
Honeywell

PlantScape Process Operations

Lesson 1

Manual Process Operation

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Notes

Introduction

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. These will enable you to perform all the steps required to create a product. The display names are C#_OP1, C#_OP2, and C#_Process. The lab uses C#_OP1 and C#_OP2, and later we will use C#_Process.

After you become familiar with the process, you will practice operating from groups. You have three groups configured for your use: Groups #1, #2 and #3.

Objectives

- ❶ Combine two substances to create a product using Custom Displays.
- ❷ Combine two substances to create a product using Groups.



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. The left sidebar shows the status of Tank A, Tank B, and the Reactor. The main area is divided into two columns for Tank A and Tank B. Each column contains a tank diagram, a flow scale, and control parameters. Arrows indicate that the 'MD Attr' dropdowns for both tanks are set to 'OPERATOR'.

Tank A		Tank B	
Total Used	0.00	Total Used	0.00
Level	150.00	Level	150.00
Reactor		Reactor	
Total Used	0.00	Total Used	0.00
Level	0.00	Level	0.00
Accumulator Target Values		Accumulator Target Values	
Tank A	0.00	Tank A	0.00
Tank B	0.00	Tank B	0.00
Reactor	0.00	Reactor	0.00

Tank A		Tank B	
COMMAND	NONE	COMMAND	NONE
MD Attr	OPERATOR	MD Attr	OPERATOR
FV101	CLOSED	FV102	CLOSED
PMP101	CLOSED	PMP102	CLOSED

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Notes



Step 1. Preparing the CMs

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

CM Manual Operation

Tank A & B Reaction / Drain

Tank A

Total Used	Level
0.00	150.00

Tank B

Total Used	Level
0.00	150.00

Reactor

Total Used	Level
0.00	0.00

Accumulator Target Values

	Value
Tank A	0.00
Tank B	0.00
Reactor	0.00

Reactor

Flow 0 100

Reactor

COMMAND: NONE

MD Attr: OPERATOR

FV103: CLOSED

PMP103: STOP

Temperature

100.0 DEG C

5000.0 LB/HR

0.0 CP%

SP: 35.00

PV: 35.00

OP: 35.44

MD: AUTO

TIC101

SP: 1772

PV: 1771

OP: 35.00

MD: CAS

FIC101

Temperature Setpoint: 35.00

Agitation

HIGH

LOW

STOPPED

STOPPED

PV OP

C#_OP2

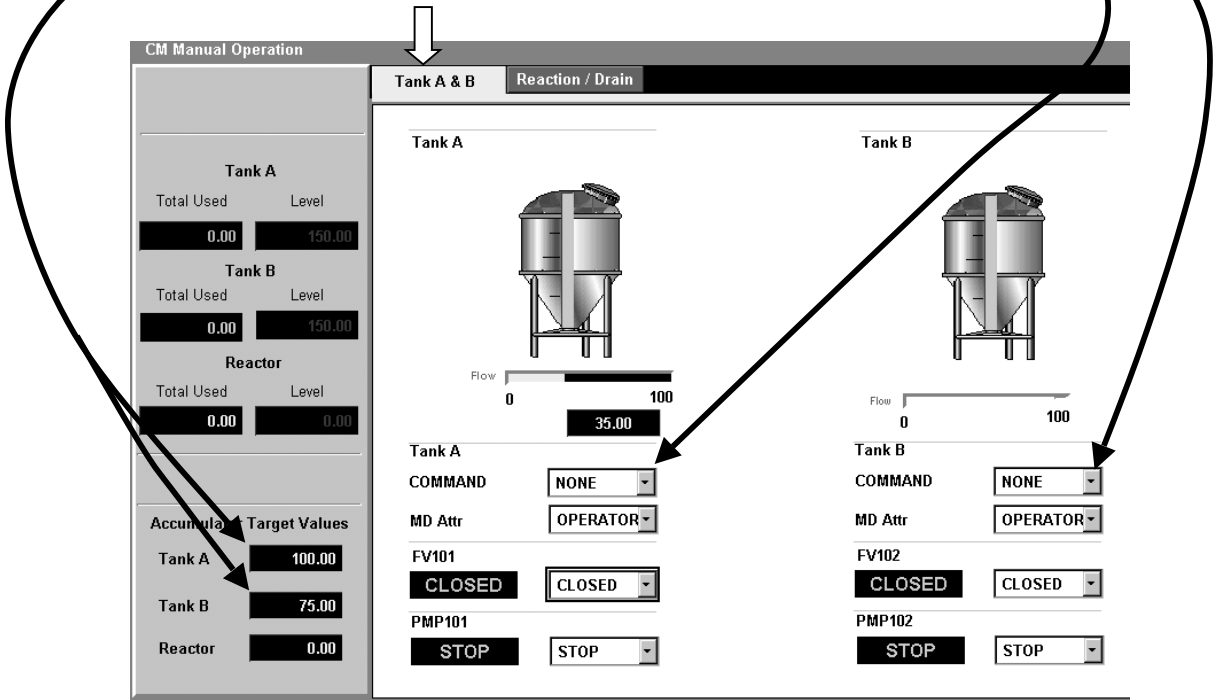
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Notes



