

ADVANCE Design 2011
SP1
What's new



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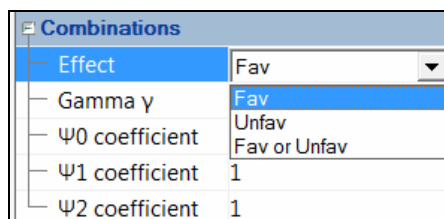
This first service pack for ADVANCE Design 2011 offers more than 230 improvements and corrections, among which are:

General application

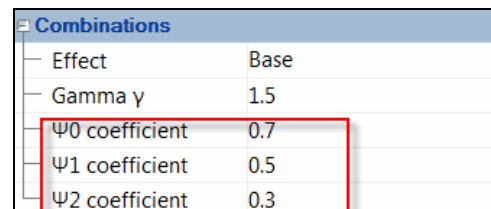
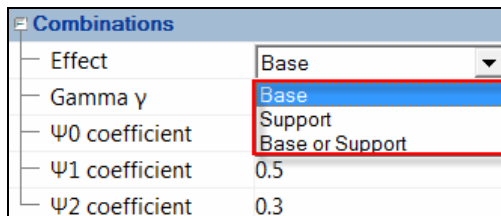
- Correction: the "Extrude" function was not operational (Ref. 11648).

Combinations

- Improvement: new entries have been added to loadcase properties:
 - Each dead loadcase can be set as "Favorable", "Unfavorable" or both.

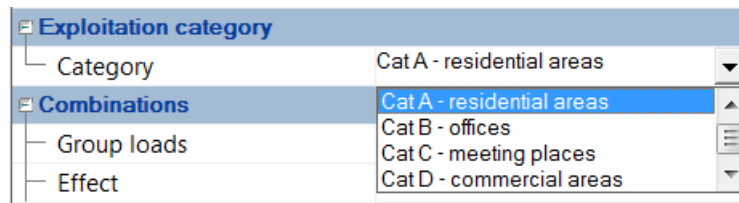


- Each variable loadcase (Q, W, Sn, T...) can be set as "Base" or "Support" or both and can be given user-defined Ψ_0 , Ψ_1 and Ψ_2 coefficients :



- Usage category (residential areas, offices, meeting places...), Cat B can now be defined for each Q loadcase.

This way, it is now possible to manage several Usage categories (example: Cat B - offices and Cat H - roofs) on the same model.

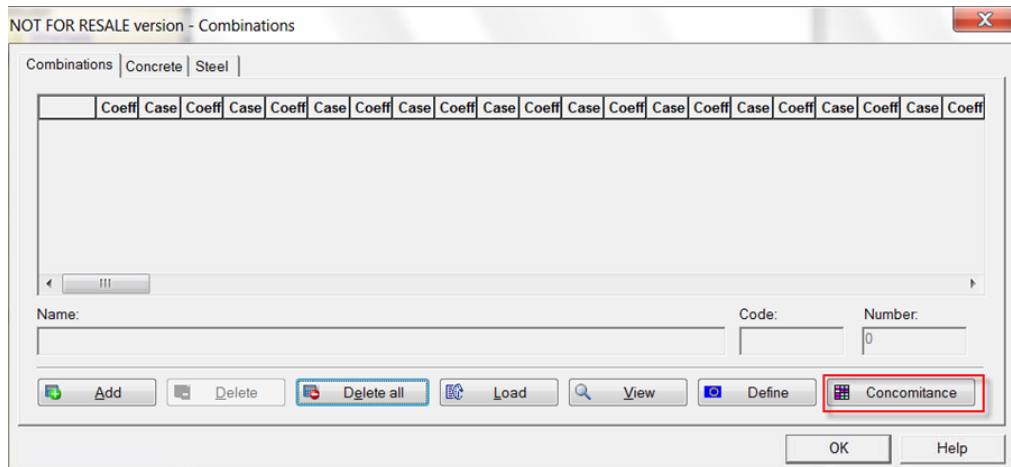


- These new properties can also be defined for each family through the "Group loads" option.

