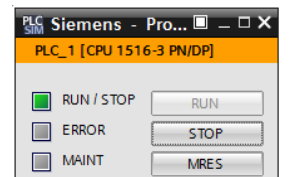
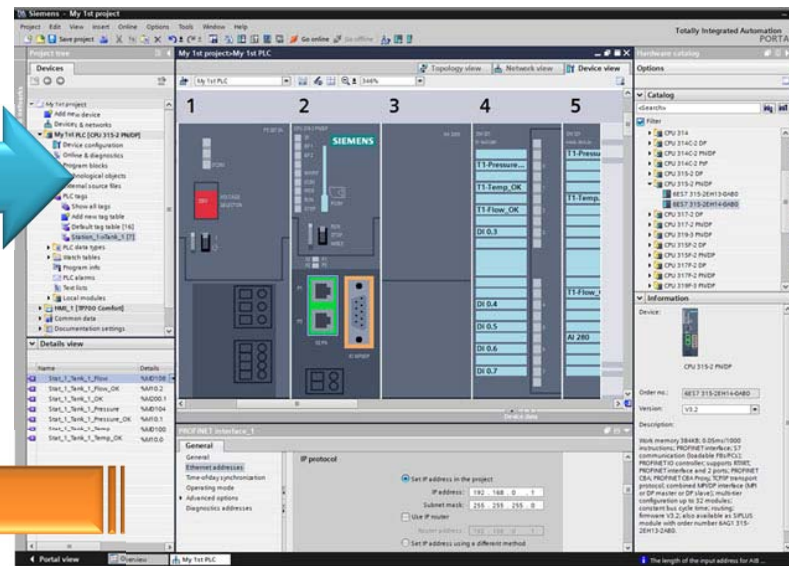
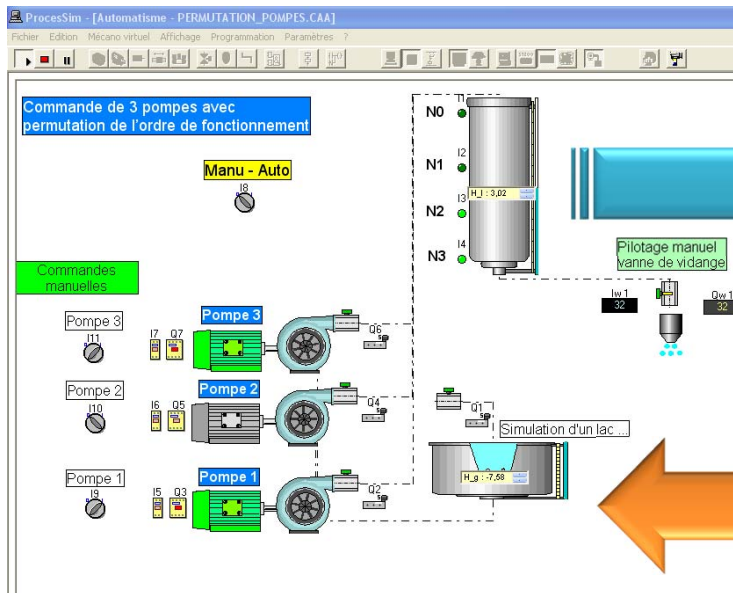


# ProcesSim – *Nieuwigheden 2016*

# Verbinding met de programmeerbare automaten ( PLC) SIEMENS SIMATIC S7-1200/300/1500/400 & PLCSIM via TIA V13-SP1-Upd5



# Fabrice SCOPEL

Emails : [fabrice.scopel@heh.be](mailto:fabrice.scopel@heh.be)

