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2

3 Batch Control

4 Additional internal variable declarations:

Variables	Address	Data Type	
Run	%M1	BOOL	On while station running
Int_Reset	%M2	BOOL	Internal reset
Step_1 to Step_15	%T1 to %T15	BOOL	Step-in-progress bits
Stir_Tmr	%R1	INT[3]	Times stir step
Up_Tmr_Dn	%M3	BOOL	Opening up time done
BDown_Tmr_Dn	%M4	BOOL	Bottom cylinder deactivate done

5 Start/stop and initial start. During reset prevent start. Step 15 also unlatches Run.

6 START_PB %I00001 — Int_Reset %M00002 — STOP_PB %I00002 — Step_15 %T00015 — Run %M00001 (M)
Run %M00001

7 Run %M00001 — Step_1 %T00001 — Step_2 %T00002 — Step_3 %T00003 — Step_4 %T00004 — Step_5 %T00005 — Step_6 %T00006 — Step_7 %T00007 — Step_8 %T00008 — Step_9 %T00009 — Step_10 %T00010 — Step_11 %T00011 — Step_12 %T00012 — Step_13 %T00013 — Step_14 %T00014 — Step_15 %T00015 — Step_1 %T00001 (S)

8 Step 1 Fill tank

9 Step_1 %T00001 — T1F %I00005 — Step_1 %T00001 (R) — Step_2 %T00002 (S)

10 Step 3 Fill Tank 2

11 Step_3 %T00003 — T1F %I00005 — Step_3 %T00003 (R) — Step_4 %T00004 (S)

12 Steps 2 and 4 Wait for Tanks 1 and 2 to be full.

13 Step_2 %T00002 — T1F %I00005 — Step_4 %T00004 — T2F %I00007 — Step_2 %T00002 (R) — Step_4 %T00004 (R) — Step_5 %T00005 (S)

14 Step 5 Heat Tank 2

15 Step_5 %T00005 — TEMP %I00012 — Step_5 %T00005 (R) — Step_6 %T00006 (S) — Step_8 %T00008 (S) — Step_10 %T00010 (S)

16 Step 6 Empty Tank 1

17 Step_6 %T00006 — T1E %I00004 — T3F %I00009 — Step_6 %T00006 (R) — Step_7 %T00007 (S)

18 Step 8 Empty Tank 2

19 Step_8 %T00008 — T2E %I00006 — T3F %I00009 — Step_8 %T00008 (R) — Step_9 %T00009 (S)

20 Step 10 Wait for liquid in Tank 3

21 Step_10 %T00010 — T3E %I00008 — Step_10 %T00010 (R) — Step_11 %T00011 (S)

22 Steps 7, 9, 11 Wait for Tanks 1 and 2 to be empty and stirrer started

23 Step_7 %T00007 — T1E %I00004 — T3F %I00009 — Step_9 %T00009 — T2E %I00006 — T3F %I00009 — Step_11 %T00011 — Step_7 %T00007 (R) — Step_9 %T00009 (R) — Step_11 %T00011 (R) — Step_12 %T00012 (S)

24 Step 12 Stir Tank 3 for 90 seconds

25 Step_12 %T00012 — Run %M00001 — Step_12 %T00012 — ONDTR TENTHS Stir_Tmr %R00001 R, 900 PV — Step_12 %T00012 (R) — Step_13 %T00013 (S)

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26 Step 13 Transfer to Tank 4

27 Step_13 %T00013 | T4F %I00011 | T3E %I00008 → Step_13 R %T00013 | Step_14 S %T00014

28 Step 14 Empty Tank 4

29 Step_14 %T00014 | T4E %I00010 → Step_14 R %T00014 | Step_15 S %T00015

30 Step 15 Unlatch run

31 Step_15 %T00015 | Run %M00001 → Step_15 R %T00015

32 Physical Outputs - Cannot turn off heater or stirrer when paused.

33 Step_1 %T00001 | Run %M00001 → PUMP1 M %Q00001

34 Step_3 %T00003 | Run %M00001 → PUMP2 M %Q00002

35 Step_6 %T00006 → PUMP3 M %Q00003

36 Step_8 %T00008 → PUMP4 M %Q00004

37 Step_13 %T00013 → PUMP5 M %Q00005

38 Step_14 %T00014 → PUMP6 M %Q00006

39 Step_5 %T00005 → HEATER M %Q00007

40 Step_11 %T00011 | Step_12 %T00012 → STIRRER M %Q00008

41 Reset

42 RESET_PB %I00003 | Run %M00001 → Step_1 R %T00001, Step_2 R %T00002, Step_3 R %T00003, Step_4 R %T00004, Step_5 R %T00005, Step_6 R %T00006, Step_7 R %T00007, Step_8 R %T00008, Step_9 R %T00009, Step_10 R %T00010, Step_11 R %T00011, Step_12 R %T00012, Step_13 R %T00013, Step_14 R %T00014, Step_15 R %T00015

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