



Plant Equipment -Hazard & Mitigation

Furnaces

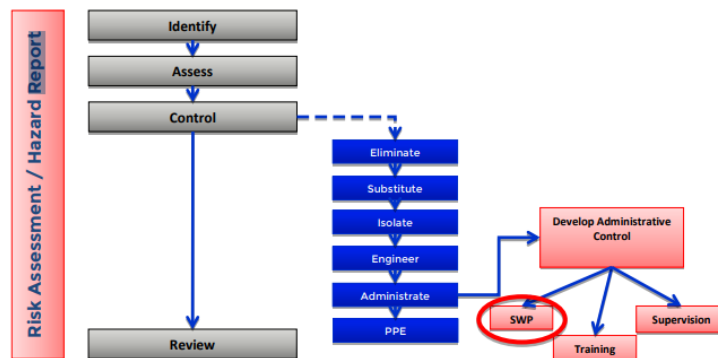
Furnaces are used to heat fluids at high temperatures—typically above 800F. Fluid to be heated enters convection section and it flows successively through the shock bank and radiant sections. Generally, a temperature controller at the outlet of liquid flow controls the fuel flow to the furnace along with air flow. Combustion of fuel provides heat to fluid. Flue gases or products of combustion exit the furnace from the stack. Some heaters are required to be periodically stack tested for air emissions and these tests follow EPA or state agency’s testing procedures.

Hazards: -

- ❖ Flameout condition and deficient air operation should be discontinued quickly, as they could cause an explosion.
- ❖ Normally, flames from burners are NOT supposed to touch or impinge on a tube. However, if a burner is improperly installed or damaged, its flame could impinge on tubes. Flame impingement could be tolerated for a short time and does not require an immediate shutdown of the furnace. Generally, operators pull out the defective burner, clean it or replace with a new burner.
- ❖ Stack thermocouples are a good indicator of furnace operation. With some sulfur containing fuels, stack temperatures below 360F-375 F could cause severe corrosion of convection tubes and/or stack lining. An abrupt rise in stack temperature could indicate a tube rupture.

Mitigation: -

- ✓ Proper training and periodic check of safety critical instruments and interlocks and BMS (Burner Management System) is highly recommended. Operators also check flame shape and color as a part of the shift rounds.
- ✓ Conduct an MOC when there is a major change in feed to the furnace.
- ✓ Each startup requires furnace be thoroughly purged of flammable vapors (generally with steam). The process is called purge cycle.



Working knowledge of operating systems is helpful in achieving our common goal of minimizing risk (ALARP). The implementation of a Safe Working Procedure (SWP) relies on the individual undertaking the task to follow the requirements as set out in the document. Therefore, a SWP is considered an administrative control, and should only be adopted once all other types of controls (i.e. elimination, substitution, isolation and engineering) have been considered.

Please Send your answers by email to: hse@aimsgt.com

Which of the following require training and authorization before you can perform them?

- a) Forklift operation
- b) Lock out Tag out
- c) Gas testing prior to hot work
- d) Confined space entry
- e) All of the above

Last Month HSE Quiz Answer: Option A

- ✓ Muhammad. P.K.
- ✓ Eliyaz Ahmed
- ✓ Mohammed Mohiuddin
- ✓ Jamsheedha
- ✓ Vivish N V

Congratulations!



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