



"AlphaCell is probably the most advanced TMM/FTMM suite for NVH simulations"



AlphaCell predicts the **vibro-acoustic** response of **multi-layer systems** to various sound excitations :

- ↳ **super easy & super fast** simulations
- ↳ **listen** to sound package efficiency
- ↳ broad application material **library**
- ↳ **complete set** of material models
- ↳ various **imports / exports**
- ↳ **reactive** and **skilled support**

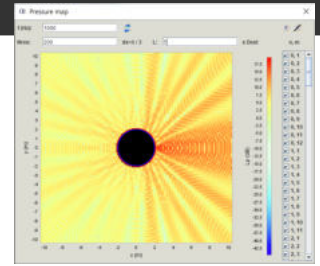
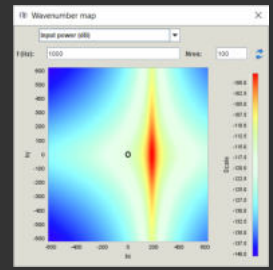
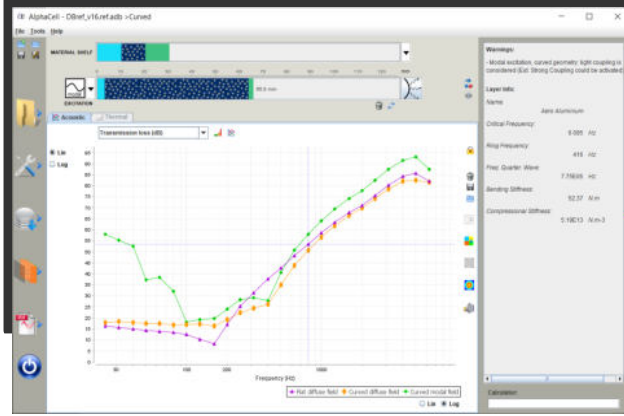
Save your time and energy to focus on your **core activities** !



Prepare to be **MATELYS** approved !

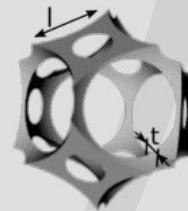
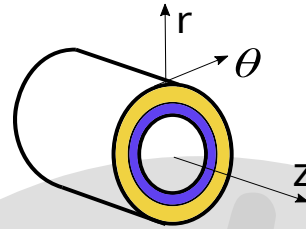


AlphaCell is a software product by MATELYS-Research Lab > <https://alphacell.matelys.com>



KEY FEATURES

- **intuitive** interface
- **listening** of solution efficiency
- plane and **curved geometries**
- **thermal** properties including bridges
- multiple **studs** in series
- generalised **equivalent plate & porous** models
- **imperfect** interfaces
- **corrugated & ribbed** plates
- multiple **fluids** including **water**
- **compressed** fibrous model
- extended material **library**
- fully **scriptable**
- export of material **cards** and **FE model**



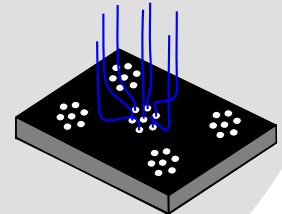
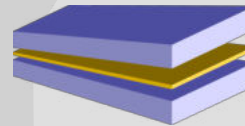
Layer name: Building Plaster board
 Thickness (mm): 12.5
 Acoustic model: None
 Elastic model: Elastic (orthotropic)
 Heterogeneous model: None

Type: Full Orthotropic

ρ : 700.0 (700) (kg m-3)
 ν : 0.23 (kg m-2)
 E_1 : 1.23E09
 E_2 : 1.23E09
 E_3 : 1.23E09
 ν_{12} : 0.23
 ν_{13} : 0.23
 ν_{23} : 0.23
 η : 0.05 (0.05)

MATERIAL MODELS

- ↳ **porous materials**
fibrous, foams, granulars, compressed, orthotropic
- ↳ **perforated plates**
circ., square, conical, slit perf., non-woven, annular pores, high SPL
- ↳ **solid materials**
isotropic, visco-elastic, orthotropic
- ↳ **orthotropic solid materials**
3D, thin plate, transverse isotropic
- ↳ **equivalent plate models**
condensed, corrugated, stiffened/ribbed plates
- ↳ **heterogeneous materials**
elastic / solid / porous inclusions, resonators, sorption



VIBRO-ACOUSTIC EXCITATIONS

- ↳ **air borne sounds**
plane waves, diffuse field, modal sound field
- ↳ **structure borne excitations**
dynamic force, moving wall, tapping/rolling machine, rain fall
- ↳ **turbulent boundary layer**

| Global Indicators | R_w (C. Ctr) | C50-3150 | L_{nw} |
|-------------------|------------------|----------|----------|
| ud_Ctr100-5000 | 31.0 (-3.0;-9.0) | | |
| M_Lnw | 34.0 (-3.0;-8.0) | | |
| F_Ci | 33.0 (-4.0;-9.0) | -4.0 | 81.0 |
| FMM | 32.0 (-3.0;-8.0) | -3.0 | 82.0 |

Plane

Spatial windowing:

- None
- Lx (m): P. Bonfiglio - (α and TL - all exc.)
- Ly (m): Abacus - (α and TL - airborne exc.)
- S (m²): D. Rhazi - (α and TL - all exc.)
- T.E. Vigran - (TL - all exc.)
- Y. Yu - (α and TL - all exc.)

Assembly Panel (Alpha and TL)

Reverberation Time (s)

Sound absorption coefficient (-)

Transmission loss (dB)

Reverberation Time (s)

Equivalent Absorption Area (m²)

Volume: 39

- revRoom1_3mics_2
- revRoom1_3mics_2
- revRoom2_3mics_2
- diningRoom1_3mics_2

AlphaCell runs under
MS-Windows 7,8,10,11 ; Linux ; Unix ; Mac



AlphaCell is a software product designed, developed, distributed and supported by MATELYS-Research Lab
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