SwichCore - Development of a new core material with high fire performance for sandwich panels

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The aim of the research project was the development of new core materials with high fire performance for sandwich panels. The research consortium focused on the development and investigation of rigid foam on the basis of phenolic resin and two types of hybrid core on the basis of EPS. Numerous tests and analyses in order to determine the mechanical and fire properties of these materials were performed. The test results show that the phenolic foam and the hybrid foams possess very good mechanical properties and that they can be directly - without any other innovations - used as core materials for sandwich panels. They are suitable as core materials with reference to thermal insulation and environmental safety as well.

The fire behaviour tests show a positive development of both phenolic foam and SIAC concerning the reaction to fire. Especially the phenolic foam, which was studied in particular during the SwichCore project, is just a few steps away from being used as core material on a large scale. The same applies for SIAC material - a hybrid core material on the basic of EPS.

The advantage of phenolic foam compared to other used core materials with similar thermal insulation properties e.g. polyurethane, is a far better fire resistance. Especially the smoke growth rate in the SBI test is less than from other used materials. The smoke growth rate is one of the most important properties of materials for the classification of fire behaviour.

The desired aim in reference to the fire resistance wasn't achieved completely but the more important thing is that the research works created basics for further developing work in the companies which are interested in these new products. Presently producers of phenolic foam and SIAC are evolving these materials together with producers of sandwich panels and in cooperation with the Institute for Sandwich Technology. New core materials with high fire performance will be available in the near future.