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DESIGN AND MANUFACTURING OF A POSITIVE CLAMP FOR AUTO POUR STOPPER ROD MACHINE- A CASE STUDY

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ABSTRACT

The main aim of this paper under study is to overcome drawbacks of the present clamping system used to clamp the locking plate of an auto pour stopper rod machine. Auto pour stopper rod machine is used to pour molten metal into the moulds to produce various components by casting. Locking plate is a component of the machine which is bolted to the actuator arm. It is necessary to clamp the locking plate firmly to prevent leakage of molten metal.

The present system which is used to clamp the locking plate is a pneumatic brake caliper which makes use of compressed air to apply clamping force. The functioning of this brake stops when power supply is cut off, thus releasing the locking plate that leads to leakage of molten metal. The temperature of molten metal is around 1400^0C and hence its leakage can cause fatal accidents. This study emphasizes a new system which makes use of spring force to clamp the locking plate. The new system does not require electricity to clamp the locking plate thus preventing leakage of molten metal in case of power failure.

KEYWORDS: Clamping, Locking Plate, Molten Metal, Pneumatic Brake, Spring