W1.82

Oil and Gas Burners

1 Oil Burners

Pressure oil atomiser has a fixed orifice; oil throughput is controlled by varying pressure of oil.
If oil quantity is to be reduced to one third, oil pressure is reduced to one ninth
for fuel oil "s" din 51603/1963, atomising pressure required is ~90 atmos at 110 ^{o}c. ;
range of regulation is limited to 1:3. Lower or higher capacities are achieved by changing nozzles. For high capacities, multiple nozzle burners are used
In another type, pressure is constant, nozzle size is varied; atomising pressure is ~20 atmos.
In another burner known as 'oil return burner', the turned down ratio is high at 1:8. This makes it possible for burner to be used for preheating of refractories and for heating up to normal operation from cold. Quantity injected into kiln is controlled by a valve in the oil return line. Oil returns to storage tank. Pump capacity should therefore be ~50 % above the maximum requirement of kiln; atomising pressure is 20-40 atmos
Pressure oil cum compressed air burner--in this oil is pumped at~10-25 atmos. Compressed air is used to give oil swirling motion and intensely mixes primary air with oil; turn down ratio is 1:5
In 'ultrasonic' burner, flame shape is controlled by acoustic nozzles; oil particles are produced of any desired size and flame shaped to desired proportions

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2 Gas Burners

Most common burner for gas is a plain burner pipe without primary air.
High nozzle velocity of natural gas of 300-400 m/sec, causes an intensive intake of hot air from cooler and an instant and thorough mixing of air and gas making primary air redundant
Complete combustion of gas is achieved without excess air; igniion of flame starts at about 50 cms from burner tip
In an adjustable burner for gas, a cone inserted concentrically in the nozzle adjusts flame length and tip velocity; nozzle cores of elongated shape produce long flames.
Nozzle core may be fitted with curved deflectors to give swirling motion to emerging gas thereby flame shape can be cntrolled and gas and air are better mixed
Gas pressures are in the range of 2-3 atmos.

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