IDS SMART TOUCH+

SMART TOUCH

USER OPERATING / TROUBLESHOOTING MANUAL

SMART CONTROLS

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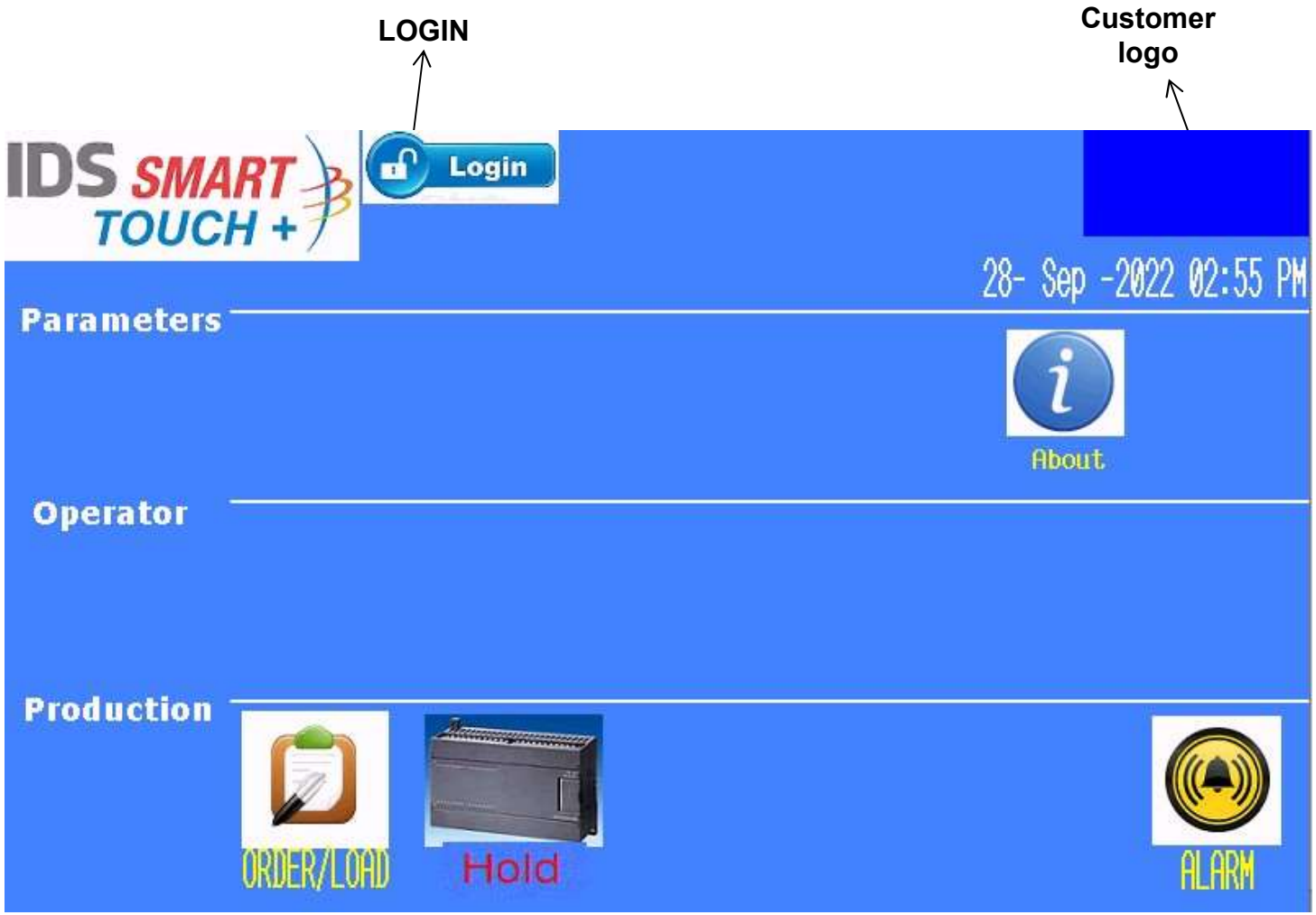
Main :



At System start up, the above screen shall be displayed. The User can access screens by pressing respective buttons.

Login :

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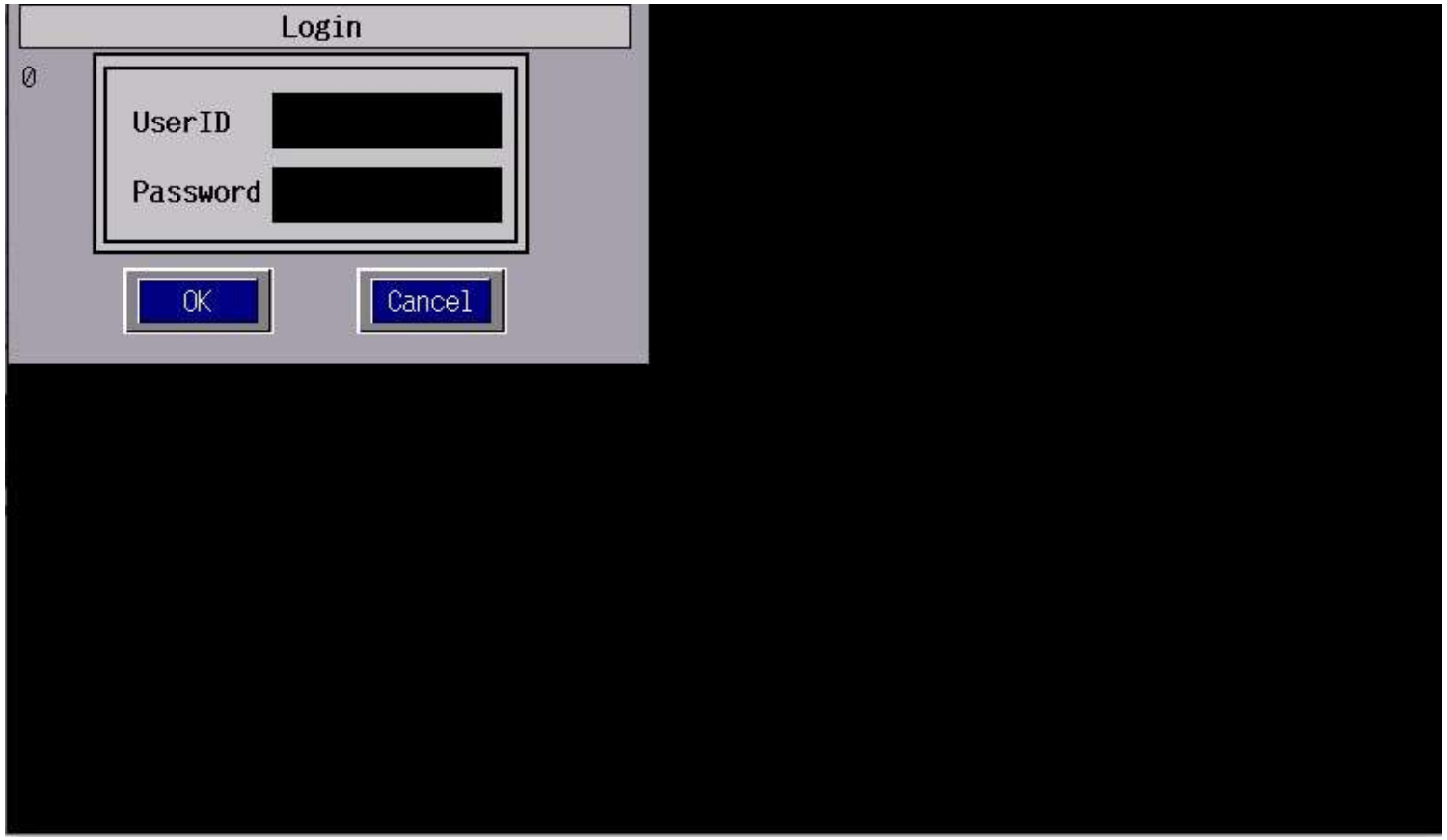

