

ALPHACELL TOP USE CASES

Altair Partner Alliance

AlphaCell and FEA for the Design of Multi-layer Systems

Challenge

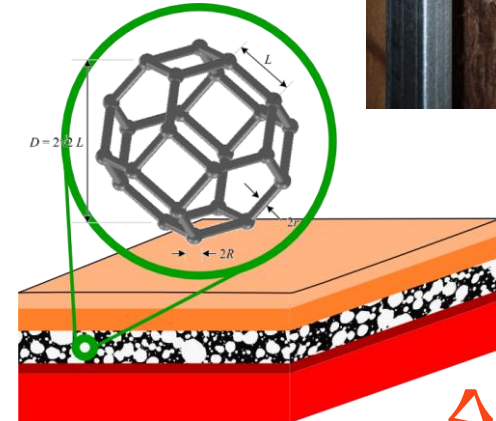
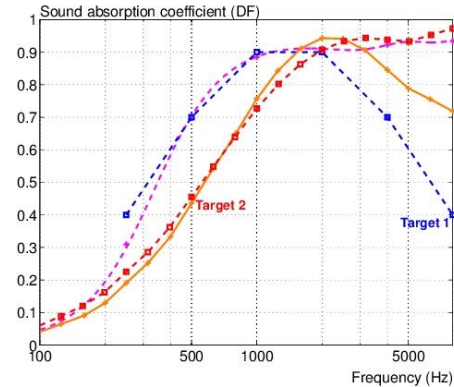
- Accounting for stiffeners in multi-layer systems

Solution

- Dedicated model for studs and stiffeners

Result

- Our initial objective was to compare FEA to TMM results obtained with AlphaCell. Our need evolved to simulation of stiffeners and paths analysis. AlphaCell will remain a complement to our FEA softwares. How to take into account stiffeners in a multilayer model was not very clear in the documentation. The help of Matelys team was really appreciated. Finally, we use AlphaCell now for the simulation of multilayer materials and components for the building industry. The simulation obtained for porous multilayer door component were in good correlation with sound transmission loss measurements. AlphaCell is an easy to use, time-saving tool. As we are extremely satisfied with AlphaCell, we would recommend it to others. AlphaCell integrates nicely with the other tools we use : HyperMesh, OptiStruct, SnRD, HyperView.



Do the Right Thing First

Challenge

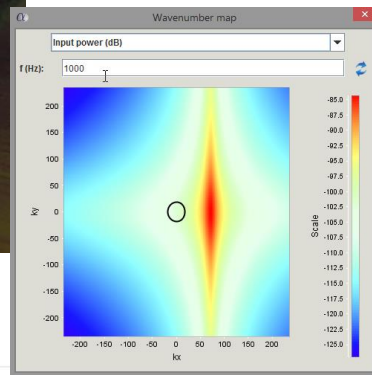
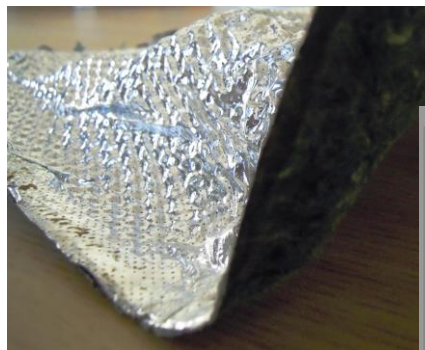
- Decrease the number of tests for complete parts

Solution

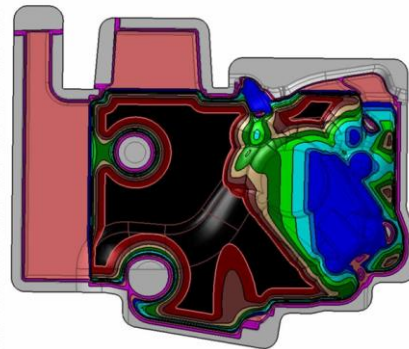
- AlphaCell model for compression of porous materials

Result

- AlphaCell is easily available through the APA. I appreciate the simplicity of TMM as it enables a quick assessment of the sound packages. Initially, we intend to use it only for evaluating the sound absorption and sound insulation of lay-up concepts. Due to the success of the methodology, we recently extend it to component concept (assembly of several lay-up's). We use a lot the model for compressing the porous materials. We are currently using the model for turbulent boundary layer or for rainfall excitation in association with the patch assembly module to refine our analyses. AlphaCell helps us reducing the lead time to assess innovative solutions. As a result, we are in a stronger position at the tooling launch. We decrease the number of tests for complete parts, which are expensive and time consuming. I also would like to acknowledge the very high quality support. It is a fast, receptive and efficient development team.



z	Size	Material	h1	h2
0	1100	air1	250	1000
1	1100	1Ce-2	50	400
2	1070	2Ce-2	200	1000
3	650	3Ce-2	100	300
4	650	4Ce-5	300	250
5	650	5Ce-11	70	300
6	580	7.5Ce-4	50	400
7	530	10Ce-14	60	300
8	480	12.5Ce-11	50	400
9	410	16Ce-17	60	500
10	340	19.5Ce-11	100	700
11	240	air-10	240	1000
12	250			
13	250			
14	100			
15	30			
16	70			
17	50			
18	60			
19	50			
20	60			
21	240			



Design of Damping Treatments

Challenge

- Answer final customer needs within minutes

Solution

- AlphaCell models for sandwiched panels and condensed models

Result

- AlphaCell and the support provided by Matelys helps us to get a better understanding of how our DECI-TEX acoustic felts work. AlphaCell is also a great and fast tool to design our acoustic and damping treatments. It helps us to convince our customers during the early stage of their projects. For examples, within minutes we can obtain the key NVH parameters of sandwich panels and improve their behavior.

