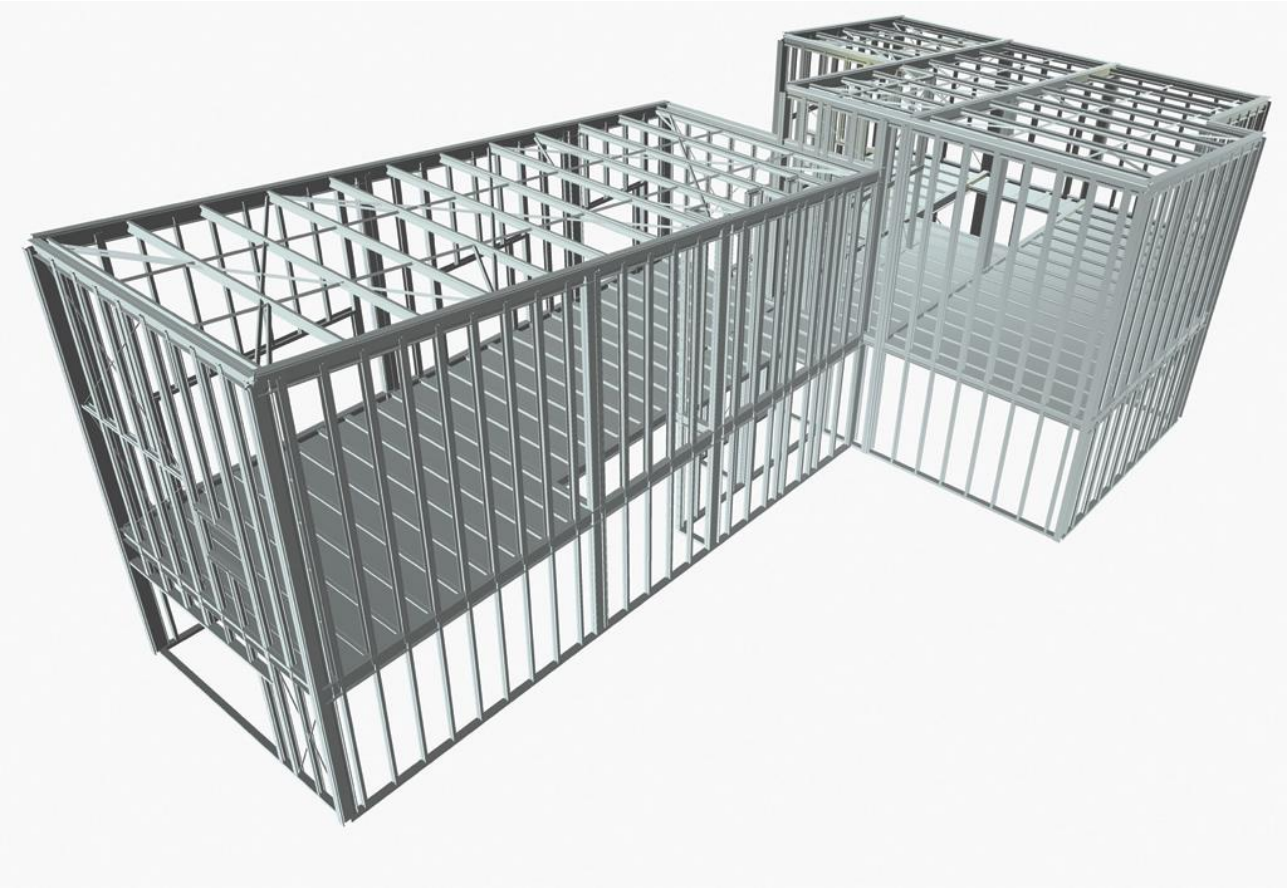
CFS design with SCIA Engineer



Official Partner of SCIA in Cyprus

Evgeniou Voulgareos 87A, 4153, Limassol, Cyprus
Tel: +357 25251718, Mob: +357 97614727
Email: info@masesoft.com

Process for calculation

1. New > Select New Project > Analysis > OK
2. Project data > Basic data > Material (Concrete, Steel)
   > Functionality > Dynamics (Seismic, General Dynamics)
   > Subsoil (Soil Interaction, Pad foundation check)
   > Stability
   > Climatic loads
   > Loads (Wind load, Snow load) > OK
3. Setup > Mesh
4. Setup > Solver
5. Setup > Concrete solver
6. Main > Structure > Modelling/Drawing > Import DWG, DXF, VRML97 or
   Main > Line grid and storeys > 3D Line grid or
   File > Import > IFC 2x3
7. Cross-sections
8. Layers (Για όλες τις διατομές και πλάκες ανά όροφο)
9. Stroreys
10. Main > Structure (1D member, 2D member)
11. Main > Structure > Model data > Section on beam
12. Main > Structure > Model data > Support
13. Connect Members/nodes
14. Main > Structure > Model data > Hinge on beam
15. Structure > Load panel (Walls and roof) Arrow should always look outside structure
    > From properties choose 3D wind
16. Connect Members/nodes
17. Check structure data
18. Main > Load Cases (Selfweight, Dead, Dead-Partitions, Dead-Roof, Live)
19. Main > Load Groups (Permanent, Dead-Partitions, Dead-Roof, Variable)
20. Main > Loads > Dead > Surface load > on 2D member
    > Live > Surface load > on 2D member
    > Dead-Partitions > Line force > on 2D member edge
21. Mesh generation
22. Main > Dynamics > Mass groups (Selfweight, Dead, Live)

