

# Project

## Evaluation of a commercial software for the sizing of safety valves for multi-component flashing two-phase flow

During the emergency relief of pressure systems with two-phase multi-component mixtures, the safety devices (e.g. safety valves and rupture discs) should be accordingly sized. During the pressure relief through these devices, thermodynamic, mechanical and the chemical non-equilibrium between the species may arise, which have a certain impact on the calculation of the mass flow rate and pressure drop.

Commercial software packages like „SuperChems“ (from the American company ioMosaic) are able to perform mass flow rate and pressure drop calculations for the sizing of such safety devices.

Within this project, safety valves for multi-phase multi-component flow should be sized, using SuperChems. The aim is, on the one hand, to specify the application boundaries of the program. On the other hand, the equations of state and models used for the calculation of selected mixtures and scenarios should be evaluated. The used models and calculated results should be in respect of the non-equilibrium phenomena analysed.

This project takes part within the framework of the international project **Multiflash**, to investigate the non-equilibrium phenomena of flashing multi-component two-phase flows through safety devices under critical flow conditions.

**Start** 2017  
**Duration** 3-6 Months



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**TOPICS:** Thermodynamics,  
Fluid mechanics, two-phase  
flow, Modelling...