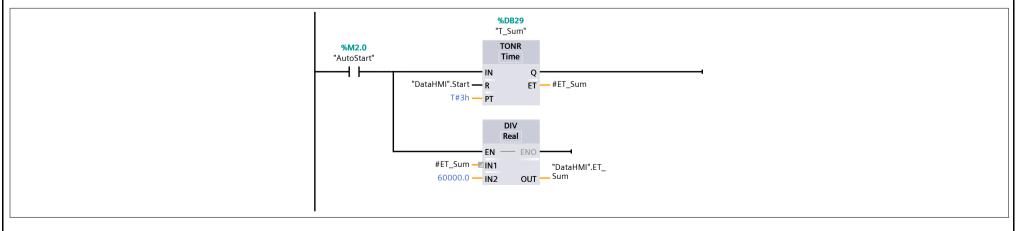
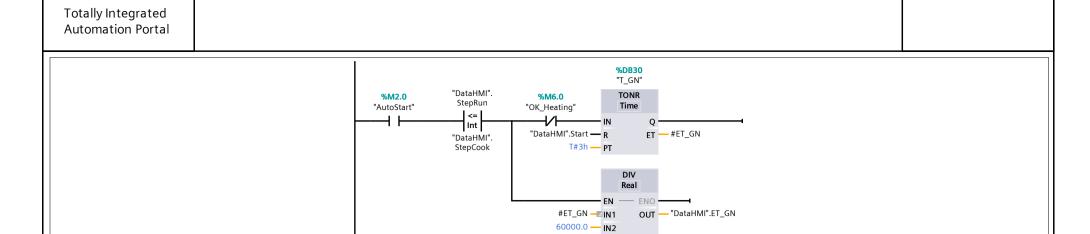
Totally Integ	rated								
Automation Portal									
Auto [FC3]	•								
Auto Properties	:								
General									
Name	Auto	Number	3		Type	FC		Language	LAD
Numbering	Automatic								
nformation	_								
Title	Chế độ chạy thanh trùng tự động	Author			Comment	Up	te Init: 18/02/2016 date1: 17/08/2016 date2: 24/08/2017 N	Family	
Version	0.1	User-defined ID							
Name		Data type		Default value		C	Comment		
Input		, , , ,							
Output									
InOut									
▼ Temp									
TempPre_	Real								
Temp_Dn		Real							
Temp_Up			Real						
Press_Dn	Real								
Press_Up	Real	Real							
ET_Time_	DInt	DInt							
ET_Time_ComeUp_CONV		Real							
PressDn_Ramp		Real	Real						
PressUp_Ramp			Real						
ET_Sum		DInt							
ET_GN			DInt						
T_Cool1_PhunSuong		DInt							
ET_Cool1		DInt							
Cool_TG		Real							
Constant		DInt							
Constant									
▼ Return									
Auto		Void							
Network 1: E	Bắt đầu chạy chương trìr	1	MI".Start	"DataHMI".Pause			%M2.0 "AutoStart"		
Notwork 2: S	'ton chuarag trình		//2.0 oStart"						
network 2: 5	itop chương trình	1					%M3.3		
		"DataH	MI".Stop	0 — IN	OVE ENO "DataHMI". OUT1 — StepRun		"aFinish" { S }		

Network 3: Tính tổng thời gian



Network 4: Tính thời gian gia nhiet



Network 5: Reset khi chay tu dong

```
%M8.1
                "DataHMI".
                                                                "mTestPhunSuon
 %M2.0
                 StepRun
"AutoStart"
                                                                 RESET_BF )—
                  Int
%M11.7 "Reset_V1"
                                                                     30
                                                                   %M11.3 "P_1"
                  %M3.3
                 "aFinish"
                                                                 RESET_BF )—
                                                MOVE
                                                EN - ENO
                                           0 — IN
                                                               %QW128
                                                              - "aqAir"
                                                       OUT1
                                                               %QW132
                                                       OUT2
                                                              – "aqSteam"
                                                              %QW130
                                                    OUT3 — "aqVent"
                                                   MOVE
                                                EN -
                                                       - ENO
                                          0.0 —
                                                - IN
                                                               "DataHMI".PV_
                                                    d OUT1 — Time
                                                                    %M3.3
                                                                   "aFinish"
```

