

# USER MANUAL

---

MODEL:

**EPX TROLLEY**

---

**Trolley Lube System & Oiler**

*English (Original Instructions)*

*Updated: 06/05/2018*



# USER MANUAL: TROLLEY WASH & LUBE SYSTEM

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT



## Table of Contents

<b>System Configuration</b>		Alarm	08
User Management	03	<b>Operations</b>	
System Settings	04	System	09
<b>Wash Tank Configuration</b>		Wash Tank	09
Set Point	04	Wash Tank Manual	10
Temperature PID	05	Dip Tank	11
Alarm	06	Dip Tank Manual	11
<b>Dip Tank Configuration</b>		<b>Advanced Functions</b>	12
Set Point	07	<b>Alarms</b>	13
Temperature PID	07		



### **WARNING:**

1. Avoid contact of chemicals with skin and eyes. If contact occurs, see MSDS sheet for further first aid measures.
2. Always wear appropriate PPE
3. Follow safety instructions of chemical manufacturer (MSDS).
4. Always follow plant and OSHA guidelines about the use of equipment.
5. Disconnect power and shut off compressed air and water supply before servicing equipment.

# USER MANUAL: TROLLEY WASH & LUBE SYSTEM

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

## System Configuration

### Login:

1. Using the HMI, login to the System using the on-screen keyboard [Figure 4.1]

**NOTE:** Please contact your distributor for administrative login credentials.

2. Navigate to the **MAIN MENU**
3. Select **USER ACCOUNT MENU**
4. Select the sub-menus for the following procedures [Figure 4.2]:

### Add New Account:

1. Enter **USERNAME**
2. Enter **PASSWORD**
3. Select user **ACCESS LEVEL**
4. Select **ENTER** to add the user to the system

### Set Password:

1. Select **USER** from drop down menu
2. Enter **NEW** Password and **OK** 

### Set Privilege:

1. Select **USERNAME** to from drop down menu
  - Current access will be highlighted in green
2. Select or deselect options to alter access levels
3. Click **OK**  to save changes

### Delete User:

1. Select **USER** from drop down menu
2. Select **DELETE USER** to remove the user from the system

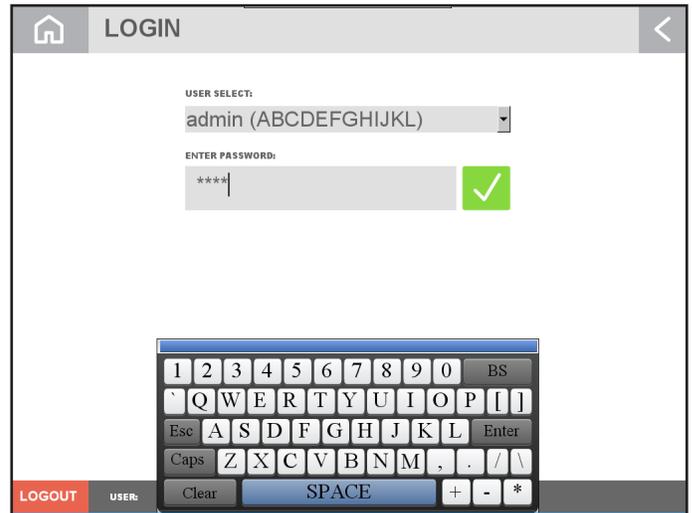


Figure 3.1: Login Screen Pop-Up

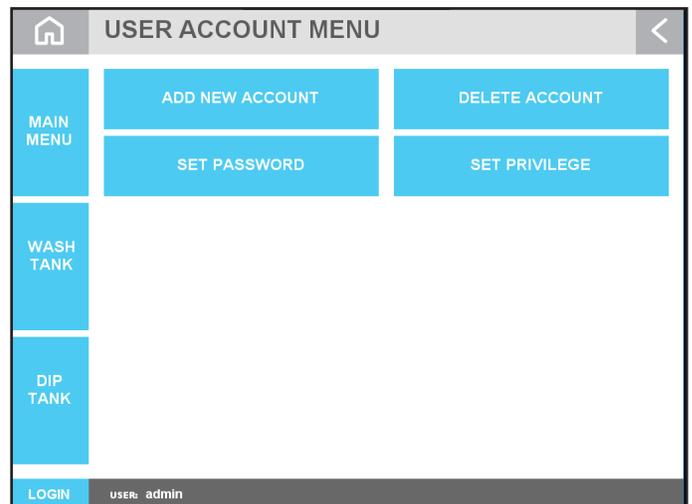


Figure 3.2: User Account menu

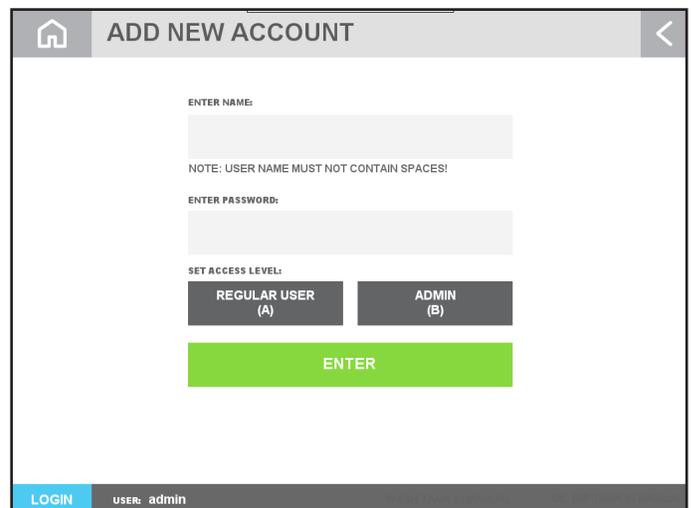


Figure 3.3: Add New Account screen

## System Configuration (cont.)

### System Settings:

1. Navigate to **MAIN MENU > SYSTEM SETTINGS**
2. From this screen the system auto logout timer can be set [Figure 4.1].
  - The number identified will set the amount of minutes the system will automatically log the user out of the system due to inactivity.