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.



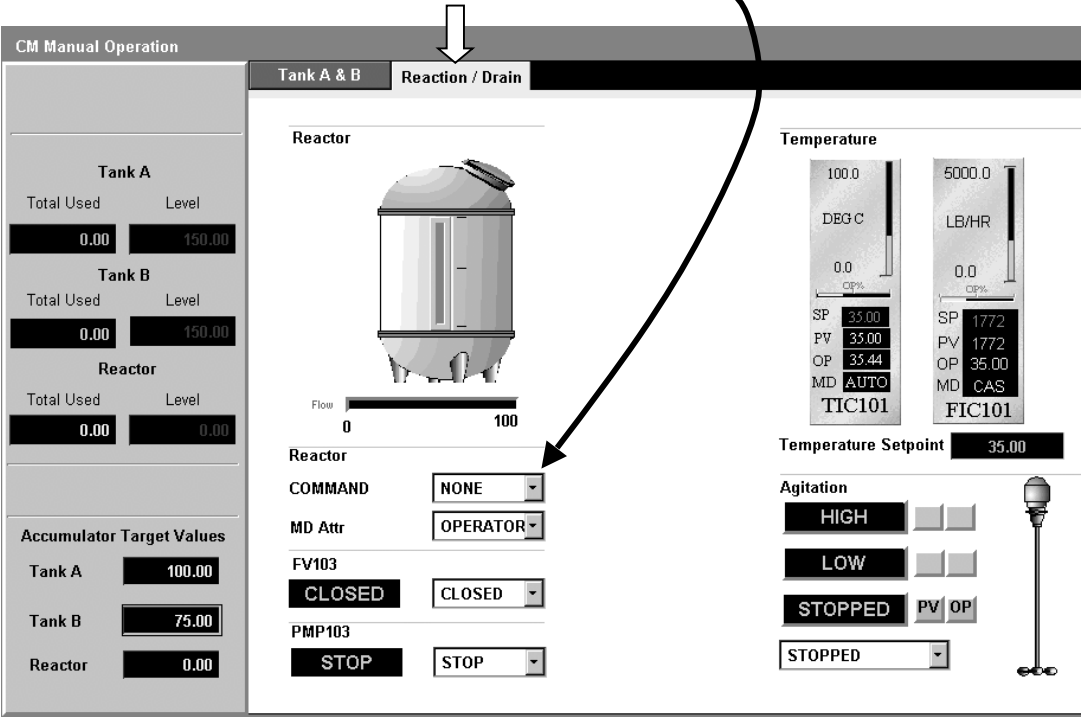
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Notes