Network 6: A1.1: ĐK van cấp nước (Phun sương)

```
%10.2
                      "DataHMI".
                                            %M2.0
                                                                                     %M3.5
                                                                                                         %M2.1
                    Mode_Phun_Xi
 "iLevelLow"
                                          "AutoStart"
                                                             "T_WaitSter".Q
                                                                                    "aDrain"
                                                                                                     "aVanCapNuoc"
                                                                                      <del>-</del>//-
                                                                 ---
                                                                                                         \leftarrow \succ
   %M2.1
"aVanCapNuoc"
```

Network 7: A1.3: Mo bom cap nuoc (Phun suong)

Khi bom du luong luong thi se dung bom cap nuoc

```
"aVanCapNuoc" "iLevelLow" Mode_Phun_Xi "AutoStart" "aBomCapNuoc"
```

Network 8: A2.1: Mo van phun suong (Phun suong)

Khi du muc nuoc thi se bat bom phun suong

```
%I0.2
"iLevelLow"
                       "DataHMI".
Mode_Phun_Xi
                                                   %M2.0
"AutoStart"
                                                                                                     %M4.1
"Err_LTemp"
                                                                                                                               %M2.4
"aVanPhun"
                                                                               %M4.0
                                                                           "Err_HTemp"
                             <del>-</del>1/1-
                                                      \dashv \vdash
                                                                                <del>-//</del>}
                                                                                                                                                      %DB6
"T_PhunSuong"
  %M2.4
"aVanPhun"
                                                                                                                                                             TON
                                                                                                                                            T#1s — PT
                                                                                                                                                                    ET — T#0ms
```

Network 9: A2.2: Mo bom phun suong (Phun suong)

Sau khi da mo van phun suong 1 s

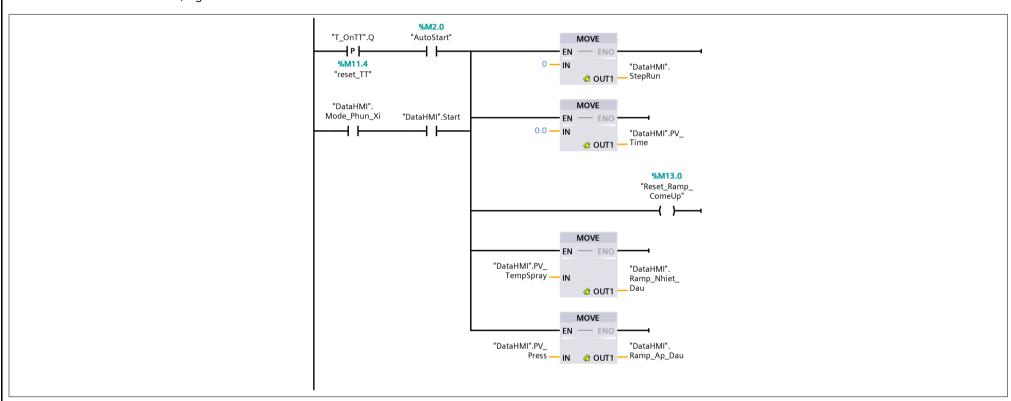
```
#DB26
"T_OnTT"

TON
Time

T#3s PT ET T#0ms
```