**Paul FELIQUE**

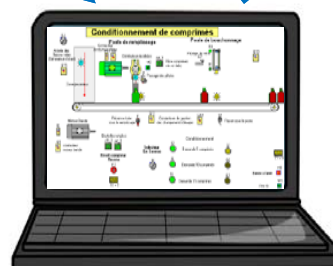
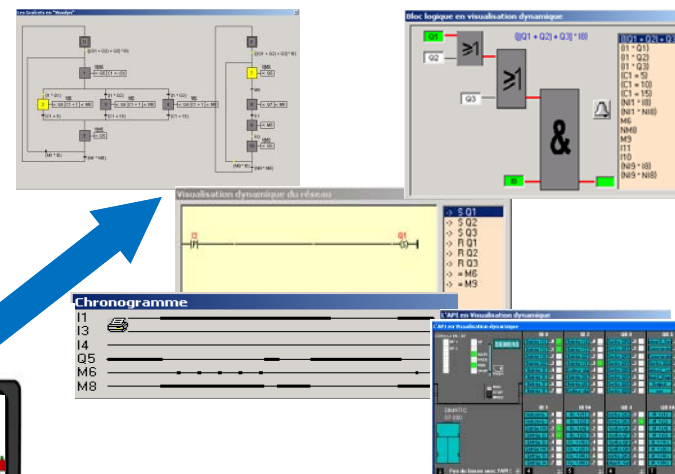
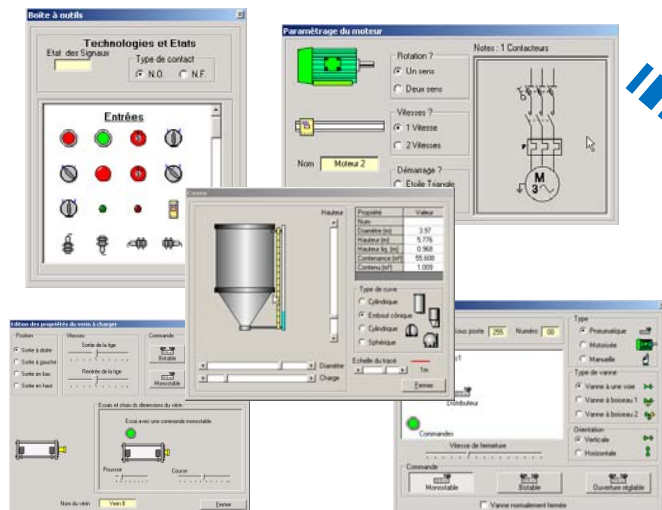
paul.felique@skynet.be



