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New Aspects for the Visualisation of Compounding Processes

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For the user of computational fluid dynamics (CFD) simulations there is a need to extract specified information out of a huge amount of data and to have this information visualised in a demonstrative way. In a cooperation project between the Institute of Plastics Processing (IKV) and the Computational Center of the RWTH Aachen University, the assets and drawbacks of a new visualisation technique are investigated. For the visualisation of flow simulation results for polymer compounding processes in a Virtual Reality (VR) environment a visualisation tool has been developed. The aim of the project is to reduce working time and error rate for the data exploration in the new environment. The Virtual Reality Environment offers more degrees of freedom for the interaction in the man-machine communication. For the first time we developed an assistance system for the polymer extruder screw design in VR. Filter functions for the analysis of the results like cutting-, clipping- or iso-planes are integrated in the tool. Flow patterns in twin-screw extruders are visualised with streamlines or particle animations. All results of the flow simulation are presented to the user in three dimensions. Thus this visualisation tool offers new insights in compounding processes. The interactions between users and the system are being studied in order to evaluate the novel visualisation system.