Network 11: A3: Bat dau qua trinh thanh trung

Neu Time BK >0 thi co bai khi, nguoc lai thi GN1



Network 12: Thông số toàn bộ 20 bước chạy

Totally Integrated **Automation Portal** Network 12: Thông số toàn bộ 20 bước chạy %M2.0 "DataHMI". Mode_Phun_Xi "AutoStart" Auto (Real) EN - ENO #TempPre_ "DataHMI". TempSet -IN1 OUT "DataSetting". OffPerHeat_TT_ Phun _ -IN2 "DataHMI". Mode_Phun_Xi Auto (Real) EN - ENO "DataHMI". #TempPre_ TempSet -IN1 - ComeUp OUT -"DataSetting". OffPerHeat_TT_ Xi _ IN2 MOVE Auto (Real) MOVE EN - ENO EN - ENO OUT — #Temp_Dn "DataHMI". "DataHMI".PV_ "DataHMI".PV_ #TempPre_ "DataHMI". - IN 👍 OUT1 — Temp - IN 👍 OUT1 — Temp_PreHeat TempSet _ TempSpray _ "DataSetting". OffTempSterD_TT — IN2 SUB SUB SUB Auto (Real) Auto (Real) Auto (Int) EN - ENO EN - ENO EN --- ENO OUT — #Press_Dn OUT — #Press_Up "DataHMI". "DataHMI". "DataHMI". %MW10 PressSet — IN1 StepCook — IN1 OUT — "PreCooling" PressSet — IN1 0.03 — IN2 0.03 — IN2 1 — IN2 MOVE MOVE MOVE 0.0 — IN "DataSetting". Per_TT — IN 0.0 — IN "Control_Temp". "Control_Temp". "Control_Vent". Config.
Config.
OUT1
OutputLowerLimit Config.
Config.
OUT1
OutputUpperLimit Config.
Config.
OUT1 — OutputLowerLimit %M12.5 "DataHMI". "Ena_Ramp_ ComeUp" Real 0.0 MOVE MOVE MOVE EN - ENO "DataHMI". "DataHMI". "DataHMI". "DataHMI". "DataHMI". PressSet — IN 📥 OUT1 — Ramp_Ap_Cuoi RampRun — IN Ramp_Nhiet_ Ramp_Nhiet_ - OUT1 — Cuoi ₫ OUT1 — Time "DataHMI".PAirST — IN 0.0 — IN "DataHMI". "Control_Air". "Control_Air". "Control_Vent". Config.

d OUT1 — OutputUpperLimit PVentST __ Config. Config. d OUT1 — OutputUpperLimit OutputLowerLimit

Network 13: Kiem tra tgian thiet lap che do va reset TG_ dem

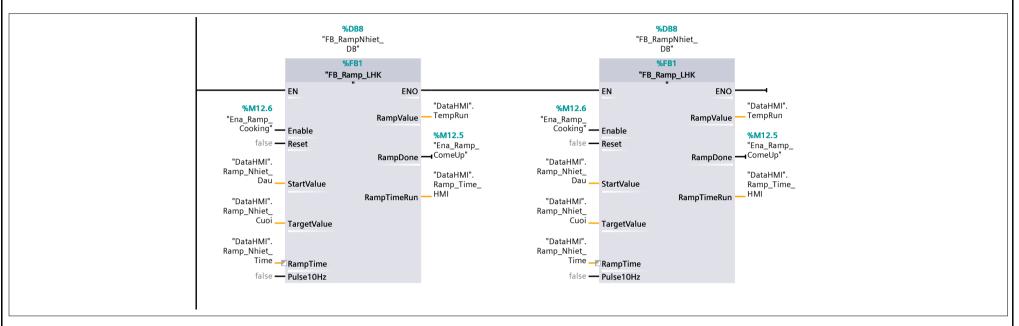
Hàm Ramp Nhiệt Reset hàm ramp Set nhiệt độ hiện tại làm giá trị đầu

Totally Integrated **Automation Portal %DB27**"Ti_GN1" "DataHMI" TON %M2.0 StepRun "AutoStart" <> Int ET — T#0ms T#1s — PT "Ti_GN1".ET "Ti_GN1".ET MOVE > Time | < |Time 0.0 — IN "DataHMI".PV_ OUT1 — Time %M13.0 "Reset_Ramp_ ComeUp" MOVE - ENO "DataHMI".PV_ "DataHMI". TempSpray Ramp_Nhiet_ d OUT1 — Dau MOVE "DataHMI".PV_ "DataHMI". Press — IN 🍓 OUT1 — Ramp_Ap_Dau Network 14: Heating: Điều khiển van cấp hơi ON cho toi khi cach diem dat 3 do thi OFF "DataSetting". Ena_PreHeat_ TT "DataHMI". StepRun "DataHMI".PV_ %M2.0 %M3.2 TempSpray "AutoStart" "aPreHeat" <= Int Real #TempPre_ "DataHMI". StepCook ComeUp Network 15: Heating: Điều khiển van xả nước nhỏ "DataHMI". %M2.0 "DataHMI". %10.4 %M14.7 StepRun "AutoStart" Mode_Phun_Xi "iLevelHi" "aDrainSmall" <= Int "DataHMI" Network 16: PID Nhiệt : Điều khiển qua van TT hơi "DataHMI". StepRun %M6.2 %M2.0 "EnaPID_Temp" "AutoStart" **⊣** ⊢ Int "DataHMI". StepCook Network 17: PID Xả Áp : Điều khiển qua van TT thông %M12.7 "DataHMI". "DataHMI".PV_ "Ena_Ramp_ StepRun Pressure Mode_Phun_Xi "AutoStart" Cooling" "EnaPID_Vent" l <= l l >= l Int "DataHMI". StepCook Real #Press_Up **%M12.7**"Ena_Ramp_ Cooling" "DataHMI".PV_ "DataHMI". StepRun <= Real #PressDn_Ramp "DataHMI". StepCook Network 18: PID Cấp Áp : Điều khiển qua van TT khí nén