23. Main > Dynamics > Combination of mass groups (Add All > OK)
    > For ''Dead'' and ''Live'' loads below surface (also with ground floor) are NOT added to the ''Combination of mass groups'' because masses bellow ground surface are NOT calculated.
    > For ''Live'' loads above ground (0+) > Used Coeff. = 0.3 (Auto)
    > Code: $\Psi_{Ei} = \varphi \times \psi_{2i} = 0.3$ (Residential $\varphi = 1$, $\psi_2 = 0.3$) - Table A1.1 + A1.2(B) (CYS)
24. Libraries > Load > Seismic spectrums (q-factor for steel)
25. Main > Load Groups (Together, Seismic)
26. Main > Load Cases (Seismic > Dynamic > Seismicity > CQC)
    > Seismic X => X=1, Y=0, Z=0
    > Seismic Y => X=0, Y=1, Z=0
27. Libraries > Loads > Seismic spectrums
    > Period
    > Eurocode
    > Code parameters > AgR*γi, q factor, Subsoil, Spectrum (Type 1), Direction.
28. Load > 3D wind generator > OK
    > Add load cases > Run generator (16 load cases)
29. Main > Combinations (live load coeff=0.3 only for seismic combination - Auto)
    > ULS with wind, SLS, Seismic X (0.3Y), Seismic Y (0.3X))
30. Main > Stability combinations (Selfweight, Dead, Live)
31. Main > Result classes > TOTAL (ULS, Seismicity)
    > DYN (Seismicity)
    > GEO (ULS)
    > SERV (SLS-Char, SLS-Quasi)
32. Properties > Buckling data
33. Analysis > Modal
34. Main > Results (Modal Participation factors Wxi, Wyi, Wzi_R > 0.90)
35. Main > Load Cases (Predominant mode > Mode shape)
36. Analysis > Test of input data (Δημιουργεί τις σωστές μάζες ανά μέλος που έχει Line force)

MASES ENGINEERING SOFTWARE
Evgeniou Voulgareos 87A, 4153, Limassol, Cyprus
Tel: +357 25251718, Mob: +357 97614727
Email: info@masesoft.com
SCIA A NEMETSCHEK COMPANY

37. Calculation > Batch analysis (Linear, Modal, Stability)

    Solver setup > Use IRS in case of 2 storey or more

38. Main > Results
39. View > New animation window > Play
40. Main > Steel > Steel slenderness > Properties > Selection field > Standard
    > Values > Lam y
    (Λυγηρότητα στον y)
    > Extreme > No > Refresh

    Αλλάξτε μόνο τα Values για Ly και ly και πιέστε Refresh
    > Properties > Ly > Refresh
    > Properties > ly > Refresh
41. Main > Steel > Beams > Member check data > ULS check > Check (Preview για πίνακα)
42. In case of high Unity, Section and Stability checks you may need to add LTB restraints and Member buckling data for steel members

MASES ENGINEERING SOFTWARE
Evgeniou Voulgareos 87A, 4153, Limassol, Cyprus
Tel: +357 25251718, Mob: +357 97614727
Email: info@masesoft.com
SCIA A NEMETSCHEK COMPANY

Concrete foundation

43. Remove Supports
44. Main > Structure > 2D member (Wall=Shell, Slab=Plate)
45. Main > Structure > Model data > Support > surface (el. foundation)
46. Main > Structure > Model data > Property Modifiers 1D (0.5)
    For 1D members below ground (0 <) change ‘’Mass factor’’ to 0*.
47. Main > Structure > Model data > Property Modifiers 2D (0.5)
    For 2D members below ground (0<) change ‘’Mass factor’’ to 0*.

* ‘’Mass factor’’ has to be zero (0) because foundations and basements have no movement because according to codes they are non-sway members.

48. Libraries > Load > Seismic spectrums (q-factor for concrete)
49. Connect Members/nodes
50. Check structure data
51. Analysis > Batch analysis (Linear, Modal, Stability)
52. Main > Results > Beams > Internal forces on beam
    > Properties > Rib/Integration strip (√)
53. Main > Results > 2D member
54. Main > Results > 2D member > Integration strip (Strip foundation)
55. Main > Concrete > 2D member > Member design > Member design ULS
    Properties > Use scale isolines
56. Main > Concrete > 2D member > Reinforcement 2D
57. Main > Structure > Load panel > Load to panel edges
58. Main > Load > 3D Wind Generator > Add Load Cases
    > Run generator
59. Main > Load case > 3D Wind √ or
60. Select panels > Properties > 3D Wind √
61. Connect Members/nodes
62. Check structure data
63. Analysis > Test of input data

64. Analysis > Batch analysis (Linear, Modal, Stability)
65. Main > Results
66. Engineering Report for steel results
67. Engineering Report for concrete results

Για την γεωμετρία θα χρειαστεί να ενεργοποιήσετε:

- Snap mode  
- View > Set view parameters > Set view parameters for all

MASES ENGINEERING SOFTWARE
Evgeniou Voulgareos 87A, 4153, Limassol, Cyprus
Tel: +357 25251718, Mob: +357 97614727
Email: info@masesoft.com
SCIA A NEMETSCHEK COMPANY