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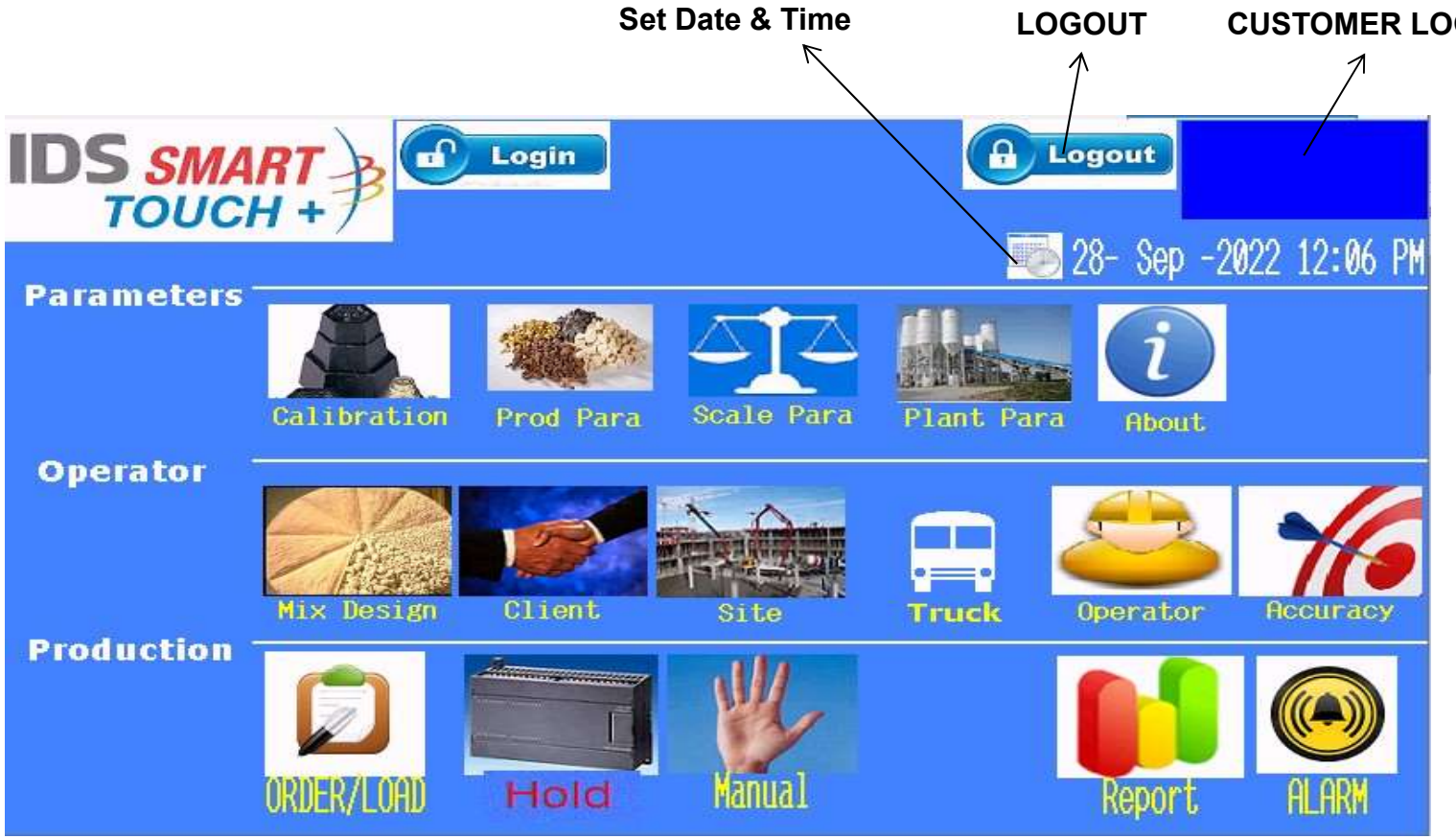
After pressing ON LOGIN button above screen will open. User has to enter its user id & password to get into main menu screen

Main1 :



*** Above screen is the main screen after login**

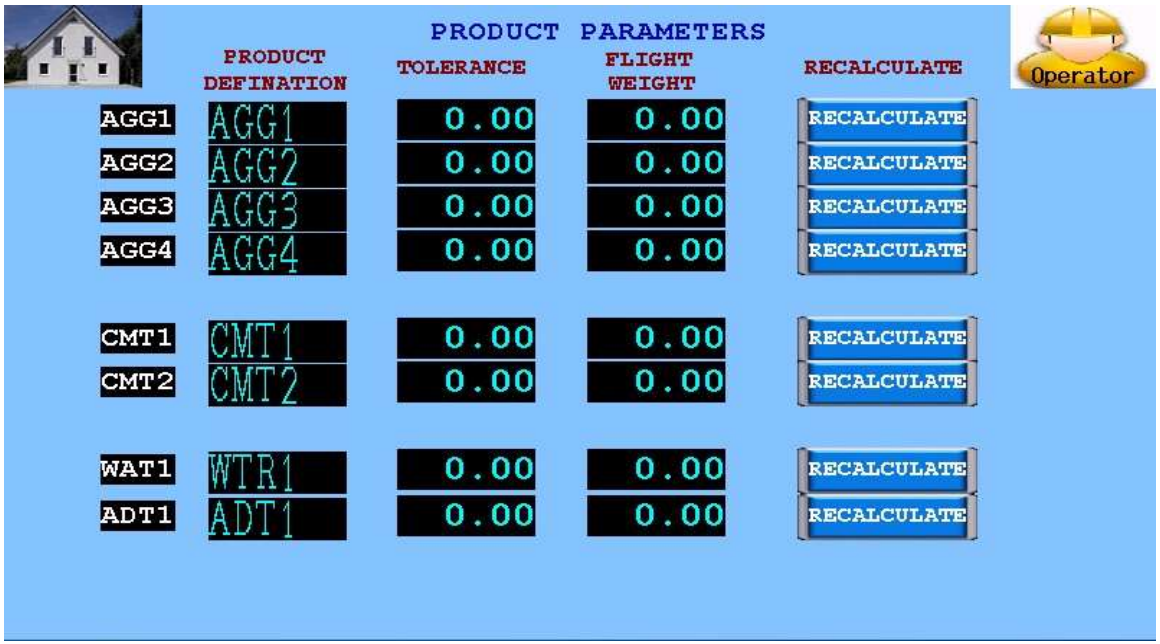
*** For customer LOGO-**:

LOGO will be save in USB—DAT0000(folder)—JPEG(folder) with the name of JP00000.jpg.

Operator Parameter:

- **Moisture:** In manual mode, enter the measured moisture value from the lab.
- **Mixer Operation:** User can set mixer operation in auto or manual mode.
- **Mixer Capacity:** Enter the maximum batch size in M3, Note that the system will calculate number of batches for particular order based on this value. If this value is entered wrongly, there is a danger of all components of plants being overloaded.
- **Mixing Time:** Enter the required mixing time.
- **Half discharge Time:** After the mixing is over, the system opens the mixer gate till half position. The gate remains open as per the value entered in this field. If there is no half opening position, or the mixer selected is R/D type, this value should be zero.
- **Full discharge Time:** Set the timing in seconds, the system keeps the discharge gate in full open position, for that period. Then, the system gives a CLOSE command to the gate.
- **Vehicle Capacity:** Enter Maximum vehicle capacity (For Ex. 6m3). The system generates an alarm if quantity to be concrete (set Load) to be produced is more than the vehicle capacity to avoid overload of vehicle.
- **Cement swap:** If cement swap is yes then online swapping option will be there on Mimic.
- **Accuracy Menu :** For Accuracy shortcut button is given in operator parameter, user can go directly from this section

Product Definition:



The Product Master allows you to define all products used in the plant. To add a product follow the steps below

•.

• **Product Names :** Click / tap on the respective text box.,

Enter an Unique code and Definition as maintained in your organization for the said product from the MMI keypad. The product code and definitions are used throughout the application.

Ensure to select proper scale type to which the product belongs.

•**Tolerance:**

Define tolerance in kg/lit or % as defined in Plant Parameters.
Whenever a batch crosses a tolerance level, an alarm is triggered.
During batching if this alarm is triggered quite often, reset the particular extractor.
If the problem persists, check the mechanical operation of the gates.

•**Operator parameter:** For Operator shortcut button is given in accuracy, user can go directly from this section

Plant Configuration :

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All Parameters in this section are critical and need to be handled by trained personnel only.
Failure to do so may lead to cause of Death, Severe Injury to Personnel/Equipment !!!

