**KEELO SOFT**

**by JPT**

Disclaimer

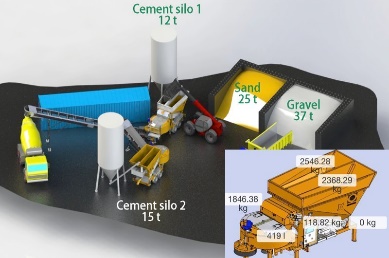
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**Introduction**

Keelo Soft by J P Techatronics for controller and automation of different custom equipment machine like batch plant, mixers, etc. Where in a data acquisition system is present already with user interface guided by process flow.

**Application**

Used for different custom equipment machine like batch plant, mixers, etc illustration below

**Systems Safety Precaution**

* Only qualified and trained Employees may work on or near Exposed Energized Electrical Parts or Electrical Equipment.
* Stand on Insulated safety mat /Install safety mat on Floor where you stand
* Safety glasses must be used in jobs like cutting, drilling & while using air blower.
* Hand protection in the form of suitable gloves should be used for handling hot objects, glass, or sharp-edged items.
* When using an interlock as a safety device, ensure that it of a fail-safe design.
* De-energize electrical circuits before repairs are made. Use a LOCK on main switch. Take out a electrical panel key after locking the electrical panel and during Mixer maintenance.
* Isolate equipment controlled by the automation systems from the control system.
* Safety Shoes must be worn in shop area compulsorily.
* Do not stand directly in front of an electric panel when operating the disconnecting means or operator switch.
* Before connecting the power supply ensure that no individual is working on the panel/machine.
* While working / testing on connected Motors, Keep the motors locally earthed.
* Ensure or remove loose clothing or jewelry (watches, rings etc) before working  
  on a machine or panel.
* Watch out for sparks, burning smell, smoke or short circuits in the workshop
* To avoid damage of multi-meter, do not use Multi-meter in Current mode/ series current mode to check Voltages.
* Ensure emergency contacts are available to you, e.g. First Aid, Vehicle, Driver, Phone contacts, person to aid you.

DO’S AND DONT’S - Safety

Safety Test:

* Check direction of mixer motors one by one. For inclined belt remove V-belts and  
  take trial for direction of the motor. Then connect the belts to gearbox.
* Keep the Mixer Area Emergency S/w in depressed position and put ON the mixer  
  MCCB / MCB.
* Ensure mixer to be empty and the gate to be closed.
* Operate Mixer through manual PB and confirm that mixer does get ON.
* Now release the Emergency S/w, Open the mixer Hatch and repeat the above  
  step.
* Close mixer hatch, and start mixer and stop, confirm the mixer shaft rotation to be  
  proper through inspection window.
* After confirming the direction run the mixer for some time and observe.
* Confirm mixer no load current to be as per manufacturers specifications.
* Press Emergency S/w and confirm that the mixer stops.
* Run the mixer again and with due care open mixer hatch to ensure that the mixer  
  stops.
* Carryout similar activities for Skip/Belt, Silo area etc. and ensure proper safety  
  operation and direction of rotation of each equipment.
* In Case of Skip it is advisable to simulate sensor / limit s/w operation and confirm  
  proper skip operation & signal.

Interlocks:

* Ensure following operational interlocks, as configured in the software.
* Skip/Belt operation with respect to Mixer and Mixer gate status.
* All weigher gate operations with respect to Mixer and Mixer gate status.
* Aggregate discharge operation with respect to Belt status / Skip position.
* Feeding of each material with respect to weigher gate position

**Configuration Sensors Parameters**

* Transfer Type: In this section Aggregate Transfer type can be selected for Aggregate scale.  
  • Weighing Skip  
  • Transfer Skip  
  • Transfer Belt  
  • Transfer Belt with Waiting Hopper  
  • Direct

Transfer Belt:

