



Setting up an Internal Testing Lab

BY CHRIS WIBERG

Whether you are selling your product into residential, commercial, industrial, utility or even overseas markets, it is becoming increasingly common that pelletized fuel will be required to comply with stricter quality standards. While third-party testing is regularly used to demonstrate compliance, many manufacturers are installing internal laboratories to manage day to day product quality. Manufacturers who set up their own internal labs should be aware of the pitfalls.

First, understand the method you need to perform. Sometimes slight method variations can result in significant differences in your results. Durability is a great example. While the European and North American durability test methods are identical in procedure, the equipment is not exactly the same. The North American tumbler is 15 millimeters (mm) wider than the European tumbler. In addition, the North American method uses a 3.18 mm square hole sieve to separate the fines while the European method uses a 3.15 mm round hole sieve. While the dimensions themselves don't seem that different, the fact that one is a round hole sieve and the other a square hole sieve means that the North American method uses an aperture size that is nearly 30 percent larger than the European method. This will significantly bias your results low if the North American durability method is used to report results for European quality specifications. Bulk density is another method with similar issues. Slight variations in the container size, drop height or number of drops can

result in significant differences in test results. Moisture and ash methods can differ by the temperatures that are used as well as by the amount of air that is exchanged within the furnace or oven.

Second, understand equipment limitations. Most published test methods specify tolerances for each piece of equipment. If the method calls for a four-place analytical balance and all you have is a two-place balance, the test will not be accurate. Try to maintain the analytical sensitivity that the method is calling for and pay close attention to the precision and bias section within the method. Also, keep a close eye on the calibration section—or the lack thereof. All measuring devices require a calibration, whether it is a caliper, balance or vessel. Bulk density is again a good example. More modern methods include a method for calibrating your bulk density container while older methods do not. Don't assume that just because you bought a one-fourth cubic foot bulk density mold that the interior volume is exactly one-fourth cubic foot.

Third, your analytical results are only as good as the sample you start with. Take the time to develop sampling plans and sample preparation procedures that will assure that the analyzed sample is representative of the feedstock material or final product being assessed. Composite sampling (collecting several samples throughout the material and combining them into a single sample) is a good way to generate results that are representative of larger volumes of material, however, it may not identify the variability within

the material. Grab sampling (extraction of a small amount of material from a single location) will help identify the variability, however, be careful not to rely on a single grab sample for larger volumes of material. Sample preparation is also very important. The reduction of the sample particle size or the sample volume should be conducted in a carefully defined fashion so as not to introduce bias into the analysis sample. The use of good grinding equipment as well as riffing and splitting equipment is essential.

Finally, get the proper equipment and set it up in an appropriate location. The natural tendency is toward cheap and easy. It is common to gravitate toward less expensive equipment and place it in the most convenient space available. Using alternative equipment to grind the sample or placing testing equipment too close to an operating pellet mill may produce an inaccurate analysis. If your internal test results are not satisfying the purpose they are intended to serve, then you are better off not investing the time and money into setting up an internal lab. On the other hand, be assured that it is possible to set up a good internal lab to help comply with day to day product quality. With the right equipment and guidance, this can be achieved.

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