Combinations	
Group loads	<input checked="" type="checkbox"/> Enabled
Effect	Base
Gamma γ	1.5
Ψ_0 coefficient	0.7
Ψ_1 coefficient	0.5
Ψ_2 coefficient	0.3

Each loadcase will then inherit properties from its family.

Please note that, these new loadcase properties are only taken into account when generating combinations through the "Concomitance" button introduced in ADVANCE Design 2011.

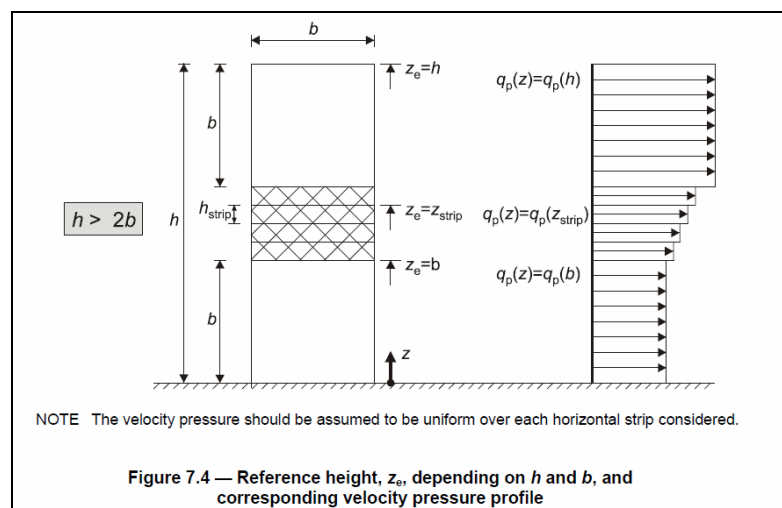


Eurocode 1

- Improvement: in the "Description of climatic loads" table, the article references are now easier to read (Ref. 11480).

$h < 100\text{m}$ et $h < 4 \cdot d$ puis $c_s c_d = 1$	6.2(1) c)
$n > 5\text{Hz}$ puis $c_s c_d = 1$	6.2(1) b)
$L_t = 300\text{m}$ et $z_0 = 200\text{m}$	B1 (1)
$\alpha = 0.67 + 0.05 \cdot \ln(z_0)$	B1 (1)
$n = n_{1,x} = \frac{46}{h}$ [Hz]	F.2 (2)(F.2)
$L(z) = L_t \cdot \frac{z}{z_t}$ pour $z \geq z_{\min}$	B.1 (1) (B.1)
$L(z) = L(z_{\min})$ pour $z < z_{\min}$	B.2 (2) (B.3)
$B^2 = \frac{1}{1 + 0.9 \cdot \left(\frac{b+h}{L(z_t)}\right)^{0.63}}$	B.1 (2)
$f_L(z, n) = \frac{n \cdot L(z)}{v_m(z)}$	B.1 (2)(B.2)
$S_L(z, n) = \frac{n \cdot S_v(z, n)}{\sigma_v^2} = \frac{6.8 \cdot f_L(z, n)}{(1 + 10.2 \cdot f_L(z, n))^{3/3}}$	B.2 (6)
$\eta_b = \frac{4.6 \cdot h}{L(z_t)} \cdot f_L(z_t, n_{1,x})$ et $\eta_b = \frac{4.6 \cdot b}{L(z_t)} \cdot f_L(z_t, n_{1,x})$	B.2 (6)(B.7)
$R_h = \frac{1}{\eta_b} - \frac{1}{2 \cdot \eta_b^2} (1 - e^{-2 \cdot \eta_b})$; $R_h = 1$ pour $\eta_b = 0$	B.2 (6)(B.8)
$R_n = \frac{1}{\eta_n} - \frac{1}{2 \cdot \eta_n^2} (1 - e^{-2 \cdot \eta_n})$; $R_n = 1$ pour $\eta_n = 0$	

- Correction: there was a mistake in the wind pressure formula in the case of tall buildings (Ref. 11197).



