

## Tension only members

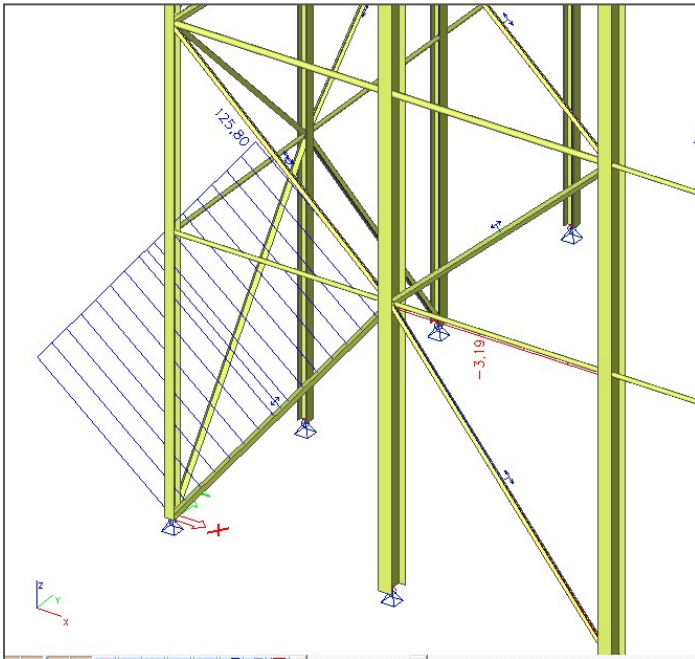
CPE esas.07

Analysis of the structure with the possibility to define members capable of resisting only to tension or compressive forces or a limited compression or tension. A practical application is the elimination of compression in wind bracing.

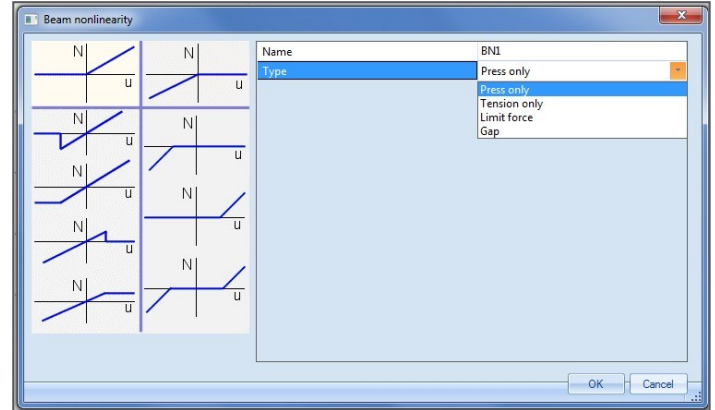
### Features

It is possible to define a member with following non linearity types:

- pressure only: the member is only active under pressure (i.e. strut, ...)
- Tension only: the member is only active under tension (i.e. anchor, diagonal, ...)
- Limit force: the member acts in the structure until a specified limit is reached after which the member will be eliminated from the calculation or yields plastically.



When using this type of beam non-linearity, it can happen that numerically a very small pressure/tensile force remains in the member, mostly due to the self-weight. This value will always be negligible compared to the other force components in the member.



Example of internal forces - diagonals are tension only.

It is important to keep in mind that 'Tension only' does not change anything for shear forces and moments. The only component which cannot occur is compression, but the member can still be subjected to bending, torsion,... To specify that a member can only be subjected to normal forces, the FEM type of the member can be set to axial force only.



Tension-only elements in real project: Coverage of the atrium, Helios Building; Baudin Châteauneuf

### Required modules

esas.00