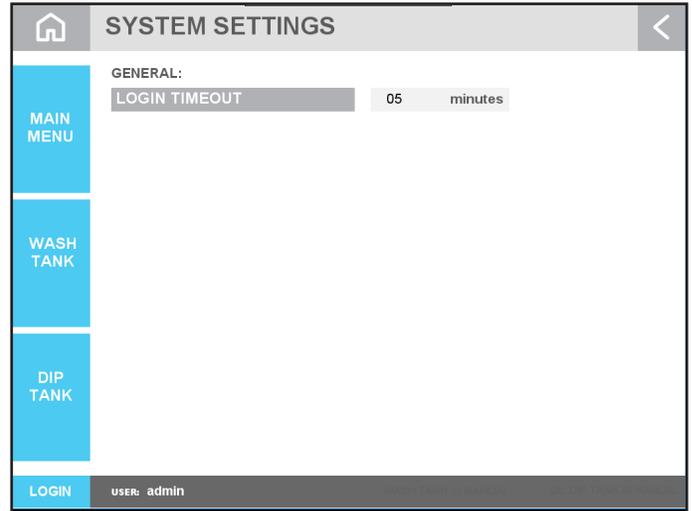


Figure 4.1: Main Menu, System Settings selection

## Wash Tank Configuration

### Wash Tank Set Point:

1. Log in as an administrator.
2. Click the Home icon and navigate to **WASH TANK > WASH TANK CONFIGURATION** [Figure 4.2].
3. From this screen the following settings can be set:
  - **Conductivity Deadband:** The value which the current value drops below the set point before dosing. *(Eliminates pump/sol activation)*
  - **Dose Time (ON):** The amount of time that the system will Dose Chemical. *(Only occurs if the system is below set point)*
  - **Dose Time (OFF):** The amount of time the system will “wait” before dosing again. This gives the system time to mix the chemical with the solution in the tank.
  - **Selected Probe for Use:** Toggle button used to switch control between the current and secondary probe. All Probe readings are visible under the Probe readings display.

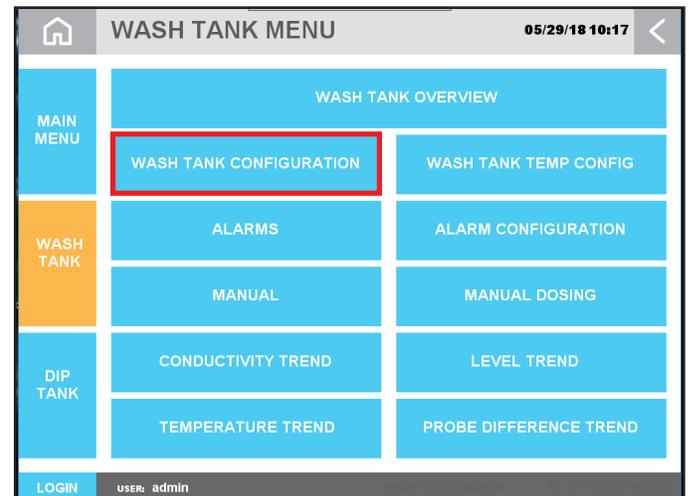


Figure 4.2: Wash Tank Menu

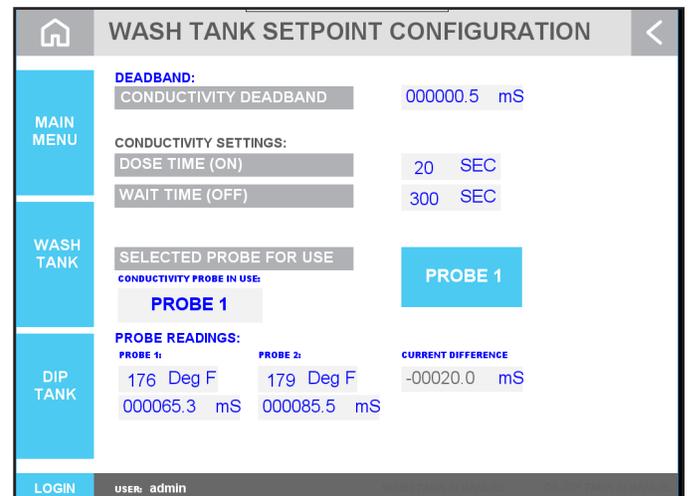


Figure 4.3: Wash Tank Set Point Configuration Screen

## Wash Tank Configuration (cont.)

### Wash Tank Temp PID:

1. Log in as an administrator.
2. Click the Home icon and navigate to **WASH TANK > WASH TANK TEMP CONFIG** [Figure 5.1].
3. From this screen the **WATER LEVEL SET POINT** can be identified.
  - The Water Level Set Point ensures there is enough water to cover the temperature sensors for an accurate monitoring reading



### WARNING:

Controller Gain, Reset, and Rate are all tied directly to the PID loop for the temperature steam valve control. These should only be adjusted by those who have experience in automation or controls.

