

NATURAL GAS BASED POT AND MUFFLE FURNACES FOR GLASS INDUSTRY

INTRODUCTION

A model for environmental performance – natural-gas-based pot and muffle furnaces that are energy-efficient, which also make good economic sense. For Pot furnace Keeping the traditional design and mode of operation unchanged, the new system minimized energy wastage by using pre-heated air for combustion, and utilizing the heat of the outgoing flue gases. Also, the installation of efficient combustion systems and use of better refractory and insulation materials reduced functional and structural losses. The refurbished furnace was centrally fired by a single burner mounted on the furnace crown for better heat distribution.

A natural-gas-fired muffle furnace was designed and demonstrated by adopting a participatory technology development approach. The gas-fired design is very similar to the existing coal-fired units, both in terms of construction and operation. The gas-fired furnace has the provision to use better-quality muffles made of silicon carbide that can enhance the muffle life to more than three years. The design was optimized to achieve complete combustion of gas and better distribution of heat. The technological innovation has made it possible to increase production by 10%.

ADVANTAGES

- The glass units could benefit immensely as the gas-fired furnaces demonstrate energy savings up to 50% and 30% in the case of pot and muffle furnaces, respectively.
- The new technologies definitely make economic sense, they also boast of an envious combination of being environmentally sound and, most important, much less harmful to the workforce that would now sustainably continue to manufacture glassware for the nation.

SCALE OF DEVELOPMENT: Technology commercialised.

