factors and replaced them with "Management Features" in line with the PartL2a document. You must re-save the plant room spec files and/or VRV spec file to use them.
- Removed humidification control as it was not part of CO_2 emissions calculation.
- Added Domestic Hot Water.
- Added an option to set the Electric COP in the plant room spec file.
- The user must now set the Heating Circuit Length even if the using a pure electric

heating system as the notional building uses pumps.

- Removed an option to set the Fresh air fan SFP and check the fresh air cooling option from the air distribution file when a CAV or VAV system is being input. If these options have been previously used, the macro will ignore them.
- Added schematics and descriptions for each type of system in the Air Distribution file.
- Added an option to model displacement ventilation system in the Air Distribution file.
- In the Air Distribution file, split VAV into two options; VAV and FATVAV.
- In the Air Distribution file, split Fancoil into two options; Fancoil and Chilled Beams\Chilled Ceilings.
- In the Air Distribution file, split Mechanical Ventilation into 3 options; Mechanical Ventilation, Mechanical Ventilation (extract only) and Mechanical Ventilation with Recirculation.

Tas Release 9.0.9a

All Tas

- Changes and additions for performing 2006 Building Regulations calculations.

Tas Release 9.0.8

3D Tas

- Inclined walls (sloping floors) - implemented by allowing floor heights to be assigned, and windows to be placed in floors.
- Create an isometric view from direction of the sun at given day/time - option on view setup dialog.
- Set Length of wall on input - RH button gives menu option when in wall input mode.
- Wall perpendicular/parallel options - RH button gives menu option when in wall input mode ,to be parallel or perpendicular to previously selected wall.
- Accelerator keys implemented for grid and angle snap - these options are also available on the RH button menu.
- Merge floors problems - major change to merge functionality that has fixed many problems.
- Infinite Loop on export - BE had itself as a secondary element, added check when creating BE.
- Problem applying plane to space with nearly co-linear walls - changed tolerance in plane calculation.
- Fatal error handler implemented in DWG file import, should stop crashes during import.
- Couldn't get out of select by rectangle mode if a zoom window command issued before the select rectangle completed, now fixed.
- Shading bug, shadows look different from different views- problem with windows in walls not on perimeter of the floor.
- When a door is the first in the window list and is included in a group, it was not setting the y offset to zero, and hence reported overlapping errors. Now fixed.
- All windows in group are now offset by the floor width if any one of them is a door.
- The point letters ABC in plane definition are now displayed when editing a plane and when it is selected to be used to calculate a height.
- Problem copying all walls to a floor - all windows were not copied - now fixed.

Building Simulator

- Added new standardised internal heat transfer flags for TM33 ADL2 2006 accreditation.
- Added aperture control ZDWNN without an outside air temperature cutoff.
- Two ventilation function types, tcmvc and tcmvn have been added to control ventilation based on zone and outside air temperature.
- There is now a 'Thread Priority' option to allow simulations to run at lower priority so the user can continue working more effectively with other foreground tasks (off by default, i.e. simulations will run as fast as possible).
- IZAMs, ICs etc can now be dragged onto a selection of Zones in the Zone List View.
- All U value and glazing parameters are now calculated in accordance with EN410, EN673 and EN6946 as part of the new ADL2/TM33 requirements.
- Complete HTML help file TBD.chm now available via F1 (context sensitive) key press.
- Fixed problem to do with Internal Shading where a large number of zones with a small number of surfaces could result in an incorrect array size being calculated.
- Thermomstat setback temperature can now be used for frost protection (was previously ignored as plant was considered to be 'off' when the schedule was 'off').
- Substitute element now works from Profile value not only schedule value as before. Any non-zero Profile value will force the use of the Substitute Element.
- There is a new cavity convection calculator included in the Gas Layer form. This will calculate EN673 (transparent) or EN6946 (opaque) compliant cavity values.
- IZAMS can now be copied quickly (like ICs and constructions) by dragging them onto the parent folder.
- New solar radiation check to ensure low radiation when the sun is lower than 8 degrees below the horizon.

Result Viewer

- Complete HTML help file TSD.chm now available via F1 (context sensitive) key press.
- Now allow 12 variables to be displayed for a whole year on PCs with 2.5GHz or greater processors.

Part L2

- Added new option for mechanically ventilated systems that allows the user to model systems that use recirculated air. The volume of recirculated air is sized based on the peak heating load and the supply air temperature is optimised to control the room temperature. No additional heating occurs in the room. Subprojects that use this system can only contain a single zone.
- The option to optimise central plant temperature has been removed. CAV systems and mechanical ventilation with recirc now always optimise the central plant temperature, all other systems do not.
- CAV now optimises supply air temperature for heating as well as cooling.
- The resultant temperature values have been removed from the "Sizing" results.
- Results given in CO_2 instead of Carbon.
- Created an option to have extract fan only systems in Part L2.
- Now outputs "daylight factor" parameter in the setup tab of the excel spreadsheet created by running the daylight availability macro.
- On the CECM table of the output for Part L2, cells the contain total values have been replaced with cells that contain formulas that calculate totals. This way if the user alters the spreadsheet it will recalculate the total for them.
- In the PartL2 macro, fixed a problem with the boiler calculation that was caused by Excel rounding numbers