

3rd International Conference and Exhibition on Mechanical & Aerospace Engineering

October 05-07, 2015 San Francisco, USA

The research on technological parameters of short forming process of ring parts

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A sessential basal spare part of contemporary mechanical device, ring parts have found wide application in the fields of aviation and space and other industrial purposes. The existing production process of ring parts has exposed many disadvantages such as serious waste of material, energy consuming, long production cycle and un-ideal production quality. The object of this study is to introduce a new short ring processing, which makes use of the remained heat of casting to hot rolling directly. Take 42CrMo alloy steel as an example in the research, the technological parameters in the ring processing was investigated by means of experiment, research and numerical simulation. The smelting temperature was 1700 °C, the casting temperature, de-panning temperature and initial temperature of mold were 1520 °C, 1050 °C, 2000 °C, respectively, and spinning rate of the mold in the casting was 6.7 r/s The heat preservation temperature and the soaking time in heating process were 1050 °C and 30 minutes, respectively, then persistent overheating at the rate of 5 °C per minute to 1150 °C and kept for 5 minutes. The initial rolling temperature was 1150 °C, the rolling rate was 2 and the range of mandrel roller feeding speed was 0.35 mm/s to 2.57 mm/s. These parameters offered important reference value for technology research and development in short process, and also promoted the application in short process of plastic forming.

Biography

Lu Jia has been pursuing a PhD in TaiYuan University of Science and Technology since 2014, majored in materials science and engineering. She has published more than 5 papers in reputed journals and 4 patents in CPB.

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