# Concept

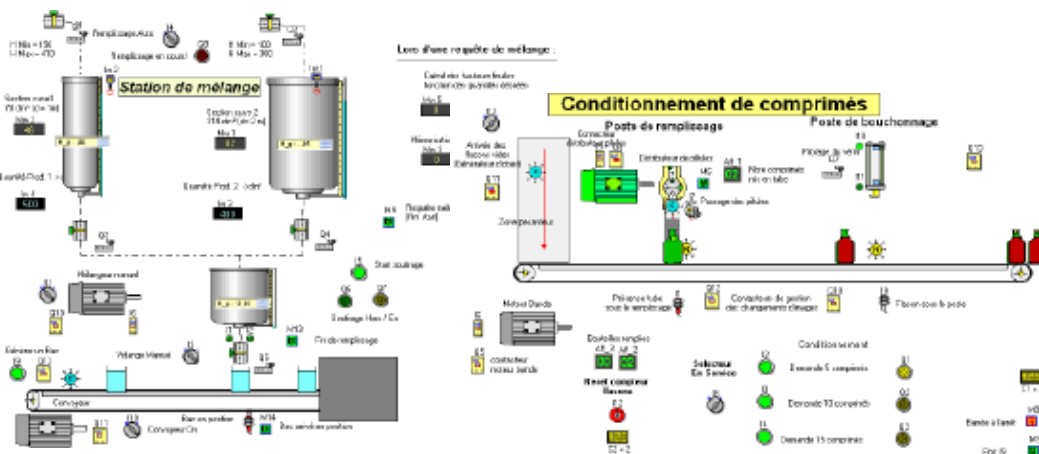
Tools voor analyse

**Virtuele tool**  
**Op basis van standaard**  
**Proces onderdelen.