



SURFACE TECHTM

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SECTIONS

- Overview
- Set-up
- Operation
- Tear Down

OVERVIEW



- The key to accurate dosing of ACE XP Polymer Fiber is creating a constant and continuous flow of the product from the vibrating hopper to the power funnel.
- The Sentinel doses fiber by automatically adjusting the speed of the weigh-loss bowl to match the plant rate over time. Make sure the hopper has fiber to dispense and that the target rate matches the plant rate.
- The Sentinel has the capacity of 2 boxes of ACE Fiber, or 1 box without the hopper extension. 1 box will produce 211.8 tons (192.1 metric tonnes) of asphalt.





WORK STATION SET UP

Set Up: Location and Deployment

- Before any setup, check with plant manager for site-specific training, sign-in, and waivers.
- Consider traffic patterns, movement around plant, and power/air sourcing.
- Agree on a plan of action with staff prior to maneuvering trailer around plant site. If you are unfamiliar with plant, do a walk-around prior to vehicular movement.
- While on site, ALWAYS be aware of heavy equipment and truck traffic. Look, Listen, and Be Aware of all activity around the plant. Know site emergency procedures and safety signals.

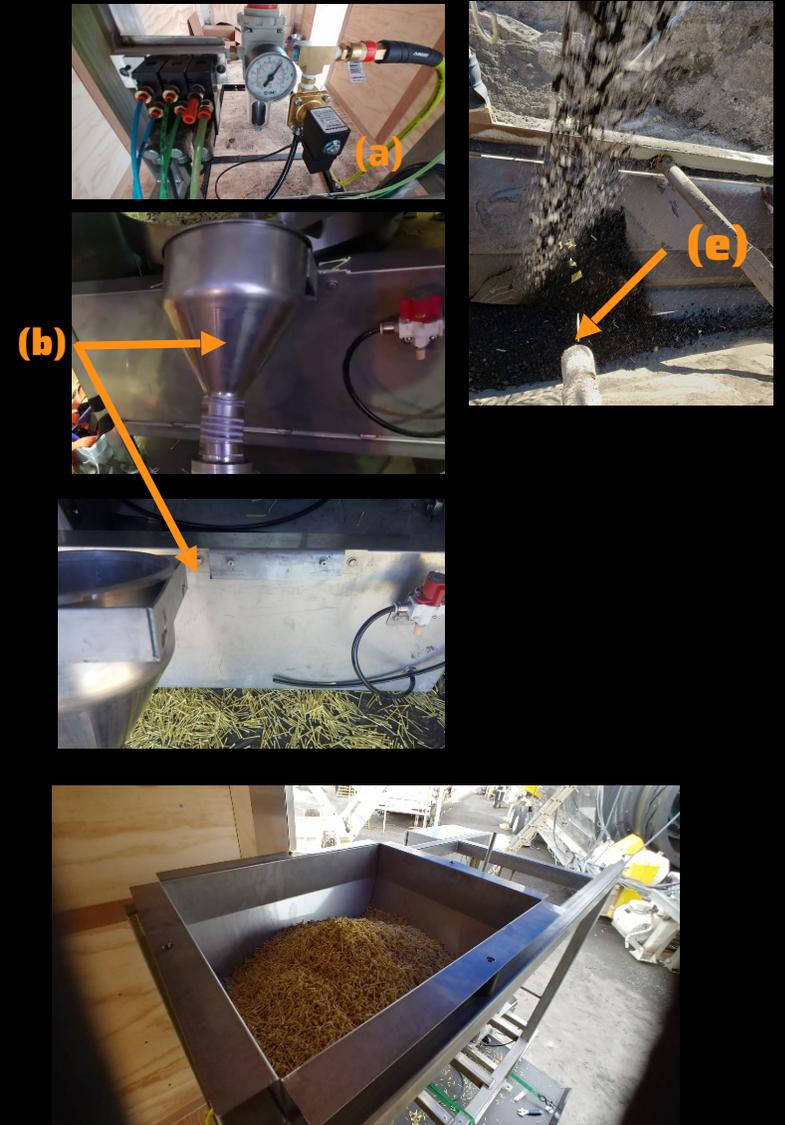
Set Up: Location and Deployment

- **Trailer Placement** - Park in a level area close to the RAP Collar or RAP Shaker Screen (if running RAP), ensuring that the trailer side to side is level or leans slightly towards the passenger side. Disconnect from hitch, level trailer front to back with tongue jack.
- **Trailer Safety** - chock both tires, deploy trailer stabilizer jacks, jack stands and/or jacks as needed to ensure trailer stability for machine slide out.
- **Deployment** - Open the rear doors of the trailer, Remove tie-downs, and remove the load-cell protection bars between the load cell plate and base of the machine.
- **Power & Air** - Trailer includes 110v, pneumatic, & ethernet hookups located on the side near the wheel well. Attach the appropriate hookups and verify that interior lines to Sentinel are secure.



Set Up: Machine set-up Procedure

