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### Interesting Facts



- Rudolph, the red nose reindeer was created by Robert L. May in 1939 for Montgomery Wards department store.
- The beginning of winter, Winter Solstice, is the shortest day of the year and is on December 21st or 22nd.
- Santa Claus donation collectors have been used by the Salvation Army since the 1890's.

### Jan Dates to Remember

- Jan 1 - New Years Day
- Jan 8 - ASHRAE Meeting
- Jan 16 - ASPE Meeting
- Jan 22-24 - AHR Expo

Make sure to visit these booths:

Bryan Boiler 1959	Hubbell 7457
Barnes & Jones 2607	Lochinvar 2701
Fulton 1279	Rovanco 856
Gordon Platt 2359	Schebler 1471
Heatfab 1731	Tunstall 2724



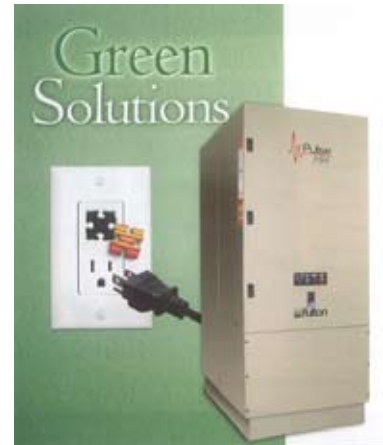
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## FEATURED Products



### Fulton Pulse Low Emissions Boiler

Unlike conventional boilers, Pulse boilers use no power burner. They make use of a small assist fan for pre and post purge only. Once the main flame is established, the fan turns off and the Pulse process naturally draws in the correct amount of air. This results in an extremely low level of electrical consumption, less than one amp of current draw during boiler operation and can be plugged into a standard 120VAC wall outlet.



**One residential Energy Star refrigerator uses more electricity annually than five Pulse PHW 2000LE boilers.**

Fulton has taken the already environmentally friendly Pulse boiler one step farther by introducing a low emissions option. The Low Emissions design provides all the advantages of the natural Pulse combustion process in an even more environmentally friendly design; making it perfect for installation in sustainable buildings where low emissions are requested.

The Low Emissions option is available on Pulse models 750-2000 and provides <30 PPM of NOx at all firing rates.

## Fulton Service Training

This month we held multiple service training classes here in our territory for the Fulton Pulse & Vantage boilers. Classroom and hands-on training were provided.



Thanks to all the contractors who attended.



# Why Deaerate?

The necessity of deaerating boiler feed water has become so recognized that even small plants can now be assured of longer equipment life, reduced pipeline and equipment replacement costs, and lower overall maintenance by using some type of deaeration. The initial cost of a deaerator is a small price to pay for the peace of mind afforded by its inclusion in your boiler plant's operation.

The question "Why deaerate?" can be answered by detailing the five primary reasons for including a deaerator as part of the boiler/steam/condensate cycle. They are as follows:



### Oxygen removal

Oxygen removal is the primary reason for deaerating water. It has been determined that dissolved oxygen is up to 10 times more corrosive than equal quantities of dissolved carbon dioxide, especially at higher temperatures. 2 ½ times more corrosive at 195F than it is at 140F. The major problem of oxygen contamination comes from the raw or new makeup water continuously added to the system to offset steam losses.

### Carbon dioxide removal

If carbon dioxide is present with oxygen, the two gases acting simultaneously may be considered to be up to 40 percent more corrosive than would be expected for the same quantities of the two gases acting individually. Carbon dioxide is the usual cause of steam and return line corrosion, which is characterized by a general thinning of the pipe wall or grooving along the bottom of the pipe.

### Improved heat transfer

Aside from the serious corrosion destruction that takes place in the steam/condensate cycle, when steam high in oxygen and carbon dioxide is produced, these gases seriously effect process equipment and its operation. Non condensable gases have a sever adverse effect on heat transfer.

It is well known that air is an excellent insulator. When air is allowed to concentrate in process equipment designed to furnish heat transfer, it significantly impairs that heat transfer. Since air is not kinetic in its desire to give up heat, it tends to plate out on the heating surface. Under certain conditions, as little as 0.5 percent of air by volume can reduce heat transfer by as much as 50 percent.

### Energy Savings

Finally, the potential savings in heat that can be recovered by a deaerator is another excellent reason for its installation. The deaerator can act as the hub of the heating plant.

High pressure returns formally trapped at atmosphere can now be piped directly back to the deaerator. The flash steam recovered by the deaerator from an average low-pressure system can amount to 20 percent of the fuel required to provide heat for that process; in addition, plumbing the condensate directly into the deaerator can save up to 6 percent in fuel. Exhaust steam and flash steam, formally lost to atmosphere, can be used preferentially by the deaerator to preheat makeup water. In these days of high energy costs, the obvious sometimes escapes notice.

### Conclusion

The question "Why deaerate?" leads to "Why do I need a deaerator?" or what would happen if I didn't install a deaerator?" unless we can reverse the laws of nature, all the functions described will occur in one manner or another, in one amplitude or another. Although many people feel it is normal maintenance to repair and replace condensate lines, boiler tubes, etc. continuously, a deaerator can make all this unnecessary. Few engineers today consider the installation of a steam boiler without seriously considering a deaerator as well.

Please feel free to contact us if you need help selecting or sizing a deaerator or other condensate handling equipment.



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