

RKALC



STRUCTURAL ANALYSIS

From concept models to advanced finite element analysis.

**AUSTRALIAN – DEVELOPED
STRUCTURAL ENGINEERING SOFTWARE**



Why RKALC Analysis?



CLOUD BASED

Access your projects anywhere, anytime



TRANSPARENT

Every step shown, no black boxes



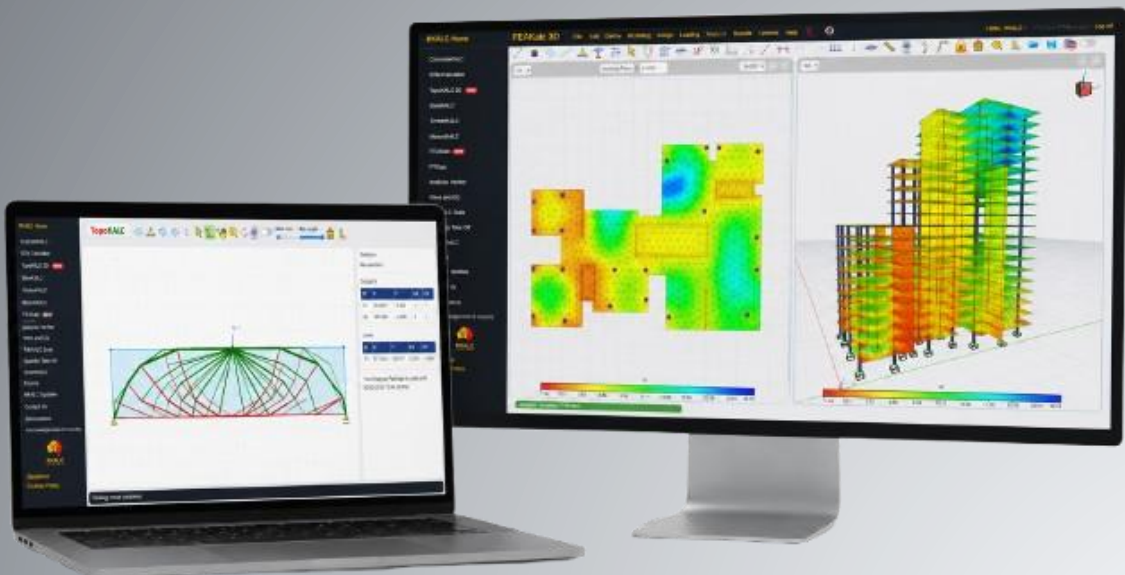
VERIFIED

Built for confidence in design & review



EXPANDING

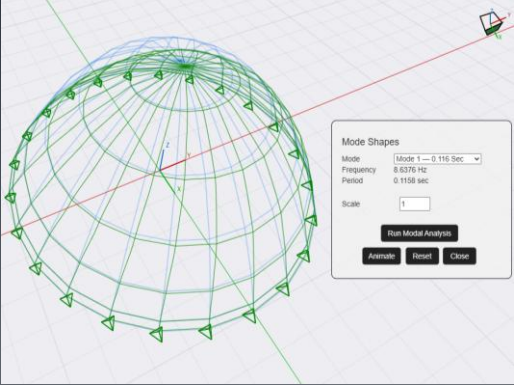
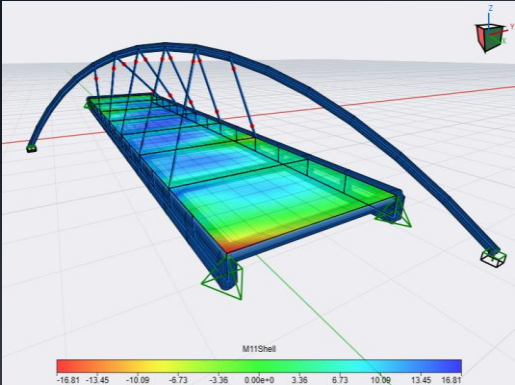
New tools and features added regularly



