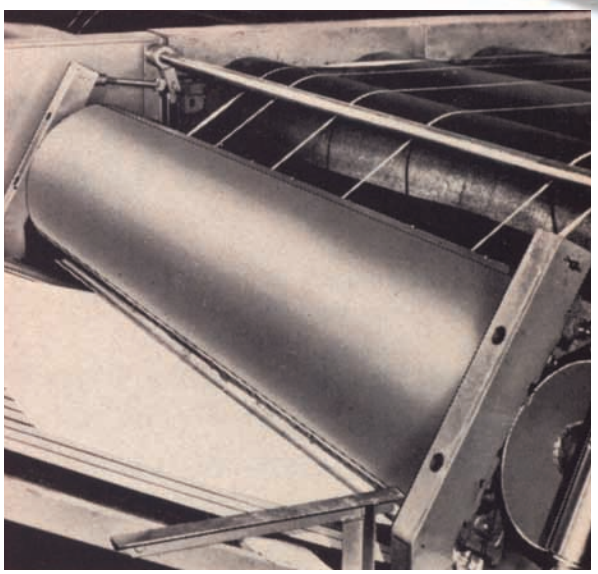
Full-Court Press: Small- Vs. Large-Roll Ironers

Q&A from a veteran supplier rep



Small-roll ironers like the American Hypro shown at left are no longer made, but they continue to serve as the workhorse machines in many U.S. laundries. Large-roll ironers, like the G.A. Braun machine above, offer several advantages in terms of energy savings, reduced maintenance and a higher quality finish.

By Jack Morgan

Textile Rental recently interviewed Ray Burke, West Coast regional sales manager for G.A. Braun Inc., Syracuse, NY, on the pros and cons of small- vs. large-roll ironers.

Burke has spent 26 years in the laundry industry in a number of different capacities, including sales manager for a leading textile distributor in the Western U. S. market. He also held the post of general manager of operations serving linen, hospitality and institutional plants. Currently, Burke oversees Braun equipment sales and support throughout Southern California, Nevada, Arizona, New Mexico and Hawaii. The interview below underscores his in-depth knowledge of large- and small-roll ironers.

What are the basic features of a small-roll ironer?

Basically a small-roll ironer will have a 10-, 11-, or 12-inch diameter roll and can feature either a hard-roll or spring roll. Small-roll ironers feature an apron, which is essentially a canvas that runs the entire length of the ironer. There's an upper and lower apron. The main function of the upper apron is to properly position the textile good to the ironer rolls and ultimately on to the lower apron to discharge to a folder.

The primary manufacturer of small-roll ironers was American Laundry Machinery, Cincinnati. They made the Super Sylon, American Standard and American Hypro. They are no longer manufactured, but they are being rebuilt.

What are the basic features of a large-roll ironer?

Large-roll ironers have anywhere from one to four rolls at either 32-, 48-, or 52-inch diameter. They are not manufactured with aprons,

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rather there is a spring press on each roll that is covered with a felt pad that is typically two layers thick per roll. These units typically are modular in that they afford the operator the opportunity to add rolls as capacity needs dictate. Not all deep chest ironers are 100% alike, and it is important that operators do their homework with respect to surface area under pressure, drive systems, suspension systems and annual operating costs.

Which ironer makes more sense for the average laundry and why?

There are many aspects and processing situations to consider. It depends on your business and what you're processing. Nonetheless, all can typically afford the end user an advantage over the older-style small-roll machines. Because you have more contact surface with a large-roll ironer, you'll get a much crisper high-quality finish.