**

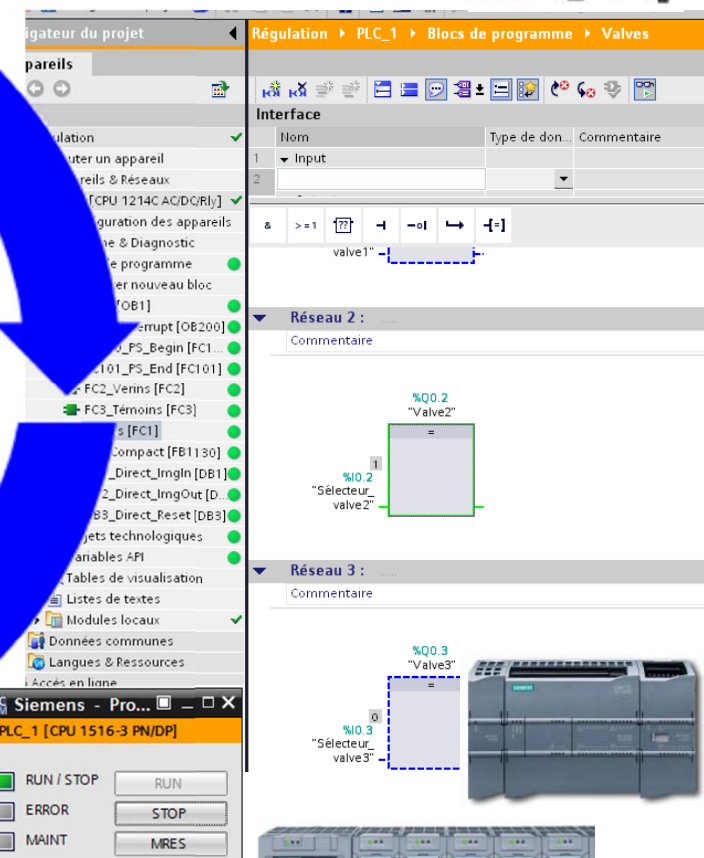
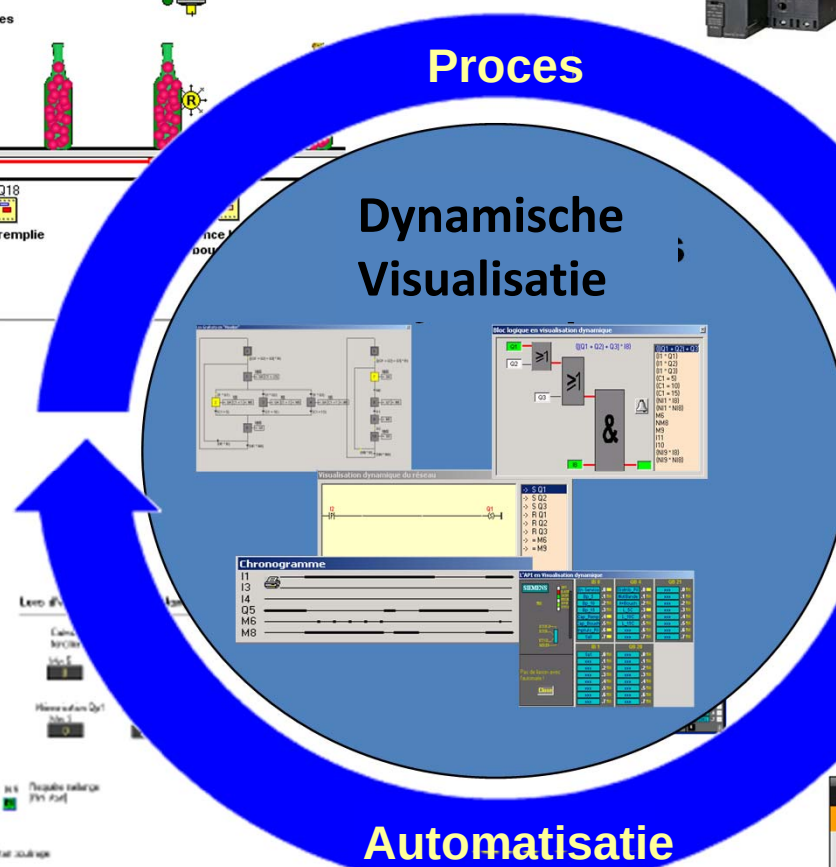
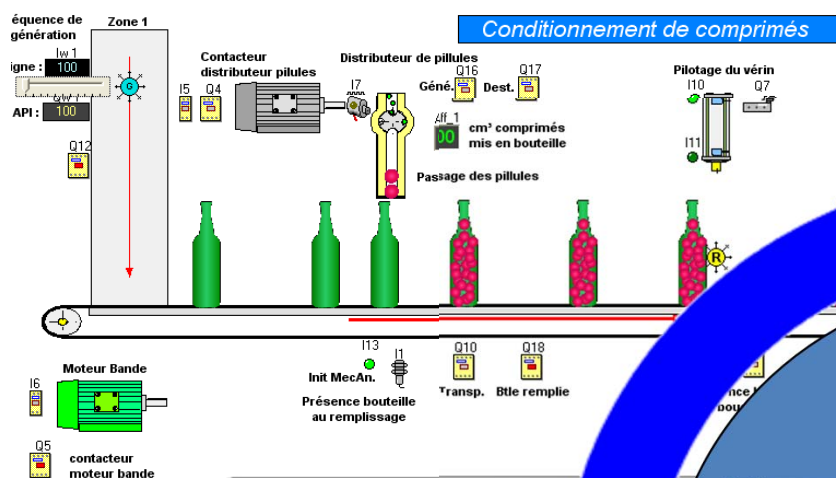


