
Honeywell

PlantScape Controller Implementation

Lesson 3

Manual Operation

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Notes

Introduction

Now that you have configured all the required CMs it is time to put them to use. In this lesson you will manually create a product. To facilitate the process, three display screens have been constructed for you to operate the CMs. This will enable you to remain within Station and perform all the steps required to create a product. The following lab uses two displays named **C#_OP1** and **C#_OP2**. A third display not shown in the lab depicts the entire process and can also be used. It is called **C#_process**. An additional way to operate is to use the groups you created in the configuration labs.

Objectives

- ❶ Combine two substances to create a product
- ❷ Verify correct configuration of your project

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Operating CMs Manually

Step 1. Preparing the CMs

1. Ensure all the project CMs are in **Operator** Mode Attribute (View from Groups)
2. Ensure Ingredients A and B totalizers are in **Operator** Command Attribute

C#_OP1

The screenshot displays the 'CM Manual Operation' window. On the left, a sidebar lists 'Tank A', 'Tank B', and 'Reactor' with their 'Total Used' and 'Level' values. The 'Total Used' values are 0.00 for all three, and 'Level' is 150.00 for Tank A and Tank B, and 0.00 for the Reactor. Below this is the 'Accumulator Target Values' section, showing 0.00 for Tank A, Tank B, and the Reactor. The main area is titled 'Tank A & B' and 'Reaction / Drain'. It contains two columns for 'Tank A' and 'Tank B'. Each column has a tank diagram, a 'Flow' scale from 0 to 100, and a 'Flow' value of 0.00. Below the diagrams are controls for 'COMMAND' (set to 'NONE'), 'MD Attr' (set to 'OPERATOR'), 'FV101' (set to 'CLOSED'), and 'PMP101' (set to 'CLOSED') for Tank A, and 'FV102' (set to 'CLOSED') and 'PMP102' (set to 'CLOSED') for Tank B. Red arrows point from the 'OPERATOR' mode attribute in the list to the 'COMMAND' dropdowns for Tank A and Tank B.

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Step 1. Preparing the CMs

1. Ensure the reactor totalizer is in **Operator** Command Attribute

C#_OP1
C#_OP2

The screenshot displays the 'CM Manual Operation' window with the 'Reaction / Drain' tab selected. On the left, there are sections for 'Tank A', 'Tank B', 'Reactor', and 'Accumulator Target Values'. The 'Reactor' section shows a tank icon and a flow meter. The 'Accumulator Target Values' section shows 'Tank A', 'Tank B', and 'Reactor' with values of 0.00. The 'Reactor' section has a 'COMMAND' dropdown set to 'NONE' and an 'MD Attr' dropdown set to 'OPERATOR'. Below this are 'FV103' (CLOSED) and 'PMP103' (STOP). The 'Temperature' section shows two gauges: 'TIC101' (DEG C) and 'FIC101' (LB/HR). The 'Temperature Setpoint' is 35.00. The 'Agitation' section shows 'HIGH', 'LOW', and 'STOPPED' buttons, with 'STOPPED' selected. A red arrow points to the 'MD Attr' dropdown menu.

Section	Parameter	Value
Tank A	Total Used	0.00
	Level	150.00
	Total Used	0.00
	Level	150.00
Tank B	Total Used	0.00
	Level	150.00
	Total Used	0.00
	Level	150.00
Reactor	Total Used	0.00
	Level	0.00
Accumulator Target Values	Tank A	0.00
	Tank B	0.00
	Reactor	0.00
Reactor	COMMAND	NONE
	MD Attr	OPERATOR
FV103	STATUS	CLOSED
	CONTROL	CLOSED
PMP103	STATUS	STOP
	CONTROL	STOP
Temperature	TIC101 (DEG C)	35.00
	FIC101 (LB/HR)	1772
Temperature Setpoint	Setpoint	35.00
	Agitation	STOPPED

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Step 2. Preparing Tank Levels and Targets

1. **Reset** and **Start** the totalizers for Tanks A and B
2. Enter target amounts for Ingredients A and B: 100 for A; 75 for B.

