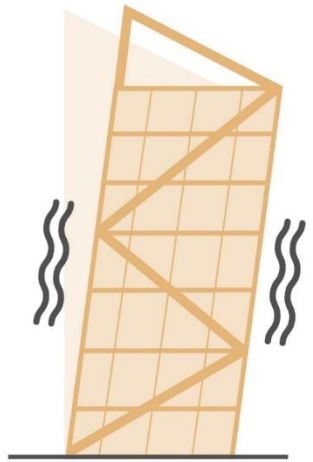
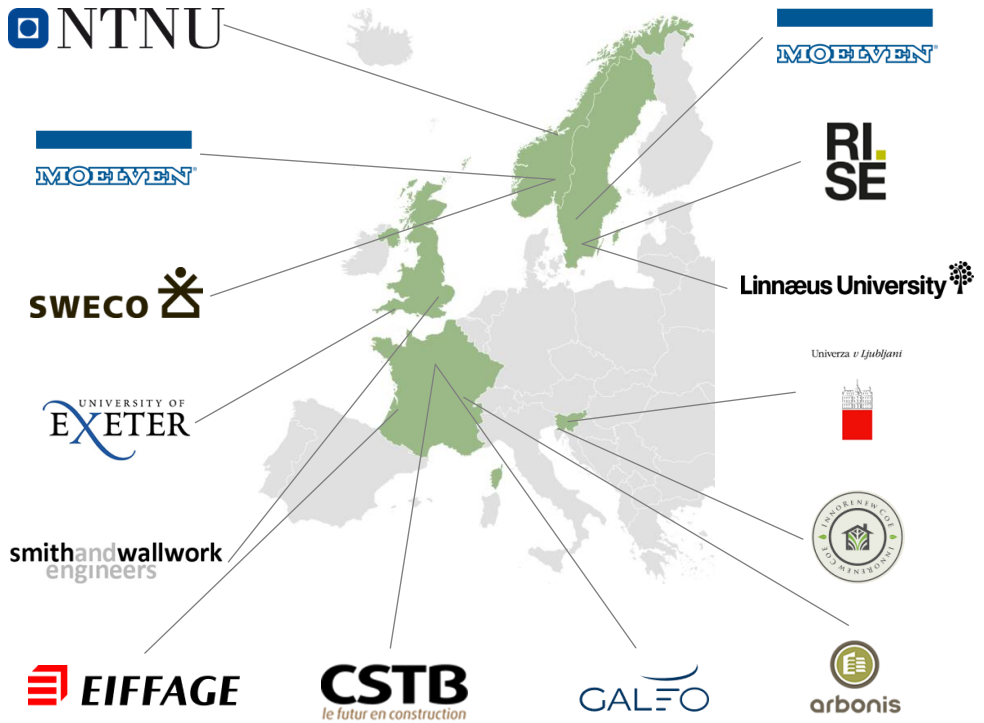
DynaTTB

