

# WOOD FIRED BOILERS

2008 New England Kiln Drying Association

PRESIDENT BUSH RESENTLY ADDRESSED THE COUNTRY,

“SEEK ALTERNATIVE FUELS”.

# THE USE OF WOOD BOILERS

A wood boiler is a pivotal part of any business. Some owners are aware of this fact, but not the norm. Most feel that it needs attention after it breaks, then fix the problem.

Just think of it's job,

It provides a source of heat for our New England winters.

It provides steam for the drying process of our kilns.

Also supplying steam to make electricity in some cases.

Wood boilers in some cases even give the plant means of disposing wastes that can't be trucked off the property.

# 2008 TECHNOLOGY

- ▣ TODAY BOILERS ARE NOT JUST WOOD BURNERS, THEY HAVE CONVERTED TO HYBRED BOILERS AND MULTI FUEL BURNERS.
- ▣ THESE FUELS INCLUDE, WOOD – (FROM GREEN SAWDUST TO DRY HARD WOOD CHIPS) , OTHER FUELS ARE CHIPPED TIRES, PELLETS, COAL, TRASH, CORN, ECT.
- ▣ THEY RUN TURBINES, KILNS, HEAT FOR ALL APPLICATIONS, AND IN MOST CASES CAN STOP THE USE OF OIL COMPLETELY.

# THE CARE OF WOOD BOILERS

- ▣ To care for a wood boiler can be broken up into many categories.
  - 1) Fire-Sides.
  - 2) Water-Sides.
  - 3) Condensate Receiver.
  - 4) Water Make-Up

# THE CARE OF WOOD BOILERS

## ▣ Fire-Sides

Keeping the grate system in good shape so the air flows can be maintained for the low and hi firing rate. There are many grate configurations for the fuel you are using. We or the manufacturer choose the system best suited for your site. However we answer to the environmentalists.

Raking the grates and frequency is site specific, but so important to the firing stability and life of the grates. If glassing of the grates is occurring, then it needs to be removed asap. This can block and really hinder your combustion.

Under your grates (ash clean out).

This also needs to be checked and cleaned. The frequency is sight specific. The fine sands that come in through your fuel builds up here and cause problems in the future is not kept clear.

# THE CARE OF WOOD BOILERS

## ▣ Fire-Sides

Also besides your grates you should also be aware of your over fired air ports.

Are they clear?

Why would these close over?

Depending in the advancement of your system, you may also have to check your pre-heater, fly-ash hopper, ect.

Do you have soot blow?

Do your boiler tubes carbon up or build a layer of ash on them?

Where is the fly-Ash collecting?

Is your soot blow 100% functional?

These are some of the questions you should be asking yourself when running one of these systems.

# THE CARE OF WOOD BOILERS

## ▣ Water-Sides

While we don't sell or sponsor, we do and can recommend.

This area in a small mill is not understood very well. The people being trained by the chemist, may not understand the water chemistry. Their testing can be as catch as catch can.

- 1) Surface blow – is to keep the solids (that are floating in suspension) moving out of the boiler.
- 2) Bottom blow – is to keep the adhesion of the solids to a minimum.
- 3) Return line treatment – is another chemical that is used in all systems. This chemical needs to be injected into the steam stream after the boiler.

# THE CARE OF WOOD BOILERS

## ▣ Condensate Receiver

This is the most important area for boiler water stability and the lack of oxygen entrained in the water going to the boiler.

- 1) Tank Temp – keeping this between 198 and 210 degrees does 2 important functions. 1<sup>st</sup> being that the hotter the water going into the steaming vessel has been known to take the wave out of pressure losses. 2<sup>nd</sup> is the amount of oxygen in the water @ 210 degrees there is no oxygen, so the hotter the better.
- 2) Proper Venting – this helps and allows the oxygen your trying to remove gets out. We suggest a 6” vent and if possible straight up and out. This also has been known to reduce the need for sulfite



# CARE OF WOOD BOILERS

- 3) Obtaining tank temp– Make sure your system can and does this all within a very short time span. The quicker the water is brought up to temp, the less likely there will be reactions that may require more chemicals thus defeating your purpose.
- 4) Stay on top of all traps in your steam lines. They should not be steaming. If this is happening the your traps need servicing. In normal water returns, temps of 140 to 160 degrees would be normal.

# Emergency Water

- ❑ Be very careful of cold water make up to the boiler.
- ❑ Often used as a second means of filling the boiler.

This is a big NO NO !, but in some cases can't be helped. Just be aware of the potential problems.

# 2008 TECHNOLOGY

- ▣ KEEP THE GRATES CLEAN.
- ▣ LEARN YOUR SYSTEM.
- ▣ STAY ON TOP OF YOUR SOOT BLOW, BE CONSISTANT!
- ▣ CHECK AND MONITOR ALL MOVING PARTS REGULARLY.
- ▣ KEEP YOUR O2 WITHIN BOUNDRIES.
- ▣ KEEP A GOOD CLEAN FIRE.

THIS ALL HELPS IN LETTING THE BOILER WORK FOR YOU!  
FINALLY,

LEARNING YOUR SYSTEM. YOU SHOULD ALLOW YOURSELF TIME TO LEARN YOUR BOILER ROOM, SIGHT, SOUNDS, AND SMELLS. THIS WILL GIVE YOU THE KNOWLEDGE OF A PROBLEM THAT COULD BE FORTH COMING. YOU WILL BE AMAZED AT THE THINGS YOU WILL START TO NOTICE LIKE, HEY THAT DOESN'T SOUND RIGHT, OR THERES A SMELL OUT OF PLACE. GIVE IT A TRY.

**FROM TECHNICAL SERVICES TO ALL OF YOU**

WE THANK YOU

ANY QUESTIONS!