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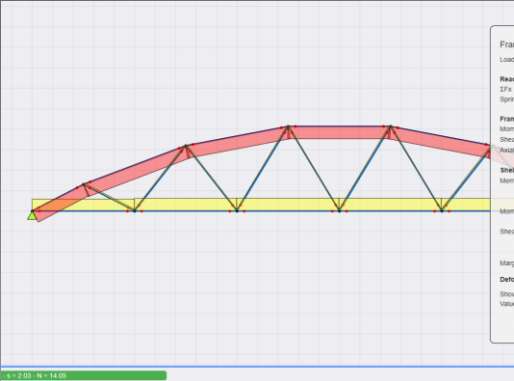
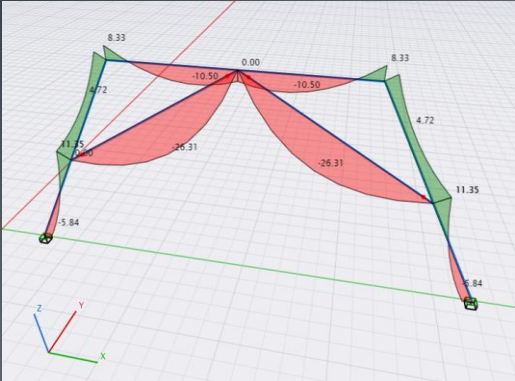


Bridges



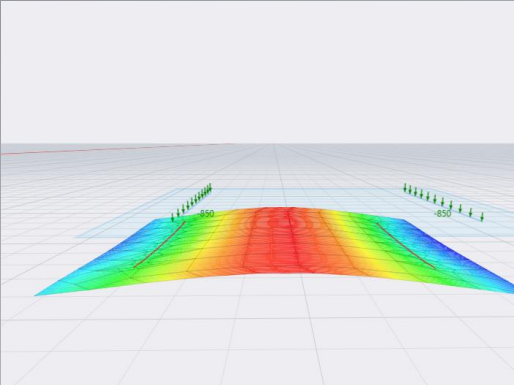
Modal Analysis

Portal Frames



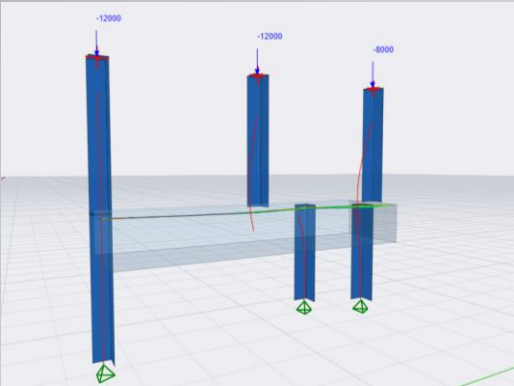
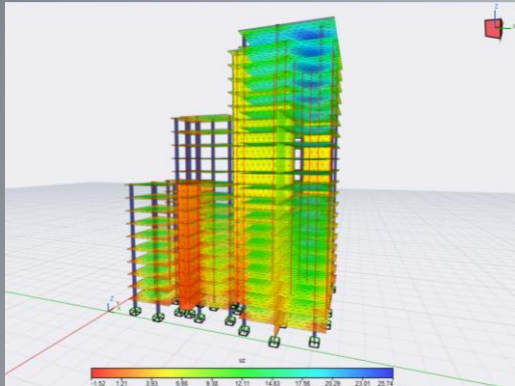
Trusses