Dynamic Response of Tall Timber Buildings under Service Load

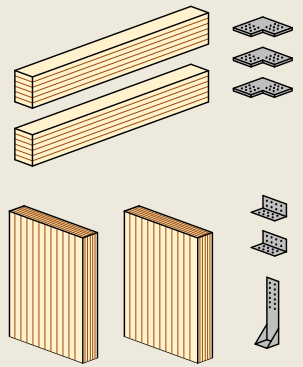




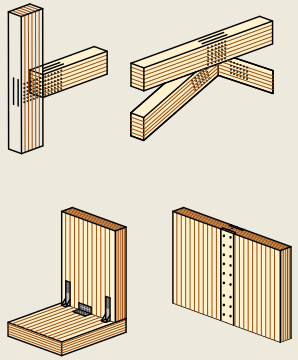
Aim of the project

WP 1 – Project management

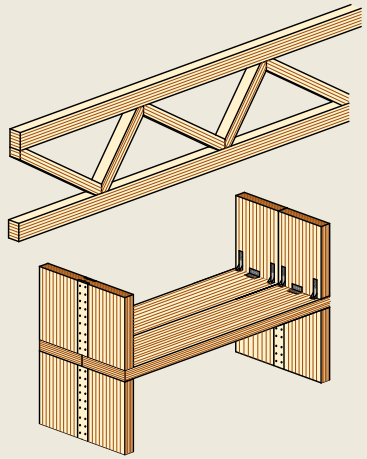
WP 2 – Laboratory experiments



Components

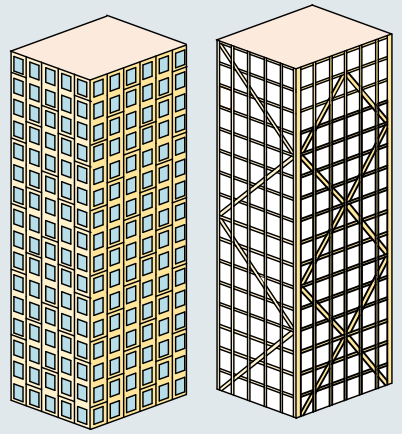


Connections



Sub-assemblies

WP 3 – In-situ measurements

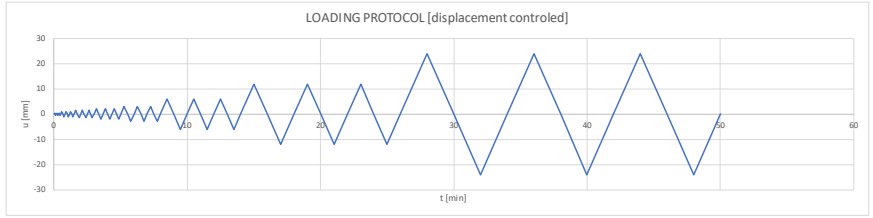


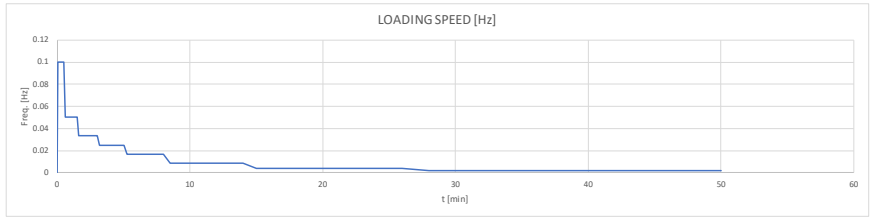
Complete buildings