Step 2. Preparing Tank Levels and Targets

1. **Reset** and **Start** the Totalizer for the reactor



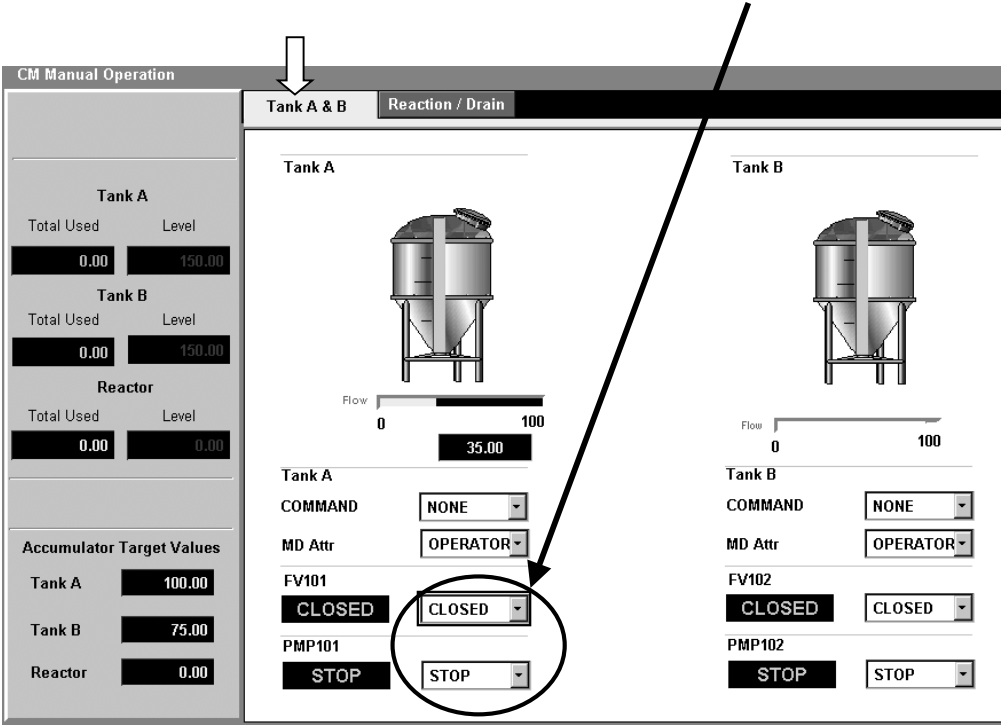
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Notes



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.)



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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 with Mode AUTO.)

The screenshot displays the 'CM Manual Operation' interface. On the left, a sidebar shows 'Tank A' and 'Tank B' status (Total Used: 0.00, Level: 150.00) and 'Reactor' status (Total Used: 0.00, 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 is titled 'Tank A & B' and 'Reaction / Drain'. It shows two tanks, Tank A and Tank B, with flow meters. Tank A's flow meter is set to 57.20. A pop-up window for 'CM_FV101RC' is open, showing a setpoint (SP) of 80.00, a process value (PV) of 57.20, and a mode of AUTO. The window also shows 'MD Attr' as OPERATOR and 'FV101' as OPEN. Below the tanks are controls for 'PMP101' (START) and 'PMP102' (STOP).

