

Advance Design 2013 / SP1



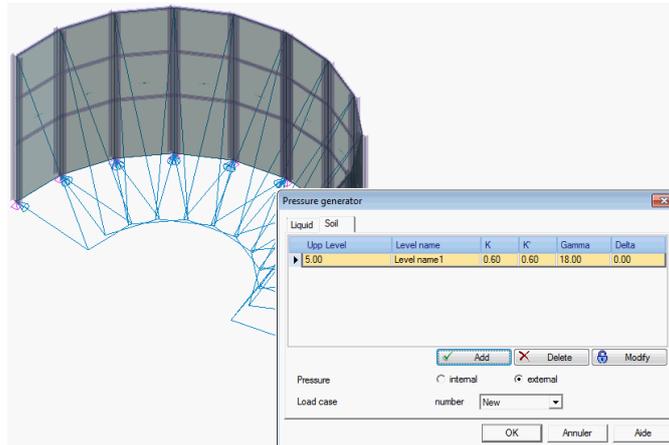
This first service pack for ADVANCE Design 2013 offers more than 110 improvements and corrections.

It should be installed on the Advance Design 2013 version that was delivered on the DVD.

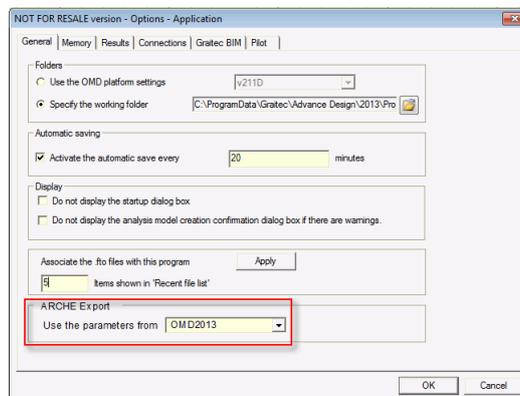
The most significant improvements are listed here below:

GENERAL APPLICATION

- [14222] As requested by users, the pressure generator (soil & liquid) can now be used on windwalls.



- [14289] Correction: the Compact function was sometimes not available on large models.
- [12722] As requested by users, the Graitec OMD version can now be selected when exporting a concrete element (beam, column, footing and wall) to ARCHE.

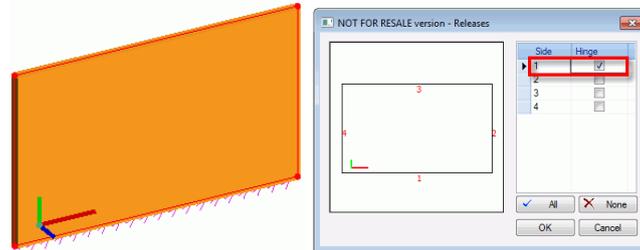


- Correction: we noticed that defining a hinged side on a planar element could let to incorrect load transfer when this side was also connected to punctual or linear supports.

Therefore, in AD2013 SP1, hinges defined on a side linked to a support are automatically ignored, as mentioned in the warning message:

“Hinges defined on sides connected to supports are not taken into account for element xx.”

Meanwhile, in order to define a hinged wall on support, one should simply use a hinged linear support.

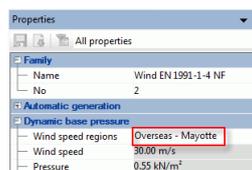


EUROCODE 0

- [14195] Correction: ULS combinations are now generated even when there is no loadcase other than dead loads.
- UK Annex : Combination codes are more appropriate:
 ULS STR/GEO combinations are now given a ECULSSTR code.
 SLS Characteristic combinations are now given a ECSLSC code.
 SLS Frequent combinations are now given a ECLSLF code.
 SLS Quasi-permanent combinations are now given a ECLSLQ code.

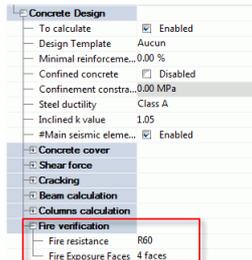
EUROCODE 1

- [13950] French NA: a new wind region is now available for Mayotte, according to the latest update of the norm.

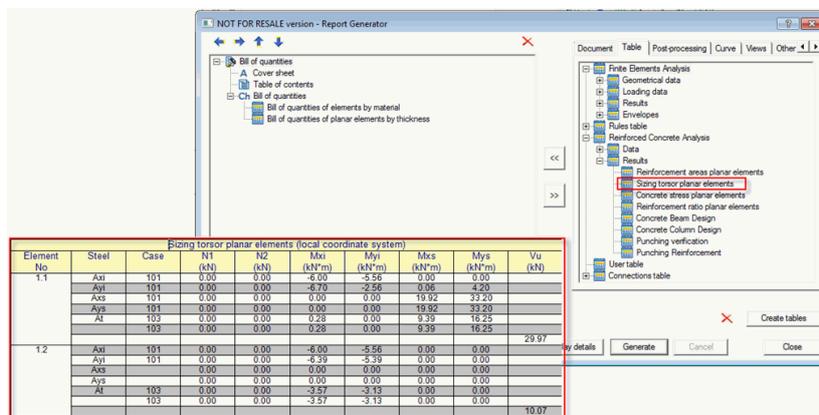


EUROCODE 2

- [14287] The EN1992-1-2 parameters (for fire verification) are now located in the element properties (whereas previously, these were global parameters).