The screenshot displays the 'CM Manual Operation' interface for 'Tank A & B' under the 'Reaction / Drain' tab. The interface is divided into several sections:

- Tank A Summary:** Shows 'Total Used' as 0.00 and 'Level' as 150.00.
- Tank B Summary:** Shows 'Total Used' as 0.00 and 'Level' as 150.00.
- Reactor Summary:** Shows 'Total Used' as 0.00 and 'Level' as 0.00.
- Accumulator Target Values:** A table for setting targets:

Accumulator	Target Values
Tank A	100.00
Tank B	75.00
Reactor	0.00
- Tank A Controls:** Includes a tank diagram, a 'Flow' meter (0 to 100, currently 35.00), and control buttons for 'COMMAND' (NONE), 'MD Attr' (OPERATOR), 'FV101' (CLOSED), and 'PMP101' (STOP).
- Tank B Controls:** Includes a tank diagram, a 'Flow' meter (0 to 100), and control buttons for 'COMMAND' (NONE), 'MD Attr' (OPERATOR), 'FV102' (CLOSED), and 'PMP102' (STOP).

Red arrows from the instructions point to the 'Total Used' fields and the 'Accumulator Target Values' table.

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Step 2. Preparing Tank Levels and Targets

1. Reset and Start the Totalizer for the reactor

The screenshot displays the 'CM Manual Operation' interface. On the left, a sidebar shows 'Tank A' and 'Tank B' levels (both 150.00) and 'Reactor' level (0.00). Below this are 'Accumulator Target Values' for Tank A (100.00), Tank B (75.00), and Reactor (0.00). The main area has tabs for 'Tank A & B' and 'Reaction / Drain'. The 'Reaction / Drain' tab is active, showing a 'Reactor' status section with a tank icon and a 'Flow' scale from 0 to 100. Below the icon are dropdown menus for 'Reactor' (set to 'NONE'), 'COMMAND' (set to 'OPERATOR'), 'FV103' (set to 'CLOSED'), and 'PMP103' (set to 'STOP'). To the right, the 'Temperature' section shows two vertical scales: 'DEG C' (0.0 to 100.0) and 'LB/HR' (0.0 to 5000.0). Below these are 'TIC101' and 'FIC101' controls with 'SP', 'PV', 'OP', and 'MD' values. The 'Temperature Setpoint' is set to 35.00. The 'Agitation' section has buttons for 'HIGH', 'LOW', 'STOPPED', and 'PV OP', with a 'STOPPED' dropdown menu. A red arrow points from the '1. Reset and Start the Totalizer for the reactor' text to the 'Reactor' tab, and another red arrow points to the 'Reactor' status dropdown menu.

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Step 3. Charge Ingredient A

1. Open CM#_FV101 and Start CM#_PMP101. (Remember the 5 second delay in the valve opening. The pump is interlocked closed until the valve is open.)

The screenshot displays the 'CM Manual Operation' window. On the left, a sidebar shows 'Tank A' and 'Tank B' status: Total Used (0.00) and Level (150.00). Below this, 'Reactor' status shows Total Used (0.00) and Level (0.00). At the bottom, 'Accumulator Target Values' are listed: Tank A (100.00), Tank B (75.00), and Reactor (0.00). The main area is titled 'Tank A & B' and 'Reaction / Drain'. It features two tank diagrams, 'Tank A' and 'Tank B', each with a flow meter showing 0 to 100. Below each tank are controls for 'COMMAND' (NONE), 'MD Attr' (OPERATOR), and 'FV101' (CLOSED). A red circle highlights the 'FV101' status, and a red arrow points to it from the instruction text above. Below the 'FV101' status is a 'PMP101' status (STOP).

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Step 3. Charge Ingredient A

1. Set the Ingredient A flow rate to 80 by clicking on the PV and entering data into the pop-up. (The flow rate is set on CM#_FV101RC.PIDA.SP.)

The screenshot displays the PlantScape Manual Operation interface. On the left, a sidebar shows the status of Tank A, Tank B, and the Reactor. The main area is divided into two sections: Tank A and Tank B. Each section includes a tank icon, a flow rate indicator, and a control panel. The Tank A control panel shows a flow rate of 57.20. A pop-up window for CM_FV101RC is open, showing a setpoint (SP) of 80.00 and a process value (PV) of 57.20. A red arrow points to the PV field in the pop-up, indicating where to enter the new flow rate. Another red arrow points to the PV field in the Tank A control panel, showing the current flow rate. The interface also includes buttons for OPEN, STOP, and START, as well as a 'Click to hide popup control' option.