Mixer parameter

Plant Configuration

As the title suggests, this screen helps to select the configuration of the said plant.

- **Plant Name & Address**: Click on blank space and put the plant name & address. This name & address printed on report as a plant name & address**.**
- **Water & Admixture Scale:** Configure Scale type Weighing / Pulsing & Also select the Admixture discharge into Mixer or Water Scale.

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Plant Configuration :

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You can select discharge type by choosing between mixer or Water Scale.

Ex: If admixture target is selected as water scale, system discharges when water scale completes its batching. If admixture target is selected as mixer, system discharges when all materials are weighed & ready.

Weigher : Here aggregate bin type will be selected.

Belt Transfer Time: enter the time taken to disch completely aggregate into mixer.
Agg Prerun Time : It is the time predefined second for which the extractor belt will run without the skip being in down position

- **Vibrator On Time:** Enter the start delay time in Secs. The system starts the vibrators in auto mode for the specified time.
- **Vibrator Off Time:** Enter the start delay time in Secs. The system stops the vibrators in auto mode for the specified time.
- **Product Batching Delay:** Enter the time delay for batching individual material.
- **Scale Stabilization Time:** Enter the scale stabilization time for batching each material. If scale is not stabilized within the specified time, system generates “Scale Unstable Fault”.

•**Mixer Parameter Tile:** User can go in mixer parameter section from the above screen

Mixer Parameters:

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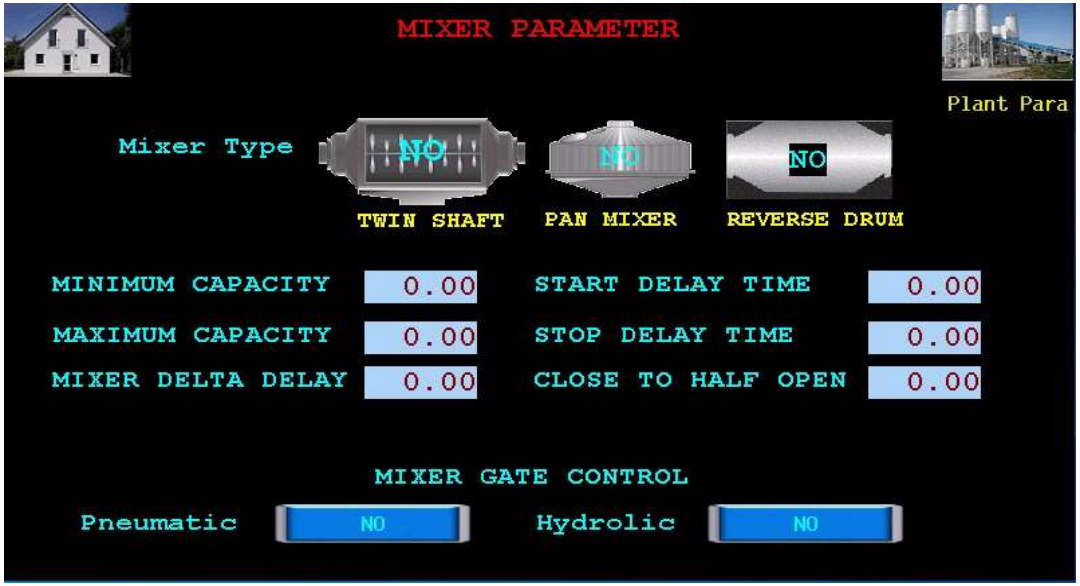

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- **Mixer Type**: Click / Tap on the respective text Box to select Mixer type (Twin Shaft, Pan/Planetary or RD Mixer).
- **Maximum & Minimum Mixer Capacity:** Enter the minimum & Maximum batch size in M3.
- Note that the system will not produce concrete less than the prescribed quantity. Remember that this value should not be too less. If values are too less, overall weighing and mixing accuracy might get affected. The recommended to be >= 30% of the maximum values (capacity).
- **Mixer Start Delay:** The mixer motor will turn on at a predefined interval after giving start command.

Mixer Parameters :

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Mixer Stop Delay: The mixer motor will turn off at a predefined interval only after finishing all the cycles

- **Mixer Delta Delay :** Here, define delay time before starting Mixer motor.
  -This delay time defines of motor goes to star to delta conversion.
- **Mixer gate Control:** Select Gate control type (by mixer or hydraulic motor).

.

For R/D Mixer :-

- **Stop Time**:
  - This timing should be greater than the time taken by the drum mixer for halting after the stop command.

- **Discharge Time**:
  - Enter timing in seconds to define reverse rotation of mixer.

Scale Parameters :

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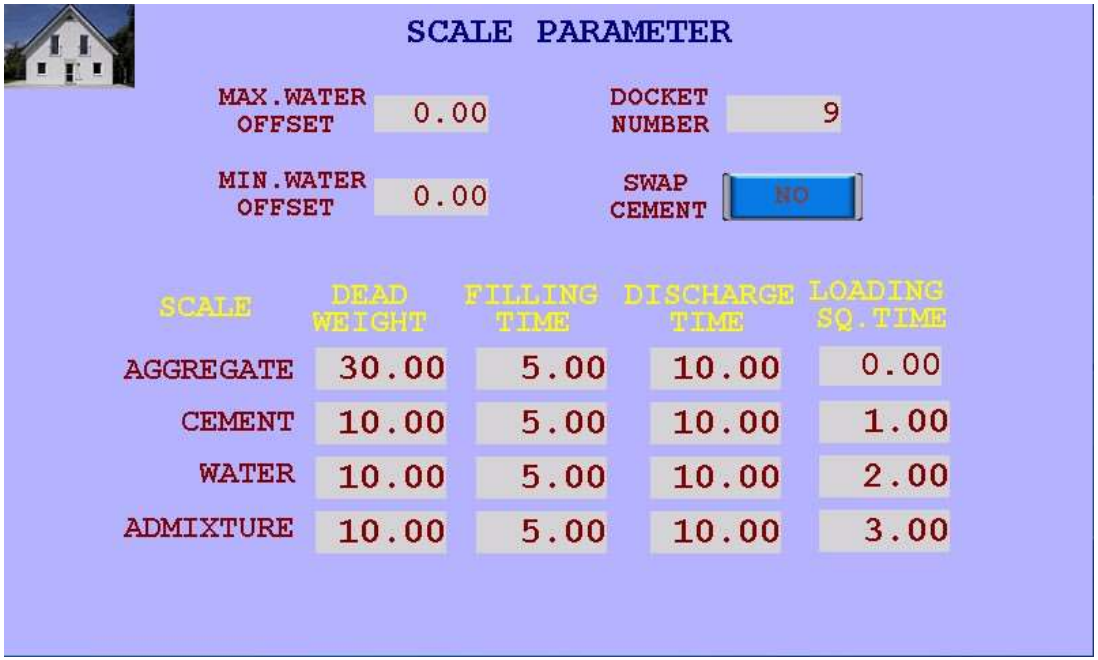

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These parameters define various scales for operation. The scale readouts and discharge controls will be affected as per the defined values.

- **Dead Weight:** Define the allowable value for each scale to start batching. If the indicator reading is less than this value and more than (-30kg for Aggregate, -10 for Cement, -10 for Water And -1.0 for additives), the batching would start, otherwise an alarm will be triggered and system shall wait for the user's consent.

Scale Parameters :

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- **Fill Time Selection (Sec):** Enter the maximum time in Seconds taken by each material to be filled. If weighing / Filling of a particular material is not accomplished within this defined time an alarm will be generated.
- **Discharge Time Selection (Sec):** If selection is **Reference**, Enter the maximum time in Seconds taken by each hopper / tanks to discharge all the materials. If all materials are not discharged within the defined time an alarm will be generated and users consent would be awaited.
- **Enter the Lag Time in seconds, to start loading into the mixer**

  To update the default Loading sequence, follow the procedure.
  Click on respective text fields to enter time in secs.

  After the delay, the material is discharged into the mixer.

For example if the settings are: Aggregate 0 seconds, cement -07 seconds, water 04 seconds, then the loading sequence would be as follow: Water would start loading after 4 seconds followed by aggregate after 1 sec and then by cement after 3 seconds.