Totally Integrated Automation Portal

```
%M12.7
                     "DataHMI".
                                                                                  "DataHMI".PV_
                                                              "Ena_Ramp_
Cooling"
  %M2.0
                                         "DataHMI".
                                                                                                           %M6.4
                      StepRun
                                                                                     Pressure
"AutoStart"
                                        Mode_Phun_Xi
                                                                                                        "EnaPID_Air"
                       <=
Int
                                                                                     Real
                     "DataHMI"
                                                                                    #Press_Up
                     StepCook
                                                              %M12.7
"Ena_Ramp_
Cooling"
                                                                                  "DataHMI".PV_
                     "DataHMI".
                      StepRun
                                                                                     Real
                                                                                 #PressUp_Ramp
                     "DataHMI"
StepCook
```

Network 19: Ramp Nhiệt _ Áp



Network 20: Cooling: Điều khiển van Bypass

Mo van Bypass lan 1 va đóng van phun giải

```
"DataHMI".
StepRun
                                                                                  %M3.6
  %M2.0
                                      "T_OffBPC1".Q
"AutoStart"
                                                                                 "Err_Nap"
                    "DataHMI"
StepCook
                                        "T_OFF3".Q
                                                                               %DB32
"T_OffBPC1"
                                      "DataHMI".PV_
Pressure
                                                            "DataHMI".
                                                          Mode_Phun_Xi
                                         >=
Real
                                                                              - IN
                                                                     T#3s — PT
                                                                                         ET — T#0ms
                                        #Press_Dn
                                                                                  %DB49
                                                                                 "T_OFF3"
                                                                                   TOF
                                      "T_PhunSuong_
                                                            "DataHMI".
                                        Cool1".Q
                                                          Mode\_Phun\_Xi
                                                                                  Time
                                                                              - IN
                                                                                         ET — T#0ms
                                                                     T#3s — PT
```

Network 21: Cooling: Điều khiển van Cool + Bơm Cool

```
"DataHMI".
                                "DataHMI".PV_
                  StepRun
                                  Pressure
"AutoStart"
                                                                  MOVE
                  | >
|nt
                                  >=
Real
                                                                  "DataSetting".

Out_Cool
                                                          100.0 — IN
                 "DataHMI".
                                  #Press_Dn
                 StepCook
                                "DataHMI".PV_
Pressure
                                                                  MOVE
                                   <
Real
                                                                  EN -
                                                           50.0 — IN
                                                                                 "DataSetting".
                                  #Press_Dn
                                                                   OUT1 — Out_Cool
                                                                     %M3.1
                                                                   "aBomCool"
```

Network 22: Đếm thời gian giữa Hold

Totally Integrated **Automation Portal %DB7**"Timer_ComeUp" "DataHMI". "DataHMI".PV_ TONR %M2.0 %M14.3 TempSpray "AutoStart" "Run_Ramp_Ap" <= Int · IN Real "Ti_GN1".Q — R "DataHMI". StepCook #ET_Time_ #Temp_Dn T#5h — PT DIV Real CONV Dint to Real "DataHMI". Mode_Phun_Xi %M6.0 "OK_Heating" EN #ET_Time_ #ET_Time_ #ET_Time_ "DataHMI".PV_

