

Importance of realistic gas atmosphere assumptions for combustion and gasification calculations

M. to Baben, J. Rezende, K. Hack

GTT-Technologies

In the last year, several customers have sent questions to us concerning the appropriate definition of gas atmosphere in FactSage calculations involving ashes and slags in combustion or gasification or even laboratory experiments. The choice of atmosphere is important for the partitioning of elements with high volatility between ash and gas phase. Here, partitioning of Sulfur and Potassium will be mainly discussed. For four different scenarios the implications of gas atmosphere assumptions will be discussed:

- Ash fusion experiments
- Ash deposition on heat exchangers in coal firing plants
- Melting and oxidation of sulfides from coal ashes
- Condensation of salts during cooling of syngas

For all of scenarios recommendations will be made on how experimental boundary conditions should be translated into input parameters.