ACS Calibration procedures

1) Calibration of the throughput measurement…..every 6 months

a) Hopper must be completely emptied. Make sure the rubber boots are in good shape and not folded in. Make sure the load cell is secure and the eyelet is straight.

b) Go to service menu (parameter service>parameter throughput>online throughput>press #4) note the MRN of the hopper to be calibrated and is displayed in 1000th of a pound (1000 = 1lb 11365 = 11.365lb's).

c) Place a precisely defined calibration weight in the hopper (or on top of the hopper centered as good as possible) and note the new MRN weight. This total weight will now be the hopper and the weight in grams or 1000^{th} of a pound if measurement is not metric.

d) Subtract the empty hopper weight from the calibration & hopper weight. If the difference is greater than 15 grams or .02 ounces, then the above procedure should be performed again. If the hopper is still off by greater than 15 grams or .02 ounces, the hopper should be calibrated.

e) The new MVSL is calculated as follows: Actual weight of calibration weight divided by the computed difference times the hopper MVSL.

f) **Example: If measuring in grams. Empty weight is 6500 grams and calibration weight is 5000 grams. The MVSL for the hopper is 99.6. When the calibration weight is put in the hopper, the new weight is 11530. Subtract 6500 from the 11530 and you have 5030.**

5000/5030 = .994 multiplied by the current MVSL of 99.6 will be 99.0. This value is entered in Parameter…thruput…MRN…..select the hopper and scroll to the MVSL. Save this change under parameter save.

Example: If measuring in pounds. Empty hopper MRN is 5875 and when a 10lb calibration weight is added to the hopper the MRN is 15925. Subtracting the empty hopper weight from the hopper & calibration weight results in a difference of 10050. Now divide the calibration weight by the difference. 10000/10050 = .995 Now go to parameter throughput>parameter MRN> select the correct hopper weight MRN and multiply the MVSL # by the correction factor of .995 resulting in a new MVSL number that normally is between 98 and 102. Once this new number has been entered, you must save with the parameter user save allowing the computer to remember it if power should go out.

g) When you are happy with the above results the system can be put back into operation. It is easy to check the calibration of the hoppers when the system is running. Note the core weight before starting a new roll and then note the start and end time of your production sample(PT). Note the output displayed on the ACS display every minute or reset the roll report and this will calculate the average weight during the test. Weigh the sample and subtract the core weight, which will give you the Roll weight (RG). Determine the average weight from your sample (either from the roll report if it was reset or calculating the average from the status page) and then determine the thruput from the actual sample using this formula: **RG/PT** = average of the output display. This should be within 1% of the displayed output. If it is not correct, a system wide correction can be performed.

Example: Net actual is 439.52 lb/hr with a production time of 26.25 minutes. 26x60 + 25 = 1585 seconds. 439.52 x 3600/1585 = 998 lb/hr is the actual. PC display was 982 lb/hr which is a difference of 1.5% heavier. The MVSLT must be changed by this amount. If it starts at a value of 0, change it to a 100 and then add the 1.5 since the actual was heavier than the displayed amount. . In this case the new number is 101.5.
h)

2) Calibration of the haul-off speed

a) Determine the exact speed of the haul-off via a hand tach and see if this value is displayed by the GT3 display. If not then do the following.
b) Go to service…online service….MRN and note the frequency of the haul-off
c) Divide the frequency by the actual line speed and multiply by 100.
d) This value gets put in parameter service….thruput…MRN…haul-off. and then select MUHI and put this value there. Put 100 on the next line down called MCHI. The next line down is called MRHI and should be the maximum speed of the haul-off. Once this is done, save the change under parameter save and verify the correct speed is displayed.

3) Calibration of the Screw speeds

a) Determine the exact screw speed and see if this value is displayed on the GT3. If not then do the following.
b) Go to service…online service….MRN and note the frequency of the haul-off
c) Divide the frequency by the actual line speed and multiply by 100.
d) This value gets put in parameter service….thruput…MRN…extruder 1 or 2 or 3..and then select MUHI and put this value there. Put 100 on the next line down called MCHI. The next line down is called MRHI and should be the maximum speed of the extruder. Once this is done, save the change under parameter save and verify the correct speed is displayed.

4) Calibration of the slew rates

a) The line must be running
b) Go to service…online service….MRN and note the speed of the haul-off or extruder, whichever you are testing as the procedure is the same for both.
c) We will calibrate the slew rate for the haul-off in this example.
d) Go to parameter thruput….dout and select the line for Inc haul-off which will be a value of 1 or 0. Select the enter button which will change the state of the value and do this for exactly 10 seconds. use a stopwatch. Hit enter again which will stop the incrementing. Go to online thruput and note the new speed of the Haul-off. Use this formula to calculate the slew rate:

12 X 10(change time)/RPM1 – RPM2 = DSRI and DSRD

e) Now go to parameter thruput….DDC…select haul-off and enter these values. When you are done, go to parameter save and hit enter. The system should be calibrated at this time.