Note: Only one default loading sequence which applies to all the mix designs / recipes.

Product Parameters :

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- **Fine Flow Weight / Flight Weight:** Expressed in kg./ ltr. is the quantity of the product to be batched at slow speed. The fine feed continues dosing till target quantity is achieved.
- **Large / Small Open Time:** The system jogs for as much time to receive the balance material..

Calibration :

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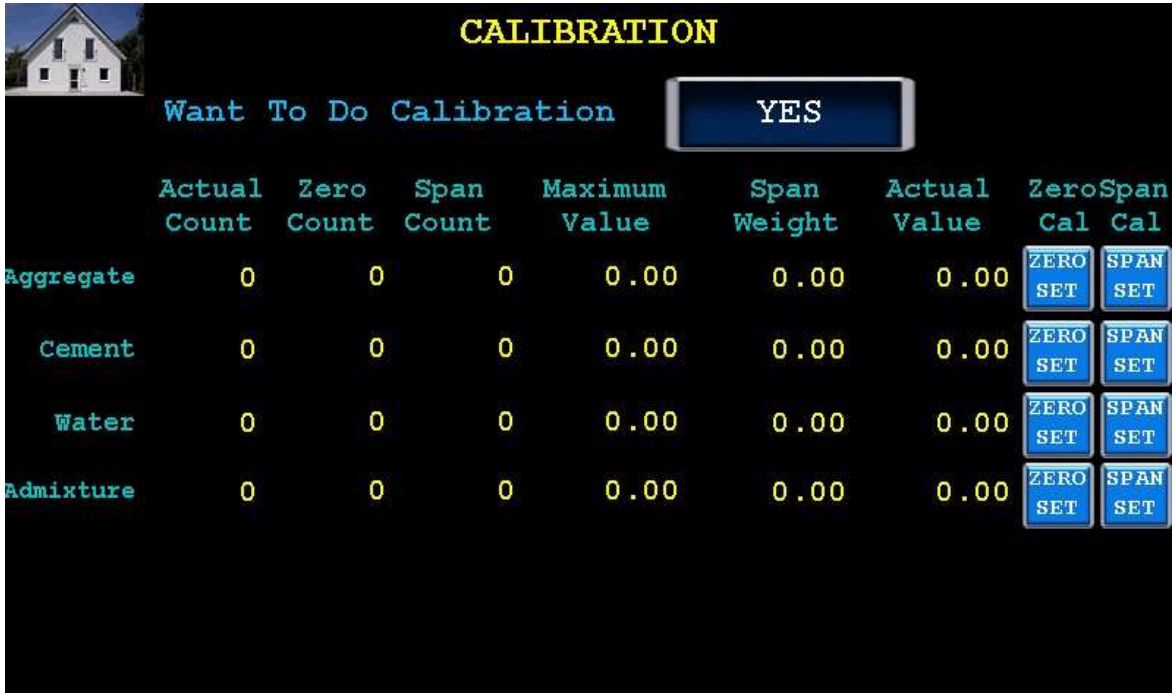

The screen facilitates to calibrate the PLC with the Transducer.

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Calibration :

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Calibration process from HMI

Step 1: Enter the maximum weight of the weigher in the "Maximum Weight Column" on the HMI.

Step 2: Ensure that the weigher is empty with zero weight, and then press the "ZERO set" button on the HMI.

Step 3: Now place 75% of the maximum weight on the weigher.

Step 4: Enter the same weight in the "SPAN Weight" column on the HMI and then press the "SPAN SET" button on the HMI.

Step 5: The scale weigher weight will be displayed in the "Actual Value" section on the HMI screen.

Step 6: Calibration is now complete.

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Input Test:

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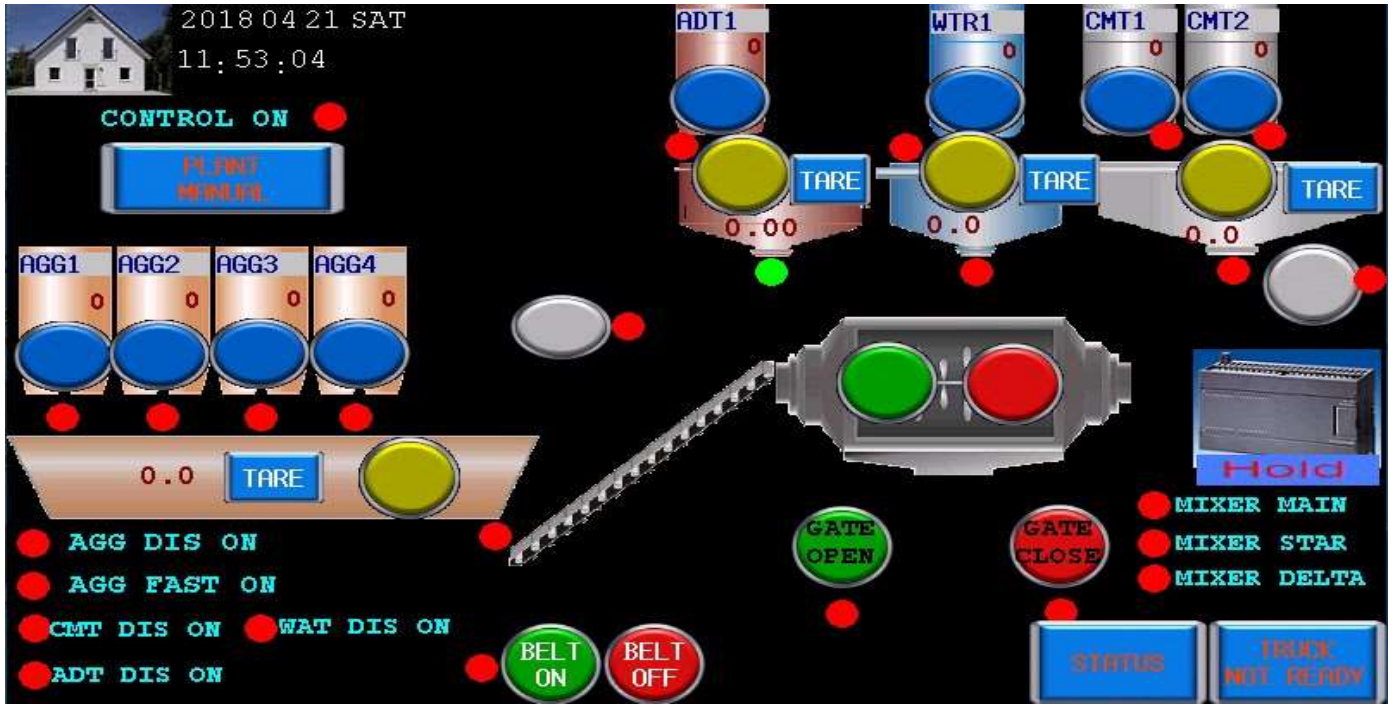

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- **Input Test:** The screen enables to test Input status of each sensors / field equipments.
  If the feedback signal is true, the Sensor status shall be displayed in Green, else it shall be in Red.
- **Tare:** Tare Button is given in this screen for Weigher weight
- **Status:** user can check i/p & o/p status by clicking on this tab

Output test or Manual operation :

