Sprocket- Chain Simulation: Modelling and Simulation of a Multi Physics problem by sequentially coupling MotionSolve and nanoFluidX
ADITYA JAYANTHI, CHRISTOPHER COKER[1], Altair Engineering Inc — In the last decade, CFD simulations have transitioned from the stage where they are used to validate the final designs to the main stream development of products driven by the simulation. However, there are still niche areas of applications liking oiling simulations, where the traditional CFD simulation times are probative to use them in product development and have to rely on experimental methods, which are expensive. In this paper a unique example of Sprocket- Chain simulation will be presented using nanoFluidx a commercial SPH code developed by FluiDyna GmbH and Altair Engineering. The grid less nature of the of SPH method has inherent advantages in the areas of application with complex geometry which pose severe challenge to classical finite volume CFD methods due to complex moving geometries, moving meshes and high resolution requirements leading to long simulation times. The simulations times using nanoFluidx can be reduced from weeks to days allowing the flexibility to run more simulation and can be in used in main stream product development. The example problem under consideration is a classical Multiphysics problem and a sequentially coupled solution of Motion Solve and nanoFluidX will be presented.

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