- a. The Sentinel runs off 110v electric and compressed air. Connect air supply to chuck on air regulator and 110v to in-line voltage regulator. Turn on regulator.
- b. Attach the power funnel mounting plate to the front of the machine and fit the funnel on the bracket beneath the spout of the bowl.
- c. Connect Sentinel to power regulator unit and rotate master power switch on Sentinel to “on”.
- d. Turn on tablet by connecting to Sentinel via Ethernet/RJ45 cable. The tablet should turn on and load the main operations screen.
- e. Clamp the 2” Line-Vac outflow hose to the bottom of the Power Funnel. Secure the outlet end inside the RAP Collar or RAP Shaker Box. Attach Power Funnel to Sentinel below Funnel Feeder. Plug in funnel air supply. Turn on Power Funnel air supply at inline valve.
- f. Fill hopper with ACE XP. Cut away box flaps, trim bag to just above zip tie, place box on top of MD frame. Climb ladder, orient box to hopper, remove zip tie and GENTLY dump into hopper. Remove bag slowly and carefully to minimize ACE XP spillage.



Set Up: Final Check

- a) Check alignment of hopper, feeder pan, weigh-loss bowl, and tickler arm. Everything should be in line, with fiber flowing down the hopper to the feeder pan, into the bowl, and up the spiraled ramps through the tickler encasement.
- b) Flow Sensors: The sensor detects fiber in the bowl. Proper adjustment of the sensor ensures that the weigh-loss bowl maintains an optimal level of fiber.
 - Proper set up for these sensors will improve overall accuracy of the machine.
 - Use a small screwdriver to adjust the sensor threshold by turning the screws *very gently*.
- c) The sensor has a green and yellow indicator light that guides fiber. In general, the sensor should be set as close to the level of the bowl as possible while keeping the green indicator light on the sensor. Once set, the light should turn yellow if an object is placed between the sensor and the pan.



Set Up: Calibrating the Weight-Loss Bowl

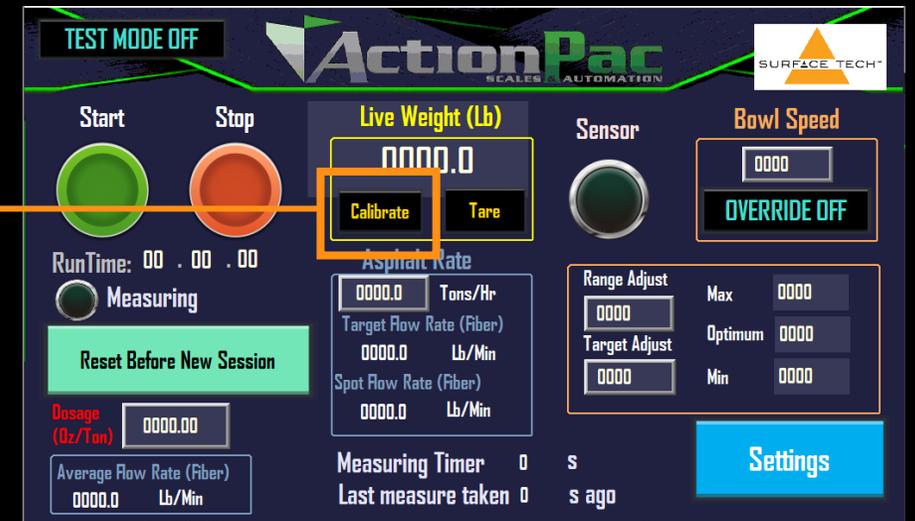
Often after long hauls, or long down times, the load cells will lose accuracy. Either the weight displayed will be incorrect, or the signal will have a hard time settling. Re-calibrating the Bowl with a known weight is the most common fix for this issue.