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Step 3. Charge Ingredient A

When the total used of Ingredient A approaches the target of 100:

1. Close CM#_FV101RC (Mode to Man, OP to 0.)
2. Close CM#_FV101. (Interlocks will then stop the Pump.)
3. Click on the pop-up to clear it from the display.

The screenshot displays the 'CM Manual Operation' window with tabs for 'Tank A & B' and 'Reaction / Drain'. The left sidebar shows summary data for Tank A, Tank B, and the Reactor, including 'Total Used' and 'Level' values. The main area shows detailed views for Tank A and Tank B, including flow meters, control valves (FV101, FV102), and pumps (PMP101, PMP102). A red arrow points to the 'FV101' control, which is currently in 'MAN' mode. Another red arrow points to the 'FV101RC' control, which is also in 'MAN' mode. A third red arrow points to a 'Click to hide popup control' button. The 'Accumulator Target Values' section on the left shows targets for Tank A (100.00), Tank B (75.00), and the Reactor (0.00).

Tank A	
Total Used	98.00
Level	52.00

Tank B	
Total Used	0.00
Level	150.00

Reactor	
Total Used	0.00
Level	98.00

Accumulator Target Values	
Tank A	100.00
Tank B	75.00
Reactor	0.00

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Step 4. Begin mixing

1. Start the agitator on low speed.

The screenshot displays the 'CM Manual Operation' interface with the 'Reaction / Drain' tab selected. The interface is divided into several sections:

- Tank A & B Summary:**
 - Tank A:** Total Used 98.00, Level 52.00
 - Tank B:** Total Used 0.00, Level 150.00
 - Reactor:** Total Used 0.00, Level 98.00
- Accumulator Target Values:**
 - Tank A: 100.00
 - Tank B: 75.00
 - Reactor: 0.00
- Reactor Section:**
 - Reactor diagram with a flow scale from 0 to 100.
 - Reactor COMMAND: NONE
 - MD Attr: OPERATOR
 - FV103: CLOSED
 - PMP103: STOP
- Temperature Section:**
 - SP: 35.00, PV: 34.98, OP: 35.44, MD: AUTO, TIC101
 - SP: 177.2, PV: 177.3, OP: 34.98, MD: CAS, FIC101
 - Temperature Setpoint: 35.00
- Agitation Section:**
 - Buttons: HIGH, LOW, STOPPED
 - Agitation speed: LOW (selected)

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Step 5. Charge Ingredient B

1. Open CM#_FV102 and Start CM#_PMP102. (Remember the 5 second delay in the valve opening. The pump is interlocked closed until the valve is open.)

The screenshot displays the 'CM Manual Operation' interface. On the left, a sidebar shows 'Tank A' with Total Used 98.00 and Level 52.00, 'Tank B' with Total Used 0.00 and Level 150.00, and 'Reactor' with Total Used 0.00 and Level 98.00. Below this is the 'Accumulator Target Values' section with Tank A at 100.00, Tank B at 75.00, and Reactor at 0.00. The main area is titled 'Tank A & B' and 'Reaction / Drain'. It shows two tank diagrams with flow meters. Tank A's flow meter is at 0.00. Tank B's flow meter is at 0.00. Below the diagrams are control buttons for 'Tank A' and 'Tank B'. For Tank A, the 'COMMAND' is 'NONE', 'MD Attr' is 'OPERATOR', 'FV101' is 'CLOSED', and 'PMP101' is 'STOP'. For Tank B, the 'COMMAND' is 'NONE', 'MD Attr' is 'OPERATOR', 'FV102' is 'CLOSED', and 'PMP102' is 'STOP'. A red arrow points to the 'FV102' status, which is circled in red.