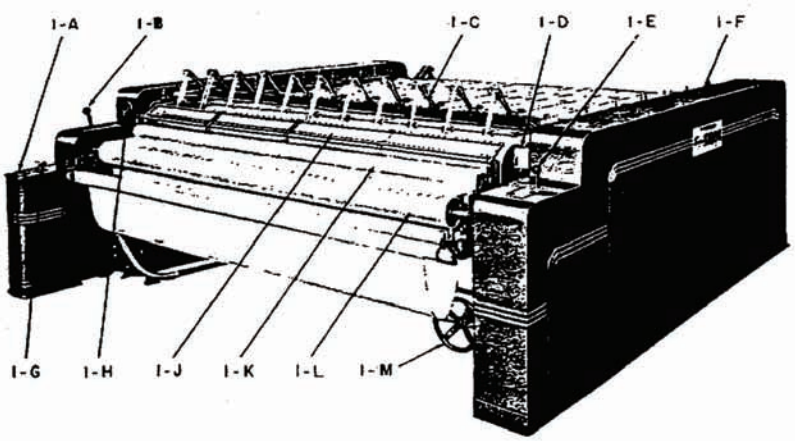

FIGURE 1 - FEED END OF 8-ROLL FLATWORK IRONER

ITEM	DESCRIPTION	ITEM	DESCRIPTION	ITEM	DESCRIPTION
1 - A	Start and Stop Button	1 - E	Pressure Control Lever	1 - J	Finger Guard
1 - B	Clutch Lever	1 - F	R.H. Main Guard	1 - K	Doffer Roll
1 - C	Spool Arm Assembly	1 - G	Speed Control	1 - L	Ribbon Drive Roll
1 - D	Pressure Indicator	1 - H	Speedometer	1 - M	Raising Rig Hand Wheel

The illustration above came from an original owner's manual for a small-roll flatwork ironer. The lines identifying various parts of the machine underscore the fact that its open gears require regular, extensive maintenance.

What maintenance and other operational aspects should a textile service plant be aware of?

Although small-roll ironers have been the workhorse in the industry for many years, there are a number of things you need to stay on top of with these units. With an apron on a small-roll ironer, you must have someone who knows how to track the apron and how to maintain it, especially if the upper apron should rip in half. Aprons are made out of canvas and they are going to wear down.

Some operators are taking aprons completely off the ironer. Most aprons' textiles contain cotton that can easily be affected by improper pH levels. This can cause apron tracking problems, static, shorten the life of the apron, and it can cause apron-drive slippage. The removal of aprons drastically reduces the throughput and limits the finish quality. If you have a low pH and it's on the acidic side of the product going through the ironer, it's going to deteriorate. The pH should be in the 6 range, but you really should not go below 5. The range should be between 5.5 and 6.5. Seven is neutral. A reading below this stated range may cause acidic problems.

Besides quality issues with high-end linens, there are other downsides with small-roll ironers that make them less of a bargain then they seem (cost of rebuilt small vs. new large-roll). There are speed limitations. Most small-roll ironers were designed to run at 110 feet per minute where most large-roll ironers run between 120 and 150 feet per minute.

Maintaining a small roll-ironer is extremely labor intensive. For instance, on a 114–118 class American Super Sylon ironer there are 121 lubrication points that must be oiled weekly. This process can take several hours per ironer. When you pull the cover off of a small roll ironer, there is a tremendous amount of exposed gearing inside. One gear drives the next roll, which drives the next roll. There is more maintenance than a large-roll ironer because of the open exposed gears. It can also be a fire hazard. Lint is attracted to the moisture of the grease so it must be well maintained and blown out. Lint will attach right on to the gearing. A large-roll ironer has a sealed safe-out gearbox per roll. It's not exposed. The bearings are all sealed.

It has an oil reservoir to maintain lubrication and seal out contaminates. Small-roll ironers, such as the Super Sylon were built with sleeve bushings. They do not contain a reservoir and have exposed gears that drive each roll, which require weekly lubrication, either manual lubrication or some type of automated lubrication system. If not properly and frequently lubricated, a drying out effect occurs. This causes bushing failure, which often leads to shaft seizing to the bushing and/or the shaft to wear through the bushings into the end frames.

