

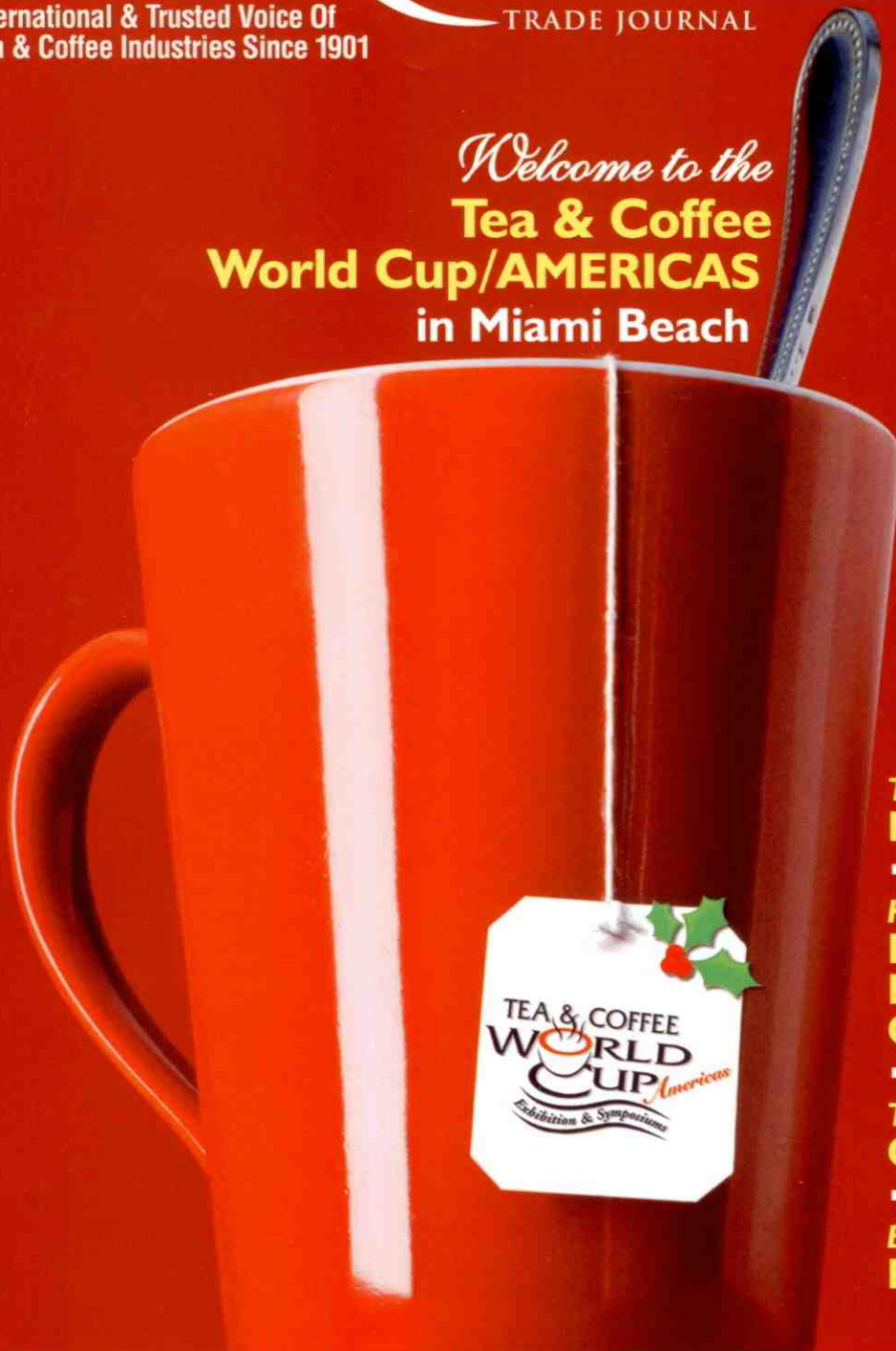
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A sampling of Harney's loose teas.

Blending is Key for a Cup of Fine Tea

As the tea industry expands and evolves, industry leaders are constantly looking for new ways to keep up. Harney & Sons relies on its creative blending to set them apart from other major companies, and has just recently updated their technology and equipment to more efficiently blend their teas. ([Staff Report](#))

Harney & Sons' teashop and tasting room, is located in Millerton, New York, a small town just two hours' drive from New York City. A tea drinker's delight, the tearoom is located behind its own garden just off Main Street. It is a pleasant, cheerful place to enjoy a cup of fine tea, along with a sandwich or a sweet.

More than that, it is a place where customers can sample the company's gourmet tea varieties, which number around 250.

John Harney, the founder of the company, has been in the tea business for 36 years. Today, he still runs the company, along with his sons, Michael and Paul. The company's products include black,

green, white and oolong teas, herbals, floral and organic teas. Many are exclusive blends. The teas are offered in loose form, bags or sachets, and are distributed to gourmet stores and hotels.