Floor Plates



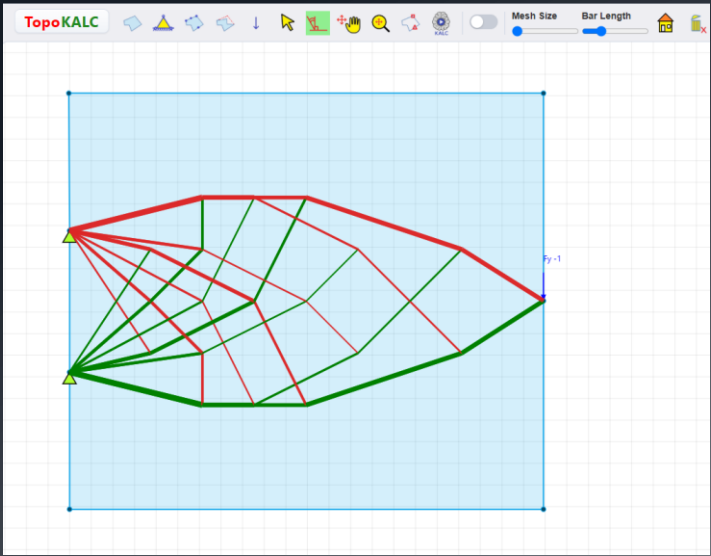
Spring Support

Full Buildings



Verifications



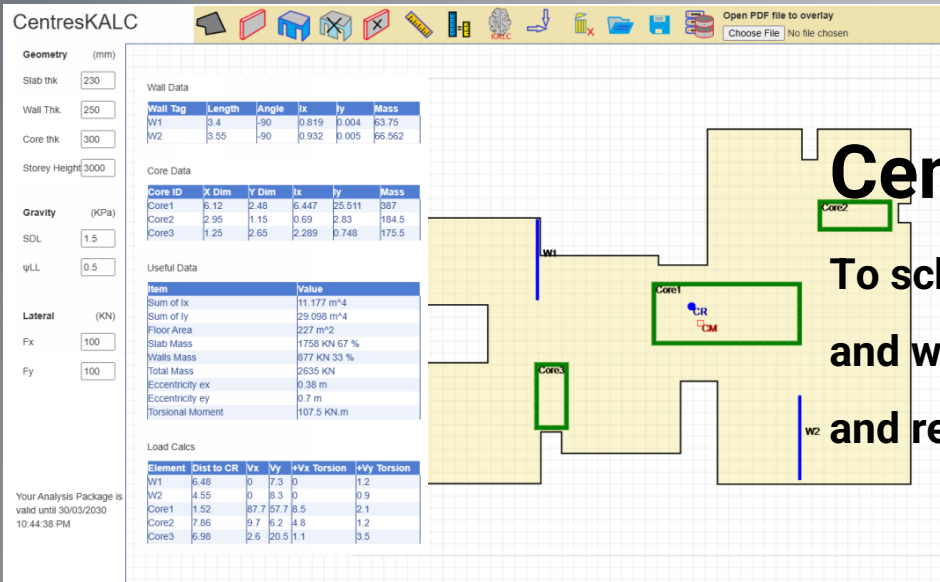
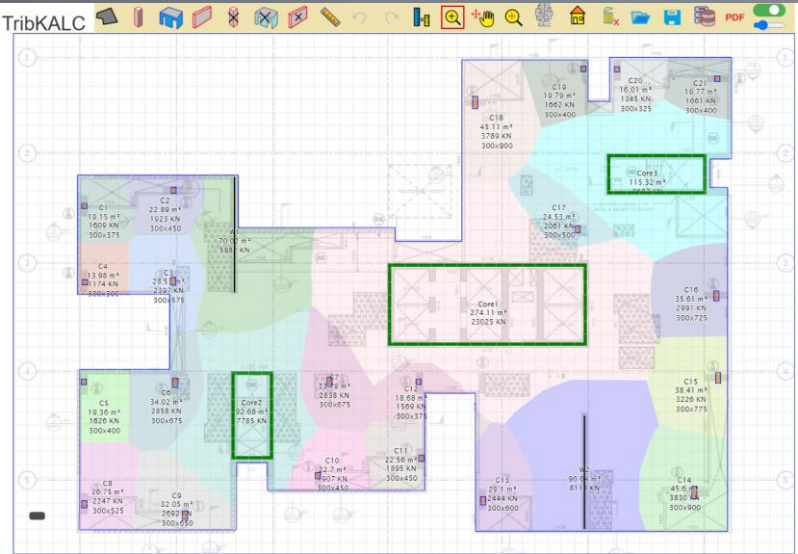


TopoKALC

Topology optimisation tool
to find optimal load path

TribKALC

Trusted by
Industry, with over 2000
projects on RKALC
cloud



CentersKALC

To scheme lateral system
and work centres of mass
and rigidity

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Wind and EQ Loading

WindKALC
Advanced
To calculate
Wind loads to
AS1170.2 with
cross wind
and 18 load
cases for
ETABS

AS1170.2-2021

Criteria

Region: A
Return Period: 1/500
Terrain Category: TC2.5
s(m): 113.4
Storey Height (m): 3.15
No. of Storeys: 36
Total Height H (m): 113.4
Bldg. X Dimension (m): 40
Bldg. Y Dimension: 22
Site Wind Speed Vr: 45
Damping: 0.03
Average Storey Mass (kg): 1200000
M z, cat (H): 1.2104
Along-Cross Combo Factor α: 0.80

Directional Inputs

Insert the values for each direction based on building geometry, wind cardinal directions and dynamic properties from analysis model:

Along Y Direction

Building Period (sec): 3.2
CPe Windward: 0.8
CPe Leeward: 0.5
Combination Factor Kc: 0.9
Md Dir Factor +Y: 0.9
Md Dir Factor -Y: 0.8
Ms Shielding Factor +Y: 1
Ms Shielding Factor -Y: 0.95
Building Aspect Ratio (h:b,d) facing load: 6:2:1
Along X Direction

Building Period (sec): 2.6
CPe Windward: 0.8
CPe Leeward: 0.5
Combination Factor Kc: 0.9
Md Dir Factor +X: 1
Md Dir Factor -X: 0.85
Ms Shielding Factor +X: 0.8
Ms Shielding Factor -X: 1
Building Aspect Ratio (h:b,b) perp direction: 6:1:2

