

2008 Tech/Plant Summit
Dallas, TX / Feb. 26 - 28

Steam, Oil, or Gas Fired Ironers

Which works best for you?



Steam, Oil, or Gas Fired Ironers



- Each & every laundry operation has a unique set of circumstances which must be analyzed when making a decision on whether to purchase Steam, Gas or Thermal Oil ironers (self contained or central system).
- There is no such thing as a “quick fix” or “this one is best” when each of the above has their own merits, pros & cons, etc.
- Productivity, maintenance, environmental, operating costs, licensed engineers, space allocation & system economics are all factors in the decision making process.

Steam, Oil, or Gas Fired Ironers



Steam Ironers

- Steam *has* been the conventional method for heating ironers for many years.

Advantages:

1) Most laundries need or already own/operate a steam boiler.

- Steam is used in other areas of the laundry (e.g. steam to washroom, water heaters/steam bundles, steam tunnel, presses, etc.).
- Gas or Oil fired boilers (dual fired boilers) have the advantage of being able to switch from Gas to Oil depending on costs/market conditions!
- Typically cost of Steam Ironer is LESS when compared to “Thermal Ironers” vs. “Steam Ironers”.

Steam, Oil, or Gas Fired Ironers



Steam Ironers

Disadvantages:

- 1) Efficiency:** Flash loss, trap loss, blow down loss and de-aerator loss (15%-20%). This excludes the inherent loss of efficiency with Steam boilers (80% efficient)
- 2) Corrosion:** Steam systems are well know for corrosion problems. Air in combination with hot water, salts, and other contaminants have potential for metal corrosion. Steam, as a rule, is abrasive and will wear & tear on pipe, fittings, valves, etc. Add scale & other mineral deposits from water supplies gathering internally on piping and equipment and a problem can occur!
- 3) Maintenance:** Steam systems require substantial maintenance focusing on steam traps, steam feed & condensate piping, condensate pumps, expansion joints, water analysis & treatment. (Steam/water lines can also freeze if power fails during a bad cold snap).

Steam, Oil, or Gas Fired Ironers



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- 4) **Environmental:** Water in a steam system must be chemically treated (to reduce corrosion). These chemicals cannot be discharged into the sewer system and are considered hazardous materials. In addition, the temperature of the water/blow down is often regulated by law. Special provisions for cooling are required if water/blow down is drained to the sewer system. (Most municipalities will not allow a discharge of over 140°F.)
- 5) **Safety:** To deliver the temperatures needed at the various ironing lines the boiler must operate at High Pressure (this in and of itself can be a safety factor when operating equipment/especially if correctly maintained equipment is in question.)
- 6) **Temperature Control:** Steam temperature is directly related to steam pressure. As systems age or are badly maintained, it is common to see a 10°F-15°F swing from gauge to gauge, pressure regulators, etc. This doesn't sound like much but can be the difference in burning a load of goods or ruining them in a jam!

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Steam Ironers

OPERATIONS:

- 1) Steam Pressure:** Typically steam boilers are rated for 150PSI (max) with operating pressure 125-140PSI (any higher & pressure relief valves will blow!)
- 2) Steam Temperature:** Typical (older) ironing systems (e.g. Hypros & Super Cylons) operate very well with 125PSI (352.5°F) at the ironer. Newer more modern steam ironers (especially large roll models) operate well at 135PSI (358°F) (distance from boiler & size of steam header are MAJOR factors when determining optimum operating pressure/temperature needed at the ironer.) Any less and you will be limited in operating speed of ironing system and run the risk of wet/badly finished goods leaving the ironer or jamming!
- 3) Licensed Operators:** Many parts of the country require that full time licensed stationary engineers supervise the operation of high pressure steam systems. Annual typical cost of an Engineer is \$60,000-\$75,000. However in some states/cities the stationary Engineer does not have to be in the boiler room every second and so he can also be a “Maintenance Mechanic”.

Steam, Oil, or Gas Fired Ironers



Continued.....

4) Steam traps:

- Often overlooked, steam traps are an integral part of a steam ironer. Traps are used to remove condensate from the chest, which keeps the chest hot. Broken, jammed or badly operating steam traps will not remove water or maintain pressure, causing the chest to cool.
- Each chest should be trapped individually for best results.

5) Cleaning & Waxing: Many ironer “rejects” are a direct result of improper cleaning. Typically, the start of the shift is a good time to clean and lubricate the ironer every 2-3 hours during the day. Make sure to turn off the blower motors during waxing/lubricating.