#### 4. Visible Indicators:

- **Control Variable:** Output of the PID to the steam valve.
- **Watch Line:** Interactive reading status box. Select a point on the red, trend graph window to populate data.
- **Conductivity Probe In Use:** Indicates which probe is currently being used.
- **Probe 1:** Temperature reading from Probe #1 (*Leading probe in Chain flow Entrance End*).
- **Probe 2:** Temperature reading from Probe #2 (*Lagging Probe in Chain Flow Exit End*).
- **Temperature Set point:** Indicates the current Temperature Set point.
- **Temp Trend:** The temperature of the probe in use.

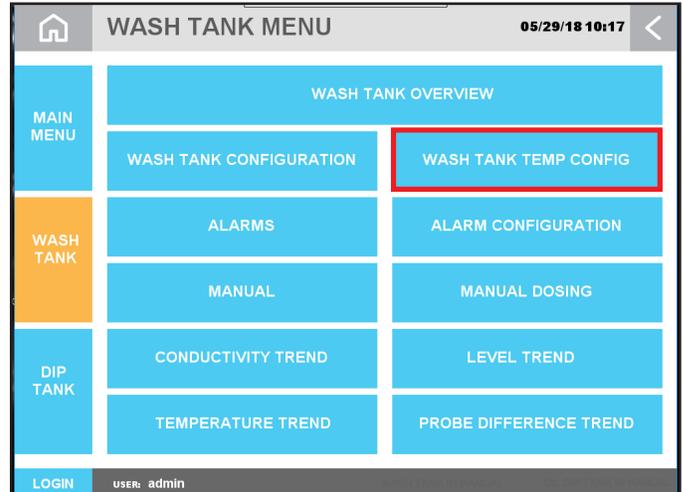


Figure 5.1: Wash Tank Menu

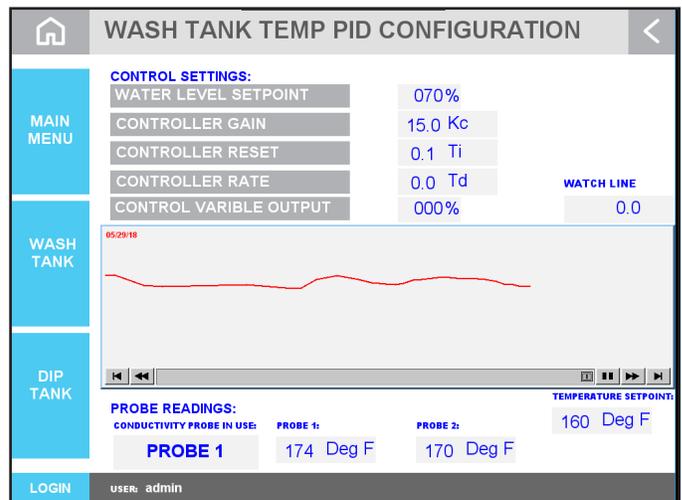


Figure 5.2: Wash Tank Temp PID Configuration Screen

## Wash Tank Configuration (cont.)

### Wash Tank Alarm Set Point:

1. Log in as an administrator.
2. Navigate to **WASH TANK > ALARM CONFIGURATION** [Figure 6.1].
3. From this screen the following settings can be configured [Figure 6.2]:
  - **Water Level HI/LOW:** Sets the high and low values for the water level
  - **Conductivity HI/LOW:** Sets the high and low values for the conductivity.
  - **Dose Attempts:** The maximum amount of doses before an alarm will trigger.
  - **# Of Dose Attempts:** This button determines if the alarm is set to a critical.
    - **Critical:** System will not dose until the conductivity level is achieved (manually) thru manual dose option normally.
    - **Non-Critical:** System will continue to dose even if the alarm is present.
  - **Probe Difference:** The amount of difference between the probe readings.
  - **Estop Alarm Enable:** This is primarily set to either display the alarm on the alarm banner.

**NOTE:** No matter what is selected for *Estop Alarm Enable* when the estop is pressed power to the system will terminate and stop all current operations. The light will illuminate to indicate that the button is pressed.

