SUPERPANELS - Strengthening and Upholding the Performances of the new Engineered Research PANELS
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A great effort has been spent in the mechanical engineering fields in order to conceive new panels of improved static and dynamic performances. This was due to the search of innovative design solutions specifically tailored for facing with the problem of transportation engineering where the vehicle requires high stiffness, low weight, low noise, low cost design. The project will allow the co-operation among five different research groups of different sizes but all active at international scale, in the automotive, aerospace, naval, and railway transportation. The process of exchanging researchers and coordinating activities will allow maximising the specific expertise of each group, and aiming also to a faster selection and developments of the candidate panels, configuration and materials. In fact, the range of such panels is now very large according also to the possibility offered by new technologies, but these last are still to be deeply investigated in order to explore their capabilities. Further, on the researcher shelf there are innovative methods that only a decade ago were at an initial stage; in fact, the increase of the knowledge about standard predictive structural and structural-acoustic tools has been impressive and in the near future some of the methods now used at research level will enter in the common engineering practice. In this project they will be extensively used, tested and verified against the specific measurements that will be needed to verify the predicted and expected performances. Several candidate solutions will be suggested and motivated at the beginning of the project, so defining a sort of current design. The results will qualify how and where the specific performances have been increased without penalties for any other standard requirements. The main attention will be devoted to assure compliance with the static requirements and to improve the dynamic and vibroacoustic performances. Other emerging requirements as the flammability will be also investigated.

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