

HIGHER TECHNICAL INSTITUTE  
NICOSIA - CYPRUS

MECHANICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DESIGN OF A GLASS FURNACE

Design by :

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## SUMMARY

### DESIGN OF A GLASS FURNACE FOR THE PRODUCTION OF BOTTLES

The glass furnace has been designed to melt the recommended chemical composition of sand at 1600 °C, in order the ability to produce good quality glass be attained.

The design starts with the selection of insulating, refractory and supporting materials which will form the structure of the furnace and will give the possibility to the furnace design engineer to calculate the heat requirements. Based on this total heat requirement the capacity of the burner was designated. This burner capacity helped the computation of the A/F ratio, the chimney area and height, as well as, the natural draught to induce air into the burner. Also a part of this heat requirement, helped the completion of the power requirements section. These include the estimation of the amount of heat to be carried away to cool the floor. Knowing that, the correct capacity of cooling tower is selected and also the correct pipe-work and pump used to circulate the water are found. After the structure design is completed a constructional drawing is presented according to these solutions. The temperature control method follows which is the last part of the design before the costing is done. The cost analysis is in the form of an invoice and presents in detail the cost of each component used to construct the furnace.

The project report finishes with the presentation of the furnace specification and a discussion about some critical points on the furnace operation.

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