**Commando funkties**

**Virtueel proces**



## Verbinding tussen een proces en de bediening in gesloten kring





# Wat biedt u ProcesSim ?

## Verminderde kost en optimale effectiviteit

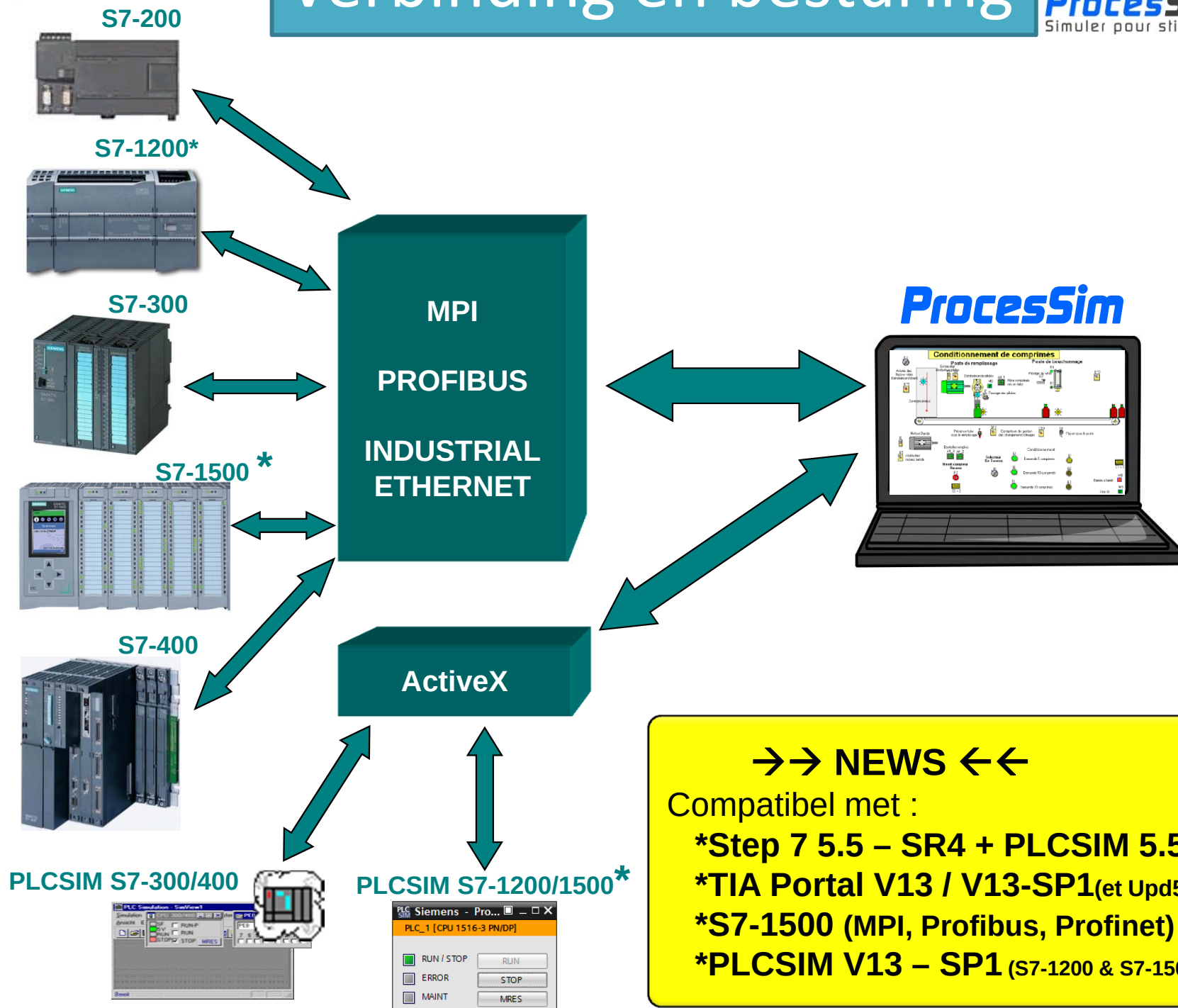
- Ontwerpen van een virtueel proces, identiek aan een werkelijke installatie
  - Vermindering van de tijd voor het ontwerp.
  - Verlaagde ontwerpkoost.
  - Nazicht van de overeenkomst met het lastenboek.
  - Realisatie van interactieve prototypes ( met het oog op marketing)
  - In dienststelling en testen.
  - Interactieve handleiding.
  - Onderhoud en simulatie van fouten.
  - Optimalisatie van het procesverloop, zonder onderbreking van de p
  - Opleiding van toekomstige operatoren voor de in dienststelling
  
- Opleidingen
  - Aanmaak van concrete en gepersonaliseerde toepassingen
  - Persoonlijk en aangepast ritme voor het leerproces
  - Responsabiliseren van de leerlingen.