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Thermal Oil Ironers

Central System

Advantages:

- Capable of replacing steam in a broad application. Not only at your ironers but your washers, dryers, water heaters, etc. It can even be used to create steam if needed for presses, etc.
- Laundries heated with thermal oil (Building Heat).
- Efficient heating of dryers and ironers (no losses due to steam use).
- Best conditions for the ironer to process the different textiles: operating temperatures between 300 and 400°F with an injection regulation (easily & accurately regulated +/- 1 to 2 *F).
- Washing machines could be connected directly to the thermal oil installation.
- Washing machines could also be connected with a steam generator of only 60PSI without any condensate recycling.

Steam, Oil, or Gas Fired Ironers



– Continued...

– Advantages:

- Ease of starting by pushing the button; also easy after long breaks because the thermal oil system stays filled with the thermal oil which is protecting the whole installation against corrosions.
- Advantages of thermal oil heating plants compared to high pressure steam heating plants:
- Simple installations and placements.
- 30 - 40% less investment costs (when compared to steam system).
- No corrosions and less maintenance costs.
- Higher efficiency of the heating plant.
- Pressure less system (actually 15psi - 40psi)
- High security and a longer life (as a system)

– Disadvantages:

- 4,000-5,000 hrs life span on oil (2-3 years). Oil must be replaced and this cost must be accounted for!
- Some heat transfer loss due to the need to pump oil throughout the facility.

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Thermal Oil Ironers

Self Contained System

Advantages:

- Optional Low NOX burners available on some models which minimizes release of impurities into the environment.
- All parts, including circulation system are accessible through side panels.
- Some units are shipped with oil (essentially plug & play).
- Some units also have individual burners so each chest can be regulated independently.
- Some units are also designed for easy addition of rolls (future expansion).
- No need to purchase a boiler for these units (if boiler is not required for other equipment in the facility).
- Eliminates the need to install & maintain steam pipes, fittings, traps, etc.
- 30% less energy consumption than steam ironers.
- Higher production output than equally sized steam heated ironers.
- Short start up times (20 mins. approx) (no boiler start up).
- Ideal for facilities needing a new ironer and not having the capacity with their existing steam system.
- Ideal for facilities that wish to operate the ironing dept (or individual ironer) without the need to start up the boiler/steam system.

Steam, Oil, or Gas Fired Ironers



Thermal Oil Ironers

Continued...

Self Contained System

Disadvantages:

- 4,000-5,000 hrs life span on oil!! (2-3 years) Oil must be replaced and this cost must be accounted for!
- Variations in the cost of Gas... (NO CONTROL OVER THIS!)

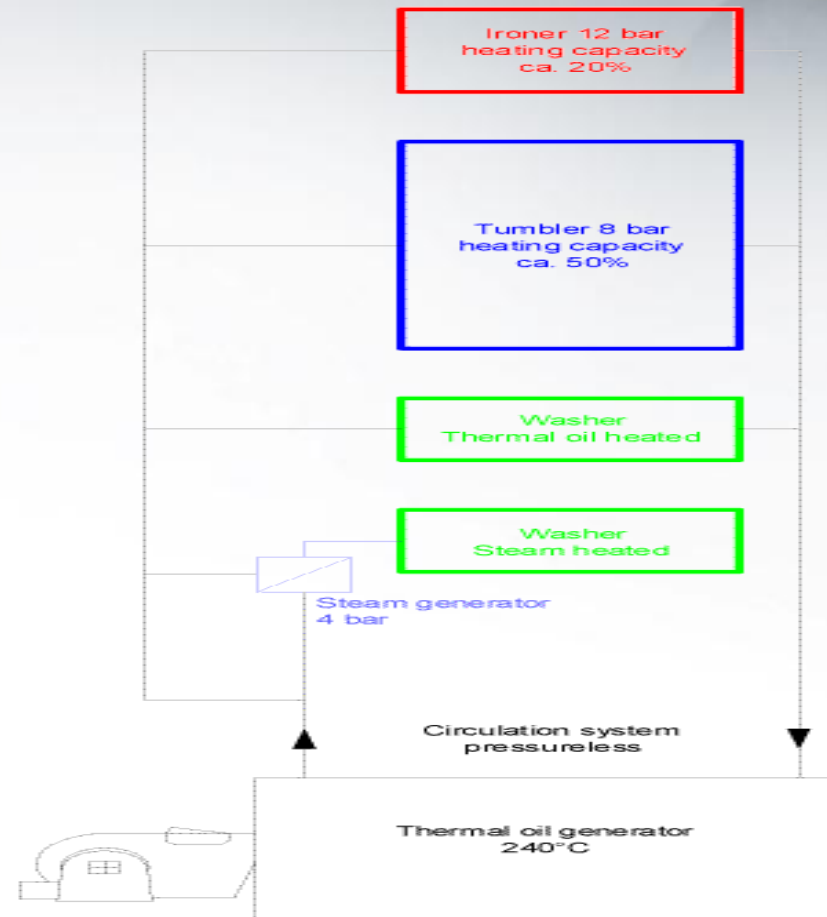
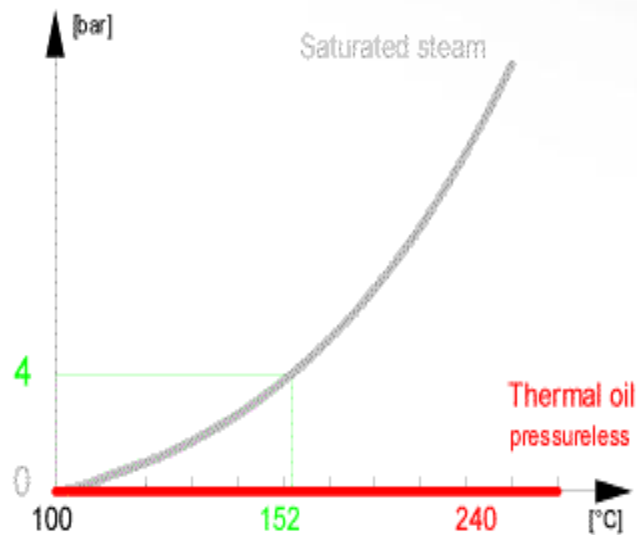
Steam, Oil, or Gas Fired Ironers



