

A Better Way to Weigh

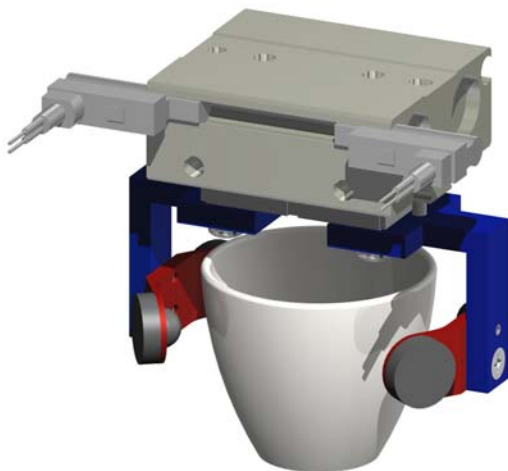
Keith Hensley

Standing in front of two balances all day feeding them crucibles may not seem like your idea of enjoyable work. Well it isn't. Just ask Kathy Maline of Ward Laboratories in Kearney, NE.

Automation in soil testing labs improves many things—consistency, productivity, pain relief, and throughput. A critical step in the Loss on Ignition (LOI) process is weighing.

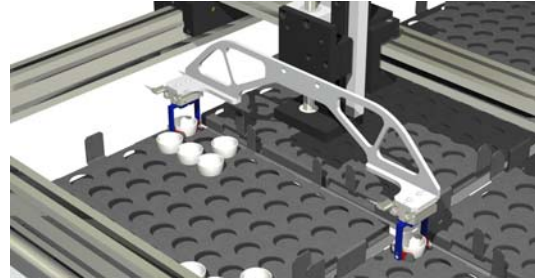
Weighing more than a thousand samples *twice* is also one of the most boring tasks in a soil laboratory. If soil scooping is mind-numbing soul-killing work, LOI weighing can't be far behind. According to Duane Osmanski, lab manager, "One of our concerns with such an uninteresting task is that the technician can inadvertently grab the wrong crucible in a series. If this happens, every weight gathered after that point is associated with the wrong sample. We can catch this with our quality control but we have to reweigh every sample in that tray."

I was contacted in April about making a robotic sampler that could free technicians from this dull job while at the same time getting better results. The result is a 360 sample Cartesian-style gantry that picks and places crucibles on two four-place balances.



Having a four-year degree in Environmental Science, there are many more productive activities that Kathy can engage her mind in rather than weighing samples for hours at a time. "The new automated weighing system saves me from standing in front of a computer all day!" She adds, "Now I can spend most of my day doing more valuable things."

Some of the more subtle advantages of automation are that it impresses customers and makes employees happier. According to Ray Ward, owner and founder of the lab, "Customers are impressed when you're keeping up with the latest technology. It gives them assurance in the quality of the lab's data and raises their confidence level in our results."



Ray expects the weighing system will make his people happier, especially Kathy. He also thinks he will benefit from more consistent results and elimination of errors. "Unfortunately when a person is doing the weighing they are not free from interruptions or distractions. A machine does not have that problem. The robot also eliminates the monotonous parts of the LOI test."

By adopting the automated system, Ward Labs expects to reduce the 12 hour weighing process to 6 or 7 hours. It currently weighs 360 samples in 36 minutes, completely unattended. Sitting or standing all day not only strains her lower back; Kathy endures a great deal of foot and shoulder pain during the busy fall season.

Duane expects another benefit of the machine will be in the consistency of the data. Before the robotic weigher, there was greater variability between when the samples were removed from the oven or furnace and weighed. The new system has a heated platen on which the steel trays rest. By heating the platen beneath the samples to 67 ° C we can ensure that the temperature at which each sample is weighed is constant.

Absenteeism is something all lab managers have to contend with. One Monday morning two technicians did not show up for work. Ordinarily that would put a labor-intensive soil lab in a bind. "Since we had the robotic weigher, one person (Kathy) was able to do the work of three people," Duane says. And she didn't have to weigh a single crucible.