Dynamic Factor

Peak Factor gv: 3.4
Turbulence Factor I_h: 0.1451
Lh: 156
Hs: 2
Y Direction Calcs

Size Red. Fctr. S: 0.083, 0.065
N: 1.485, 1.758
Et: 0.069, 0.062
Gust Factor: 2.1, 2.05
Dyn Fctr Cd_{yn}: 1.056, 1.03
Peak Factor gR: 3.416
Background Factor Bs: 0.852
X Direction Calcs

Size Red. Fctr. S: 0.074, 0.081
N: 2.056, 1.935
Et: 0.056, 0.058
Gust Factor: 2.08, 2.1
Dyn Fctr Cd_{yn}: 1.048, 1.056
Peak Factor gR: 3.476
Background Factor Bs: 0.913

Wind Response

Y Direction

	+Y	-Y
Total Base Shear	6848	4766
Overturning Moment	433197	301521
Resonant Moment	95628	56182
Crosswind Base Shear	2126	0
Crosswind Overturning M	176484	0
Reduced Wind Speed	2.13	1.8
Log10(Cfs)	-3	-4 (N/A)
Mode Pwr. Exponent k	1.5	1.5
Mode Shape Correction Km	1.12	1.12
Along Wind Acceleration	5.97	3.51
Crosswind Acceleration	13.08	2.95
Combined Acceleration	16.29	5.15

X Direction

	+X	-X
Total Base Shear	2951	3358
Overturning Moment	186817	212496
Resonant Moment	35946	43145
Crosswind Base Shear	2166	2572
Crosswind Overturning M	179623	213306
Reduced Wind Speed	4.24	4.51
Log10(Cfs)	-2.28	-2.23
Mode Pwr. Exponent k	1.5	1.5
Mode Shape Correction Km	1.12	1.12
Along Wind Acceleration	2.24	2.69
Crosswind Acceleration	12.86	15.27
Combined Acceleration	13.98	16.62

Case +Y -Y +X -X

Case +Y (Peak)

-Cross = 2126 KN
V=176.5 MN.m

F-Along = 6848 KN
M=433.2 MN.m

All values in above form are **PEAK**, for mean values, divide by the gust factor = Cd_{yn}*(1+2gv*I_h)
Tables below include Combination factor (Applying peak in one direction, and reduced peak in other - i.e. peak values will not coincide unless user opts otherwise)

Inputs

Criteria

Probability Factor k_p: 1.3
Hazard factor Z: 0.08
Structural System k_t: 0.05
Site Sub-Soil Class: Ce
Ductility Factor μ: 2
Performance Factor sp: 0.77
Geometry (Units mm)
Average Storey Mass (KN): 6500
Typical Storey Height (m): 3
No. of Storeys: 15
Seismic Height (m): 45

Calculate

Analysis Package is valid until
30/03/2030 10:44:38 PM

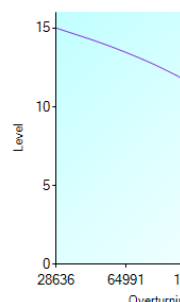
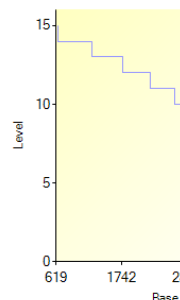
Results

Static Period (Sec): 1.09
Static Base Shear (KN): 4493.86

Loading Table

Level	Height	Storey Shear	Accumulative Shear	Overr Turning Moment
L01	3	19.23	4493.86	145418
L02	6	47.12	4474.63	145360
L03	9	79.59	4427.51	145078
L04	12	115.45	4347.92	144361
L05	15	154.06	4232.47	142976
L06	18	195.01	4078.41	140665
L07	21	238.02	3883.4	137155
L08	24	282.88	3645.38	132156
L09	27	329.41	3362.5	125367
L10	30	377.48	3033.09	116473
L11	33	426.99	2655.61	105149
L12	36	477.83	2228.62	91058
L13	39	529.93	1750.79	73856
L14	42	583.22	1220.86	53189
L15	45	637.64	637.64	28694

Charts



Building Period

Inputs

f_c (N/mm²): 40
Effective Section: 80%
Total Height H (m): 75
Inertia of Cores (m⁴): 100
Mass Per Unit Height (kg/m): 350000

Output

First Mode (Sec): 3.65
Second Mode (Sec): 0.58
Third Mode (Sec): 0.21

Calculate

Static EQ loads & Building Period Calcs

Australian-developed structural engineering software



Licensing

- Individual Licenses
- Team Licenses (contact us)
- Academic Access (contact us)



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