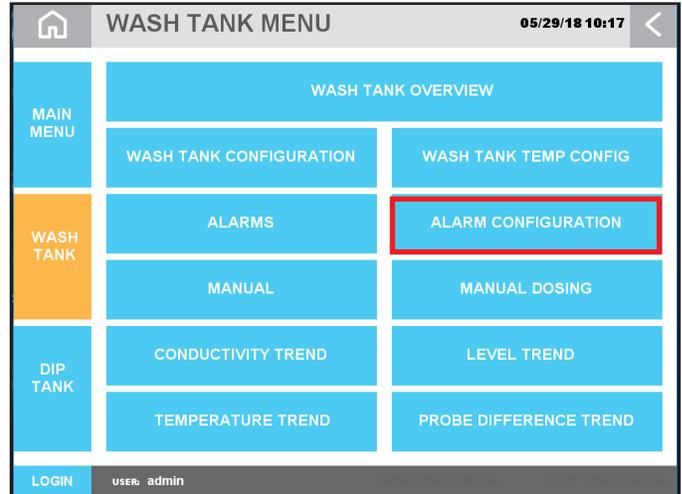


Figure 6.1: Wash Tank menu, Alarm Configuration Selection

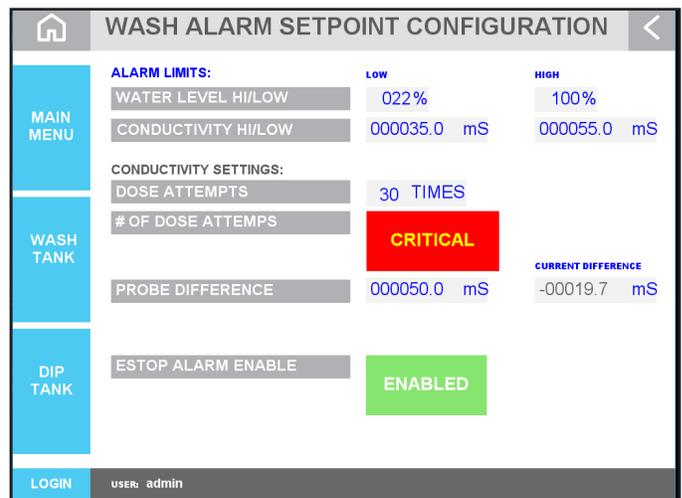


Figure 6.2: Wash Alarm Set point Configuration screen

## Dip Tank Configuration

### Dip Tank Set Point:

1. Log in as an administrator.
2. Click the Home icon and navigate to **DIP TANK > DIP TANK CONFIGURATION** [Figure 7.1].
3. From this screen the **OIL LEVEL DEADBAND** can be set [Figure 7.2].
  - This value is the minimum level that the system will allow before it begins dosing.

### Dip Tank Temp PID:

1. Log in as an administrator.
2. Navigate to **DIP TANK > DIP TANK TEMP CONFIG.**
3. From this screen the **WATER LEVEL SET POINT** can be identified [Figure 7.3].
  - The Water Level Set Point ensures there is enough water to cover the temperature sensors for an accurate monitoring reading

### WARNING:

Controller Gain, Reset, and Rate are all tied directly to the PID loop for the temperature steam valve control. These should only be adjusted by those who have experience in automation or controls.

#### 4. Visible Indicators:

- **Control Variable Output:** Output of the PID to the steam valve.
- **Watch Line:** Interactive reading status box. Select a point on the red, trend graph window to populate data.
- **Probe Readings:** Temperature reading of
- **Temperature Set point:** Current temperature Set point.

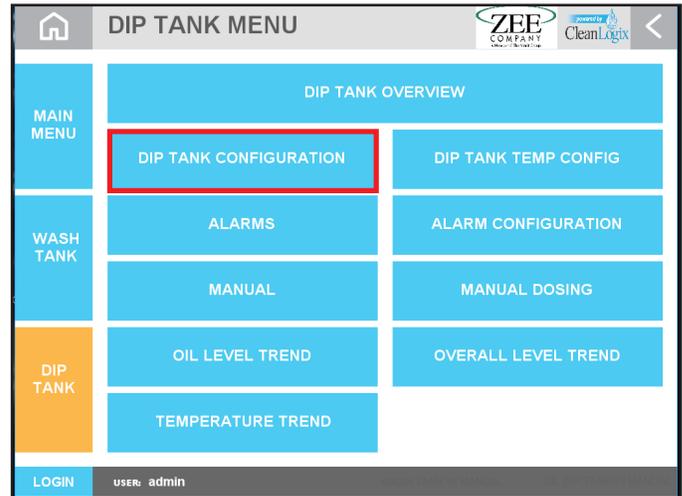


Figure 7.1: Dip Tank Menu

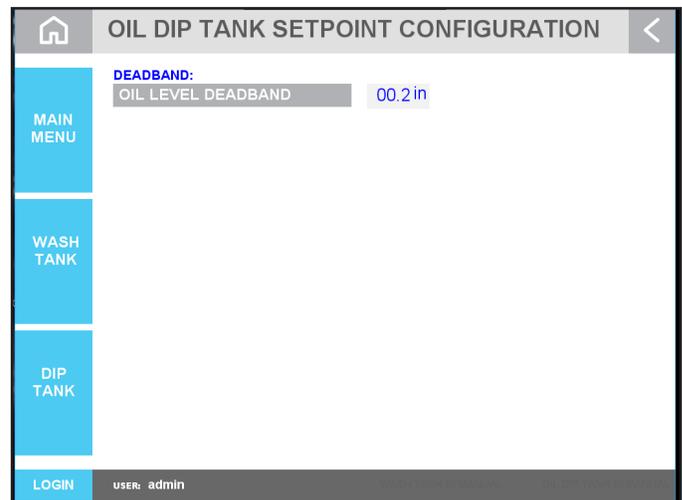


Figure 7.2: Wash Tank Set Point Configuration Screen

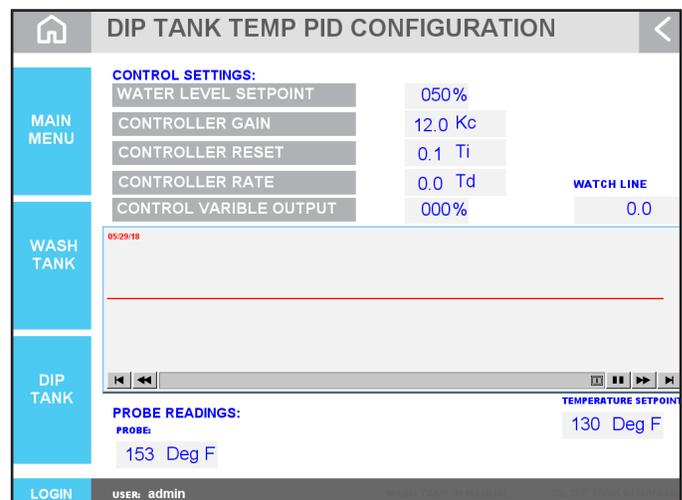


Figure 7.3: Dip Tank Temp PID Configuration screen

## Dip Tank Configuration (cont.)

### Dip Tank Alarm:

1. Log in as an administrator.
2. Navigate to **DIP TANK > ALARM CONFIGURATION** [Figure 8.1].
3. From this screen the following settings can be configured [Figure 8.2]:
  - **Overall Level HI/LOW:** Sets the high and low values for the combined Oil/Water levels.
  - **Oil Level HI/LOW:** Sets the high and low values for the oil level.
  - **Water Level HI/LOW:** Sets the high and low values for the water level.
  - **Oil Failed to Add Timer:** The amount of time the system will attempt to dispense oil before the probe identifies an unsuccessful dispense and triggers an alarm.

