

Restarting your equipment post Covid-19 shutdown

Restrictions have been eased, and it seems life is starting to back to normal. Generally plant and equipment doesn't like being shut down for weeks on end, so there are certain considerations that should be taken when re-starting your equipment, before you get back to the business of making great products.

Here are some tips and suggestions for the systematic starting of your plant and equipment after the Covid-19 lockdowns. We hope you find them useful.

Prior to shutting down the equipment did you;

- Drain any fluids?
- Place any mechanical locks (timber or otherwise) to prevent anything from moving / creeping?
- Disconnect any components?
- Apply any anti-rust solutions or covers?
- Apply grease coating to chains and gears?
- Do any remote controllers require new batteries?

Before doing any start up procedures, first reverse any of the above Shutdown steps (or others) that were taken so that they won't interfere with operation of the machine.

Also consider applying to chain spray / oil to any chains, gears or other drive elements that have been sitting idle during a prolonged shutdown.

General Considerations / Suggestions:

We believe that electrical problems are the most likely source of start-up issues, as PLCs / HMIs generally don't like being shut down for extended periods of time, and can often lose settings / local data as a result.

In particular, battery backups may not have lasted for the duration of an extended shutdown meaning local settings may be lost.

Consider following the steps below in order when restarting your plant for the first time.

Suggested sequence for restarting your plant;

1. Check the alignment of any interlocked gate switches. Consider giving the mating components a gentle wipe with a soft cloth as dust may have built up
2. Once checked, ensure all gates are closed so as not to create an E-Stop condition
3. Check and release all "mushroom" E-Stops

Disclaimer: Total Rollforming take no responsibility for any outcomes that occur as a result of following the suggestions above. These suggestions are provided as thought provoking ideas so that your engineering teams can make their own decisions on how best to restart your plant after an unprecedented event.

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4. Check fluid levels in oil and lubrication tanks and top up as required
5. Switch the mains power on and allow the machine time to restart all electrical components.
NB: This may take longer than usual, so allow the system time to restart.
6. If the machine successfully restarts, access the settings section of the machine via the HMI and check all key parameters / timer information against any records you took prior to shut down. Look for things such as;
 - Ramp timers
 - Encoder settings and offsets
 - Function timers (i.e. Stacker open after guillo cycle = 1.2secs)
 - Positional data for any servo controller functions
 - Profile libraries
 - Other key information specific to each machine

NB: If any of these have changed, then the battery back-up may have failed during the shutdown period and will need to be changed before the machine is shut down again.
7. If any settings or parameters have changed, then you will need to update these using any records you took prior to shutdown **OR** upload the latest backup file that was created – where available.
8. Once all settings have been checked / reinstated, turn on the Hydraulic pump (where fitted) and leave it to run for 10-15mins in order to circulate and warm the oil. Remember to turn on all hydraulic units connected, including to Uncoilers, Coil Carts or others.
 - Listen out for any unusual noises that might be coming from the hydraulic pump / system.
 - Check all valves and hoses after a few minutes for signs of new leaks
 - *NB: Do the hydraulic checks **before** attempting to run or cycle the machine to avoid causing damage to the hydraulics or machine components.*
9. Whilst the hydraulics are warming up, connect any air supplies and turn on any pneumatic dumps valves so that the system can refill
10. After running the hydraulic system in idle for 10-15mins, and filling any pneumatic components with air, systematically work through the functions of the machine checking one at a time such as;
 - Gate switches and E-Stops – check all create an E-Stop condition when pressed / triggered
 - VSD's (Variable Speed Drives) – check any digital displays for fault lights / codes before attempting to operate the machine
 - Check any VSD settings that you recorded prior to shutdown

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- Encoder accuracy
 - Set HMI to a screen where you can see the “length” measurement displayed
 - Mark the encoder with a small black vertical line using a marker, and set this to “12 o’clock”
 - Complete one clockwise revolution of the encoder wheel (12 o’clock, to 12 o’clock) and record the distance travelled on the HMI
 - Complete one anti-clockwise revolution of the encoder wheel and the value onscreen should return to 0 (near enough)
 - Complete this process 2 or 3 times to check that the same value is recorded each time one revolution is completed
 - If the values differ, then there may be an issue with the encoder

- All Uncoiler functions;
 - Forward and Reverse using manual controls (and remotes where available)
 - Expand / Collapse
 - Under / Over feeding
 - E-Stop

- All Coil Car functions;
 - Forward and Reverse using manual controls (and remotes where available)
 - Up / Down

- All Rollformer functions (as fitted)
 - Lubrication primer / pump
 - Infeed slitter
 - Engage / disengage of any hydraulic cylinders
 - Hands Free Feed functions
 - Guillotine cycle
 - Tamper cycle

- All Dropstacker functions
 - Open / Close
 - Up / Down (Dual leave machines)
 - E-Stop

- All Cut To Length functions (CTL)
 - Knife homing
 - Knife positioning – set your knives to specific distances and double check that they have correctly spaced (servo driven knife setting)
 - Feed rollers, Forward and Reverse
 - Printer outputs

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- All Folder functions
 - Homing of back gauges
 - Operation of clamping and folding beams, one at a time
 - Cycle the slitter carriage
 - Check profile library
 - E-Stop including kick bar
 - Perform some backgauge and angle accuracy checks using scrap material
11. Once all manual functions have been tested, consider using some scrap coil or material to run some short test pieces before commencing production orders.
12. If your line permits, consider running at a slower speed initially just to let everything work itself back into operation.

Other Start-up Preparations:

Consider, if you haven't already;

1. What sub-contractors might you need on the day you try to start the machines? Can you book these in now, so that you are first priority – some sub-trades will be in hot demand i.e. Electrical and / or Mechanical
2. What consumables might you need i.e. all the anti-rust you have applied will need to be removed using rags / degreaser. Pre-order in stock now so it is on hand when you need it.
3. If you have drained any fluids, do you have the required amount necessary to refill tanks when you re-open your doors?
4. What social distancing measures can you take in your production setting to minimise the close interaction between operators?

For clarification on any of the above, or to discuss your specific requirements, please don't hesitate to contact me on;

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