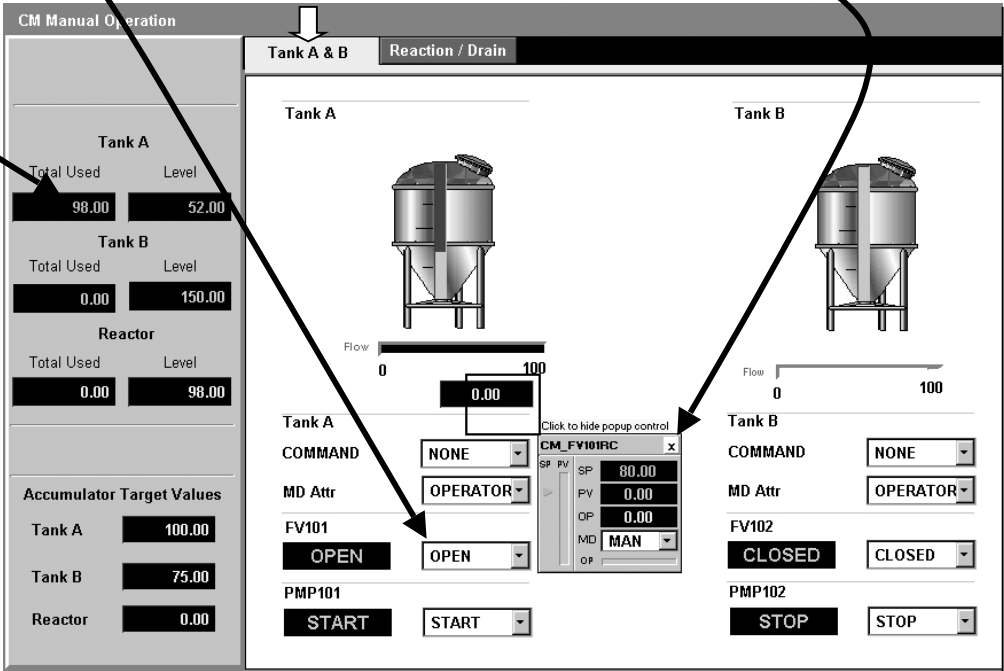
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Notes



Step 3. Charge Ingredient A

- When the total used of Ingredient A approaches the target of 100:
1. Close CM#_FV101. Interlocks will then stop the pump and close CM#_FV101RC (Mode to MAN, OP to 0.0)
 2. Click on the pop-up to clear it from the display.



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Notes



Step 4. Begin mixing

1. Start the agitator on low speed.

CM Manual Operation

Tank A & B

Reaction / Drain

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

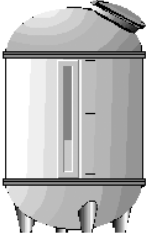
Tank B

75.00

Reactor

0.00

Reactor



Flow 0 100

Reactor

COMMAND

NONE

MD Attr

OPERATOR

FV103

CLOSED

CLOSED

PMP103

STOP

STOP

Temperature

100.0

DEG C

0.0

OP%

SP

35.00

PV

34.98

OP

35.44

MD

AUTO

TIC101

5000.0

LB/HR

0.0

OP%

SP

1772

PV

1773

OP

34.98

MD

CAS

FIC101

Temperature Setpoint

35.00

Agitation

HIGH


LOW

STOPPED

LOW

PV

OP



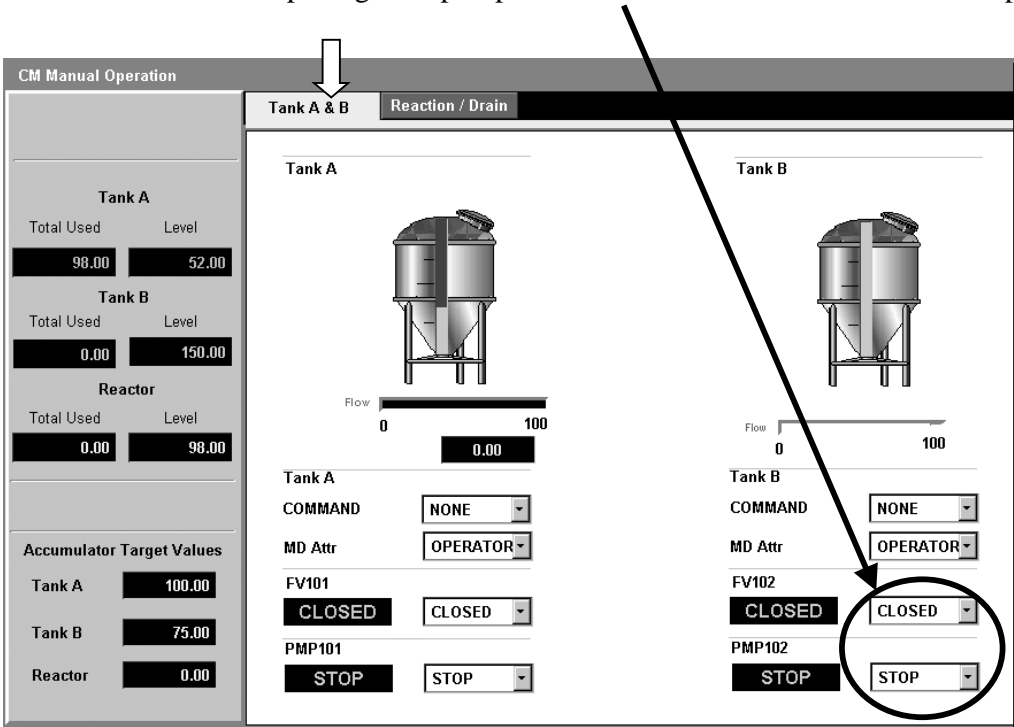
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Notes



