Energy Efficiency in Ironing

Upgrading systems and improving maintenance offer many opportunities to lower finishing costs

By Steve Culver

There are numerous reasons to look at ways to make your ironing department more efficient, and numerous areas where improvements might be made. You may seek to increase the number of pieces that each employee produces on each shift. You may improve quality and reduce rework. Recently, a spotlight has been turned on the cost of energy and steps that may be taken to use this resource more effectively. Some possible changes are behavioral, some involve fixes to your existing plant, and some improvements come from making sure that you have the right mix of equipment.

While all improvements will require some sort of investment, a start can be made by investing nothing but your time. Some suppliers may offer energy at discounted rates during certain times of the day. You may be able to reduce your fuel bill by doing nothing more than changing your hours of operation to match the times when your energy rates are lower. An analysis of the flow of goods through your plant may reveal breaks that leave your ironers hot and idle. This is wasteful and can be minimized by proper planning so that your ironing lines produce continuously instead of starting and stopping. Simply making sure that the goods arrive at the ironing lines in a timely manner can make a difference. You may want to do a re-evaluation of the sorting, washing, drying and pre-conditioning schedules, not only to ensure that there's an unbroken flow of flatwork to your ironers, but that there's a logical progression of those goods. Your ironers will be less efficient if you shift back and forth between different types of flatwork.

Minding maintenance

Volumes have been written about the contributions that maintenance can make to your bottom line, but it's easy to overlook what a good maintenance program can do to improve the efficiency of your finishing department. At the most fundamental level, proper maintenance reduces jams and other problems, thus contributing to the goal of keeping the ironing lines producing continuously. Whether it's a cylinder or a chest ironer, a machine that is operating the way the manufacturer intended is far more likely to deliver the desired production rates than one that is out of adjustment or overdue for service. Unplanned disruptions are very damaging to production efficiency. Time is required just to diagnose the problem, and the subsequent repairs may require parts that aren't in stock. The pressure to return the line to useful work may lead to a jury-rigged solution that's "good enough for now," but which will likely lead to another premature failure. The alternative in such a situation is a delay while the proper parts are ordered and delivered. Instead of this, focus on planned downtime, using manufacturer-recommended schedules and parts. It is preferable in that arrangements can be made to compensate for the production lost when the line is taken down and the necessary materials will be on hand so that the work can proceed as quickly as possible. Proper maintenance and proper parts will also extend the life of your systems and reduce all sorts of downtime.

Maintenance can have a much larger scope than just keeping the machinery in working order, too. Every plant seems to have its leak or squeaking bearing or badly routed electrical conduit that's not bad

enough to stop production but imposes its own tax on the plant's efficiency. Encourage your staff to tackle these "little" jobs at an easy pace so that bit by bit, they all are fixed and their drain on your resources is eliminated.

Some of these maintenance issues are not so little, either. A seemingly small leak can waste a surprisingly large amount of water, and that, in turn, can be surprisingly costly. Remember that you not only have to buy that water and pay to heat it, but you are charged for sending it into the sewer, too. On top of all these costs, a leak indicates that a repair is needed. What may be a simple gasket replacement can, if left too long, turn into a need to completely replace a component. An unplanned outage of something as basic as your steam supply can be much more than an inconvenience.

Boilers and steam lines

Another task that falls into this category is maintenance on pipe insulation. It's very common for steam or thermal oil pipes to be missing insulation here and there, around the valves or where some work was done on a flange. The temptation is always there to leave these as they are, since the staff may have to do work on them again in the future. This is not only unsafe (such uninsulated steel may exceed 300° F and can cause severe burns), but it robs you like the "little" leaks do. All the heat that you feel radiating from that uninsulated fitting is being paid for with money from your pocket. Such "cold" spots in steam piping can make condensate form in places where it wasn't expected and lead to strange disruptions in the flow. Pipes that are allowed to deteriorate internally due to casual maintenance will lead to noticeable losses in efficiency and may even reduce steam pressure to the point where ironers cannot be brought up to the required temperature.

A properly functioning steam-distribution system is a necessity in many laundries, and ensuring this will require more than regular maintenance on the piping. Dead legs are simply locations for heat loss and should be eliminated. Piping runs that are not direct or that include changes in diameter cause pressure drops and loss of efficiency. The boiler itself requires maintenance, of course, and this should include careful attention to the free flow of combustion air to the unit as well as a correctly sized and maintained exhaust system. Beyond this, every boiler operates best within a certain range and it is not guaranteed that your boiler is working within this "sweet spot." If you have added additional loads to the system over the years, or if leaks, or missing insulation have done so, your boiler may be operating at a rate above its optimum. Conversely, a boiler that was bought with "room to grow" may be operating at a low output that is also inefficient. Boiler technology has improved with time so that an older unit, even when producing at its best, may be just too inefficient to keep. It is not inexpensive to address these problems, but as the cost of energy steadily increases, it will become cost-effective to make sure that your steam system is operating at peak efficiency.

Ironer issues and options

Heat is not only lost through poorly insulated pipes, but the ironers themselves can be a big source of wasted energy. Steam traps should be a major concern. Many laundries do their ironing with shallow-chest ironers that were originally manufactured when energy was cheap and efficiency was not a consideration. These do not incorporate any insulation in their designs, and it is not easy to retrofit them today. If the goods are pre-conditioned in tumble dryers before presenting these to an ironer, the total efficiency of finishing on such a line must include the energy used in these dryers. If the goods are delayed in their transfer from dryer to ironer, they cool during the wait and the ironer must add this heat again to get them back up to temperature.

Even modern, deep-chest ironers lose some heat. Once again, proper maintenance can reduce the loss suffered. Canopies should fit snuggly and the exhaust blowers should be sized so that they remove only the moisture from the linens along with the minimum amount of air required to do that. If the blowers are over-sized and draw in comparatively cold air from the laundry, this cools the ironer and reduces efficiency. Insulating panels installed around the machine should be kept in good repair and must always be in place when the unit is running, not just for their insulating qualities but as a matter of safety for the operators.

Cylinder ironers may be heated directly by gas. New gas ironers offer more efficient heating systems, so long-term consideration should be given to replacing old equipment that is highly inefficient. Cylinder ironers can also be heated by electricity or by steam like a chest ironer. Typically, the energy for the latter is supplied from a central point and then brought to the ironers via a system of pipes. Each step in the process makes things a little less efficient. The steam boiler doesn't convert 100% of the energy it consumes into steam; there is always some loss. Even a properly designed and maintained system of piping will have some losses, and the longer the runs the greater the losses.

Some of this inefficiency can be avoided with a thermal-oil ironer that incorporates the heater within the machine itself such as the Powerhouse™ ironer manufactured by Chicago® shown at left This eliminates all the maintenance and heat-loss issues associated with long pipe runs from a central heat source. It also allows the temperature of the ironer to be tuned for the goods that it is processing, the set point being variable without reference to any other machine in the plant. Such a unit will heat the oil using natural gas or a similar fuel just as efficiently as a central heater, but will then deliver the hot oil directly to the adjacent ironer, thus minimizing heat loss and maximizing efficiency. This type of system offers greater quality and, in many cases, can eliminate the need for a high pressure boiler and the associated FTEs altogether.

There are opportunities to improve energy efficiency in virtually every laundry in operation today. With the costs of personnel, capital, and energy already high and in many cases continuing to rise, the opportunities that call for state-of-the-art solutions has never been greater. **TR**

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