%M6.0

ComeUp_CONV __

60000.0 — IN2

_Time

OUT

ComeUp_CONV

OUT

```
>
Int
                        <=
Real
                                                                 StepRun
                                                                                   "OK_Heating"
                                                                                       "DataHMI".
StepCook
                      #Press_Up
                                                                  Int
                                                               "DataHMI".
StepCook
  %M6.1
"OK_Cooling
                                                               "DataHMI".
StepRun
                                                                                      %M6.1
                                                                                   "OK_Cooling"
                                                                  \leftarrow
                                                                "DataHMI".
                                                                StepCook
                                                             "DataHMI".PV_
Time
                                                                                                            ADD
                                                                                                          Auto (Int)
                                                               "DataHMI".
TimeSet
                                                                                                                         "DataHMI".
                                                                                         "DataHMI".
                                                                                           StepRun -
                                                                                                                         _ StepRun
                                                                                                        IN1
                                                                                                                 OUT
                                                                                                       IN2 🁛
```

"DataHMI".

Network 23: Mode Lon: Cho ap OK thi cap nuoc

"DataHMI".PV_

%M14.3

"Run_Ramp_Ap"

"DataHMI".

Khi áp dang tang va cap nuoc cho toi muc giua

```
%DB4
"T_LonCooling"
"DataHMI".
StepRun
                                                                  "DataHMI".PV_
Pressure
                                                                                                                     TON
                        %M2.0
                                             "DataHMI".
                       "AutoStart"
                                           Mode_Phun_Xi
                                                                      >=
Real
  Int
                                                                                                     T#10s — PT
                                                                                                                            ET -
                                                                     "DataHMI"
PressSet
```

Network 24: Mode Lon: Nạp khí nén lúc đầu

```
"DataHMI".
Mode_Phun_Xi
                                            %M10.1
"Xi_VanNuoc"
                                                                                               %M14.5
"Xi_Khi"
 %M2.0
"AutoStart"
                                                                                                 ⊣ ⊢
                                                %M10.5
                                             "Xi_VanPhun"
```

Network 25: Mode Lon: B1 _ Mở van cấp nước và van phun

Mở bơm nước từ từ cho tới khi áp đã đủ

```
"DataHMI".
                                                          "DataHMI".
Mode_Phun_Xi
                                           %M2.0
                                                                                  %M10.3
                                                                                                      %10.2
                                                                                                                         %M10.1
"T_LonCooling".ET
                       StepRun
                                         "AutoStart"
                                                                                  "P_Low"
                                                                                                   "iLevelLow"
                                                                                                                      "Xi_VanNuoc"
    >=
Time
                        Int
     T#2s
   %M10.1
 "Xi_VanNuoc"
```