# Verbinding en besturing

Siemens

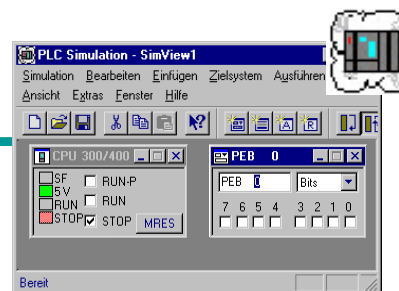


# Verbinding en besturing : PLCSIM

## Simulatie van de PLC met PLCSIM (1/2)



Een of meerdere  
Sessies van ProcesSim



Simulatie van de PLC

## Simulatie met PLCSIM (2/2) Vanaf de versie 5.4 + SP3



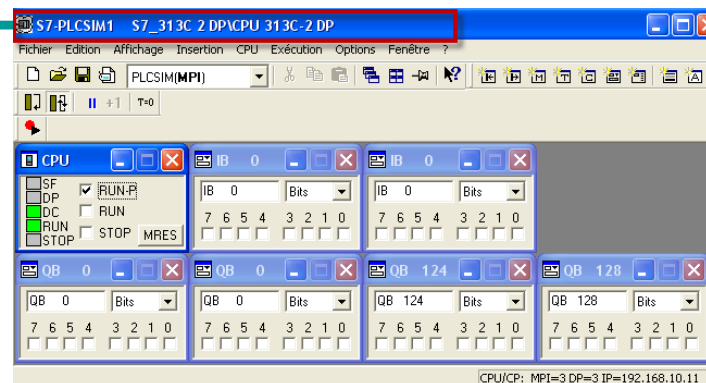
Ip : 192.168.10.20

1<sup>ste</sup> sessie van Processim

Verbonden met PLCSIM N°1

2<sup>de</sup> Sessie van ProcesSim

Verbonden met PLCSIM N°2

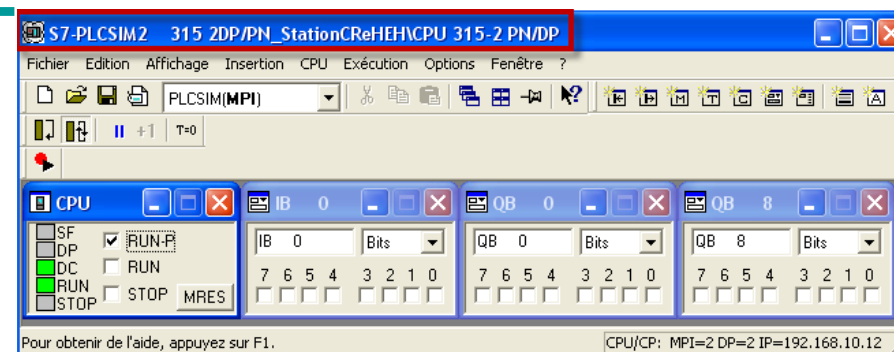
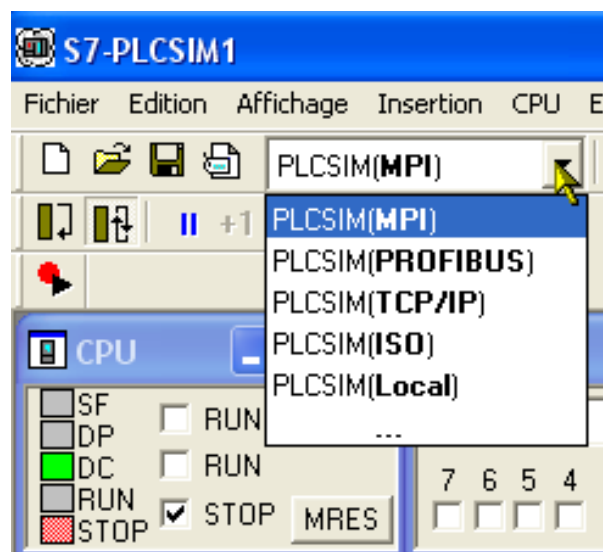


Simulatie PLC 1 (PLCSIM N°1)

Ip : 192.168.10.11

MPI : 2

Profibus : 2



Simulatie PLC 2 (PLCSIM N°2)

