Eclipse Combustion Pvt. Ltd.

Burner Management System

The burner management system described here below is sequenced for automatic operation of the burner from the control panel supplied along with the burner.

The burner control panel will house the necessary interlocks required for the safe operation of the burner in automatic mode. This is achieved by use of hardwired system using solid-state timers, contactors etc. To facilitate operation / monitoring of the burner operation the control panel will be provided with necessary push buttons, Indicating lamps on the front side of the control panel.

The controlled elements are the combustion air blower (which also supplies air for the pre-purge operation), ignition, shut off valves, pressure switches, servomotor for changing the output of burner from lo-fire to hi-fire and vice-versa, and alarm. The burner flame is continuously monitored using a flame monitoring device consisting of UV Scanner mounted on the burner and a programmable burner sequence control unit mounted inside the control panel.

The sequence of operation of the system will be as under:

1. The main power supply is switched on and subsequently the supply to the control panel is switched on. The successful energisation of the control panel is indicated by an indication light (SUPPLY ON)

2. To initiate the operation of the burner system, the COMBUSTION START push button is pressed. This action initiates the blower operation to supply air for the pre-purge operation. An indication light, COMBUSTION FAN ON, indicates the operation of the blower.

3. Once the blower starts running, BMS Logic will check all the safety interlocks as mentioned below –

    1) Air pressure switch.
    2) LPG gas pressure switch.
    3) LPG high gas pressure switch.
    4) Recirculation fan is ON
    5) Dryer Running in Forward direction
    6) Dryer Shell tempt. Is under 600 deg. C
    7) Any other interlocks by customer

If all the above interlocks are satisfied, customer's system will give control ON signal to Sequence controller (model T 420) that will initiate the burner sequence that is already programmed. Initially the pre-purge operation sequence will start. During this operation the combustion air blower delivers the purging air for a fixed duration of time set (factory set in T 420 is 30 sec approx.). After that main gas solenoid valve will open. In case any of the above interlocks are not proved then these valves cuts off and the system will go back recycling mode. to Pre-Purge condition.

4. If all the interlocks are satisfied. Again Pre-purge will start. Then ignition transformer energizes, simultaneously solenoid valve in valve train will open and sparking of burner ignition rod will take place. Once flame is established, it will be sensed by Ultraviolet scanner and it will give feed back to burner controller (T 420). After set period of time ignition transformer will de-energize. (factory set time is 5 seconds approx)

5. In case flame fails during the cycle, the recycle mode in the burner controller allows the system to re-initiate the start up sequence automatically, provided the main burner has been operating for atleast 30 seconds approx. If recycle is successful and main burner is operational then it is ready for another cycle.

   The flame sensor then monitors the main flame continuously. The BURNER ON indicating lamp indicates the establishment of the main flame. In case the main flame goes out or is not established, a signal is given to the solenoid valve to close, a FLAME OFF alarm is given, (which has to be acknowledged), and the post-purge operation is initiated. (for 28 seconds approx)

6. The burner is initially lighted on low fire position. The gas butterfly valve connected with servomotor (T510 model) mechanically will open as per the feedback from customer's temperature controller system .

   Further as per the temperature demand, customer's temperature controller will give signal to servomotor and it will open or close gas B/F valve.

7. BMS (Eclipse) will provide burner ON / Fail signal to DCS. Gas High / Low pressure switch and Air pressure switch feedback signal will also be given to the DCS.