On the Live Weight View, select **Calibrate.** Empty the bowl and press “Zero”. This will calibrate the bowl to a ‘live zero’.

Then, find an object with a known weight (such as a small tool, walkie talkie, or cellphone). Place it in the bowl and enter the known weight. The tablet should now register the weight of the object.

Return to the main screen.

Make sure the bowl is empty and press ‘tare’. The Bowl should now be accurately calibrated.





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OPERATION

Operation:



To start the Sentinel, press the green Start button. Stop with Stop.

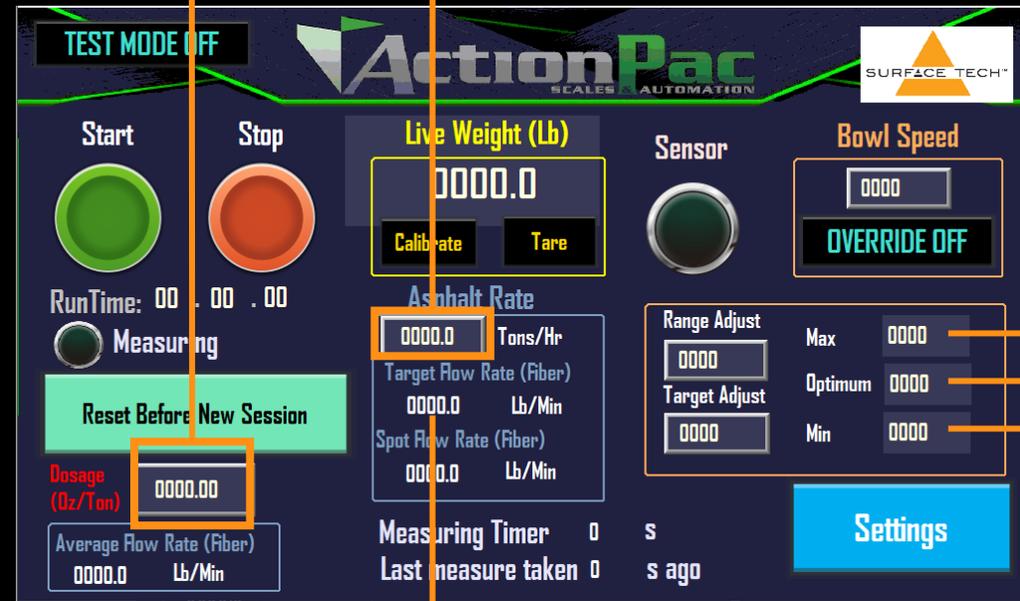


Before initial start-up, and between any changes in plant rate, press 'Reset Before New Session' to ensure continuous accuracy.

Operation:



After filling the hopper, press “Reset Before New Session.”
Enter the fiber dosage(Oz/Min) and plant rate (tons/hr).



This optimum bowl speed is the initial bowl speed that is decided by the system for your target flow rate (Oz/Min)

The inputs of dosage and plant capacity will calculate an Optimum Bowl Speed

In the long run, the system will change the bowl speed in the range of Max and Min.