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All Parameters in this section are critical and need to be handled by trained personnel only.
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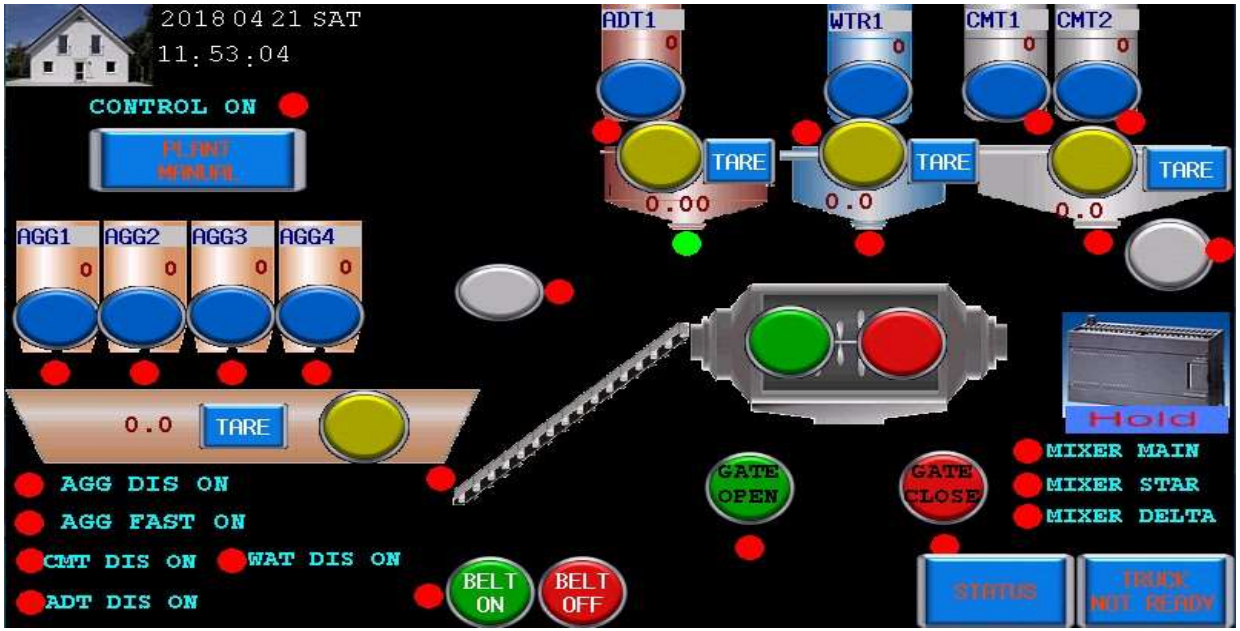

- **Output Test:** The screen enables to test output status of each sensors / field equipments.

User shall test by pressing individual motors / equipments by pressing Green buttons..

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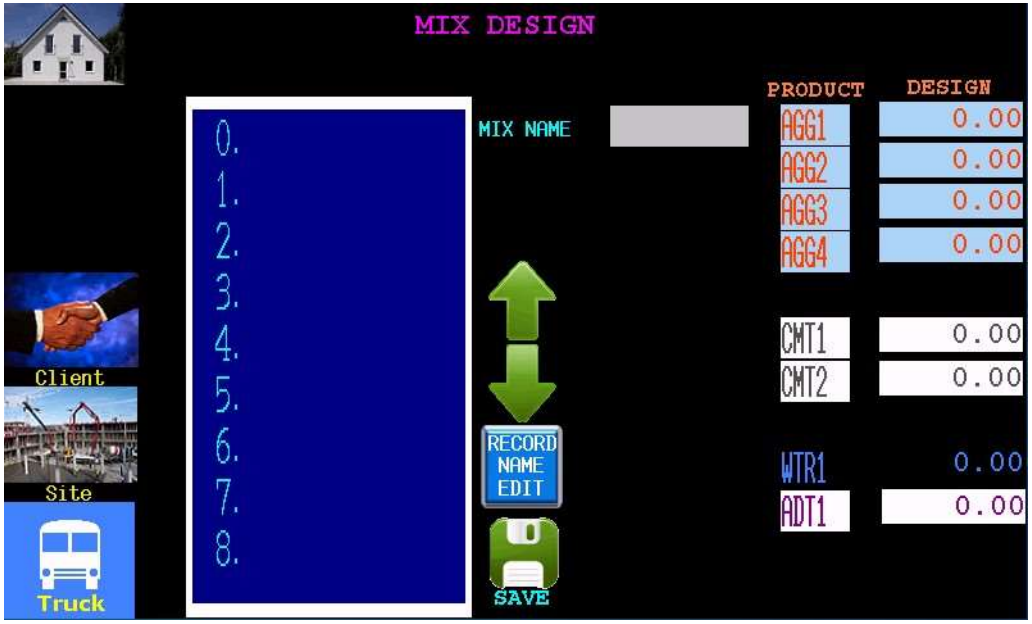
Mix Design :



To store a Mix Design, follow the procedure is given below,

- Click on recipe number where you want to store.
- Then for mix design, Select the product which is to be batched & enter the value of the Aggregates against respective fields.

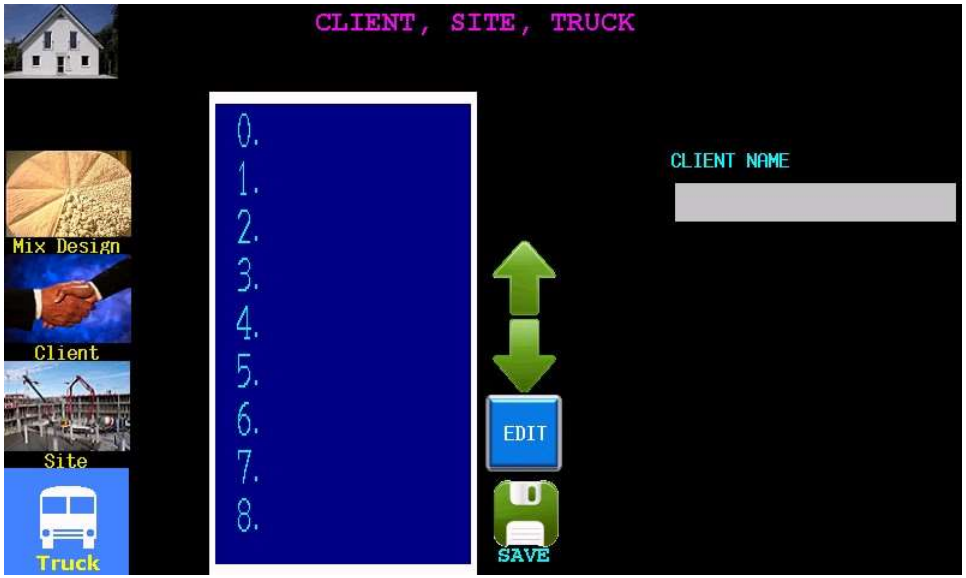
Similarly, enter the values for Cements, Additives & Water.

•. After all the values are entered, store the recipe by clicking - 'Save' from Tool bar.

•For change in name of any recipe just click on edit button and then respective recipe, then just enter the name.

•To change any ingredients quantity, select that particular mix design, - change the quantities & Save it.

Client



To store a Client, follow the procedure is given below,

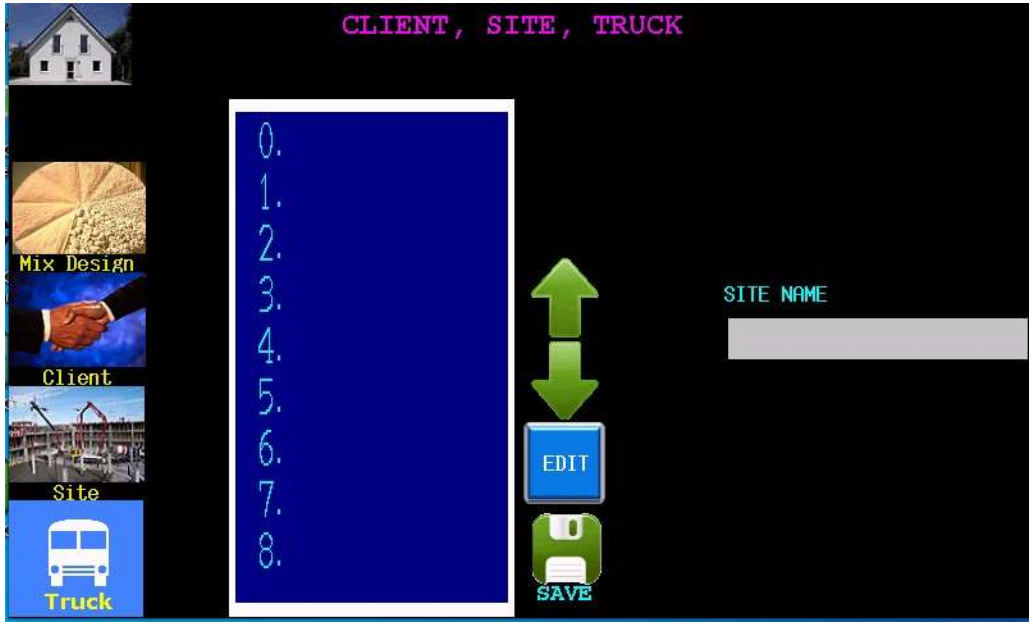
- Click on recipe number where you want to store.
- Then for Client, click on blank field type the Client Name.

