AES TECHNICAL BULLETIN
MagnuM 6500 Furnace Operation / Clinkering / Changes

The purpose for this bulletin is to discuss the MagnuM 6500 Furnace operation in relation to clinkering, buildup in the firepot, what causes these things to happen and what is the solution. We have found that once customers are instructed and understand how to operate the furnace expected results will be consistent with the design of the unit. The installation and operations manual clearly explains how the unit is supposed to operate and what maintenance is involved. Following these procedures will enable the operator to have trouble free operation.

The following list explains the different situations where excessive clinkering or buildup in the firepot may occur. Remember that the MagnuM 6500 Furnace does not have a self cleaning firepot and needs to have the clinker manually removed every 12-24 hours depending on fuel quality, quantity, installation of product and operator habits.

1. Fuel quality: If your fuel is high in starch it is not going to burn quickly or completely. This will cause the firepot to fill up quicker than normal. If the fuel is wet (over 15%), it will contribute to a rapid concentration of clinkers and plugging of the air holes. If the fuel has a high test weight (over 56 lbs per bushel), it could be dumping more fuel into the firepot than the unit is capable of burning. This would require a fuel feed rate test to see if this is happening. Corrective action is to make sure the fuel is dry and clean, try to get good quality fuel as possible and every 6-8 hours knock the clinker down with the cleaning tool. You do not have to take the clinker out right away but need to stir the fuel around in the firepot which will break up the clinker and knock the buildup down to size. The firepot would have to be cleaned out every 8-12 hours to have proper operation. This can be done without losing the fire.
2. Ash buildup: It is important to shake down the ash (front shaker rod) every 8-12 hours to allow enough air to get around the firepot. Do not wait until you are ready to empty the ash drawer. If the firepot cradle is full of ash it will cause the air to only go into the back side of the firepot and this will cause uneven combustion and possible firepot warping. Corrective action is to shake down the fuel every 8-12 hours and check the ash area underneath the firepot every 1-2 days.
3. Shaker grate not sealing: If the shaker grate is not laying right on the bottom of the firepot cradle, it will re-direct the air out the bottom of the firepot and the fire will not burn properly. This can be caused by the slide not manufactured properly, customers beating on it when they cannot get it to move (normally caused by lack of maintenance) or unburnt fuel getting underneath it. Corrective action would be to check to make sure that the slide is setting flat and correct it if it is not setting flat. This can be done easily by tapping on the rod to bend the plate downward. Dislodge any fuel that is setting underneath the plate. Also make sure that the customer is sliding the plate all the way back when the unit is burning.
4. Door or Ash drawer not sealing: If the door or ash drawer door is not sealed it will take air pressure away from the firepot. Corrective action is to do the paper test or a leak test to make sure that all gaskets are sealing. If the gaskets are leaking, replace with new gaskets or repair existing gasket.
5. Firepot not sealing: If the firepot is not sealing against the top of the firepot cradle, the air pressure will drop and the fire will not get enough air. Corrective action would be to grind the area that is causing the firepot not to seal and allow the firepot to sit correctly in the firepot cradle. Before grinding the cradle make sure that the firepot itself is not warped.
6. Incorrect Air intake venting: If the outside air is not hooked up or is not properly sized for the application you will not get adequate combustion air. If there are more than 2 elbows or if the air run is more than 10 feet, you need to be using 4" air intake venting. If the venting is being obstructed, contaminated by exhaust or otherwise not allowing correct air to the unit, you will need to change the system so that it is correct. Testing for this would be done with an air flow instrument or you can do a preliminary test by

unhooking the outside air and opening a door or window for a few hours to see if the combustion air is an issue.

7. Incorrect Venting for exhaust: If the venting has more than 2 elbows or has an equivalent length of more than 10 feet, it is recommended to go with 4" venting. If the venting is restricted by outside elements it has to be changed. Corrective testing would need to be done by taking the unit out of the environment that it is in and making sure that it does run correctly. If the glass gets dirty quickly (under 1 hour) the venting is not correct. MagnuM 6500 Furnaces after January of 2006 must use 4" venting.
8. Environmental conditions: In most cases, the home itself is causing the problem. If the unit is being used in any way to supply air to the home, it will not work correctly. If the home has not been balanced so that there is no negative pressure, it will have to be done or the unit will not operate on the higher settings and may not operate correctly on the lower settings.
9. Draft/Exhaust blower: If the exhaust blower is not operating correctly it will affect the fire. Corrective action would be to do an air flow test (should be around 75 cfm) and an amp draw test (should be around .95 amps). Always check the label on the product for correct cfm and amps. Check for gasket leakage between the draft/exhaust blower and the housing.
10. Plugged heat exchanger/plugged venting: If the venting or heat exchangers or draft/exhaust blower is plugged (normally caused by lack of maintenance, improper combustion air, improper venting, negative air pressure, and wet fuel) this will cause the firepot to fill up prematurely on higher settings. Corrective action would be to identify these items and correct.
11. It is important to daily move the heat exchanger cleaner rod back and forth to eliminate the plugging of the heat exchangers. Do not force the heat exchanger rod as you will bend or break the heat exchanger plate. This is a time consuming and costly repair that his not covered by warranty. If you have plugged your heat exchanger tubes you might have to take the appliance outside and wash out the heat exchanger area. Consult your local dealer for inspections and corrective action to be taken.
12. Operator Error: It is important that proper installation, maintenance and operation practices are followed. If the appliance is not installed correctly, proper fuel used or proper operation ignored, the firepot will fill up after a short time of operation. Continued use with the above problems and the appliance will plug up, venting will become plugged, draft blower could become plugged and extensive damage to the appliance could occur. The appliance is not covered under warranty for operator error, lack of maintenance and improper installation.
13. The unit will burn fine on the higher settings for about 8-12 hours and then it needs the clinker knocked down or taken out. The longest that the unit will burn without clinker removal would be app. 24 hours if all conditions are perfect and proper fuel is being burned. The unit works the most efficient on the #2-3 setting for maximum heat impact but will burn on 4-5 if operated and installed correctly.

The MagnuM 6500 Furnace has been tested to perform at the BTU level that is on the test plate. It has been tested to run according to the operations manual guidelines. If the unit is not installed, vented or operated according to these requirements, it will not perform properly. It is the responsibility of the homeowner to contact the dealership to make sure that all of the items listed above are checked out and are not affecting the performance of the furnace. Anything less than this could cause damage to the unit and or the customers' home.

Clinker removal: The clinker needs to be removed when it builds up to app. 1" thick. This normally would be done every 12 hours or so. The clinker can be removed with the fire burning by tapping lightly on the top of the firepot and then placing your removal tool underneath the clinker and roll the clinker toward the back of the firepot. Once the clinker is loose you can tip the clinker to the side using a fireplace tong to pour the fire back into the firepot and then safely remove the clinker. This action will take a little practice to get good at doing it.

Dispose of the clinker by either placing it on either side of the firebox chamber so that it cools and crumbles into the ash pan or take the clinker out and place in a fireproof container.

Proper operation of the MagnuM 6500 Furnace is essential. Please contact your local dealer to get questions answered and proper operating techniques.