**Title of the Paper**

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**Abstract [250-500 words]**

In an integrated steel plant, raw materials are processed in blast furnace (BF) to produce hot metal. From BF hot metal (liquid iron) is tapped through tap holes & is transferred to a refractory lined vessel called as torpedo ladle for transfer to further processing stations which involves conversion of hot metal to steel. Transfer from tap hole to torpedo vessel takes place through a refractory lined drain called Trough. Separation of liquid iron & slag is carried away in Trough by principle of difference in density with the help of Skimmer block. Metal drains through metal runner & slag through slag runner. Trough needs to be relined or repaired at regular intervals for continuity of operation as refractory has a certain life limitation. Before repair drainage of remaining hot metal from Trough is a pre-requisite. This is being done in a conventional process which has various associated challenges related to process and safety.

To overcome those challenges, a concept of slide gate like ladle slide gate system was developed. This system comprises of mechanism, refractory components & an actuator. This paper covers, conventional process of hot metal drainage & challenges associated with it, approach of developing a new concept of slide gate system for this application, design, trial details & merits of slide gate system over existing conventional system.

**Keywords –**