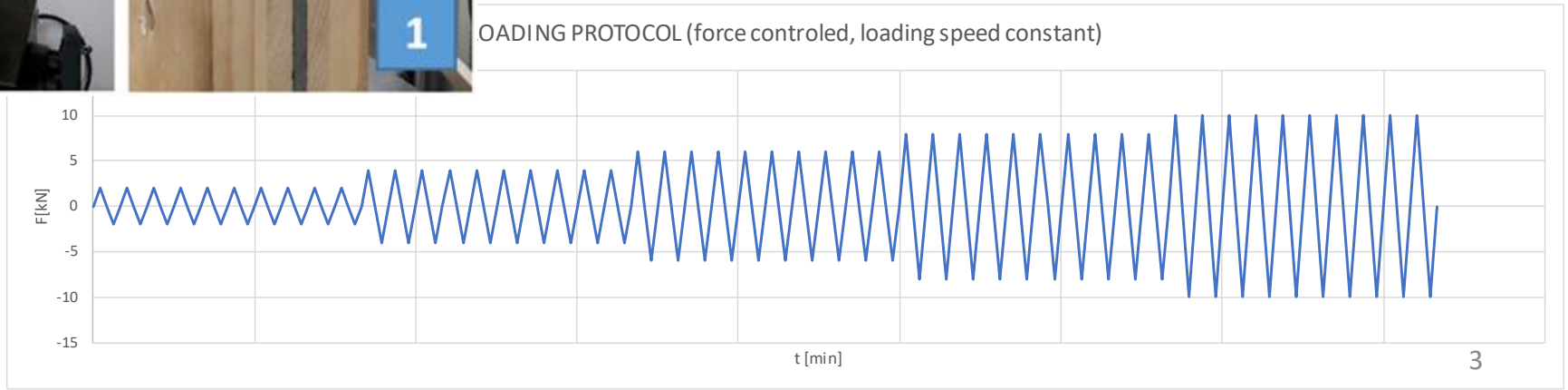
WP 4 - Modelling

WP 5 – Dissemination

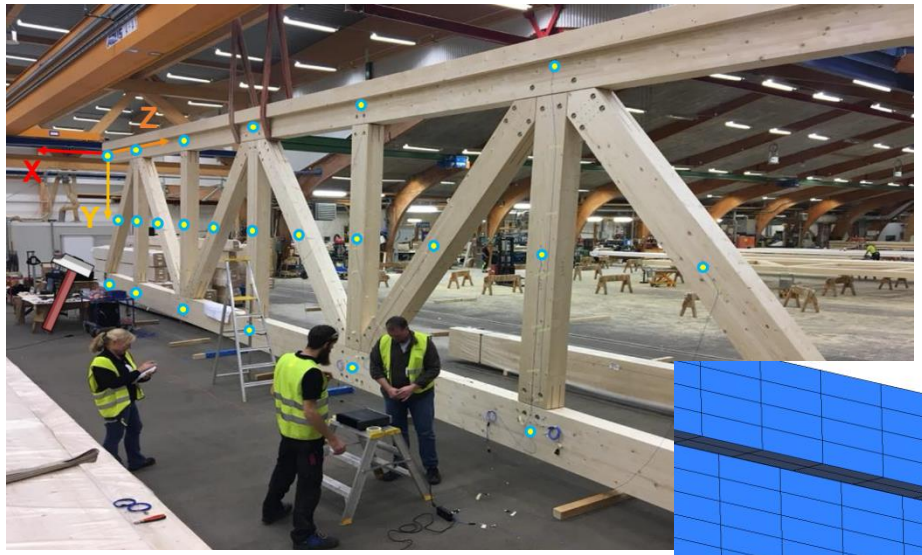
Details and assemblies

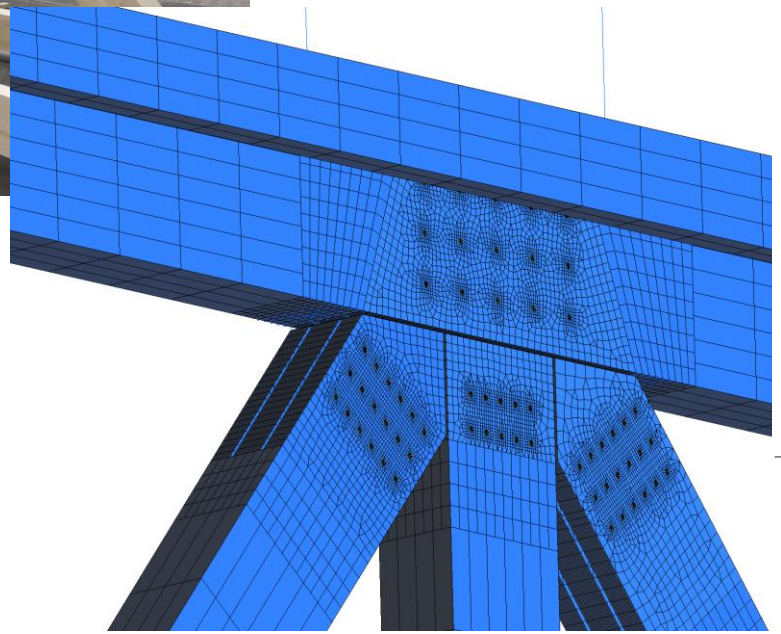


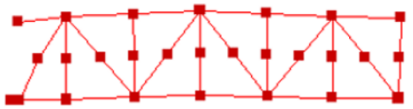
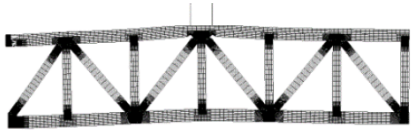
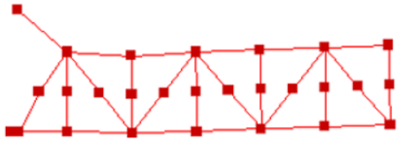
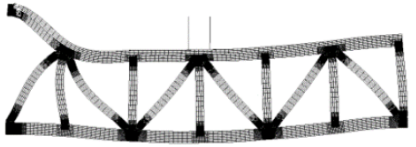
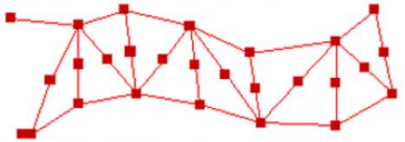
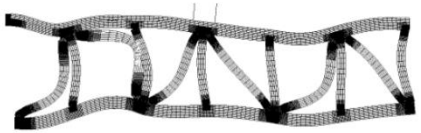
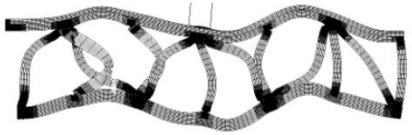




