

Advanced Modelling & Simulation - AMS

CASE STUDY : BOTTLING OF READY-TO-DRINK BEVERAGES

Bottling of ready-to-drink (TRD) beverage products is an important business. Companies invest considerably in modernizing and automatizing their beverage line equipment's, including resorting to advanced fluid flow simulation technology.

OVERVIEW

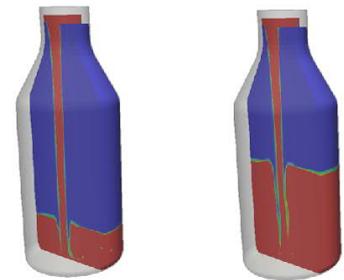
As bottles and cans are a common recipients to package beverage fluids of all sorts (juices, energy and functional drinks, teas and carbonated soda drinks), it is important to be able to predict the behavior of the flows occurring during the different phases of their life span, including filling, emptying, or shaking during transport and storage. TRD beverages containing a dissolved gas like carbonated soda drinks are particularly concerned, because the topology of the multiphase flow is more complex.

OUR SOLUTION

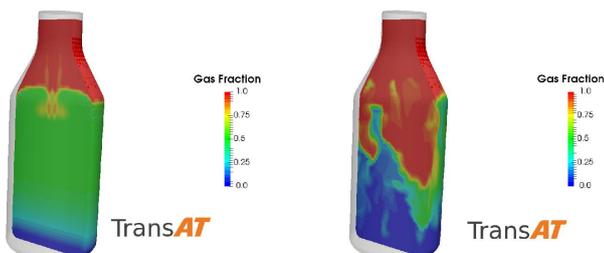
The challenge for the numerical simulation of bottling & beverage packing processes is the multiphase nature of the flows, whereby different models might be required for the simulation of the variable flow conditions. Tailored models are needed to accurately reproduce phenomena such as splashing, phase separation, settling, mixing, etc. **TransAT CFD** simulation platform is best suited for these flows, since it features various multiphase flow modelling techniques, ranging from Interface Tracking, and phase-average models to particle-laden flows, and hence it allows to select the most adapted simulation strategy for each situation.

YOUR BENEFITS

The benefits of simulation of bottling and RTD beverage packing flows are multiple, ranging from time saving to innovative developments. For instance, simulation can help during the design phase to study the impact of the bottle geometry on the smoothness and regularity of the emptying beverage flow to ensure that no product is wasted. Obviously this can save considerable time compared to prototyping and trial-and-error methods.



TransAT



EXAMPLES OF SIMULATION OF FILLING, SHAKING, AND EMPTYING RTD BEVERAGE BOTTLES.

PÖYRY'S AMS.

Pöyry's Advanced Modelling & Simulation (AMS) group provides consulting services in a broad range of industrial areas. The activities are centered on detailed simulation of fluid flow and heat & mass transfer processes pertinent to energy, industry and infrastructure.

AMS service is enabled by the CFD/CMFD product TransAT.

TRANSAT CFD/CMFD PLATFORM

TransAT is a versatile fluid-flow simulation platform (CFD) using the Immersed Surfaces Technology for multi-dimensional meshing. The platform is best suitable for multiphase flows using tailored predictive techniques and models for complex physics. TransAT can be used in the energy, industry and infrastructure sectors.

TransAT Website: www.transat-cfd.com