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Effect of using eletromagnetic stirring on AISI 1025 steel forged flanges

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This work has the objective of evaluating the effect of electromagnetic stirring (EMS) used in continuous ingot (CI) in the mechanical and metallurgical properties of hot forged flanges of AISI 1025 steel. Three conditions of raw material were supplied and compared before the forging process: one from CI using EMS; the other, prevenient from CI without EMS, and the last, with CI without EMS, and, subsequently, submitted to hot rolling process. Billets were extracted from these raw materials to manufacture connection flanges through hot forging. To evaluate the mechanical properties of the forged pieces, tension, hardness and impact tests were done, and the microstructure was observed by optical microscopy. Macrographs and penetrating liquid non-destructive testing were also done. The results of the above-mentioned tests showed proximate mechanical and metallurgical properties approved by the reference norm (ASTM A105) of the flanges manufactured with the raw materials obtained by CI with EMS and hot rolling.

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