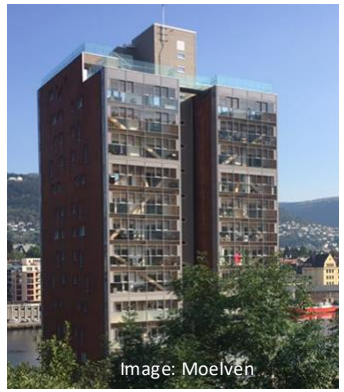
Details and assemblies





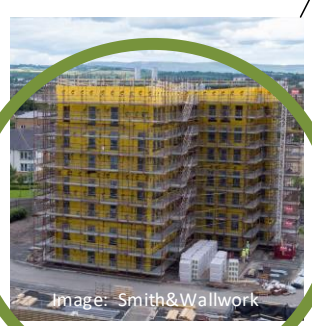
Experimental results	Numerical results
 Exp. 1: 8.97 Hz and ζ_1 = 1.7 %	 Num. 1: 8.97 Hz (0%) and $MAC_{1,1} = 0.99$
 Exp. 2: 25.25 Hz and ζ_2 = 0.9 %	 Num. 2: 39.8 Hz (+57%) and $MAC_{2,2} = 0.92$
 Exp. 3: 42.65 Hz and ζ_3 = 1.0 %	 Num. 3: 49.1 Hz (+15%) and $MAC_{3,3} = 0.87$
 Exp. 4: 61.57 Hz and ζ_4 = 0.6 %	 Num. 6: 68.5 Hz (+11%) and $MAC_{4,6} = 0.79$
 Exp. 5: 92.78 Hz and ζ_5 = 0.7 %	 Num. 16: 102.7 Hz (+11%) and $MAC_{5,16} = 0.88$

