



"Eddy's Boilerhouse News"
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NEWS LETTER ASME CSD-1 Controls and Safety Devices for Automatically Fired Boilers – Series CSD-1 Letter 9.

CSD-1 Part CF-200 Gas-Fired Boiler Units, Purging

CF-210 Pre-ignition Purging (commonly called pre-purge) states that power gas burners and mechanical draft atmospheric gas burners shall provide for pre-ignition purging of the fire box and passes. In other words, the entire combustion side of the boiler must be purged of all gases. So the question becomes how long should my pre-purge be?

The code goes on to assert that boiler units having inputs greater than 400,000 btu's but less than 2,500,000 btu's must have four (4) air changes in 90 seconds. This same size boiler will also meet the code with four (4) air changes with the damper 60% open with air flow proven.

Let's break this down, if the boiler has a fixed damper (only one setting) it must be opened far enough to get four changes of air in 90 seconds. That is the volume of air in the entire boiler it must be changed four times. If that can be done in 60 seconds or 45 seconds that is the purge time required.

The second option is four air changes with the damper 60% open and air flow proven. With a burner that modulates or has low/high firing during pre-purge the damper must be at least 60% open and the unit must have an air flow switch.

Boilers with inputs greater 2,500,000 btu's but less than 12,500,000 btu's must have four air changes with the damper 60% open and air flow proven. There are a couple of other minor options for these units but basically this is pretty much it. The reason that 60% damper open was chosen is because we get 90% of the air flow at an opening of 60%.

CF-210 goes on to say that, "natural draft atmospheric gas burners equipped with an automatically operated air shutter or damper which is closed or positioned to restrict the passage of air when the burner is not firing shall provide means to open such air shutters or dampers to the high-fire position for a period of at least 90 sec immediately before each lightoff cycle is initiated."

CF-220 Control; states that "boiler units having forced or induced draft fans, or both, shall be arranged to shut off the gas supply upon failure of the combustion air". We have to have an air flow switch. It goes on to say, "Boiler units having inputs greater than 400,000 btu's and less than or equal to 2,500,000 btu's may recycle once upon loss of combustion air, before the establishment of safety shutdown. For such boiler units having inputs greater than 2,500,000 btu's safety shutdown and lockout shall be established upon loss of combustion air".

What do they mean by “may recycle once”? To recycle once means that on the loss of combustion air the boiler unit can re-start the cycle which includes going through pre-purge again. The boiler unit can't have a re-light control. A re-light control turns the pilot back on without going through the purge cycle. This is a no-no.

Remember when replacing a Flame Safeguard Control do not reduce the purge time. The boiler manufacturer has worked out the math on these four air changes and we don't want anything less.

Be Safe.

NEW TRAINING CLASSES ADDED:

PHOENIX, AZ (JANUARY 11-15, 2010) 40 HOUR BIA RECERTIFICATION

PHOENIX, AZ (JANUARY 25 - FEBRUARY 5, 2010) 80 HOUR BIA CERTIFICATION

PHOENIX, AZ (FEBRUARY 8-12, 2010) 40 HOUR BIA RECERTIFICATION

PHOENIX, AZ (FEBRUARY 22-26, 2010) 40 HOUR BIA RECERTIFICATION

PHOENIX, AZ (MARCH 8 - 19, 2010) 80 HOUR BIA CERTIFICATION

PHOENIX, AZ (MARCH 22-26, 2010) 40 HOUR BIA RECERTIFICATION

PHOENIX, AZ (APRIL 5 - 9, 2010) 40 HOUR BIA RECERTIFICATION

PHOENIX, AZ (APRIL 12-16, 2010) 40 HOUR BIA RECERTIFICATION