- Improvement: the "exceptional snow fall" field is now automatically activated when set on A2, B1, B2, C2 and D snow areas (see 1.1 (3) from French National Appendix) (Ref. 11381).

Clause 1.1(3)

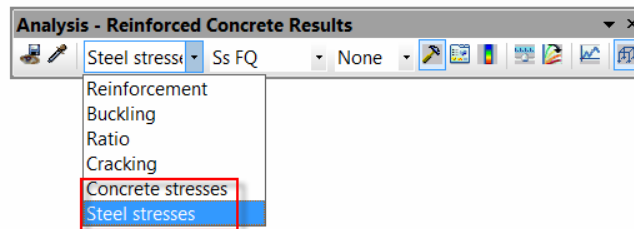
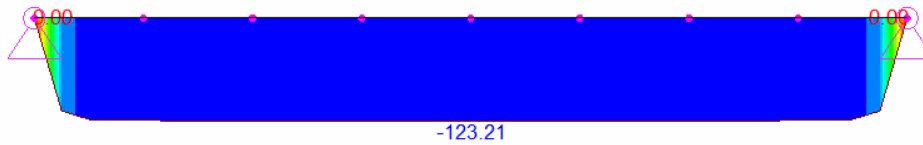
Les conditions d'emploi du Tableau A.1 de la norme NF EN 1991-1-3:2004 à prendre en compte sont les suivantes :

- pour les régions A1, C1 et E définies par la carte fournie en annexe de la présente norme : les conditions normales (ni chute exceptionnelle ni accumulation exceptionnelle de neige à considérer),
- pour les régions A2, B1, B2, C2 et D : les conditions normales et le cas B1 des conditions exceptionnelles (possibilité de chute exceptionnelle mais sans accumulation exceptionnelle).

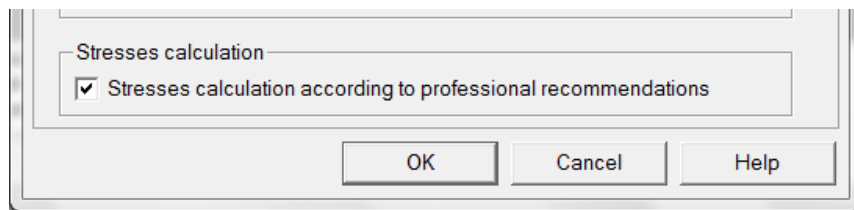
Toutefois, si des conditions locales particulières le justifient, les spécifications particulières du projet individuel peuvent prescrire de prendre en compte également le cas B3 des conditions exceptionnelles (possibilité de chute exceptionnelle avec accumulation exceptionnelle).

Eurocode 2

- Improvement: ADVANCE Design can now return values for both concrete stresses and steel stresses.



A new option has also been added in order to compute stresses according to French "Recommandations professionnelles".

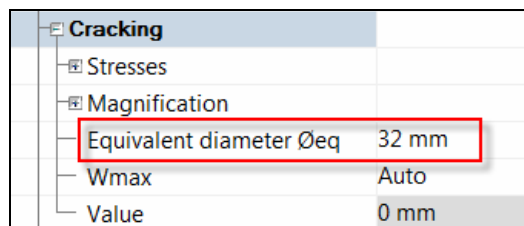


When activated, ADVANCE Design will use the same α_e value for the three SLS combinations (characteristic, frequent, quasi-permanent):