Component	Value
Tank A Total Used	98.00
Tank A Level	52.00
Tank B Total Used	0.00
Tank B Level	150.00
Reactor Total Used	0.00
Reactor Level	98.00
Tank A Accumulator Target	100.00
Tank B Accumulator Target	75.00
Reactor Accumulator Target	0.00
Tank A FV101	CLOSED
Tank A PMP101	STOP
Tank B FV102	CLOSED
Tank B PMP102	STOP

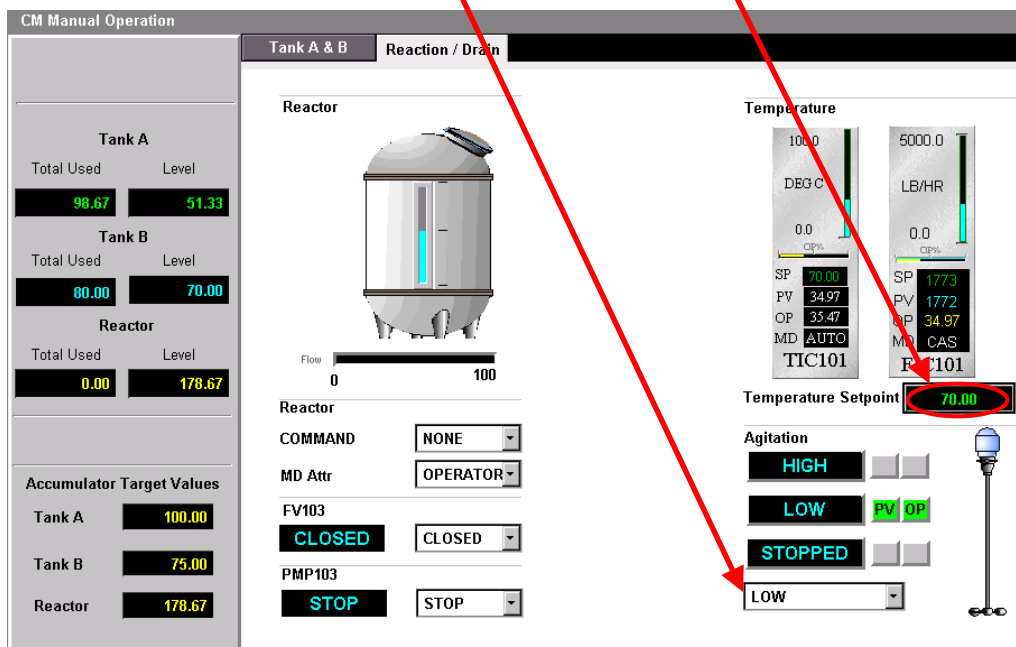
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Step 6. Start the reaction

1. **Wait** for Ingredient B to shut off automatically due to interlocks.
2. Enter the reactor temperature target of 70 Degrees by changing the SP of CM#_TIC101 to 70.
3. Change the agitator from low to high speed.



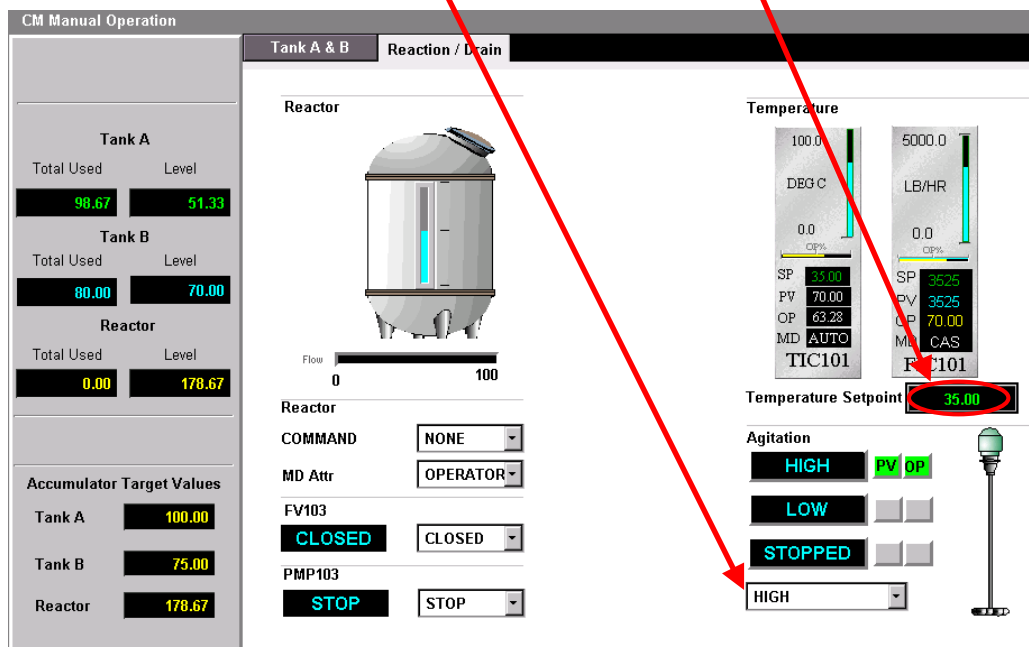
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Step 7. Complete the reaction