In-situ measurements



Treet, 14 stories, glulam+volume elements

Norsenga bridge, glulam



ker, 7 storeys, CLT

Hyperion, 18 storeys, hybrid + CLT

Treed-IT, 12 sto

Mjøstårnet, 1 reys, Glulam

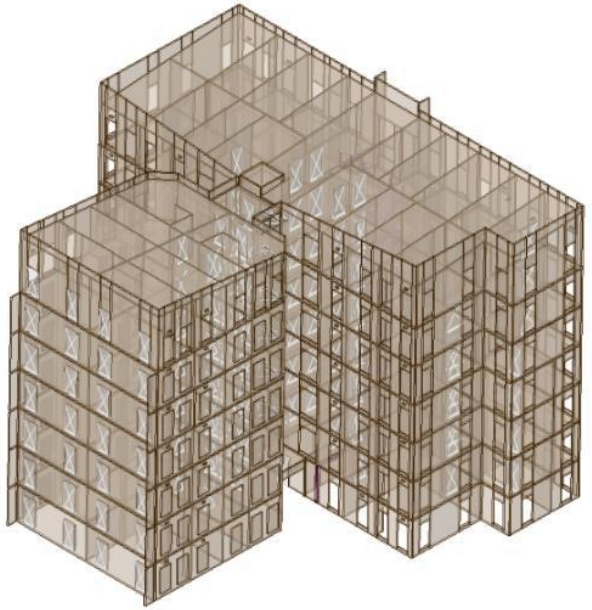
Eken, 6 st ys, G

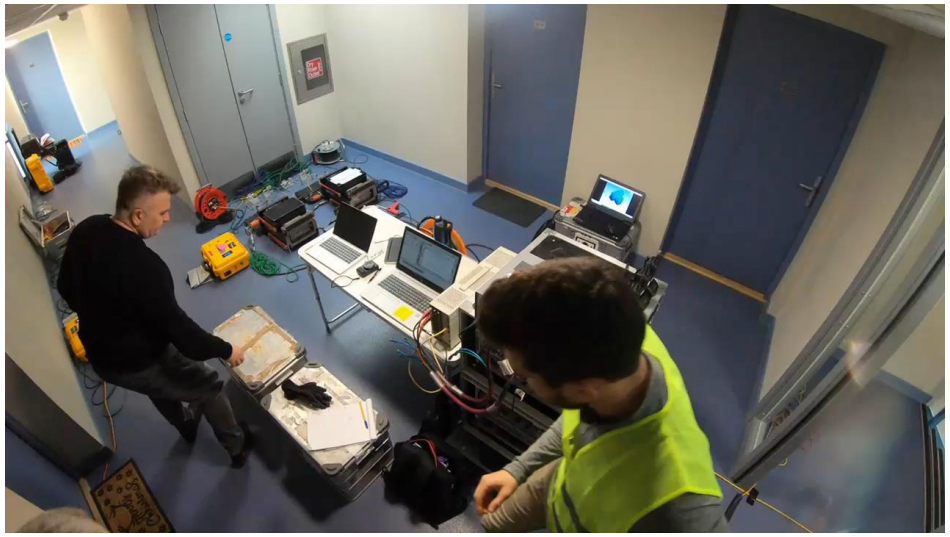
k antanika, 4 storeys, CLT

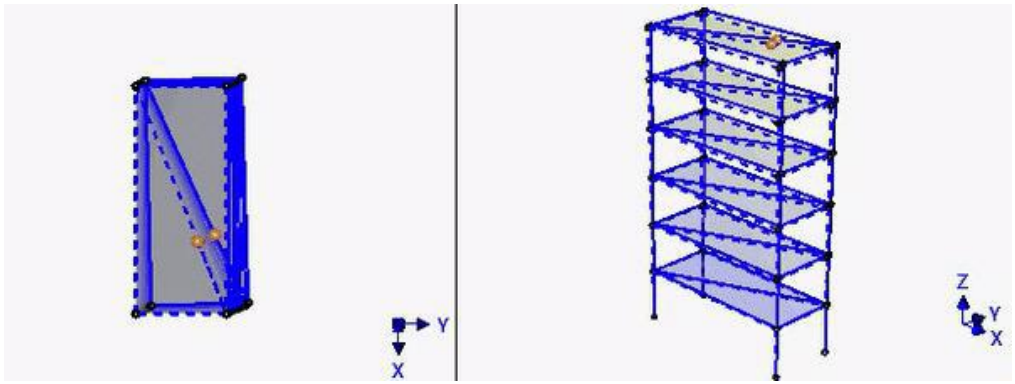
Treed-It

	Mode 1 – bending X [Hz]	Mode 2 – bending Y [Hz]	Mode 3 – torsion [Hz]
1st experiment	1.37	1.54	1.69
2nd experiment	1.39	1.49	1.62