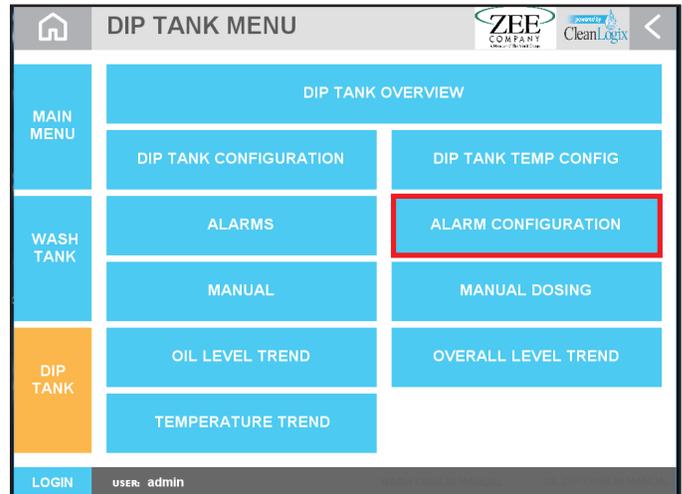


Figure 8.1: Dip Tank Menu, Alarm Configuration selection

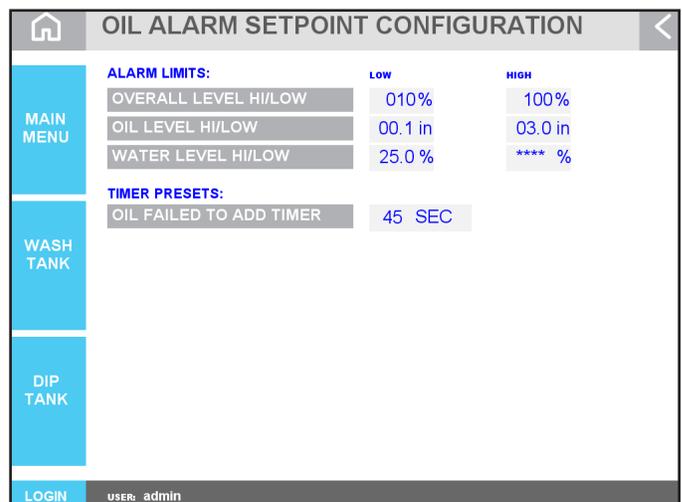


Figure 8.2: Dip Tank Alarm Set Point Configuration screen

# USER MANUAL: TROLLEY WASH & LUBE SYSTEM

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

## Operation

### System Overview:

1. Navigate to the Home screen via the Home icon at the top left corner of the screen
2. From this screen a general overview of both systems will be displayed with status indicators and selection options [Figure 9.1]:
  - **WASH TANK OVERVIEW:** button to access the Wash Tank overview screen.
  - **DIP TANK OVERVIEW:** button to access the Dip Tank overview screen.
  - The following indicators display system status:
    - **AUTO:** The system is enabled to run and dose automatically without user input. (Green when active)
    - **ENABLED:** System is enabled and running. (Green when active)
    - **CHEMICAL / OIL:** System is currently dosing. (Green when active)
    - **HEAT:** System is heating to maintain temperature set-point. (Green when active)
    - **ALARM:** An alarm has been triggered (Red when active)

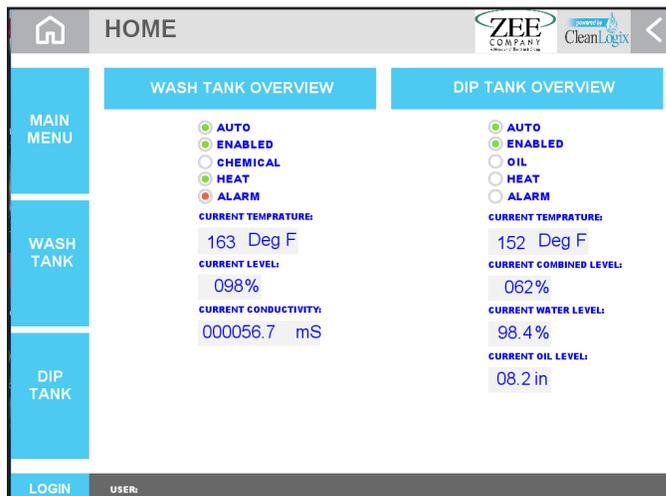


Figure 9.1: Home screen System Overview

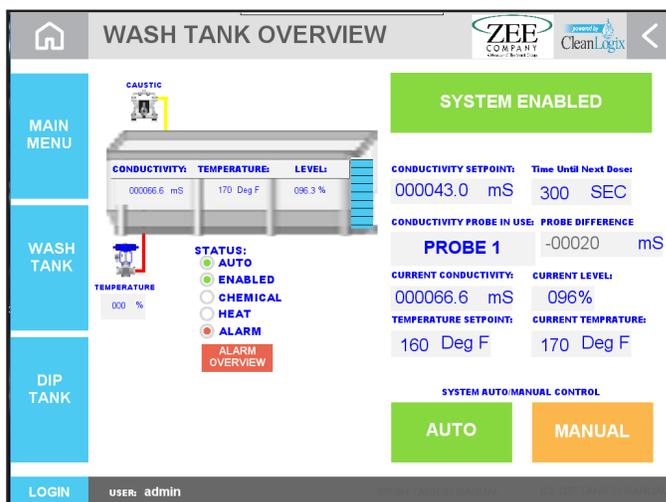


Figure 9.2: Wash Tank Overview screen

### Wash Tank Overview:

1. Select **WASH TANK OVERVIEW**, this screen will detail more information than the previous along with a set of 3 controls:
  - **SYSTEM ENABLED:** Will Enable and Disable the system when pressed. Current status will be displayed at all times (Green: *SYSTEM ENABLED* / Black: *SYSTEM DISABLED*)
  - **AUTO:** When selected, system will control dosing automatically based on configuration settings.
  - **MANUAL:** When selected, system will require manual dosing by user.