* Belt Operation: Select Belt Operation Auto/Manual. If manual is selected, then the  
  user needs to manually Switch On & Off the belt.
* Belt Control: Select Belt operation between “Intermittent” or “Continuous”. If  
  ‘Intermittent’ is selected, then the transfer belt starts & stops after discharging each  
  aggregate batch. If selection is ‘Continuous’, then the belt stops after completion of  
  last batch of a full load.
* Belt Sequence: Select Belt to be started in Time based or Sequence based. If  
  selected, time based, then the belt starts immediately once the load is started.
* Belt Transfer Time: Enter the time taken by an aggregate materials to reach waiting  
  hopper / mixer after discharging from the aggregate / weighing conveyor.
* Belt Pre-Run Time: It is the time for which the belt will run for 75% of belt transfer  
  time defined so that the partial aggregate materials from the aggregate conveyor  
  discharges. This shall increase the plant productivity by reducing the total cycle time. (Note: Please check the mechanical arrangements before enabling this feature.)
* Belt Delta Delay: Here, define the delay time to switch on the Transfer Belt motor  
  from Star to Delta.
* Belt On Delay: This is the time delay to start the transfer belt motor after oncommand is received.
* Belt Off Delay: This is the time delay to stop the transfer belt motor afterdischarging the aggregate materials.
* Belt Hooter Time: The system shall buzzer for the defined time before starting thebelt

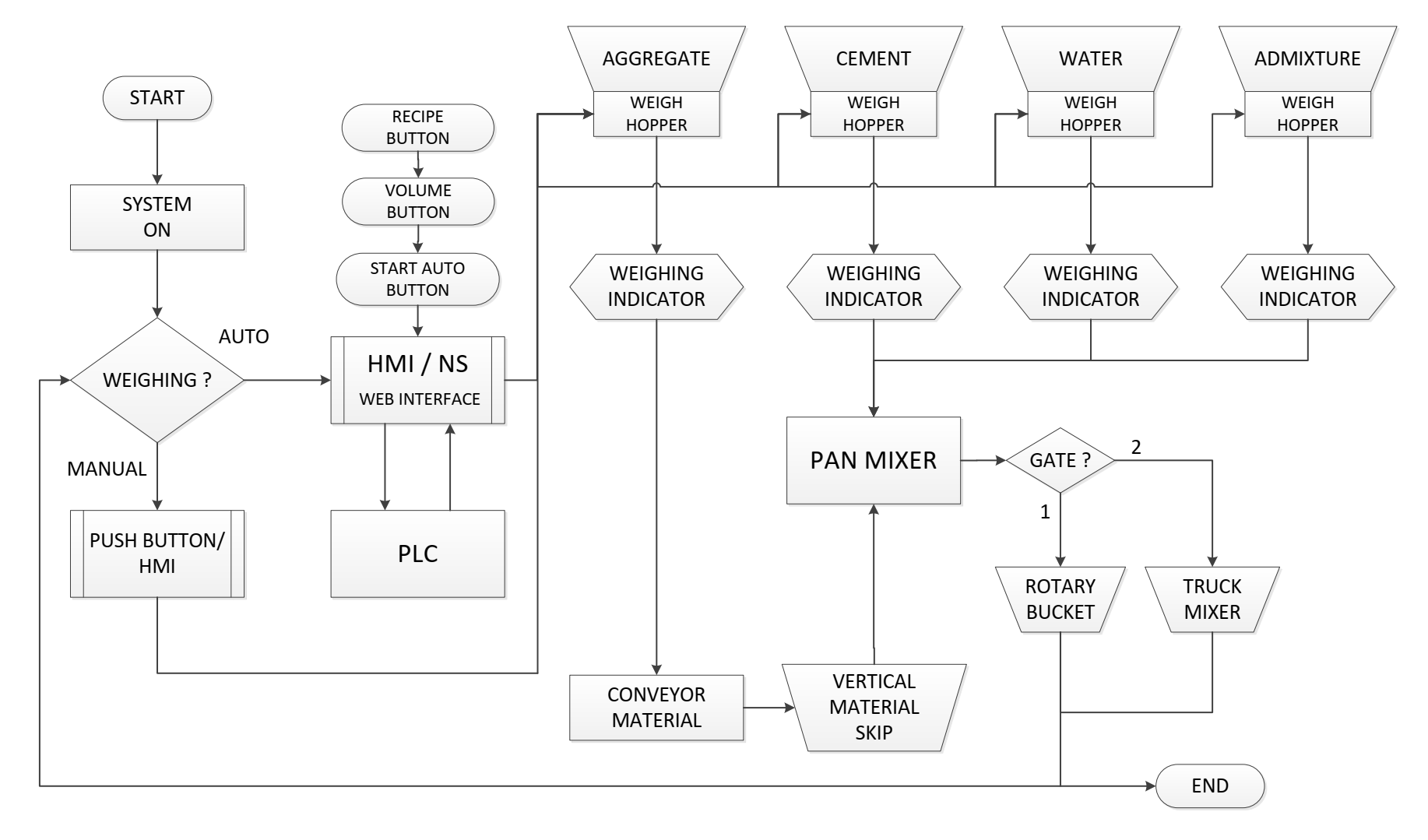
Waiting / Preload Hopper:

* Waiting Hopper Sensor: User can select the presence of Level Sensors by “Yes /  
  No”.
* Hopper Discharge Time: Enter the time taken by the waiting hopper to discharge all  
  aggregate materials into the mixer.
* Hopper Discharge Half Time: Enter the time to discharge aggregate materials from  
  waiting hopper in to mixer.
* Hopper Full Open Time: Enter the time taken by the hopper gate to reach its fully  
  opened position.
* Hopper Close Time: Enter the time taken by the hopper gate to reach its fully open  
  to closed position.
* Hopper Half Open Time: Enter the time taken by the hopper gate to reach its mid  
  position.

**Alarms Sensors**

* Aggregate Filling Fault Alarm
* Cement Dead Weight Fault Alarm
* Additives Dead Weight Fault Alarm
* Water Filling Fault Alarm
* Additives Filling Fault Alarm
* Aggregate Discharge Fault Alarm
* Cement Discharge Fault Alarm
* Water Discharge Fault Alarm
* Additives Discharge Fault Alarm
* Skip Waiting Position Fault Alarm
* Skip Up Position Fault Alarm
* Skip Down Position Fault Alarm
* Mixer Gate Open Fault Alarm
* Mixer Gate Close Fault Alarm
* Aggregate Hopper Gate Close Alarm
* Cement Hopper Gate Close Fault Alarm
* Additives Discharge Valve Alarm
* Mixer Not Running Alarm
* System in Manual Mode Alarm
* PLC is On Hold Condition Alarm
* Aggregate out of Tolerance Alarm
* Cement out of Tolerance Alarm
* Water out of Tolerance Alarm
* Additives out of Tolerance Alarm

**Flow Chart**



Manual Run :  
Input Signals :

* Put ON the mixer and confirm proper star to delta transition.
* Ensure the mixer ON feedback input is indicated in the PLC.  
  • Similarly operate other moving equipment and check for following feedback indications on PLC.
* Transfer belt ON feedback ( True when ON).
* Skip Ascending and Skip Descending feedback (True when ON).
* Aggregate Extractor belt (False when ON) or Aggregate hopper gate close feedback (True when Closed).
* Cement Weigher gate close feedback ( True when Closed).
* Water Weigher gate close feedback (True when Closed).
* Additive Weigher gate close feedback ( True when Closed or False when Discharge  
  Motor ON)

Output Signals :

* Additive Weigher gate close feedback ( True when Closed or False when Discharge  
  Motor ON)
* In Case of Skip it is advisable to simulate sensor / limit s/w operation and confirm proper skip operation & signal.
* Put ON each Aggregate bin and physically check for respective bin gate operation.
* Repeat above step for each ingredient of Cement, Water Additive etc.