•. After the name entered, store the recipe by clicking - ‘Save’ from Tool bar.

•For change in name of any recipe just click on edit button and then respective recipe, then just enter the name.

•To change , select that particular Client - change the name & Save it.

Site



To store a Site, follow the procedure is given below,

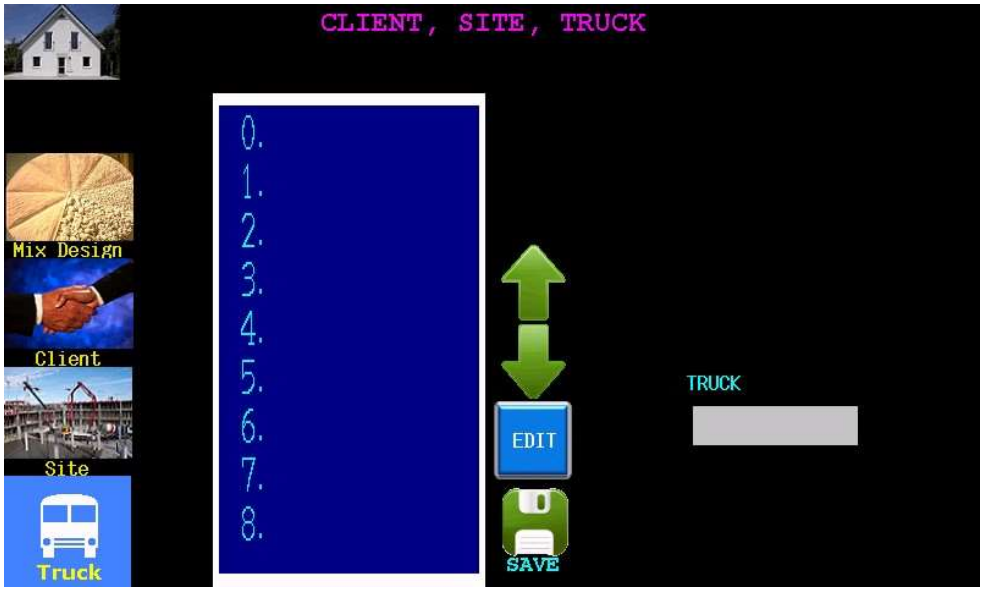
- Click on recipe number where you want to store.
- Then for Site, click on blank field type the Site Name.

•. After the name entered, store the recipe by clicking - 'Save' from Tool bar.

•For change in name of any recipe just click on edit button and then respective recipe, then just enter the name.

•To change , select that particular Site - change the name & Save it.

Truck



To store a Truck, follow the procedure is given below,

- Click on recipe number where you want to store.
- Then for Site, click on blank field type the Truck Name.

•. After the name entered, store the recipe by clicking - 'Save' from Tool bar.

•For change in name of any recipe just click on edit button and then respective recipe, then just enter the name.

•To change , select that particular Truck - change the name & Save it.

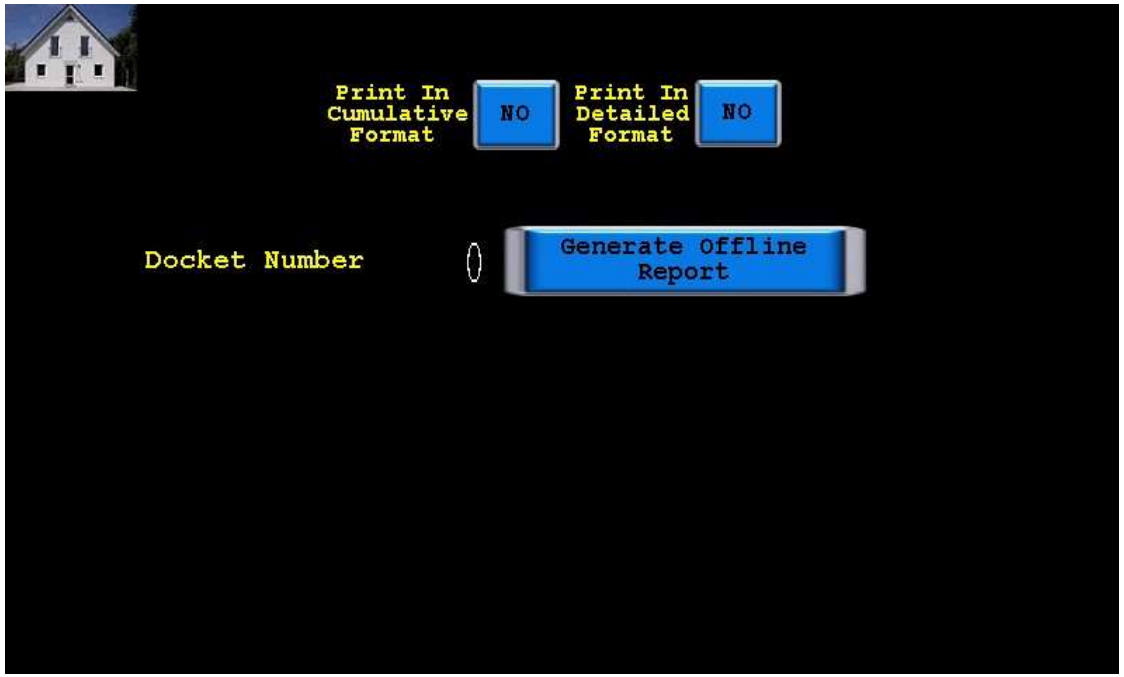
Sales Order :

- The screen enables to set the Sales Order
- To Set the Sales Order, follow the procedure:
  - Click – on Mix Design, the display shows list of Saved Mix designs in list, select the mix design.
  - Select , Client & Site.
  - Enter Per Load Quantity (Quantity which is to be batched).
- After entering relevant details click on **'Set Load'**.

Load Now:

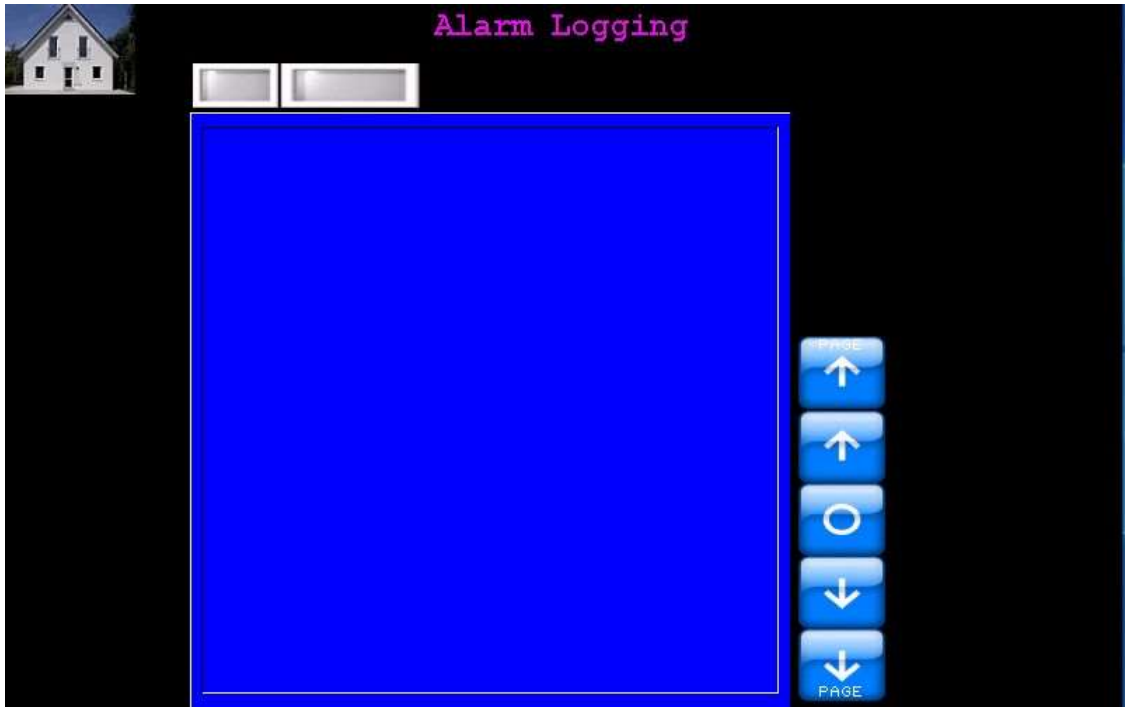
- The screen displays the details such as Number of loads, batches/load, batch size etc.
- Click - Load Now to start batching. The following Mimic Screen shall be displayed.