## Operation (continued)

### Wash Tank Manual Dosing:

1. To configure the system for manual dosing **DISABLE** the system, by pressing **SYSTEM ENABLED** [Figure 10.1]
2. Once disabled, navigate to **WASH TANK > WASH MANUAL**
3. On this screen chemically can be manually dosed [Figure 10.2].

**NOTE:** This is intended for when the tank is drained and then refilled.

4. Select **MANUAL** to engage the system manually.
5. Review the **MANUAL OPERATIONS SET POINT** and reconfigure as necessary by pressing the text box to edit the value.
6. Select **START** to begin dosing. Status light will turn green to indicate manual dosing is active.
7. When complete, return system to **AUTO**
8. Navigate back to the **WASH TANK OVERVIEW** screen and re-enable the system.



Figure 10.1: Wash Tank Overview disable system selection

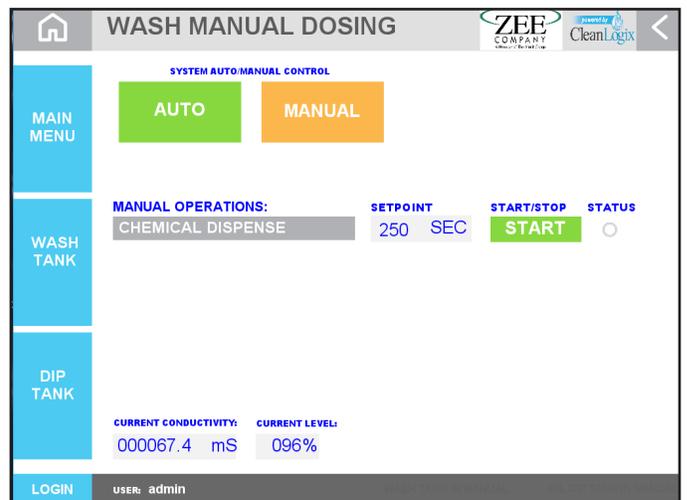


Figure 10.2: Wash Tank Manual Dosing screen, Manual selection

# USER MANUAL: TROLLEY WASH & LUBE SYSTEM

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

## Operation (cont.)

### Dip Tank Overview:

1. Return to the HOME screen and select **DIP TANK OVERVIEW**
2. The DIP OVERVIEW screen will detail more information than the previous along with a set of 3 controls:
  - **SYSTEM ENABLED:** Will Enable and Disable the system when pressed. Current status will be displayed at all times (Green: *SYSTEM ENABLED* / Black: *SYSTEM DISABLED*)
  - **AUTO:** When selected, system will control dosing automatically based on configuration settings.
  - **MANUAL:** When selected, system will require manual dosing by user.

### Dip Tank Manual Dosing:

1. To configure the system for manual dosing **DISABLE** the system, by pressing **SYSTEM ENABLE**
2. Once disabled, navigate to **DIP TANK > DIP MANUAL**
3. On this screen chemically can be manually dosed [Figure 11.3].
4. Select **MANUAL** to engage the system manually.
5. Review the **OIL LEVEL ADD SET POINT** and reconfigure as necessary by pressing the text box to edit the value.
6. Select **START** to begin dosing. Status light will turn green to indicate manual dosing is active.
7. When complete, return system to **AUTO**
8. Navigate back to the **DIP TANK OVERVIEW** screen and re-enable the system.