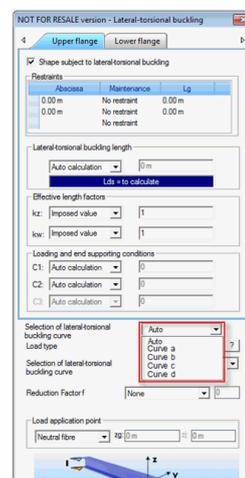
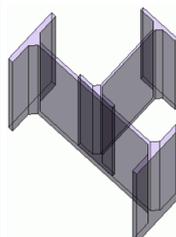
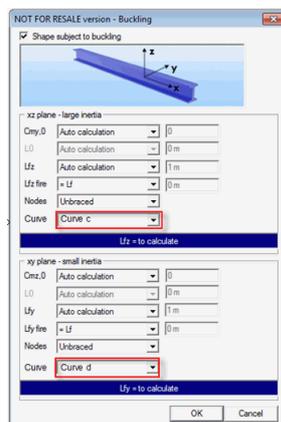
- [14090] The “Sizing torsor planar elements” table now returns the critical forces used in the EC2 design.



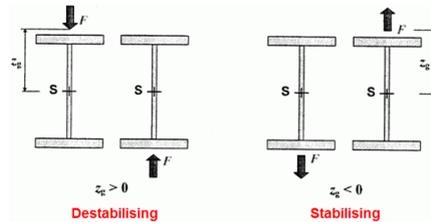
- [14287] Fire verification would sometimes return a warning on columns about inappropriate dimensions whereas cross-section met the requirements from table 5.2b - EN1992-1-2.

EUROCODE 3

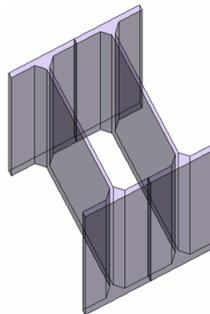
- [11691] New fields have been introduced in buckling and lateral torsional buckling properties. Users can now manually set the curve to be used in the calculation. This enables EC3 design on basically any shape.



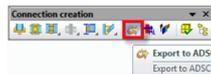
- [14475] Added 2 options for load application point in the lateral torsional buckling window:
 - o **Destabilizing:** Advance Design uses $z_g = h/2$, providing the most pessimistic value for M_{cr} .
 - o **Stabilizing:** Advance Design uses $z_g = -h/2$, providing a favourable value for M_{cr} .



- [13890] Advance Design is now able to calculate the $A_{v,y}$ and $A_{v,z}$ characteristics for complex shapes such as compound sections. Previously, these missing characteristics would stop the EC3 calculation.



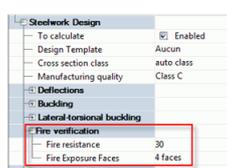
- A new icon has been added to the Connection creation toolbar, to enable the ADSC export (Advance Design – Steel Connection).



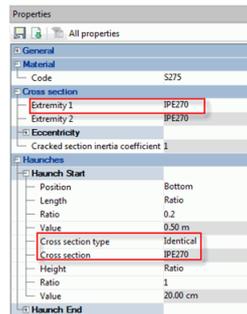
- [14137] The EC3 detailed results can now be edited directly from the shape sheet.

Shape sheet - Linear element No. 1 Filaine	
Interaction coefficients (Annex A)	$C_{my} = 0.98$ $C_{m1} = 0.79$ $C_{m2} = 0.96$ $C_{m3} = 0.98$ $k_{yy} = 1.05$ $k_{yz} = 0.92$ $k_{zy} = 0.54$ $k_{zz} = 1.03$
Verification (6.61)	$\frac{N_{Ed}}{N_{Rk}} + k_{yy} \cdot \frac{M_{y,Ed} + \Delta M_{y,Ed}}{M_{y,Rk}} + k_{yz} \cdot \frac{M_{z,Ed} + \Delta M_{z,Ed}}{M_{z,Rk}} \leq 1.00$ $0.02 + 0.36 + 0.49 = 0.86 < 1.00$ (86%)
Verification (6.62)	$\frac{N_{Ed}}{N_{Rk}} + k_{zy} \cdot \frac{M_{y,Ed} + \Delta M_{y,Ed}}{M_{y,Rk}} + k_{zz} \cdot \frac{M_{z,Ed} + \Delta M_{z,Ed}}{M_{z,Rk}} \leq 1.00$ $0.05 + 0.18 + 0.55 = 0.78 < 1.00$ (78%)

- [14287] Fire verification parameters are now element-specific (whereas previously, these were global parameters).

