Box Wrapping Machine

How Does it Work?

1. **Machine Startup:** The box begins to rotate, and the slider motor starts at the low limit switch.
2. **Initial Rotation:** The rotation proximity sensor counts three full rotations of the box.
3. **Wrapping Begins:** Once the rotations are complete, the slider motor starts moving the wrapping mechanism upward until it touches the high limit switch.
4. **Continued Rotation:** The box rotates three more times, as counted by the proximity sensor.
5. **Wrap Completion:** After reaching the high limit, the slider motor moves down, and the stretch blade engages to cut the wrap, completing the process.

Main devices which have to use for PLC Programming

- Two motors
    a. To Up/ Down for the wrapping
    b. To Box rotation
- Two limit switches
    a. To High limit of box
    b. To Low limit of box
- Stretch Blade: To the stretching after wrapping
- Proximity sensor for rotation count
- Proximity sensor for identify stretch wrap empty
- Two VFD
    a. Set the rotation motor frequency
    b. Set the slider motor frequency

PLC I/O

- Digital Outputs:
  1. Rotation Motor
  2. Up/Down Motor
  3. Spare1
  4. Spare2

- Digital Inputs
  1. High limit SW
  2. Low limit SW
  3. Stretch proximity
  4. Count proximity
  5. Motor 1 overload
  6. Motor 2 overload
  7. Emergency stop
  8. Spare1
  9. Spare2

- Analogue Outputs
  1. VFD 1 frequency
  2. VFD 2 frequency

Algorithm