

Innovative Compact Mini-Size Crucible Furnaces

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ABSTRACT

Innovations on crucible compact furnaces become a mini compact crucible furnace is aimed at reducing dimensions and weight. The innovation was done without reducing the the furnace capacity but reducing the LPG consumption. The efficiency of a mini compact crucible furnace is designed better. Mini compact crucible are expected to be more suitable for aluminum casting practices.

Research and development method is applied in innovating of mini-size compact crucibles furnace. It is made from used drums with a diameter of ± 320 mm. The heat insulator is designed from a combination of ceramic blanket and castable to reduce overall weight. The furnace frame is equipped with wheels so it easy to mobile. The crucible pot is made from carbon steel with outside diameter of 170 mm, wall thickness of 8 mm and height of 250 mm. The base is made of 8 mm thick steel plate that welded to the pipe.

The prototype of mini compact crucibles have dimension of (330x330x750) mm with a total weight of 46 kg. The furnace can be made from used drums with heat insulation a combination from a D.96 ceramic blanket and TNC-17 castable. The furnace prototype is able to melt 3 kg of aluminum and reach a temperature of 660 0C in 50 minutes with LPG consumption of 1.76 kg. The furnace's outer wall temperature is still within safe limits when operated. Prototype of a mini-size compact crucible furnace needs to be developed further to improve its heat efficiency.

Kata Kunci: Innovation, crucible compct furnace, mini