



## What is a Tension Controller?

A tension controller is a controller device which monitors and adjusts web tension to maintain desired operating conditions. Monitoring is done via load cells, and adjustment is achieved through brakes, motors, and clutches. The load cells, brakes, motors, and clutches are attached to the shafts which guide, wind, or unwind the web.



To determine the output (brake and/or clutch regulation) necessary to reach the chosen tension value based on the input (current tension indicated by the load cell), a control mechanism such as the PID algorithm is used. PID (Proportional-Integral-Derivative) control compares the current value (the tension) to the desired value to find the current error. The output signal is a weighted sum of the current error (proportional), the accumulated error (integral), and the rate of change of the error (derivative). Assigning the appropriate weighting factor to each of the three terms is determined through tuning which can be performed by software.