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.)



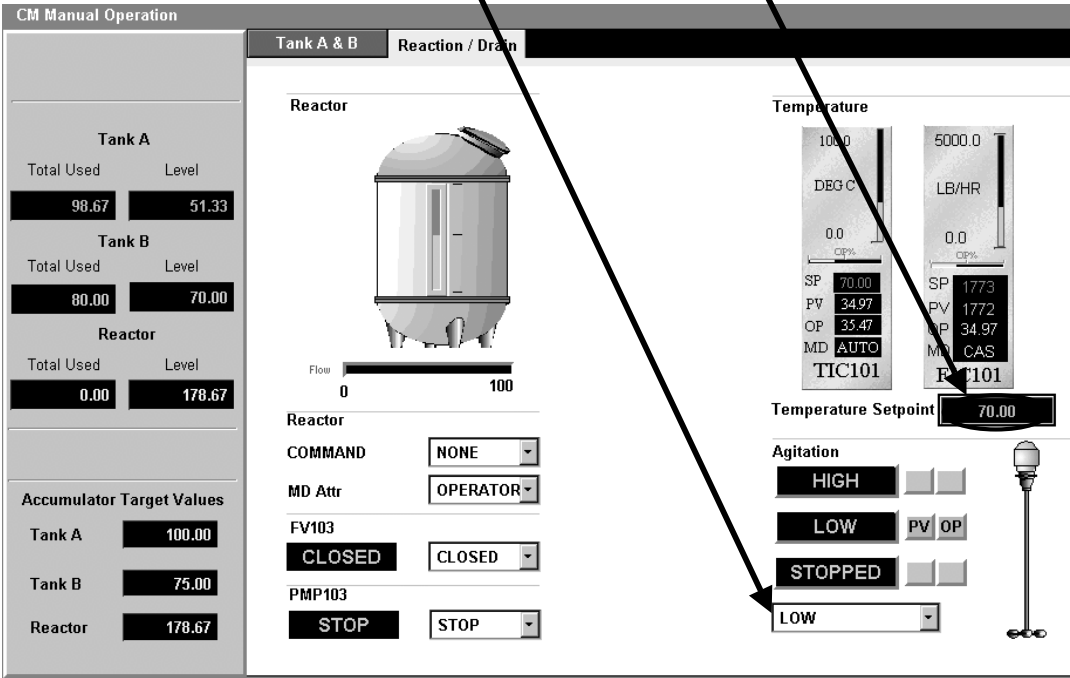
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Notes



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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Honeywell

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.

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: 98.67, Level: 51.33
 - Tank B:** Total Used: 80.00, Level: 70.00
 - Reactor:** Total Used: 0.00, Level: 178.67
- Accumulator Target Values:**
 - Tank A: 100.00
 - Tank B: 75.00
 - Reactor: 178.67
- Reactor Section:**
 - Reactor icon and a flow scale from 0 to 100.
 - Reactor COMMAND: NONE
 - MD Attr: OPERATOR
 - FV103: CLOSED
 - PMP103: STOP
- Temperature Section:**
 - Two vertical temperature scales. The left scale (TIC101) has a setpoint (SP) of 35.00 and a process value (PV) of 70.00. The right scale (R C101) has a setpoint (SP) of 3625 and a process value (PV) of 3625.
 - Temperature Setpoint: 35.00
- Agitation Section:**
 - Buttons for HIGH, LOW, and STOPPED.
 - Agitator speed is currently set to HIGH.

