What's New in Version 2.30

Update Type

V2-30T1U2-30T1-X.stf contains the following upgrade details.
1. Controller Firmware V2.30
2. HMI Touchscreen 2.30 (User Interface)
3. Profile Export Text pro-forma to suit version 2.30
This update includes all the patches (if any) applied to previous versions.

Purpose

The development of V3.00 has yielded some great results and the development of new technologies, however V3 uses a very different profile and instrument set that is not compatible with Firmware Versions 1 & 2 profiles. Not everyone will want to upgrade to version 3, losing their existing profiles and familiarity. The decision was made to port some of the technology gains, either in full or in part back to version 2. This version represents part 1 of the program to port many of the version 3 advances back to version 2. This ported series is expected to be called 2.30, then 2.31, 2.32 etc. over time.

Technical Note

The porting process is not necessarily a like for like process as the version 3 software structure in many cases has changed considerably to accommodate the new technologies. The result of this is sometimes a less than ideal implementation, however, where possible, we intend to make it as close as possible to the version 3 look and appearance. The reworking of version 2 software is not a priority and can only be carried out at times that version 3 development is waiting for results from beta testing or information gathering. Propper and full documentation is not planned at this stage due to the time involved and this document will be considered the only owner's manual augmentation to the original documentation.

Install

1. With the SuperTrickler **powered on** and from the main sub menu, remove the Micro SD card (tweezers are a great help).
2. Copy the V2-30T1U2-30T1-X.stf file on the root (top level) directory of the Micro SD card.
3. Reinsert the card back into the SuperTrickler.
4. The system should automatically take you to the Upgrade screen. (System – Setup - System Core – Firmware Update)
5. Press & Hold the Start button for several seconds until the process starts.

Changes are from the previous Version 2.20 firmware

New Technologies

- Advanced Scales Data Parsing (reading). This new system detects the scale data type (grains or grams) on the fly and should the scale inadvertently be switched to grams the new parser will detect the change and convert the grams data back to grains on the fly without interruption. The new data parsing process offers significantly faster parsing in general and especially for units that do not support the grain units.

- Vibrator motor Impulse Start. Starting the vibrator motor is not a straightforward task, it required a start operation that drives the motor at full powder for around 30 to 40 milliseconds. This can result is several problems when the remaining powder is only a few grains off the target and the pulsing instrument process requiring full power at the start of every pulse. The high-power start would often cause a spewing of powder

and overthrow. So, the Impulse Start technology was developed to overcome these problems including starting the motor a low power levels.

New Features

- Charge Weight Drift Monitoring. For five seconds after the charge (drop) is finished, the system will now monitor the weight for any change outside of the tolerance. In the event that the weight drifts outside the tolerance band the red work-light will begin flashing (the green-light will remain on) to indicate a drift was detected. From this point it's up to the operator to accept or reject the charge.
  The drift only monitors for 5 seconds because outside of this time frame the most likely cause of drift is scale drift and this is no longer indicative of the actual weight. The common causes of drift are after the charge a few kernels have fallen in or most likely the Final Stabilization time is too short; this is especially likely with large kernels that have much resonance and take a longer time for the scale to obtain a stable reading.

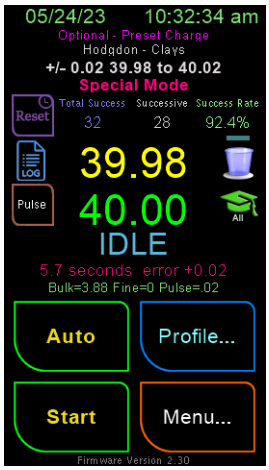
- Firmware version display on the charge screen. An on-going problem is people asking for help and the very thing that needs to be asked is what version are you running. This will be especially handy when people show pictures or video of the charge screen.

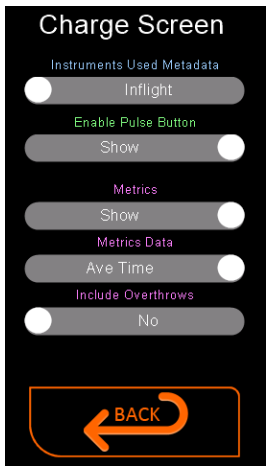
- Close buttons replaced with Back Arrow buttons for clarity, along with several other V3 skin changes.

- The short cut home buttons (the one with a dot in the top right corner) now take you to the Charge page.

- Self-learning Scholars Hat now have a basic text description underneath the hat, to help remind the operator as to what the hat colors mean.

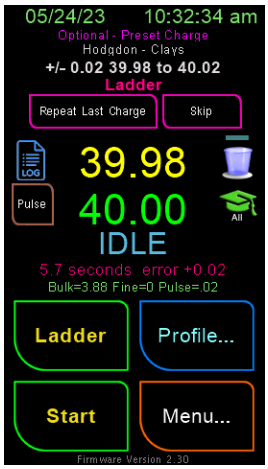
- Charge screen manual pulse button. A brown button just below the LOG icon, this button is optional and must be selected from the charge screen options menu. (User request)





Holding the Pulse button down will initiate the pulsing operation as per the pulse instrument settings (without the AI operation), the operation stops when the button is released.