Other operational considerations of the small roll vs. the large roll ironers are the vacuum limitations. A Super Sylon has a small 90° elbow that connects each roll to the vacuum manifold that commonly clogs from wax sediments and stops the vacuum to the roll. A second problem is the packing that connects each roll to the main vacuum header. This consists of a small pipe that slides into a larger pipe with a threaded collar, which has a packing cord inside of it to maintain the air seal. When roll pressure is applied, the upper smaller pipe slides into the larger bottom pipe. At that seal point is where the packing wears away and outside air enters and compromises the vacuum from the roll. If you cannot draw vacuum and remove moisture from the roll the speed and quality are negatively impacted and the goods won't dry. Suffice it to say that small-roll ironers require a bit more skill and craftsmanship as opposed to science.

How about energy consumption?

A brand new large-roll ironer has a completely insulated chest. It has three steam traps off the rear of the unit. It's all insulated. The entire bottom of the chest. The small-roll ironers were not designed for insulation because they were designed to carry an apron at the bottom. The whole surface is exposed to the atmosphere. It's wide open! Most of them do not have a canopy either. Instead of containing the heat in the actual vessel itself, it's heating the working environment. This obviously creates an uncomfortable working environment and an additional cost to end users who must invest in HVAC systems to make the plant more comfortable to work in.

Are you aware of any precise comparisons of energy use between small- and large-roll ironers?

No, nothing precise. However, a small-roll ironer has to consume more energy simply by looking at the way it's designed and opened up to the atmosphere and the limitations of the vacuum system. The shortcomings noted with these older machines will require that an operator consume more boiler horsepower to operate them, as opposed to today's deep-chest units. Additionally, it should be noted that the ironer governs the speed and productivity of any finishing system. If the ironer is limited, the benefits of upstream and downstream processing equipment get minimized, and labor efficiencies will be decreased.

What about the pros and cons of thermal oil vs. steam power in large-roll ironers?

Steam Ironers: If you have ample boiler capacity in your facility, steam is the most practical and cost-effective approach for implementing ironing solutions. A rule of thumb is that you need to have at least 125 PSI of steam pressure at the ironer in order to truly use the ironer as designed. This pressure supply will yield operating temperatures in the 325º -345º F range, which is ideal for all fabrics that may be processed, and for all wax applications that may be applied.

Thermal Ironers: In the event you are limited on boiler capacity a thermal system is a very sound alternative. Thermal units may cost a bit more in annual maintenance costs simply due to the need to utilize nomex (fire-resistant fabric) due to the heat generated by the system. Nomex covers and guide tape are about four times as expensive as polyester covers and guide tapes. Anytime you use a gas-fired ironer or a drum or cylinder ironer, or if you use a self-contained thermal ironer, you have to use nomex covering. The thermal units will provide you with an opportunity to run at higher temperatures, which will result in a greater throughput from each ironing system (steam ironers typically run in the 325º– 345º F range, while thermal ironers can run in excess of 400º F). It is important to note that if you are processing blended materials and 100% polyester, thermal processing benefits get minimized, as these products should not be processed over 350º F. Remote thermal units are reliable, and are no more labor- or maintenance-intensive than a steam ironer.

Self-Contained Thermal Ironers: Self-contained ironers have their place in the market. Typically, these systems are best used when there is not ample boiler capacity, or a utility room to support the use of a remote thermal skid heating system. There are trade-offs with the use of such an ironer. These systems place the heating source at the point of use. To do this, the heating vessel must be smaller than what would typically be used with a remote system. This smaller vessel will limit the number of passes that the fluid takes through the heating chamber. Obviously, when this happens the fluid must be heated at a much higher temperature to achieve the same end state at the chest. In doing so, the fluid will degrade much more rapidly. It should be noted that a burner rating is not equivalent to the efficiency of the overall heating system. Most burners today operate at 90% efficiency or better. However, heat exchange and the energy utilized to support the exchange process is another animal. Operators need to be cognizant of this as this is the true measure of efficiency. Another energy, and environmental concern that must be considered since the heat source is at the point of use is that it will radiate a greater amount of heat into the operating area that then must be conditioned in order to maintain a reasonable work environment for operators.

The bottom line is that there are choices, and with every choice there are pros and cons. Operators simply need to be informed, and make the appropriate choice that best supports their operational situation. **TR**

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