Figure 11.1: Home screen Dip Tank Overview selection

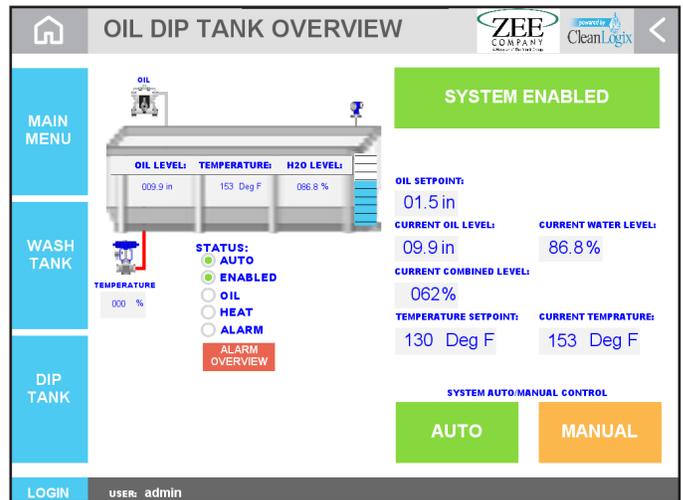


Figure 11.2: Wash Tank Overview screen

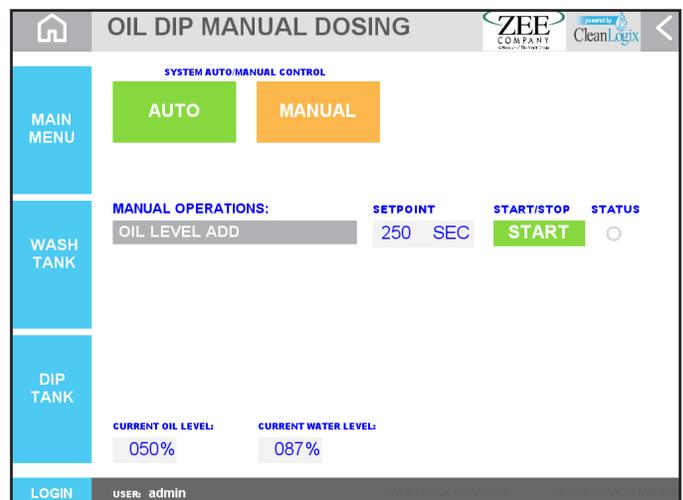


Figure 11.3: Dip Tank Manual screen

# USER MANUAL: TROLLEY WASH & LUBE SYSTEM

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT



## Advanced Functions

### Manual Control:

- Allows manual control of both the Wash and Dip Tanks (each accessible from their menu screens).
- **OFF** means the output is disabled.
- **AUTO** is the normal state.
- **MANUAL** turns the output on.
- Reset by clicking **AUTO**.



### CAUTION:

Manual controls DO NOT reflect proper Lockout-Tagout procedures.

### System Input Status:

- Embedded digital IO - shows the status of every PLC input [Figure 12.2].
- Green means the input or output is ON, gray means OFF.

### System Output Status:

- Embedded digital IO shows the status of every PLC output (Green = ON / Gray = OFF) [Figure 12.3].

### Ops Log:

- Shows a log of all system operations with users, actions, timestamps, and other information for reference or troubleshooting [Figure 12.4].

### Trends:

- Various TREND screens exist to display captured data and information relating to temperature, conductivity, liquid levels, and more for Wash and Oil Tanks.

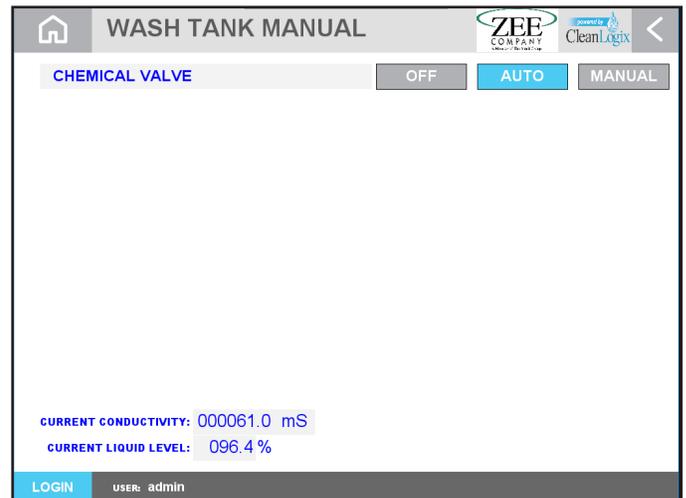


Figure 12.1: Wash Tank Manual screen

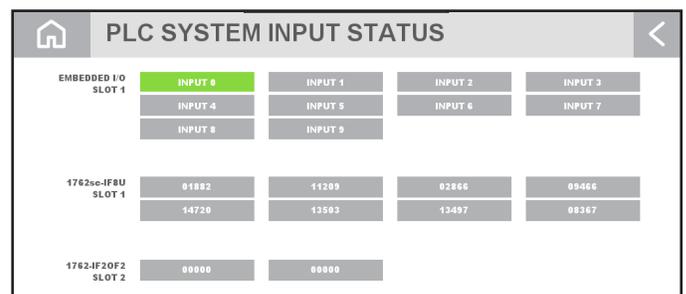


Figure 12.2: Input Status screen

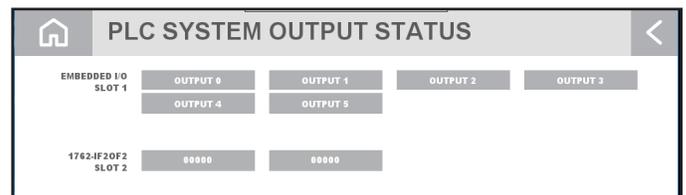


Figure 12.3: Output Status screen

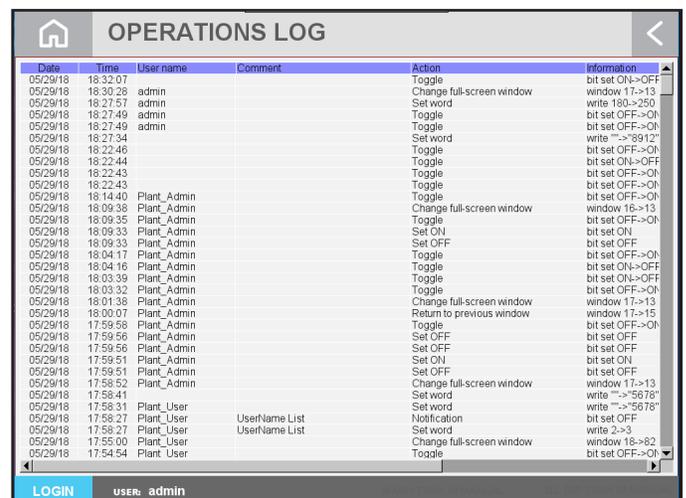


Figure 12.4: Operations Log screen

## Alarms

If the system detects a problem, it will stop the process (if running) and display an alarm banner message at the top of the screen [Figure 13.1]. The alarm must be reset before the process can resume or a new process can begin.

