

Numerical Study on Prediction of Ash behavior in Entrained Bed Gasifier

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Coal gasification plays a key role in clean coal technology with high efficiency. There are some serious problems in gasification. The ash/slag formation (slagging) is one of them and is a very important phenomena in coal entrained bed gasifier. This is because that ash/slag affect continuous operating (including erosion and corrosion of wall). The ash/slag formation is developed from particle (ash deposition) layer what is developed when hot particles impact on relatively cold wall. So it is important to predict ash behavior before slag formation. Furthermore, the ash behavior is changed with mineral components in ash. Especially, melting temperature of ash that changes with components is thought to important thing in slag formation. Ash property such as the critical viscosity temperature is critical to particle layer formation.

The purpose of this work is to predict ash behavior in Entrained bed gasifier. It is implemented the User defined function (UDF) to commercial code to predict ash behavior. For this work, the critical viscosity temperature is applied. To calculate critical viscosity temperature, it is used the Seggiani model. Furthermore the effect of injection angle on gasifier is analyzed.