The best means by which to assure the ideal stock slurry is available for the paper-machine wet-end is to keep the actual stock weight at the required need.

As the whole of the plant’s stock delivery system is dependent upon the stock having been fed from the hydrapulper, it is of top priority to be repeatable.

To allow that availability, it’s necessary to have the whole stock delivery system be tightly tied to the consumption needs of the paper-machine’s wet-end.

Once that has been carried out, the stock system's next downstream consistency transmitter will be used as the reference point for accuracy.

Which will keep a check on the hydrapulper’s calculated consistency value that has been controlled by the usage of this **Autorate** strategy.

By having the referenced consistency controller’s water valve’s position be used as the reference point necessary to correlate to the arrived at value.

While that check is being continuously carried out, a lot of other factors need to be addressed, having to arrive at the needed stock weight in the tub itself.

With some of the factors being the hydrapulper’s level, the downstream flow requirement, the feed-conveyor’s loadings, as well as its actual speed.

With the greatest variable to address effectively, is knowing the questionable contents of the different bales used to feed into the hydrapulper itself.

Some having mostly newspapers and some with more dense contents, while each needing different dwell times to properly go through the extraction plate.

The actual control strategy being used is not a conventional PID method, as that needed dedicated values of Rate and Integral, not capable of being adaptive.

Instead, the actual strategy uses the actions of the PV having been compared to the SP, while also taking into account the corrective response slew rate.

The actual controller will arrive at its needed response from the seen PV value being offset from the needed SP, to achieve the corrective output.

To allow a simpler programming process, the PID method of control can also be utilized, while not being as beneficial as the one just described.

A further enhancement has also been addressed, having a lock on the feed conveyor if an imminent rotor trip is possible, until cleared.

Another possible added value is the complete self-cancelling of the used logic whenever the PV cannot be attained over a pre-allowed time.

Which would be the result of lacking stock feed to the pulper, or possibly an unattainable SP having been used for the present conditions.

Whenever either occurred, would immediately revert control back to the available manual stock feed presently available in the plant.

At the same time, also give alarm to the operator of a major issue needing a solution until the **Autorate** can be re-initiated when needed.

Have also found that using a variable conveyor speed is far superior to having one that uses a repeating timed frequency and duration to run.

Although either method of conveyor running could be accommodated, while it’s much simpler to program for one having the variable speed.

Another factor that is beneficial, is being able to have the bales tightly side by side, rather that sparsely with gaps throughout the feed-conveyor.

Since any gaps encountered will have to be sensed and accounted for, to prevent any consistency variation of the slurry inside the tub.

The strategy used will also take into account the varying times required for the bales' contents to be beaten up relative to needed throughput.

Safeties will also be utilized to assure that any sudden load overloads will not result in drive motor tripping, leading to further downstream upsets.

A note to assure that when this consistency strategy was designed, it's **arrived at** consistency value directly matched a $35,000.00 downstream unit.

Having been a microwave consistency transmitter, leading its signal by about 5 to 10 seconds, but not having any cavitation issues from the pump.

The calculated value was preferred over the microwave, as it proved to be a more dependable signal without the need to address pumping issues.

Also **it** being as robust as the plant's DCS system, will never need calibration or maintenance, while will certainly add value to the production records.

To have the advantage of this type of strategy at your plant, let’s discuss by dropping us a line @ **plc@pneu-logicco.com**.