Network 26: Mode Lon: B2 _ Lon DK ap thap

```
Totally Integrated
   Automation Portal
                                                                                          "DataHMI".PV_
                                                                        "DataHMI".
Mode_Phun_Xi
                                                                                                                                                   %M10.2
                                                                                                                                                 "P_OFFBom"
                                                                                              <
Real
                                                                                                                                                    <del>(</del> )-
                                                                                            #Press_Dn
                                                                                           %M10.2 "P_OFFBom"
                                                                                                                                                   %M10.3
                                                                                                                                                   "P_Low"
                                                                                              \dashvP\vdash
                                                                                                                                                    -( )-
                                                                                             %M11.6
                                                                                          "Reset_OffBom"
Network 27: Mode Lon: B3 _ DK bom cap nuoc theo ap va muc
                                                                                            "DataHMI".
StepRun
                                                                                                            "DataHMI".
Mode_Phun_Xi
                                                                           %M2.0
                                                                                                                                                    %10.3
                                                                                                                                                                     %M10.4
                                                     "T_LonCooling".ET
                                                                                                                                                 "iLevelMid"
                                                                          "AutoStart"
                                                                                                                            "T\_MucCooling".Q
                                                                                                                                                                  "Xi_BomNuoc"
                                                         >=
Time
                                                                                              == |
Int |
                                                                            + +
                                                                                                                                                                      %MW10
                                                                                           "PreCooling"
Network 28: Mode Lon: Delay Bom Phun Suong
                                                                                                                                                "Timer_BomPS"
                                                                          "DataHMI".
StepRun
                                                                                                            "DataHMI".PV_
Pressure
                                                       %M2.0
"AutoStart"
                                                                                          "DataHMI".
Mode_Phun_Xi
                                                                                                                              %M10.5
"Xi_VanPhun"
                                                                                                                                                    TON
                                                                                                                                                    Time
                                                                            ==
Int
                                                                                                                                       T#10s — PT
                                                                                                                                                          ET — T#0ms
                                                                                                              #Press_Dn
                                                                         "PreCooling"
Network 29: Mode Lon: B4 _ ĐK van phun sương
Khi nhiệt đạt đủ đk
                                      "DataHMI".
                                                          %10.2
                                                                            %M3.5
                                                                                           "DataHMI".
                                                                                                                                 %M3.7
                                                                                                                                                                     %M4.1
                                       StepRun
                                                                                                                               "Err_HLevel"
                                                       "iLevelLow"
                                                                           "aDrain"
                                                                                          Mode_Phun_Xi
                                                                                                              "AutoStart"
                                                                                                                                                                                    "Xi_VanPhun"
                                                                                                                                                 "Err_HTemp"
                                                                                                                                                                   "Err_LTemp"
                                        == |
Int |
                                                                                                                                                                                        \leftarrow
                                     "PreCooling"
                                       %M10.5
                                     "Xi_VanPhun"
Network 30: Mode Lon: B4 _ DK Bom Phun Suong
                                               "DataHMI".
StepRun
                                                                                 "DataHMI".PV_
Pressure
                                                                %M10.5
"Xi_VanPhun"
                                                                                                                        %M10.3 "P_Low"
                                                                                                                                          %M3.5
"aDrain"
                                                                                                                                                           %M2.0
"AutoStart"
                                                                                                                                                                           %M10.6
"Xi_BomPhun"
                                                                                                  "Timer_BomPS".ET
                                                ==
Int
                                                                                                     >=
Time
                                                                                                                                                                               \prec \succ
                                                                                    Real
                                                                                   "DataHMI".
PressSet
                                              "PreCooling"
                                                %M10.6
                                             "Xi_BomPhun"
                                                "DataHMI".
                                                               "DataHMI".
Mode_Phun_Xi
                                                StepRun
                                              %MW10
"PreCooling"
Network 31: Mode Lon: B5 _ Cho ap on dinh thi mo van lam nguoi
```

Network 32: Dem thoi gian phun suong xi hoi

Network 33: Điều Kiển Van Cooling

Network 33: Điều Kiển Van Cooling

```
CALCULAT
                                                                                                                             ROUND
 %M2.0
                  %M3.4
"AutoStart"
                                                            R€al
                                                                        Real to DInt
                 "aVCool"
                                                                                                                  - EN
                                                                                                                                          ENO
                                                                                                                                          OUT — #Cool_TG_INT
                                                                                                       #Cool_TG — IN
                                                 OUT := IN1*IN2/IN3
                                  "DataSetting".
Out_Cool — IN1
                                                                        OUT — #Cool_TG
                                      27648.0 — IN2
                                        100.0 — IN3 👛
                                                 "DataHMI".
                                                                MOVE
                                  H NOT |
                                                                - EN -
                                                                               %QW134
                                                                    d OUT1 ── "aqCool"
               MOVE
               - EN
                     - ENO
#Cool_TG_INT — IN
                             %QW134
                   d OUT1 -
```

Network 34: D1: Xả nước

```
"DataHMI".PV_
Pressure
  %M3.5
                    %M2.0
                                       %M3.3
                                                                            %M3.5
 "aDrain"
                  "AutoStart"
                                      "aFinish"
                                                                           "aDrain"
                                                          Real
 %M15.0
"OK_Xa_Ap_
Ket_Thuc"
                                                                           %M15.0
                                                      "DataHMI".PV_
                                                                         "OK_Xa_Ap_
Ket_Thuc"
                                                        Pressure
                                                          >
Real
                                                                            \prec \succ
                                                                            %DB21
                                                                           "T_Drain"
                                                                             TON
                                                         %10.2
                                                                                              %M3.3
                                                       "iLevelLow"
                                                                            Time
                                                                                             "aFinish"
```

Network 35: Dùng bơm phun sương ở bước Cool4

Khi nhiệt độ thực bước Cool4 bằng nhiệt độ cài đặt HMI thì cho dừng bơm phun sương để không tạo áp nồi

```
*M2.0 "DataHMI".PV_ "mDungBomphun suong"

| Can be be be been depicted by the second state of the second s
```