1. **Wait** for the temperature to reach 70 Degrees.
2. Enter a reactor temperature target of 35 Degrees by changing the SP of CM#_TIC101 to 35.
3. Change the agitator from high to low speed.



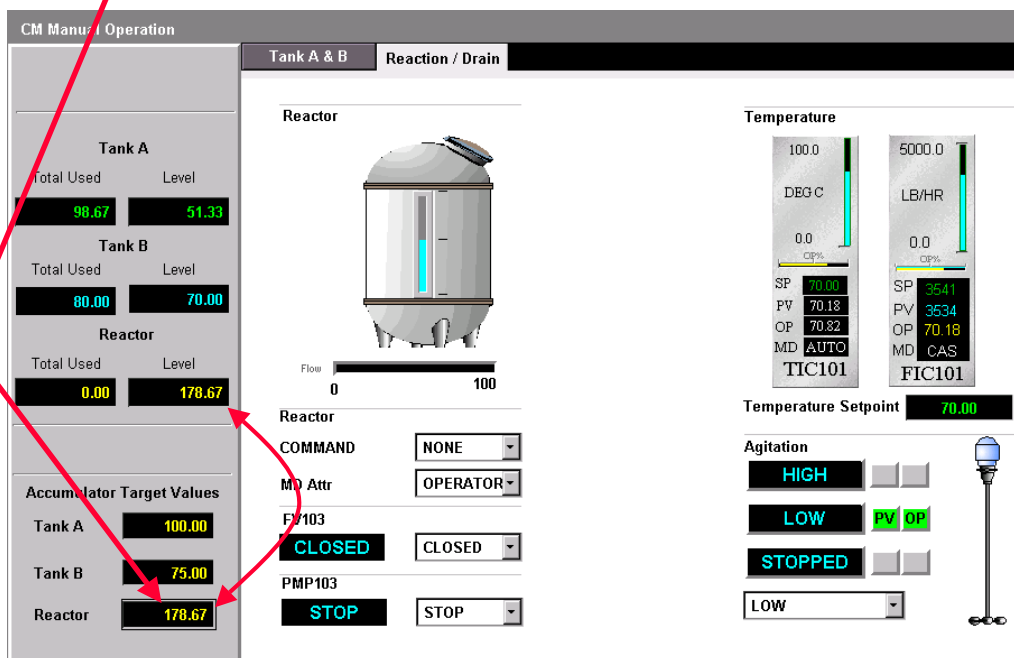
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Step 8. Drain the reactor

1. Enter the reactor drain target amount. It will be equal to the reactor level.



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Step8. Drain the reactor

1. Open CM#_FV103 and Start CM#_PMP103. (Remember the 5 second delay in the valve opening. The pump is interlocked closed until the valve is open.)
2. Wait for the interlocks to stop the agitator, close CM#_FV103, and stop CM#_PMP103

CM Manual Operation

Tank A & B Reaction / Drain

Tank A
Total Used Level
98.67 51.3

Tank B
Total Used Level
80.00 70.00

Reactor
Total Used Level
0.00 178.67

Accumulator Target Values
Tank A 100.00
Tank B 75.00
Reactor 178.67

Reactor

Reactor Level: 0 to 100

Reactor COMMAND: NONE
MD Attr: OPERATOR
FV103: CLOSED
PMP103: STOP

Temperature

TIC101: SP 35.00, PV 43.01, OP 38.99, MD AUTO
FIC101: SP 1951, PV 2179, OP 43.01, MD CAS

Temperature Setpoint: 35.00

Agitation
HIGH
LOW
STOPPED
LOW

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This completes....

PlantScape Controller Implementation

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