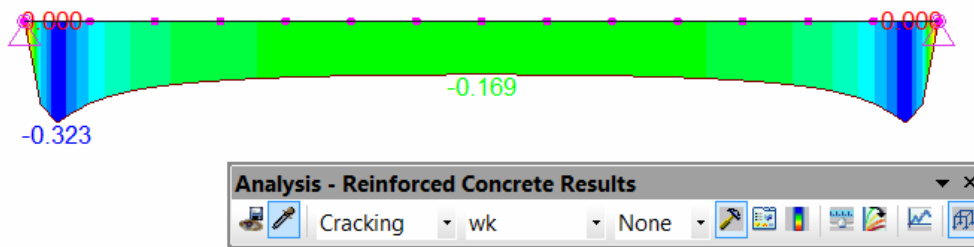
$$\alpha_e = \frac{E_s}{E_{cm} \left(1 + \varphi(\infty, t_0) \cdot \frac{M_{Eqp}}{M_{Ecar}} \right)}$$

- Improvement: ADVANCE Design can now perform a crack widths calculation (see 7.3.4 from EN1992-1-1).

A new field "Equivalent diameter Φ_{eq} " has been added in the concrete properties of linear and planar elements.



After calculation, the values for $S_{r,max}$, $\xi_{sm}-\xi_{cm}$ or w_k can be displayed.



The crack width is calculated taking into account the theoretical reinforcement value for the reinforcement ratio calculation. In the ADVANCE Design 2012 release, this feature will be improved with the possibility of defining the reinforcement bars on linear and planar elements.

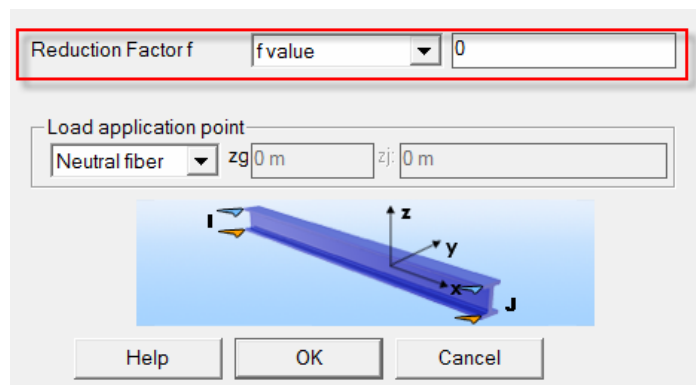
- Improvement: The Young's modulus for concrete materials is now computed with the formula from EN1992-1-1 (Ref. 11617).

$$E_{cm} = 22[(f_{cm})/10]^{0,3}$$

(f_{cm} en MPa)

Eurocode 3

- Correction: users could not enter a value for “f” (lateral torsional buckling) (Ref. 11433).

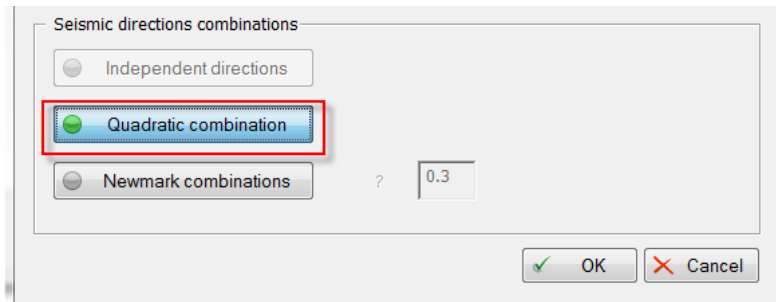


- Correction: when computing shear areas S_y and S_z with $\eta h_w t_w$ (6.2.6 from EN1993-1-1), ADVANCE Design used total height instead of web height (Ref. 11733).
- Correction: the slenderness values λ_y and λ_z displayed in the shape sheet were incorrect (Ref. 11550).

Buckling Slend. and Length	LambdaFy = 3.179 LambdaFz = 0.854 Lfy = 10.00 m Lfz = 10.00 m
L.tors.buckl. Slend. and Length	LambdaDi = 1.130 LambdaDs = 1.130 Ldi = 5.00 m Lds = 5.00 m

Eurocode 8

- Correction: when set on "Calculation spectrum" the values for T_B , T_C and T_D were wrong (Ref. 11478).
- Correction: the "Quadratic combination" button was not operational (Ref. 11673).



Note: *The reference number (Ref. xxxx) is the GRAITEC Database reference.*