Report:



- User can select the type of report they want to print Detailed/Cumulative or both by selecting yes/no.
- User can print previous report by entering the docket number & then press generate offline report.

Report:



- User can see alarm list in this screen

Plant Mimic :

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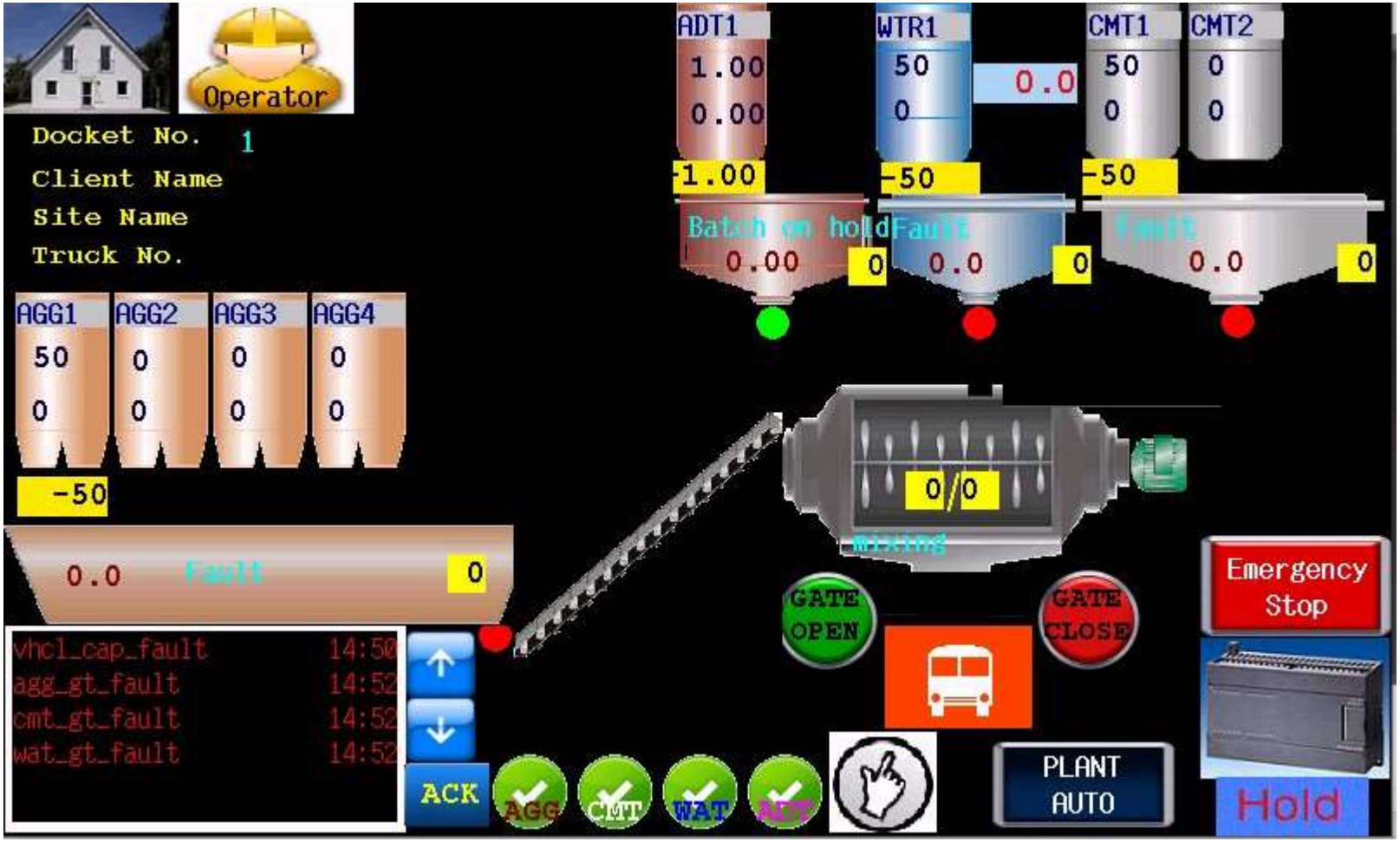

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Mimic

- As shown, the system will display the status of various components / materials continuously.
- The system shows the materials being weighed in decrementing manner.
- Also the status of each material, the batch number, number of balance batches will be displayed.
- The system will also show the status of Mixer, Transfer Belt / Skip.
- Alarms generated & normalized alarms during production, will be displayed at the left bottom grids of the screen.
- While batching, faults may be accepted by clicking on the respective buttons.
- These alarms shall be cleared from the grid by clicking on **Acknowledge All** button.
- For first batch of every order, the system confirms the presence of vehicle below the discharge shoot. A symbol of truck keeps blinking at the bottom of the screen for acknowledging the presence of vehicle.
- Vehicle presence can be acknowledged by pressing **'Truck Ready'** button.
- The batch cycle will stop indefinitely at skip waiting position. The cycle will continue only after the acknowledgement of **'Truck'**.
- **Mixer gate Operation**: Select mixer gate operation by Auto or manual. If 'Manual' is selected, user should open & close mixer gate manually every time. If selection is 'Auto', mixer gate open & close automatically.

Mimic :

Note :
The **'Truck'** key is of toggle type. Hence if it is pressed again, the truck symbol will disappears again.

Batching cycle can be put on hold, by pressing **Cycle Hold** button. & could be renewed by pressing **Cycle Continue** button.

The cycle can be stopped immediately if there is an emergency by clicking on **Emergency Stop** button.

Note:
Once **emergency stop** button clicked or incase of power failure, PLC will go on hold condition & no process takes place. In such cases, user can release hold by clicking on **PLC On Hold** button from main screen. Or, keep Plant Auto / Manual selector switch in auto mode, press mixer Gate Open & Close buttons simultaneously. This releases the PLC from Hold condition.

- **Alarms, the user can accept are:**

- ……Dead weight fault !!! (Depending on the weight present on the scale).
- ……Tolerance fault !!!
- ……Negative fault !!!

- **Alarms, the user cannot accept are:**

- ……Fill fault !!!
- Skip is not sliding fault !!!
- Skip is not Climbing fault !!!
- Mixer is Not running fault !!!
- ……Scale Overloaded fault !!!
- ……Gate fault !!!

Alarms & Troubleshooting

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- **PLC Not Connected !!!**
  Please check PLC & MMI cable for proper fitment.

- **Load Now** button is not showing in the screen.

a) Check whether the previous load is completed or not.

Remedy

a) Open mimic screen by clicking on **"Loading"** button from main screen.
b) Click on "**Emg. Stop"** button from mimic screen to finish the previous load.

- **In auto mode, Mixer gate closes immediately after sensing open signal**

Remedy:

a) Check mixer full discharge time for the selected vehicle. If it is 0secs, then abort the cycle or select mixer gate operation as manual mode.
b) Enter proper discharge time for the said vehicle.
c) Check for the relays RL20 & RL21 (Mixer Gate Open & Close) for proper operation.

- **Skip is sliding down after sensing waiting position in auto mode**

Remedy

a) Check skip down/reverse contactor or RL 15 is getting energized continuously
b) Check whether the PLC is getting erratic (skip top) signal before reaching at top position.
c) Check skip break coil supply & skip slack i/p signal.
d) If skip down PLC output is continuously energized, then PLC DO card may be defective.

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- **Skip is not resting properly at down position & system generates "Skip Down Sensor fault" in auto mode**

Remedy

a) Check skip down relay for proper signal / supply.

b) Check & count skip top to down travel time, increase it by 0.3secs to 1secs (ensure that no overshoot of skip position takes place).

- **Weight Indicator shows ULUL (RED LION)**

Remedy

a) Check load cell signal wires for proper connection to weight indicator & junction box terminals.

b) Check for any moisture in the cable ends, shield connections, load cell resistance at input & output.

c) Check individual load cells for proper & constant output (mV), else load cell may be defective.