Thermal Oil Ironers

NOTE: 1 Bar = 14.5PSI

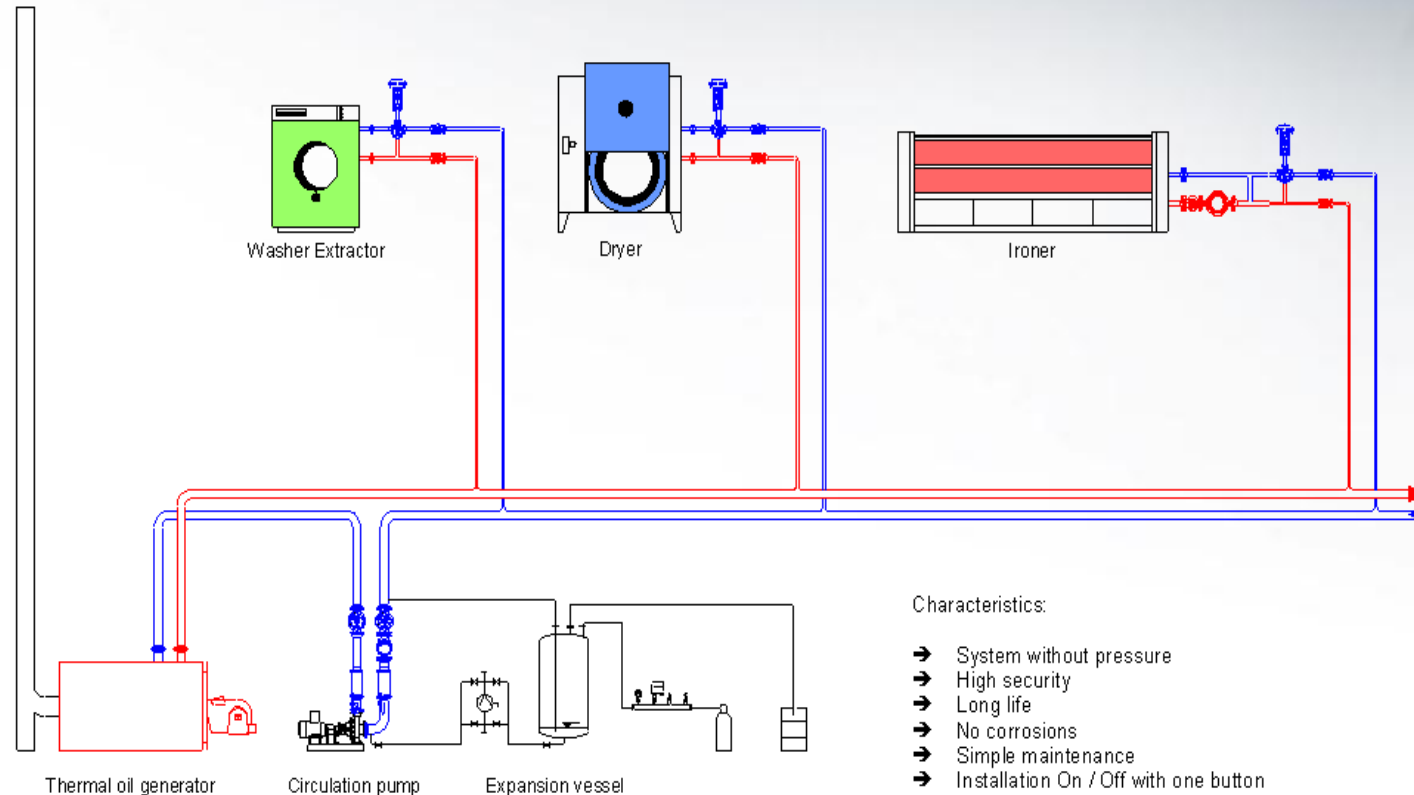
240°C = 460°F



Steam, Oil, or Gas Fired Ironers



Thermal Oil Ironers



Steam, Oil, or Gas Fired Ironers



Gas Fired Ironers

Direct Fired Gas System

Advantages:

- Size: Usually much smaller unit (1-2 rolls) and takes up very little room/space in a crowded facility (typical for small hotels/motels/inns, party rental and small hospital OPL's).
- No need for boiler (steam generation).
- Can be run independently of other laundry equipment.
- Some models offer chrome plated heated cylinder thereby eliminating the need for wax.
- Easy hook up (plug & play).
- Some models of this size are also available with “Electrical” power ONLY! This eliminates the need for gas lines, permits, etc.
- Newer models have modulating gas burners thereby increasing the efficiency of the machine. This system reacts more quickly and precisely to changes in the ironing temperature so gas consumption is lower.

Disadvantages: Variations in the cost of Gas... (NO CONTROL OVER THIS!)

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Tricks of the trade (applicable to most of the above ironer types)

- 1) **Keep your ironer clean:** Make sure that the chests are a shiny/silver color. Any other color translates into dirty linen and hang ups in the ironer.
- 2) **Lubrication:** Most operators either lubricate too much or not enough. The experts say “**lubricate often, but sparingly**” (Paul Roche/Tinge Brown & Co.). Every 2-3 hours is good and only add lubricant to your cloth if it is limp & cold. If cloth is hard then do not add lubrication.
- 3) **pH=Neutral:** Somewhere between 6-7. A lower pH causes the linen to roll up and squeal.
- 4) **Monitor speed vs. feed rate:** Co-ordination between ironer speed with the items that are fed is critical. Small pieces e.g. napkins at 30ft/minute does not translate into the same speed for large pipes/sheets.
- 5) **Conditioning vs. chest temperature:** Remember that the lower the temperature at the chest, means the less moisture retention in the goods. **Wet linen will jam in an ironer if the temperature is 270°F or lower.** The hotter the chest, the wetter the linen can be.

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Tricks of the trade continued...