Ip : 192.168.10.12

MPI : 3

Profibus : 3



# Verbinding en besturing : PLCSIM

## Simulaite van de PLC met PLCSIM (1/2)



Een of meerdere  
Sessies ProcesSim



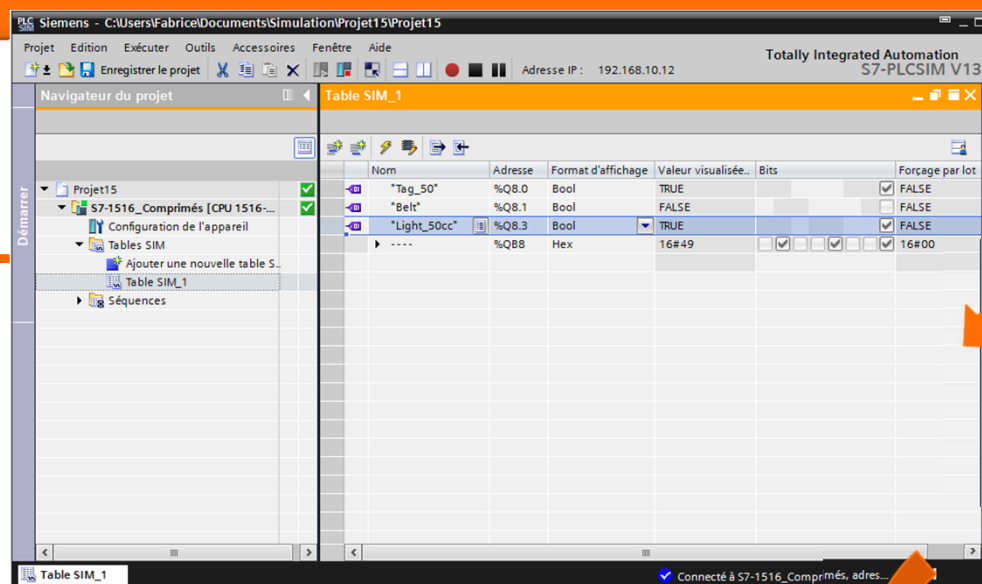
Simulatie van de PLC

# Simulatie van de PLC met PLCSIM – 1/2 Vanaf de versie V13 (SP1 pour S7-1200)

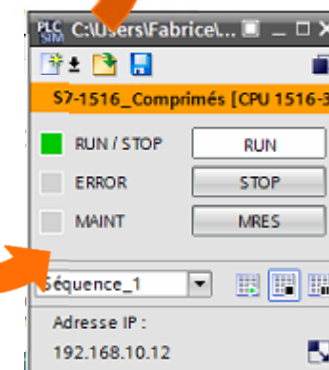
## Simulatie van de PLC met PLCSIM S7-1200 & S7-1500



Een of meerdere  
Sessies van ProcesSim



Simulatie van de PLC



# Simulatie van de PLC met PLCSIM – 1/2 Vanaf versie V13 (SP1 pour S7-1200)



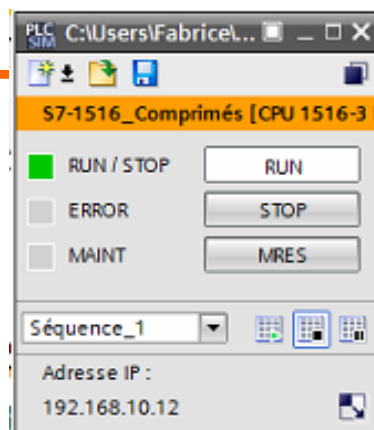
Ip : 192.168.10.10

1<sup>ste</sup> sessie ProcesSim

verbonden met PLCSIM N°1

2<sup>de</sup> sessie van ProcesSim

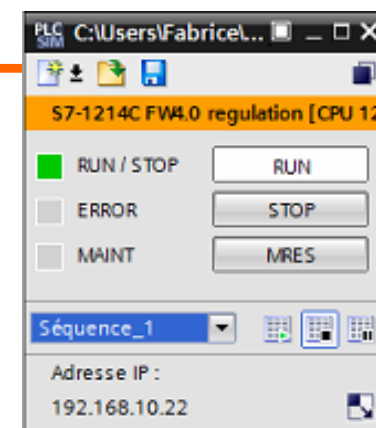
verbonden met PLCSIM N°2



Simulatie van de PLC 1 (PLCSIM N°1 / S7-1500)

