

基于ANSYS的生物质液压成型模具锥角优化 Study of Mold Cone Angle of Hydraulic Briquetting Press Based on ANSYS

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摘要: 液压成型机模具锥角是影响成型的关键参数,为降低压缩过程中的摩擦力、减少消耗的压缩能、提高成型燃料的成型密度和成型品质,运用ANSYS参数化语言,对液压成型机模具锥角进行优化分析。研究了模具锥角值与应力分布关系、模具不同锥角时摩擦力与位移关系,得出锥角与应力分布呈二次抛物线形式。研究表明:模具锥角最佳取值范围为 $5.5^{\circ} \sim 6.0^{\circ}$ 。经试验,锥角在此范围内取值,出模后的成型燃料松弛密度增大,耐久性增加,成型密度和成型品质提高。Mold cone angle is an important parameter. The simulation of the main molding stage of hydraulic briquetting machine was carried out with the finite element software ANSYS, in which the special ANSYS parametric design language was used to optimize analysis the mold cone angle of hydraulic briquetting press. The relationship between mold cone angle and equivalent stress was studied, along with the relationship between the friction stress and displacement in different mold cone angle values. The result indicated the best range of mold cone angle of  $5.5^{\circ} \sim 6.0^{\circ}$  is obtained, in which, the simulation results are approximately in accordance with the measured values. Furthermore, the briquette block has a good density, and quality, and is suitable for storage and transportation.

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