- 6) **Roll Size:** Regularly measure the circumference of your roller. When roll size drops below the manufacturers minimums then you stand to lose as much as **50% of pressing capability**.
- 7) **Monitor Linear Speed:** Linear speed increases (each roll turning a little faster than the previous one as the linen goes through the ironer) is necessary on ALL ironers. Most older ironers are built with the rolls turning at the same speed, so increased speed is accomplished by increasing the thickness of the padding on successive rolls. Linear speed is critical in ironing polyester linen. If linen is buckling then check the padding thickness or speed of rolls.
- 8) **Rolls should be square to the ironer chest:** When bearing blocks wear out an ironer can get out of level. When this happens, the rolls may not be entirely parallel or square to the chest. This can cause problems in feeding. If the rolls aren't square, linen will buckle and bunch up.
- 9) **Check the feed board:** A feeding board can warp over time which can cause an uneven pull on the linen and result in linen with dog ears or with a trailing edge that rolls up. To test the board, remove the finger roll and see if the problem goes away. If it does, then you need to replace the feed board.

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Tricks of the trade continued...

- 10) **Check the finger roll:** A finger roll is supposed to be round but with wear and tear it can become chipped or spit in the middle. If it is not perfectly smooth it can cause linen to buckle or bunch up. **Also check the placement of the roll.** Many operators like to position the finger roll back toward the safety to provide more room for feeding cotton linen. However, if the plant is running polyester linen, it is best to place the finger roll toward the front of the feed board. Polyester linen does not require the same space to feed it through the ironer.

- 11) **Excessive chemicals in wash formulas:** Avoid using excessive chemicals in the wash formulas. Although a load may test with a pH of 7, it may contain excessive chemicals that will evaporate when the linen is run through the ironer. The chemicals then attach themselves to the chest and leave deposits behind on linen or cause the linen to buckle on the leading edges.
 - (reprinted courtesy of TRSA)

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