Operation:



It is recommended to start the Range Adjust at **6** and Target Adjust at **0**. If you feel the Optimum Bowl Speed is undervalued or overvalued, you may change Target Adjust + or - numbers respectively

Range adjust decides the Max and Min levels of the range in which bowl speed changes. For example if Optimum = 60 and Range Adjust is 10, then Min will be 50 and Max will be 70, forcing the bowl to change the speed between Min and Max according to Spot Flow Rate (Oz/Min).

Operation :

- 1) There are 3 things to calibrate which are vital to the function of the Sentinel: weigh cells, product flow, hopper feeders
- 2) Once you have entered in all desired settings, simply press the green 'start' button to begin dosing.
- 3) The Sentinel will take a few minutes to dial in on an accurate rate. Wait a minute or two before making any adjustments.
 - A. In addition to changing the Range Adjust & Target Adjust, you can raise or lower the height of the tickler arm to adjust flow. Do this by loosening the **bracket screw** above the tickler motor and sliding the bracket very slightly. Up to increase flow, down to decrease.
 - B. Make sure the tickler is not touching the bowl. It will render the weigh cells useless, leading to production issues.



Operation : Hopper and Vibrator Flaps

The hopper on the Sentinel comes with an extension that allows for 1 extra box of ACE XP™ (2 total).

Ideal calibration of the hopper vibrators will result in enough fiber filling the bowl to last 3-5 minutes.

There is an agitation system on the Sentinel. The Vibrator shakes the hopper, moving ACE XP™ onto the Back Feeder. This prevents bridging of the ACE XP™ hopper.

To adjust the Hopper Vibrator, Find 'Hopper on duration' and 'Hopper off duration.' Default settings will work in most cases but, in especially hot/humid environments you may want to raise the on-duration.

Select the appropriate window and raise the value by 50-100ms until the hopper is effectively



Operation : Best Practices: Be Safe and Aware

1. Communication with Plant - Plant production should always equal fiber production. Having a plan to check in with the plant operator and making sure actual dosage matches output is very important. Easy landmarks can be every other box emptied, or every time fiber production stops. Stay on top of current speed and watch for any changes in pace. Have a voice or text link established and active.
2. If there is a tablet or program restart, ensure TPH matches actual plant speed.
3. Monitor Flow - Watch the 'Average Flow' compared to the 'Target Flow'. After 10-15 minutes, average should be +/- %10 of Target. Spot rate can start erratically but should settle over time, fluctuating when the bowl fills.
4. Inventory Management - With knowledge of tons run, boxes of fiber should be monitored for a tonnage comparison. Each box is 211.8 tons of production. If you ran 1500 tons today, 7 boxes should have been used.
5. Temp and Weather - In many regions, it is not uncommon to pave on day with a cool morning with a warm afternoon. Or, night work is cooler than day. Settings may need to be adjusted to ensure good Sentinel performance based on how hot and sticky things get. ACE XP is half wax. Be prepared to manage any chance in consistency.

