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From its humble beginnings in a residential garage in 1996, Kicking Horse Coffee has grown dramatically — producing, on average, a total trade volume of about 27,200 kilograms a week.

The company uses only shade-grown beans to produce 11 single-bean varieties — and with the help from gentle blending of a Munson Rotary Batch Mixer, seven different blends of award-winning gourmet coffee.

Although bean quality varies by region and the conditions under which they are grown, there are actually only two coffee varieties: Arabica and Robusta.

"Once the beans arrive at Invermere, they are sorted by the region in which they were grown and roasted in one of three different ways," says Tom Hoyne, manager of the Roasting Department.

Dark roasts provide a rich, full bodied, sometimes chocolaty, flavor. Medium roasts are smooth and well balanced between acidity and body. Light roasts can be floral, fruity, sweet and rich.

Of the 18 varieties of Kicking Horse coffee, 11 are single-bean varieties and seven are blends of as many as seven different beans roasted to different degrees of darkness.

"Our Three Sisters blend, for example, uses two different lightly roasted beans, two different medium beans and three different dark beans, all roasted for different times at different temperatures before blending," says Hoyne.

When the company first began production, the roasted beans were blended using a wire type blender that badly damaged them.

"Since our goal was to produce the world's finest coffee, this was unacceptable," says Hoyne. "We quickly decided that we needed to replace that blender. I had seen a Munson blender at a trade show ... and was greatly impressed with it, so they were the first company we called."

Coffee roasting a complex process

Roasting coffee is both a science and an art form, says Hoyne.

"It involves coordinating heat, air flow, time and technique, and requires lots of experience," he says.

Kicking Horse's roasters typically operate at 160 to 450 F (71 to 232 C), and the beans are roasted for between 14 and 18 minutes, depending on the degree of darkness desired.

Initially, the process is endothermic, which



Continuous rotation of the drum during discharge prevents stratification of the batch. Photo courtesy Kicking Horse Coffee

means it is absorbing heat. At around 400 F (204 C), it becomes exothermic, giving off heat.

"This means that the beans are now heating themselves and we may need to adjust the heat source," says Hoyne. "At the end of the roasting cycle, the steaming hot beans are dumped from the roasting chamber and cooled with forced air to ambient room temperature."

Once cooled, the beans are manually weighed and transported by forklift in custom fabricated aluminum bins to the blender — a Munson 700-TS-110-SS Rotary Batch Mixer with a capacity of 110 cu ft (3.1 cu m).

The forklift positions the bin directly over the blender, and a slide gate is manually opened for the beans to discharge.

"The blender rotates continuously even while the beans are being loaded, so there is no stratification or waiting until all the beans are loaded for the mixing process to begin," says Hoyne.

Mixing time is two minutes regardless of the size of the batch or the number of different types of beans being blended.

Kicking Horse runs batches as small as 353.8 kilograms and as large as 1,179 kilograms.

The blender has enough capacity to handle even larger batches, but this is the largest batch we normally run," says Hoyne. "Of course, the more different types of beans we're blending,

the longer it takes to load the blender, but mixing time remains constant at two minutes."

The bulk density of the beans varies by geographic region, different conditions under which they were grown and roasting time and temperature. The bulk density has no effect on mixing time.

"I do a very rough measurement of bulk density pretty much for my own information, but the Munson blender produces a thorough blend in just two minutes regardless of the variation in bulk density," says Hoyne.

The blender's "tumble, cut, turn and fold" mixing action assures thorough blending without damage to the relatively fragile beans. The tumbling action is caused by constant rotation of the drum.

At the same time, specially designed lifters within the drum continuously cut out portions of the batch and fold them back into the centre of the blend. As displaced beans move toward the outer edge of the mix and come into contact with the drum's walls, they are gently folded back into the main body of the batch.

Once mixing is complete, the drum continues to rotate and the lifters direct its contents toward the discharge spout, preventing stratification and promoting complete emptying of its contents.

"The same aluminum bins we used to transport the roasted beans to the blender carry the finished blend to the packaging line," says Hoyne.

No cleaning between batches

Because the blender does not cause dust formation and discharges 100 per cent of its contents, there is no need for cleaning between batches.

"We simply make sure the blender is completely empty before adding a new batch of beans," says Hoyne. "We can hear as few as one or two beans rattling around inside the blender, so we know for sure when it's empty."

That said, they do thoroughly clean the blender once a week using a biodegradable surfactant to remove any oils that may have accumulated on the inside surface. ☐

For more information, contact Kicking Horse Coffee at 250-342-4489 or visit kickinghorsecoffee.com. To contact Munson Machinery, visit munson-machinery.com. This article originally appeared in the October 2013 issue of IPP&T.