Yoker



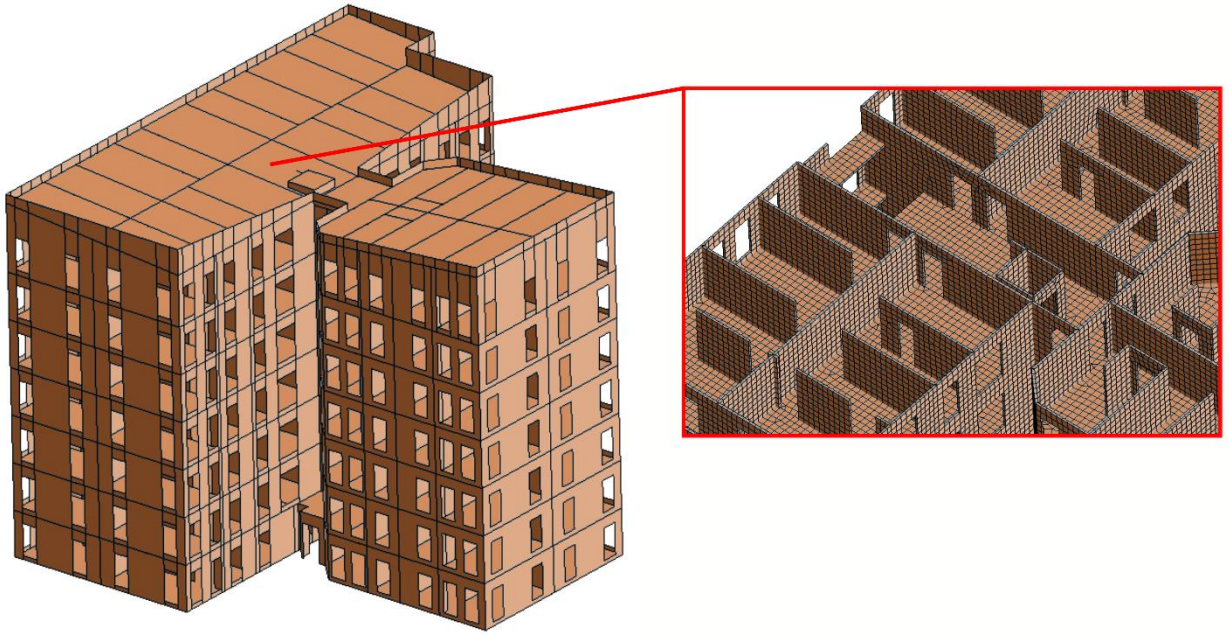


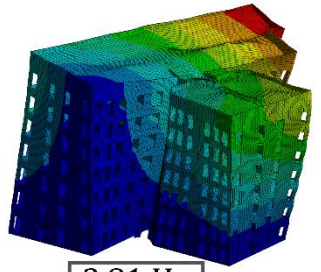


f_1 = 2,85 Hz

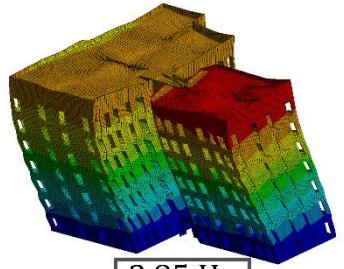
ζ_1 = 1,8%

Full-scale models

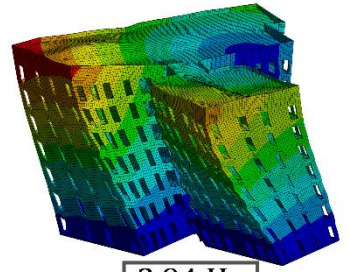




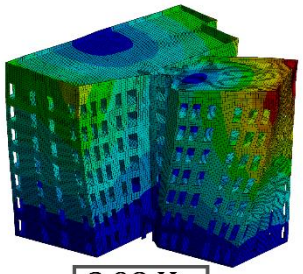
2,81 Hz



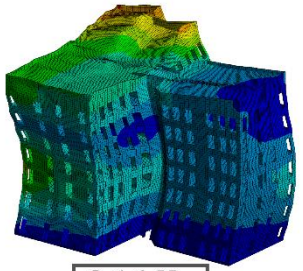
2,85 Hz



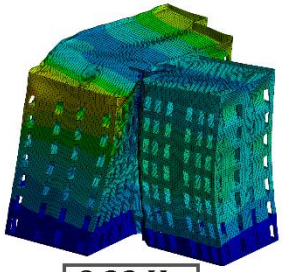
2,94 Hz



3,98 Hz

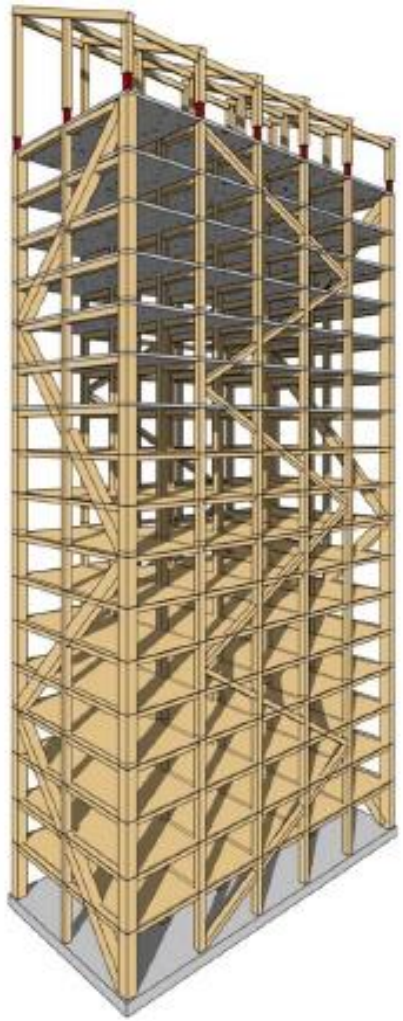