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Notes



Step 8. Drain the reactor

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

The screenshot displays the 'CM Manual Operation' interface with the 'Reaction / Drain' tab selected. On the left, a sidebar shows 'Accumulator Target Values' for Tank A (100.00), Tank B (75.00), and Reactor (178.67). The main area shows a 'Reactor' tank icon with a 'Flow' scale from 0 to 100. Below the icon are controls for 'COMMAND' (NONE), 'MD Attr' (OPERATOR), 'FV103' (CLOSED), and 'PMP103' (STOP). On the right, 'Temperature' controls show 'TIC101' (70.00) and 'FIC101' (3541). 'Agitation' controls show 'HIGH', 'LOW', and 'STOPPED' buttons. A 'Temperature Setpoint' field is set to 70.00. Arrows from the instruction point to the 'Reactor' level field (178.67) and the 'Reactor' drain target field (178.67).

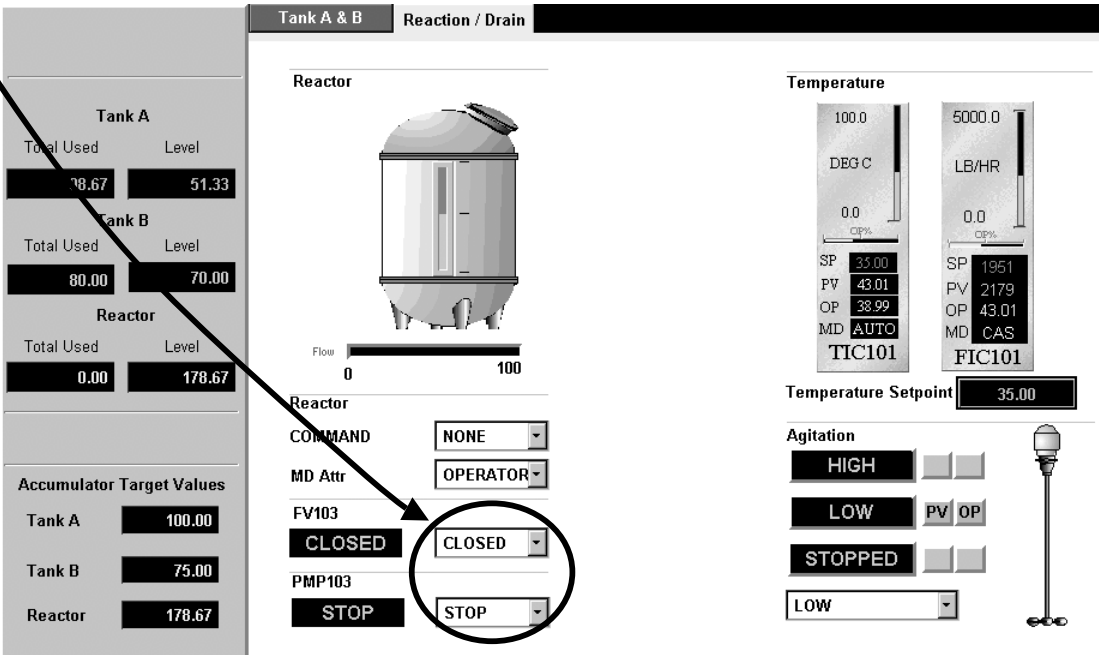
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Notes



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 interlocks to:1) stop the agitator; 2) close CM#_FV103; and 3) stop CM#_PMP103



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Notes



Operate from C#_Process and from Groups

After you have run enough batches from the lab using C#_OP1, and C#_OP2 to become familiar with the process:

1. Run a batch using C#_Process. This display allows operating the entire batch from one screen.
2. Call up groups #1, #2, and #3 and examine them.
3. Practice operating from Groups by running a batch using the three Groups.

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Notes



This completes....

PlantScape Process Operations

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