



MSME Technology Facilitation Centre

(A Joint Initiative of Government of West Bengal and Council of Scientific and Industrial Research)



TECHNOLOGIES of ADVANCED FURNACE FOR METAL MELTING

(Keywords: Metal manufacturing, MSME, TFC, Advanced Furnace, CSIR NML, inevitable equipment)

Furnace is an inevitable equipment of any metal manufacturing unit. In West Bengal, surveys revealed that, the furnaces used by the micro, small and medium scale enterprises are mainly source of pollution and create health hazards as well as occupational hazards. Thus, there is a huge requirement of ADVANCED FURNACES. These micro small and medium scale enterprises of West Bengal are huge in number. It has been researched that provision of ADVANCED FURNACES for Metal Melting would increase the productivity of these MSME units and thereby reducing health hazards and occupational hazards of the workers.

Council of Scientific & Industrial Research, India's one of the premier R & D institutions has laboratories that offer Technologies of Advanced Furnace for Metal Melting:

COAL FIRED FURNACE FOR MELTING NON-FERROUS METALS

Application:

It is used for melting of non-ferrous metals such as Brass, Bell Metal, Copper, Bronze, Zinc, Lead etc., within a temperature range of 1000 0 C to 1200 0 C through burning raw coal. It is a low cost furnace and can be utilised for casting of non-ferrous metal for making utensils, handicrafts, small machine parts etc., in cottage or small-scale industries. Melting is rapid and does not create any smoke during burning of coal.

Raw Materials:

Few pieces of refractory bricks, a mild steel grate for construction of furnace, and Non -ferrous metals for casting

Process Features:

Coal burns in the furnace around the ladle filled with non-ferrous metals. A small blower supplies the air to the grate of the furnace for burning of fuel at high temperature (1200 0 C). 10 kg metal melts within one hour at 1000 0C in batch process. This is a simple and low cost furnace.

TECHNOLOGY PROVIDER

CSIR- Institute of Minerals and Materials Technology,
Bhubaneswar
Website: <http://www.immt.res.in/>

IMPROVED COKE BASED ENERGY EFFICIENT BRASS MELTING FURNACE

Salient Features

- Reduced coke consumption (about 20%)
- Less pollution, Less effect on Zn vapour on human body
- Reduced melting cycle per batch (20%)
- Minimum alteration of traditional furnace

Major Raw Materials

- Bricks , mud, Steel grit

Details of specification application:

- For making artifacts made of Brass and Aluminum alloys.

Product specification The equipment required with respect to the mentioned set-ups (ref. section 3.) are as follows: Furnace body: Burnt Clay bricks and mud available locally Steel/Iron Grid: Fabricated locally from 25mm mild steel rod. Top cover: Fabricated locally from 5mm mild steel plate Pit Covers: 2-3mm thick mild steel plates Air pre-heater: Fabricated from 12/ 10 BG (2/ 3 mm) mild sheet. Fabricated from local fabricator as per design Crucible: Clay Graphite, available at local market Blower: Motorised blower, of capacity maximum up to ¼ HP depending on the melting capacity of the furnace.

TECHNOLOGY PROVIDER

CSIR- National Metallurgical Laboratory
(NML, Jamshedpur)
Website: www.nmlindia.org/