

Press Release 1/2014

ARENA 2036 – Automotive Production Models for the Future

Stuttgart, 17 January 2014 – DYNAmore GmbH is involved in the ARENA 2036 project, the first „research campus: public-private cooperation for innovation” which is funded by the German Federal Ministry of Education and Research (BMBF) at the University of Stuttgart.

Themed ARENA 2036 (Active Research Environment for the Next Generation of Automobiles), several research institutes, big corporations and two SMEs (one of them is the DYNAmore GmbH) got together to push research towards novel production models for the future. Within the three technical aspects construction, simulation and digital prototyping, the participating research groups will investigate the potential of light weight materials – especially of fiber reinforced plastics – for large series production in the automotive industries. The possibilities for an efficient, flexible and sustainable production are being analyzed within a production- and research factory accompanying the other research projects.

Together with the German Aerospace Centre (DLR), the German Institute for Textile and Fiber Research (DITF), the Daimler AG and the Institute of Aircraft Design (IFB) of the University of Stuttgart, the DYNAmore GmbH works on the development of the so called Digital Prototype. The main focus is put on the transfer of process- and manufacturing simulation data towards life-time prediction and failure analysis as well as serviceability simulation for composite materials. Therefore, interfaces between the different simulation tools and models have to be defined and might also be implemented into the LS-DYNA/LS-PrePost software environment. The challenging tasks

in the area of composite simulation is to define proper simplifications and assumptions in order to keep the required accuracy for the simulation of fiber reinforced components without any loss of efficiency. Besides the implementation and improvement of a mapping algorithm, which is one of the main requirements for the complete process chain, new material models for certain manufacturing procedures might have to be developed as well. To evaluate the developed software interfaces, three standard processing procedures were chosen: the braiding process, the resin transfer molding (RTM) process and the draping procedure. Through participation in this highly up-to-date research project, the DYNAmore GmbH once more highlights its expertise in supporting the field of material development as well as the related production processes with its know-how in Finite Element simulations.

The accompanying installation of the research factory will be advanced by the Fraunhofer Institute for Manufacturing Engineering and Automation (IPA) in Stuttgart, the Bär Automation GmbH, Gemmingen, which is the second SME being part of the research campus. This allows a direct comparison between the virtually developed models and methods with the real production processes. Further important partners are the Robert Bosch GmbH, Stuttgart, as well as BASF SE, Ludwigshafen. The target of the project, which can be extended to a maximum of 15 years is the complete computer-oriented development and fabrication of a car body, mainly made out of composite materials under the aspects of light-weight construction. The start-up project, which is established for 5 years now, began on July 1st, 2013.

Regarding to that, Dr. André Haufe, Manager of process simulation at the DYNAmore GmbH, says: "Through the strong cooperation with customers and partners within research environments, several challenges and targets for the simulation technology can be addressed on a high order strategic level. Especially the strong and

common interest of all partners in an economical and prognosis-oriented solution pushes the different groups forward and was a very good way in the past to develop on a customer oriented and application driven level to improve our software tools. With the successful application for the ARENA 2036 research campus of the University of Stuttgart, our development activities are completed in an optimal way towards the closure of the gap between the process and serviceability simulation and therefore, as a SME, we are more than happy to be within the project from beginning onwards.”

The name DYNAmore stands for excellent support when it comes to the numerical solution of generally non-linear physical problems. The product portfolio contains the finite-element software LS-DYNA, the pre- and postprocessor LS-PrePost and the optimization software LS-OPT, as well as numerous FE models for crash simulation (dummies, barriers, pedestrians, human models, etc.). Core issues include support, sales, training, engineering services, software development and system integration. DYNAmore is one of the top addresses for pilot and development projects for simulating nonlinear dynamic problems.

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