TASC Systems Ltd

Mechanical Sizer Upgrades

A quick guide to upgrading mechanical fruit sizers to use electronic controls.

Mechanical fruit sizers that utilise a moulded plastic cup for carrying the fruit to a spring balance drop point as shown in Figure 1 have existed for decades. These sizers provided a system that, when setup properly, did a good job of sizing the fruit and was also able to be maintained using on-site staff.

Figure 1 . A typical mechanical sizer

A common issue with mechanical sizers however is maintaining the accuracy throughout the day as temperature changes affect the springs and therefore the resulting fruit weights. Also an issue is the time taken to change fruit setups as time must be set aside to re-set the spring tensions.

Electronic sizers started to appear in numbers in the early eighties and brought with them increased speed and more consistent accuracy. Their computer systems also introduced features such as multiple programs and batching by weight or number, which were impossible in the past. Another important advantage was the ability to get away from the requirement to size the fruit from the biggest to the smallest along the sizer.

In the past upgrades from mechanical to electronic sizers have been carried out by replacing virtually all of the existing system except for the basic metal frame. However where the reasons behind the upgrade do not include requiring more throughput, it is possible to perform the upgrade with few changes.

Weighing

Most electronic sizers use a floating cup principle to weigh the whole cup and fruit. With a mechanical sizer the cups do not float and so the actual fruit weight is shared between the xrod and the cup pin, on which weighing usually takes place. On the trials and installations carried out so far, it is still possible to achieve good accuracy of at least +/- 3 grams weighing on the cup pins. Indeed, early American electronic sizers all weighed on the cup pin, and the principle is even still used on one of the latest models of electronic sizers.

To fit the weighing units into a mechanical sizer, the easiest way is to remove the first set of scale arms. This does mean the operator loses a drop, but this is often easier than extending the sizer frame.

Figure 2 shows examples of the loadcell set up within mechanical sizers.

Note: to achieve good weighing, whether mechanically or electronically, the sizer should be in good condition mechanically. i.e. The sizer should be running smoothly and well lubricated.

Figure 2. Loadcell installation examples on Treeways and FMC mechanical sizers.

Dropping the Fruit

For the computer to activate the drops, solenoids need to be fitted at the scale arms to pull them down as the fruit passes. It is then simply a case of winding the existing spring tension up so that heavy fruit will not drop unintentionally.

Figure 3 below shows solenoids installed on the scale arms.

Figure 3. Activating the scale arms with solenoids

Upgrading mechanical sizers to operate electronically is easily achievable and brings with it many advantages. See details of our TASC LCS controller at our website, as an example of an easy to install and economical control system to operate your sizer. For answers to any questions you may have or for further details contact….

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