农作物固体废弃物致密成型燃料能量学对比分析 Comparative Analysis on Energetics of Agro-residues Densification Briquetting Fuel

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关键词： 农作物固体废弃物 致密成型 燃料 能量学

摘 要： 选取主要农作物固体废弃物为研究对象，综合考虑其热力学特性以及成型设备工程技术参数，对农作物的固体废弃物致密成型燃料与煤的能量学进行了比较研究。结果表明，对于秸秆类的固体废弃物致密成型燃料，由于其生产耗能高，仅当煤从生产地到使用地之间的输送距离超过4000 km时，此类固体废弃物致密成型燃料与煤具有近似同等的能量竞争力；而对于果壳类的固体废弃物致密成型燃料，其生产耗能较低，临界输送距离较短。当煤从生产地到使用地之间的输送距离超过2200 km时，基于果壳类的固体废弃物致密成型燃料比煤更有能量优势；当煤从生产地到使用地之间的输送距离处于1500～2200 km时，基于果壳类的固体废弃物致密成型燃料与煤具有近似同等的能量竞争力；当煤从生产地到使用地之间的输送距离小于1000 km时，则基于果壳类的固体废弃物致密成型燃料失去了能量优势。Based on thermodynamic properties of agro-residues and engineering parameters related to briquetting equipment, the energetics of densification briquetting fuel from main agro-residues in China was compared with that of coal. The results indicated that energy required for producing densification briquetting fuel from agro-residues straw is so high that this type of briquetting fuel had similar energetically advantageous to coal for locations at a distance of above 4?000?km. In contrast, densification briquetting fuel from agro-residues husk consumed lower energy consumption and had a smaller critical transport distance. More specifically, densification briquetting fuel from agro-residues husk was found to be more energetically advantageous, similar energetically advantageous, and less energetically advantageous than coal for locations at a distance of above 2200 km, between 1500 and 2200 km, and below 1000 km from the coal pithead, respectively.

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