### Resetting Alarms:

1. Identify the root cause of the alarm based on the status message shown [Figure 13.1].
2. Once the root cause of the alarm has been fixed, the alarm can be reset either by clicking the **RESET ALARMS** button on the alarm banner or by clicking **ALARM OVERVIEW** on the Wash Tank Overview screen [Figure 13.2].

**NOTE:** The alarm banner(s) can be hidden for navigational purposes by clicking **HIDE ALARMS**. This does not reset the alarms!

3. After resetting the alarms, the process can be resumed by pressing the **RESUME** button on the Overview screen. If you do not wish to resume the process, press **CANCEL**.

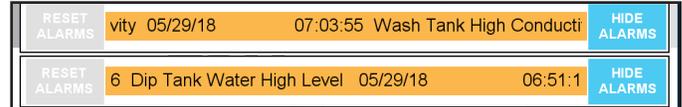
### Bypassing Alarms:

A user with Administrator privileges may click the **BYPASS ALARMS** button on the Alarm Overview screen [Figure 13.3].

**CAUTION:** This will bypass ALL alarm conditions for the system! Use with caution! Click the button again (now it will be flashing **ALARMS BYPASSED**) to undo the bypass.

### CAUTION:

Pressing **CANCEL** will end the current process. This may cause one or more alarms to appear if the system was stopped during a process. **USE WITH CARE.**



RESET ALARMS	vity 05/29/18	07:03:55	Wash Tank High Conducti	HIDE ALARMS
RESET ALARMS	6 Dip Tank Water High Level	05/29/18	06:51:1	HIDE ALARMS

Figure 13.1: Alarm Banner

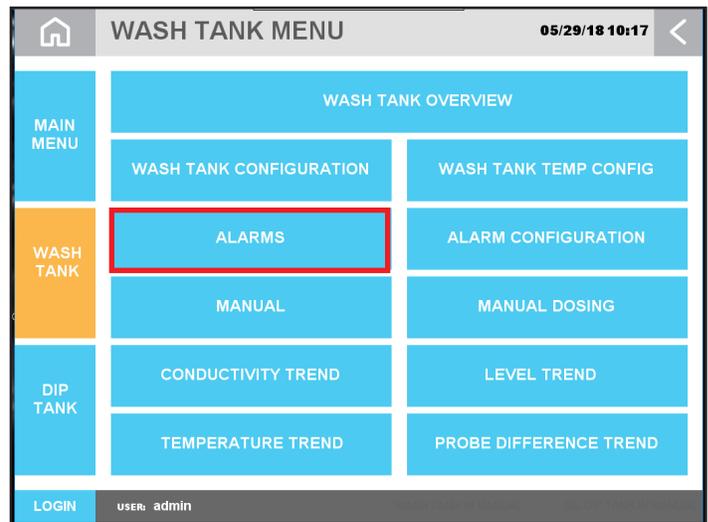
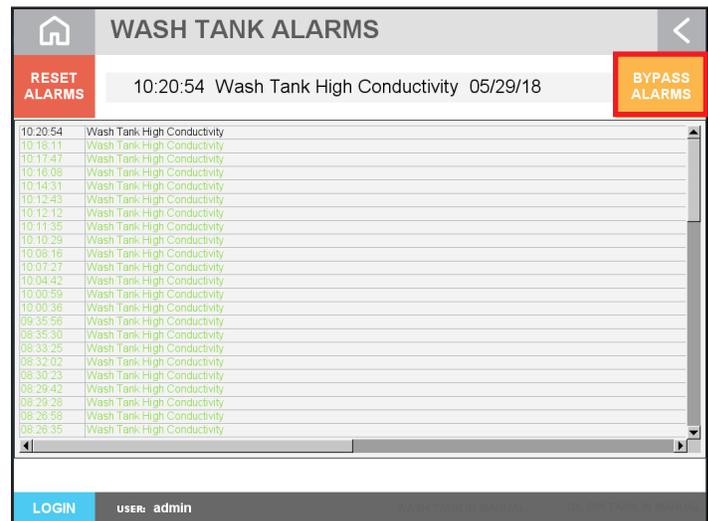


Figure 13.2: Wash Tank Menu - Alarms selection



RESET ALARMS	10:20:54	Wash Tank High Conductivity	05/29/18	BYPASS ALARMS
10:20:54   Wash Tank High Conductivity				
10:18:11   Wash Tank High Conductivity				
10:17:47   Wash Tank High Conductivity				
10:16:08   Wash Tank High Conductivity				
10:14:31   Wash Tank High Conductivity				
10:12:43   Wash Tank High Conductivity				
10:12:12   Wash Tank High Conductivity				
10:11:35   Wash Tank High Conductivity				
10:10:29   Wash Tank High Conductivity				
10:08:16   Wash Tank High Conductivity				
10:07:27   Wash Tank High Conductivity				
10:04:42   Wash Tank High Conductivity				
10:00:59   Wash Tank High Conductivity				
10:00:36   Wash Tank High Conductivity				
09:35:56   Wash Tank High Conductivity				
08:35:30   Wash Tank High Conductivity				
08:33:25   Wash Tank High Conductivity				
08:32:02   Wash Tank High Conductivity				
08:30:23   Wash Tank High Conductivity				
08:29:42   Wash Tank High Conductivity				
08:29:28   Wash Tank High Conductivity				
08:26:58   Wash Tank High Conductivity				
08:26:35   Wash Tank High Conductivity				

Figure 13.3: Wash Tank Alarms Screen, bypass selection