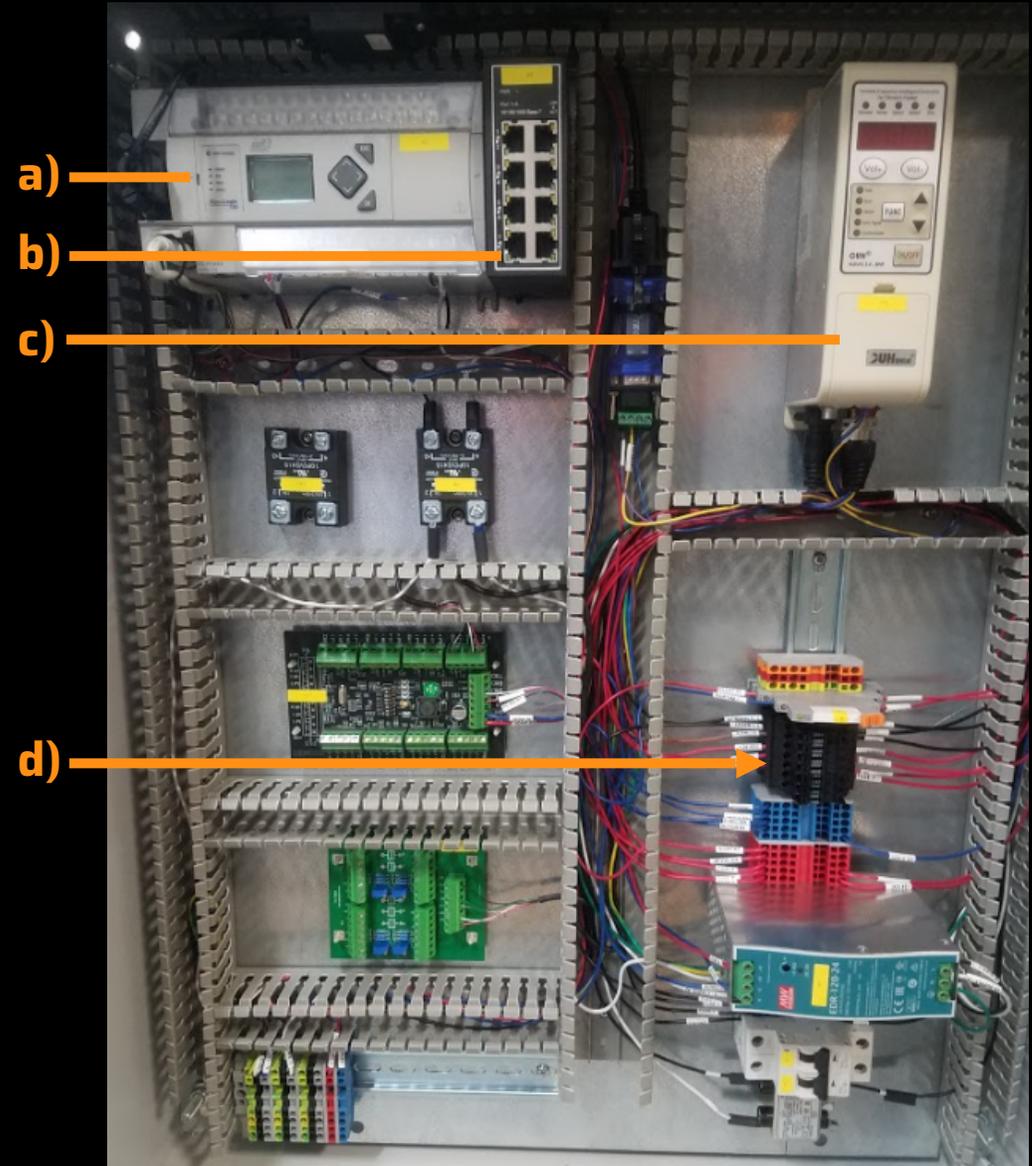
Operation: Control Box



Often, checking for loose connections can be the answer to functionality issues. The Allen Bradley PLC mounted in the electronics box controls all Sentinel components.

If there are part(s) not functioning, check the fuse array for any blown fuses, which will display red lights.

- a) Allen Bradley PLC
- b) Ethernet Hub
- c) Bowl Driver
- d) Fuse Array





TEAR DOWN

Operation : Tear Down End of Day

1. Rotate the Red Power Switch to Off.
2. Turn power regulator Off
3. Unplug extension cord from in-line power regulator and plant electric source. Detach compressed air line from Sentinel and plant pneumatic source. Disconnect tablet.
4. Store tablet in a separate area or mount securely on trailer wall.
5. Rear doors and side door should be shut and locked.

Operation : Tear Down End of Job

1. After disconnecting power, air, and ethernet, replace the load cell protection brackets. Slide the steel tubing between the steel plating which supports the bowl & the load cell tray. Align the threaded holes, and firmly tighten the screws.
2. Secure the bowl to the steel plate with tie-downs. Make sure to cross & secure the straps over the top of the bowl.
3. Store the tablet in a secure location or mount on trailer wall.
4. Close & lock cut-out hatches on trailer floor.
5. Lock trailer rear and side doors.

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