**ARDUINO CONTROLLED INDUSTRIAL LABELLING MACHINE**

Industrial labeling machines are typically controlled by dedicated PID systems. However, when a PID controller is not available, an Arduino can be used as an alternative. The primary function of an industrial labeling machine is to convey bottles and label them, which is accomplished using a combination of motors (both standard and stepper), belts, sensors (such as proximity and paper sensors), PID controllers, switches, displays, and adjustable stands for guiding the bottles. Controlling these high-voltage components with an Arduino requires some reconfiguration and adjustments.

In this implementation, an Arduino Mega is used as the controller, with an OLED display for output and a keypad for input (both used for entering passwords and checking other functionality). Two transistors and relays control the conveyor and belt motors. The stepper motor is directly controlled by the Arduino and is activated when the proximity sensor detects a bottle, while the paper sensor regulates the amount of label paper released. A hand printer is also included, which prints on the paper as it moves, and is triggered by another proximity sensor. Additionally, the machine can be controlled via an Android phone using a Bluetooth module (HC-06).