Harney & Sons buys fine teas from all over the world. The teas are blended and packaged in the company's plant, which is located just outside of town, about a mile (1.5 km) from the teashop. Blending is an important part of the operation, as about 100 of the company's 250 varieties of tea are blends, notes Michael Harney. A blend typically consists of the basic tea and small quantities of up to four other ingredients, such as flowers and nuts, plus a fruit flavor, such as blackcurrant, lemon or passion fruit, which is added in liquid form.

In recent years, the demand for Harney's teas had grown to the point where the plant's two blending machines were barely able to keep up with the

increasing demand, so in 2004 the company installed a horizontal, rotary mixer that has proved more than adequate for its needs. "Our business is growing at a rate of 15–20% a year and the mixing operation was a bottleneck," says Michael Harney. "The new machine has increased our throughput dramatically and has allowed us to keep pace with the growth."

Manufactured by Munson Machinery Co. in Utica, New York, the model 700-TS-40-SS rotary batch mixer has a capacity of 40 ft³ (1.13 m³), which, at tea's bulk density of 19 lb/ft³ (304 kg/m³), equates to 760 lb (345 kg) per batch, versus 300 lb (136 kg) for each of the old blenders.

However, productivity is much higher, since the new machine has a batch cycle time of only about two hours, including cleaning, says Harney, whereas "we could do only two batches per day (in an 8-hour shift) with each of the old blenders." He adds that the new machine is not only bigger and faster, but "we get a better mix of the flavors. It's important that we get a thorough mix, so that the flavor is consistent from batch to batch."

The Munson blender is a stainless steel, horizontal drum that is supported at either end by trunion rings. It has a stationary inlet at one end and a stationary outlet with a discharge gate at the other end. Harney receives tea in bags of various sizes, typically in the range of 85–100 lbs. (39–45 kg). The bags are manually loaded



Top: This rotary blender is the heart of Harney's tea-blending facility.



Left: At the end of the mixing cycle, tea is discharged into boxes.

lbs. (272–318 kg) of tea, plus 5–10 lbs. (2.3–4.5 kg) of solid additives and about 3% wt. (roughly 20 lb or 9 kg) of a liquid flavor. Munson supplied a pressure-pot system to introduce liquid flavorings into a batch. Liquid is sprayed into the rotating batch during the mixing process via a spray nozzle located midway along the drum.

As the drum rotates, mixing flights or baffles tumble the batch in a multi-directional manner, so that the action is fast, yet gentle to avoid damaging the product. When mixing is completed, the operator opens the plug valve on the discharge gate while the machine continues to rotate. The baffles move the batch toward the

directly into the blender via a specially designed flared hopper that is attached to the inlet. Dry additives are weighed separately and added to the batch.

A typical batch consists of 600–700



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outlet, so that essentially 100% of the product is discharged.

The mixing time is 5–7 minutes, versus up to 45 minutes for the 300-lb (136-kg) blenders, says Harney. He points out that one reason the older blenders take longer is that they have no flavor bar for liquids. Instead, liquid is added manually at the start of a mixing operation.

Since the entire product is discharged, the machine is easy to clean, says Harney. Also, he notes that the new machine was supplied with two additional access doors, one on each side of the drum. These allow operators to reach all parts of the interior easily.

Thorough cleaning is vital to the company's business, as it is important to avoid any carryover of a flavor from one batch to another. The company uses ethyl acetate to purge the flavor bar and then tumbles some leftover tea in the blender to absorb the vapors. After this tea is discharged, the machine is vacuumed to remove residual odors.

Cleaning the old blenders is more troublesome, says Harney. For a start, not all the



Liquid flavors are added from this vessel, located above the blender.

product is discharged and the residue has to be removed by vacuum. Access to the interior of the machine is more difficult. As for the odor, "we just let it air out and this takes time," he says.

Blended batches are discharged from the blender into 50-lb-capacity (27-kg) card-

board boxes for transfer to the packing lines. The company has several automated packing lines for teabags and one for loose tea, which is packed manually in 1-lb (0.5-kg) or .5-lb (0.25-kg) tins.

Harney & Sons first considered a 10-ft³ (0.28-m³) mixer but opted for the larger machine after discussions with Michael Sfugaras of Munson's local representative, PME Equipment, Flanders, NJ. Sfugaras points out that a 40-ft³ (1.13-m³) blender offers 400% greater blending capacity than a 10-ft³ (0.28-m³) machine at only 30–40% higher cost, and it can process batches down to 10% of rated capacity with no loss in efficiency.

Harney still uses one of the old mixers to meet demand. Says Mike Harney: "The way our business is growing, we will probably buy another rotary mixer within three years." ☞

Source: Munson Machinery Co., Inc., 210 Seward Avenue, Utica, NY 13503. Tel: +1 (315) 797-0090, E-mail: info@munsonmachinery.com



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