

Investigation of physical properties of low rank coal during fluidized bed drying

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Fluidized bed dryer(FBD) has been shown to effectively dry high moisture content low rank coals at elevated temperatures. During the drying process, the low rank coal experienced physical changes depending on the degree of drying and abrasion conditions. Using X-ray scanning and BET analysis technique as an investigation tool, this study examines how FBD processing conditions, such as flow rate, temperature and residence time, affect the surface area, pore size distribution, apparent density and shrinkage behavior of two rank coals. Generation of dust during the drying process was also monitored to check the degree of abrasion. The physical characteristics of coal seemed to influence the drying kinetics of low rank coal at high temperature and the rate of drying directly influenced the changes of physical properties of coals. The generation of dust was closely related with the degree of drying rather than the residence time and flow rate when the flow rate is greater than minimum fluidized velocity.