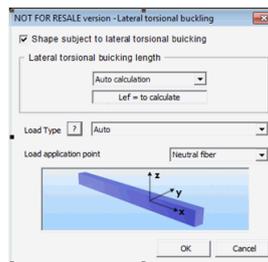


- [13749] Correction: the automatic optimization now always updates both the element cross section and the haunch cross section when there is one.



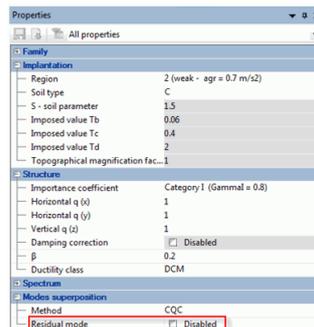
EUROCODE 5

- [12980] A new set of properties have been introduced for timber elements. Users can now set the lateral torsional buckling length to be used in the EC5 design.



EUROCODE 8

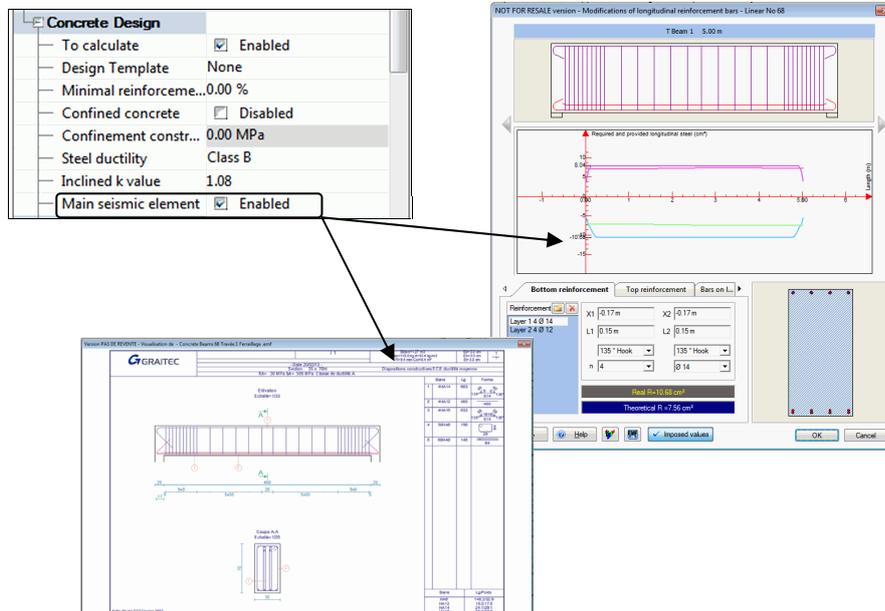
- [13796] The residual mode option is no longer activated by default when set on EN1998-1-1.



- [14230] Correction: the behaviour coefficient displayed in the “Seismic analysis assumptions” table no longer differs from the one defined by user.
- [14410] Correction: the SRSS modal summation is no longer available. It has been removed temporarily. This method should be back soon and it will benefit from the latest improvements regarding torsor calculation (torsors per group and torsors per level) already implemented in the CQC method.



- Correction: the calculation of the torsors per level has been fixed for seismic load cases. There were correct for the CQC summation but over-estimated for the eigen modes, one by one.
- A new option, available for beams and columns, allow the user to define if the element is main and secondary according the EC8. If the element is defined as a “Main seismic element”, the seismic reinforcement dispositions will be applied according to the imposed ductility class of the structure.



CM66

- [14306] Correction: the results from the steel design analysis would sometimes not be available on computers using Windows 8.

PS92

- [13436] Correction: the seismical parameters given in the “Seismic analysis assumptions table” no longer differ from the ones input by user.
- [14410] Correction: the SRSS modal summation is no longer available. It has been removed temporarily. This method should be back soon and it will benefit from the latest improvements regarding torsor calculation (torsors per group and torsors per level) already implemented in the CQC method.

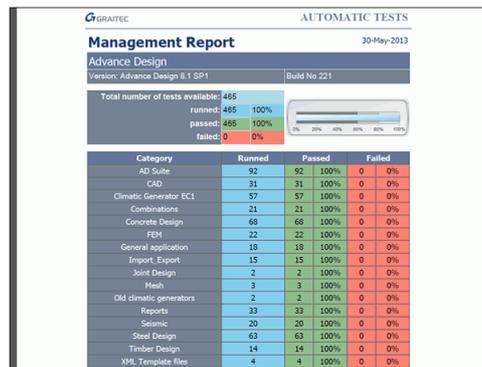


VALIDATION

As all the other versions or major service packs, the SP1 has been submitted to a validation process.

It represent 465 tests passed automatically, each of them have a detailed validation report.

Here is the synthetic validation report:



The complete validation guide has been updated and is available for download on the Graitec Advantage web site, under the chapter « Downloads \ Documentation \ Advance Design »).

Note: The reference number (Ref. xxxx) refers to an index of the internal GRAITEC Database.