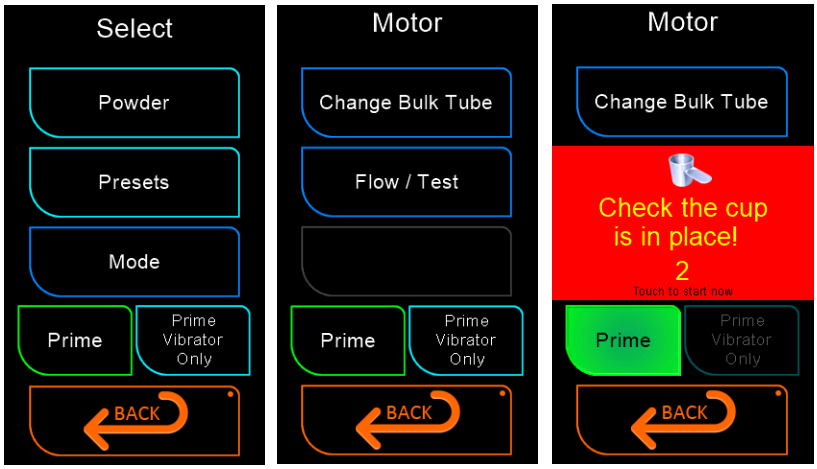
- Charge screen Ladder Controls. Repeat Last Charge & Skip



The Repeat button prevents the ladder from moving to the next charg/stage, thus repeating the last charge. This can be used if for some reason the operator is unhappy with the charge or the charge cannot be used for some other reason, e.g. spills.

The Skip button is used to skip the next pending charge. To save time some users prefer to see if the overthrow can be utilized somewhere in the laddering range and if so they then place in that position. Later when the SuperTrickler laddering stage gets to a spot that has already been utilized the skip can be pressed to jump over that point.

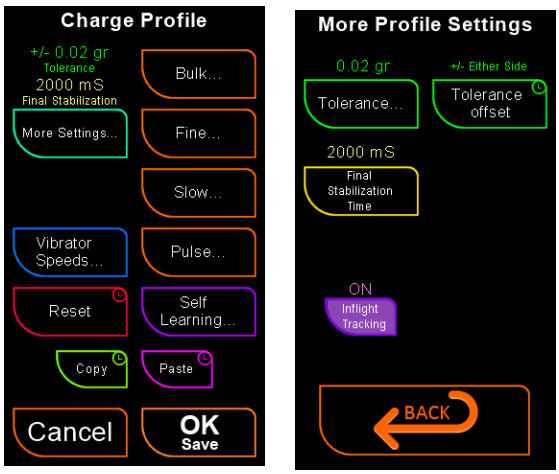
- New priming system for the Select & Motor screens.



The priming system now has two buttons, Prime that primes both tubes for 6 seconds and a Prime Vibrator Only button that will prime only the vibrator tube for 46 seconds.
You can stop the priming process at any time by pressing the priming button again.

Each screen will also issue a warning to check a cup is in place before starting the prime, you can shortcut the delay by touching the red warning panel.

- The main profile has changed, where several controls have been moved to a sub screen “More Settings…” This includes the Inflight Tracking Control, that was never a part of the main self-learning system.



Instrument Changes

- **Pulse Instrument**: The pulsing control has some new parameters, Idle Speed & Dither Strength.

In previous versions, the pulse was a stop start operation that required a start procedure of the vibrating motor on every pulse along with the problems associated with that. Product development has revealed that in many cases it is better to keep the powder in a vibratory state rather than to simply stop the tube completely. When the tube starts there is considerable inertia involved before the kernels respond to the vibration and begin moving. This new system toggles the pulse motor between two on speeds, the nominal (pulse delivery) speed and the idle speed, the result is a more predictable and smoother delivery of kernels.

Dithering prevents the powder from forming a standing wave in the tube that results in the kernels failing to move in the tube, with the idle speed system this problem is less of an issue and as a result Dither Strength has been added to allow the operator to select the amount of dithering applied during pulsing. The dithering strength has 6 possible settings; Off, Very Weak, Weak, Normal, Strong & Very Strong.
Often with large kernel very little dithering is required as the large kernels tend to be resonant and vibrate well down the tube however other powders may need more dithering, flake powders are an example as they tend to be sticky and light weight. In many ways the dither strength makes the job of the High-Speed Limit almost redundant however has be left remaining and operational, time will tell if this control is required in the future.

Note: In the Idle Speed & Dither Strength control are not self-learning controls and must be set by the operator.