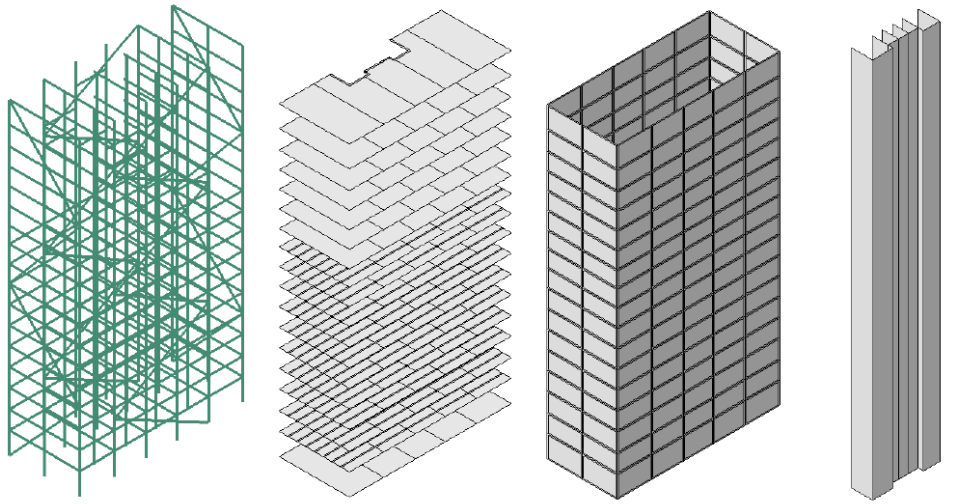
8,16 Hz



8,32 Hz

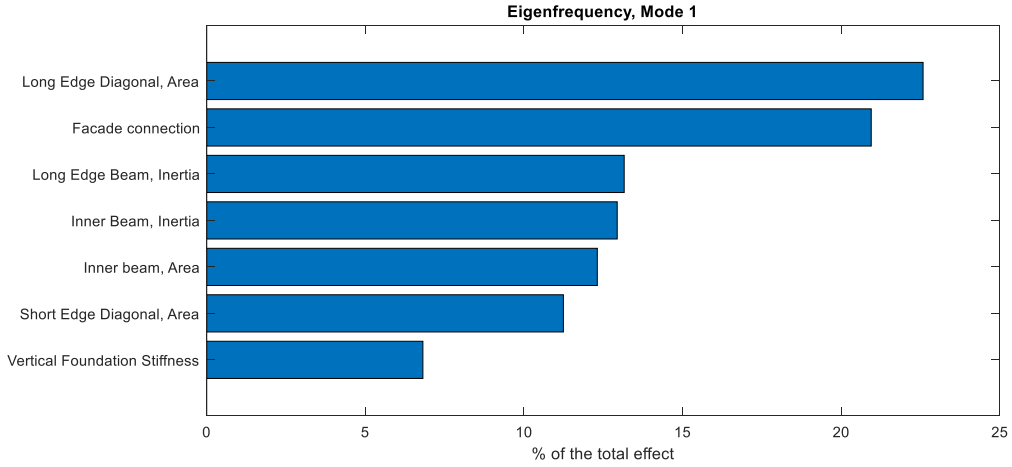
Full-scale models





(a) Frame Part (b) Floor Part (c) Wall Part (d) Shaft Part

Sensitivity study



Final Guidelines

TALL TIMBER BUILDING WIND DESIGN GUIDELINES
Guidelines
State Of The Art
Building 1
Building 2
Building 3
…

Website: www.dynattb.com

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