- **Weight Indicator shows OLOL**

Remedy

a) Check for any moisture in the cable ends, shield connections, load cell resistance at input & output.

b) Check individual load cells for proper & constant output (mV), else load cell may be defective.

c) Check load cells for any mechanical obstructions & higher milli volts (should be less than 24mV/V).

- **Weight Indicator shows Err1**

Remedy

a) Reset weight indicator by pressing **RST** key & re-check weight indicator reading by putting standard weights on the scale/hopper.

Alarms & Troubleshooting

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- **Weight Indicator & PLC / PC readings are not matching**

Remedy

a) Check analog card connections at PLC analog card & weight indicator terminals.

b) Check minimum & maximum values of both in weight indicators (analog settings) & in PC Calibration screens.

c) Check analog out put settings in weight indicator for proper selection (0-10V/4-20mA).

- **Skip starts climbing immediately after aggregate / weighing conveyor stops after discharging & material falls down**

Remedy

a) Increase skip start delay time (from Parameters – Aggregates)

- **The system shows "PLC Hold" & not able to make "PLC Ready"**

Remedy

a) Check PLC & PC communication & its cable.

b) Check whether the control contactor & MCB is on.

c) Check PLC input %I1.0 (NO contact of control contactor) for 24VDC supply.

- **Analog input image & Actual weights are not showing in calibration screen (its constant)**

a) Check PLC & PC communication & cable.

b) Check analog card connections at PLC analog card & weight indicator terminals.

c) Check minimum & maximum values of both in weight indicators (analog settings) & in PC Calibration screens.

d) Check analog out put settings in weight indicator for proper selection (0-10V/4-20mA).

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- **Admixture is over batching.**

Remedy

a) Check & control admixture flow.

b) Check selection of tolerance mode & defined allowable tolerance (See Technical - Product Parameters). If tolerance mode is in %, then change it to Kg (See- Parameters – Plant Parameters).

c) Check whether the weight indicator reading is increasing even after admixture motor stops.

d) Check admixture fill solenoid valve for proper operation.

- **Control MCB trips when Control On push button is pressed.**

Remedy

a) Check Phase & Neutral wires for any short circuit.

- **Aggregate Dead Weight Fault !!!**

  Cause

  Initial weight in the aggregate hopper is more than the allowed dead weights of the system(see Parameters – Plant Parameters Screen).

  Remedy

a) This alarm usually rises during start of production. If dead weight is less and within the acceptable limits the fault can be accepted. If the fault is accepted, the cycle will proceed. However, it is advised to discharge the dead weights after the cycle is over.

b) If enough material is not present in the aggregate hopper, check dead weight setting (see Parameters – Plant Parameters Screen).

- **Material (Aggregate) Filling Fault !!!**

  Cause

  Aggregates may not be filled within the set filling time into aggregate hopper.

  Remedy

a) Check aggregate bins for materials

b) If bin gates are not operating properly, check for presence of adequate air pressure, solenoid valve coils, MCBs and Contactors, respective PLC output nos. Q1.0 to Q 1.3 and corresponding relays (RL 0- 3) in relay cards.

c) If aggregate (sand) is not flowing freely, use vibrator.

Note :

This alarm cannot be accepted at user consent. The system will wait indefinitely till the fault is removed.

Alarms & Troubleshooting

❖ **Aggregate Discharge Fault !!!**

Cause

Aggregate material is not discharged completely within the set discharge time.

Remedy

a) Check the Weighing Conveyor free from mechanical obstructions.

b) Check the MPCB / MCB of Weighing Conveyor, Contactors, PLC output no Q2.4, RL – 24 in relay cards for proper signal.

Note

- This alarm raises during run time of the production. If quantity remaining is acceptable, then this fault can be accepted by pressing the **'Agg. Accept'** button.

❖ **Skip Waiting Position Fault !!!**

Cause

a) Skip has climbed to top / discharge position without sensing waiting position (see Parameters – Plant Configuration – Aggregate - Skip parameters).

b) System is switched manual mode while the skip is moving to wait position.

Remedy

a) Check the waiting position limit switch or proximity switch for proper operation PLC input no. I6.0 for proper signal.

Alarms & Troubleshooting

❖ **Skip Up Position Fault !!!**

Cause

a) Skip has not climbed to discharge position within the specified time (see Parameter – Plant Configuration – Aggregate - Skip parameters).

b) Skip up limit switch may not be sensing.

Remedy

a) Check the skip up position limit switch for proper operation.

b) Check for skip MCB and contactors, skip breaks, PLC input no. I6.1 for proper signal.

Note

If skip up limit switch fails to operate, then it may cause mechanical or electrical damage. So it is advisable to provide a safety limit switch just above the up limit switch and should be connected parallel to the up limit switch.

❖ **Skip Down Position Fault !!!**

Cause

a) Skip has not slide to down position within the specified time (see Parameter – Plant Configuration – Aggregate – Skip parameters).

b) Skip down limit switch may not be sensing.

Remedy

a) Check the skip down position limit switch for proper operation.

Alarms & Troubleshooting

b) Check for skip MCB and contactors, skip breaks, PLC input no. I2.6 for proper signal.

Note

The skip keeps sliding down till it senses down position limit switch. If not sensed, it may cause mechanical or electrical damages. Hence it is advised to provide a safety down Position limit switch just after the down position limit switch and connected parallel to it.

❖ **Mixer Gate Open Fault !!!**

Cause

a) Mixer gate open proximity switch is not sensing properly.

b) Mixer gate is not opening.

Remedy

a) Check the Mixer gate open proximity switch for proper operation.

b) Check for the mixer gate hydraulic motor, pressure of the hydraulic jack, hydraulic motor MCB / contactors, PLC output no.

❖ **Mixer Gate Close Fault !!!**

Cause

a) Mixer gate close proximity switch is not sensing properly.

b) Mixer gate is not closing actually.

Alarms & Troubleshooting

Remedy

a) Check the Mixer gate close proximity switch for proper operation.

b) Check for the mixer gate hydraulic motor , pressure of the hydraulic jack, hydraulic motor MCB / contactors.

c) Check for any mechanical obstructions.

❖ **Cement Gate Fault !!!**

Cause

a) Hopper gate close proximity switch is not sensing properly. Hopper gate is not closing actually.

b) Check PLC input I2.4 for proper 24VDC supply.

Remedy

a) Check the Hopper gate close proximity switch for proper operation.

b) Check for any mechanical obstructions.

Note

It's a run time fault that vanishes automatically within a few seconds. As the hopper gate takes some time to close, till the limit switch for aggregate hopper gate senses, the fault remains.

Alarms & Troubleshooting

❖ **Mixer Not Running !!!**

Note :

- This is an alarm that raises during start batch of production.
- One cannot go for production without operating mixer motors. This alarm is not acceptable at user's consent.

Remedy

a) Check for mixer motor trip circuit (MCB, Contactors, Relay etc.), PLC input nos. I1.4 (Mixer Delta), I4.4 (Mixer Star) and I4.5 (Mixer Main).

❖ **System in Manual Mode !!!**

Cause

- System may be put to manual mode during auto production.

Remedy

- Check the auto / manual selector switch and put it to auto mode.

❖ **Aggregate out of Tolerance !!!**

Cause

- Weighing of aggregate may go out of the allowed tolerance limit (see Tolerance parameters in Technical – Product Parameters).

Alarms & Troubleshooting

Remedy

a) Check the aggregate bin gate for any mechanical obstruction.

b) Check the aggregate bin gate solenoid valve, MCB / contactors, PLC output and corresponding relay card for proper signal.

c) Check the in flight rate flow of the aggregate.

Note

- If the tolerance value is acceptable, then the fault can be accepted by **'Agg. Accept'** button. If the

  weighing goes out of tolerance repeatedly in consecutive production orders, operator should reset

  / reclculate the material weighing before starting the next production order (refer Technical – Product Parameters – Recalculate Aggregate).

❖ **Batch Size Fault / Production Quantity Too Less !!!**

Note

- This is an alarm that raises during start batch of production. One cannot go for production less than the defined allowable minimum value in M^3 which can be produced in auto mode. For better accuracy this value should be 70% or more of mixer capacity.

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