NUMERICAL SIMULATION OF INDUSTRIAL RELEVANT APPLICATIONS BY THE ALSIM™ PLATFORM

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During the last decade the Lattice Boltzmann Method (LBM) has witnessed a rapid development, leading LBM to a status where a growing range of industrial relevant problems can be handled as a convincing alternative to well established traditional CFD models like Finite Elements or Finite Volume. The advent of more and more performant GPU-based hardware represents the perfect environment for LBM to express its highest potential.

This talk will give an overview about the most recent developments of the ALSIM™ platform, which represents the unique ESS solution to tackle challenging industrial applications, with special emphasis on topics related to car manufacturing. Many of these problems are multiscale, involving length scales spanning over different orders of magnitude. The talk will feature examples with LBM as a stand-alone solver as in Paint-shop Oven [1], as well as problems featuring LBM coupled to Discrete Element Methods or Lagrangian solvers as HVAC applications [2]. The availability of a portfolio of optimized tools to be coupled to the efficient, GPU based, LBM solver is unique of ESS. Current as well as future development challenges will be discussed.

REFERENCES

[1] Bhardwaj S., Euser R., Stadik A., Monaco E. et al, "High Accurate Heat Transfer Tasks on Example of Body in White Drying Process in Paint Shop", SAE Technical Paper 2019-01-0185 (2019)

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