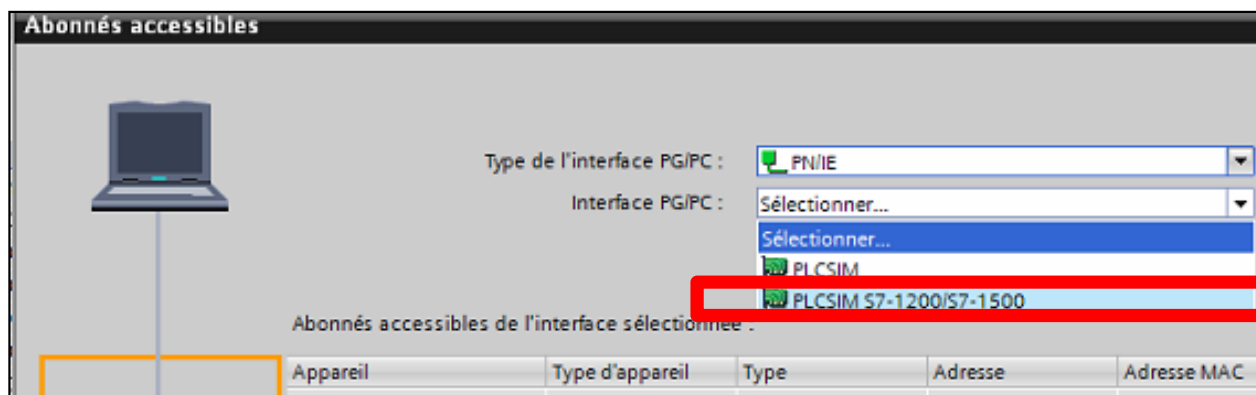
Ip : 192.168.10.12

Profibus : 2



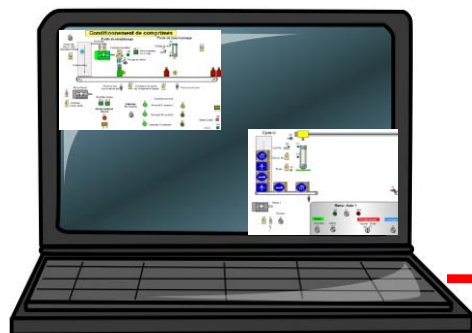
Simulatie van de PLC 2  
 (PLCSIM N°2 / S7-1200)

Ip : 192.168.10.22



# Verbinding en bediening : MPI

## Verbinging en bediening : MPI



PC

Adres : 0

Een of meerdere  
Sessies van ProcesSim

Interface



PC Adapter



Kaart : PCMCIA 5512



PLC

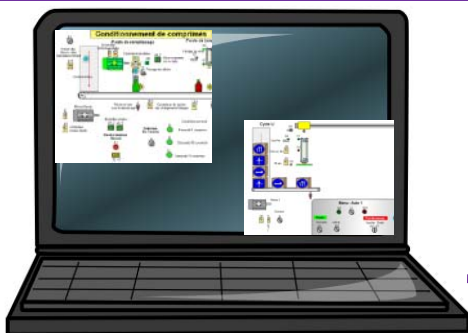
Adresse : 2





# Verbinding en bediening : Profibus

## Verbinding en bediening : Profibus



PC

Adres : 0

Een of meerdere  
sessies ProcesSim

Interface



PC Adapter



Kaart PCMCIA 5512



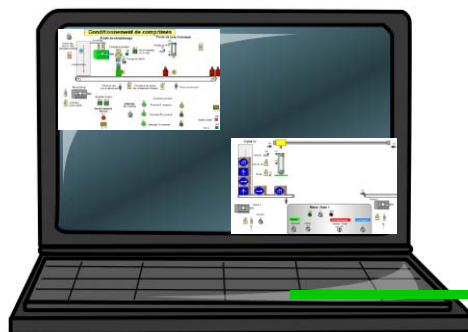
PLC

Adres : 2



# Verbinding en bediening : Industrial Ethernet 1/4

## Verbinding en bediening : Industrial Ethernet



PC

Ip : 192.168.10.11

Een of meerdere  
sessies ProcesSim



PLC

Ip : 192.168.10.12



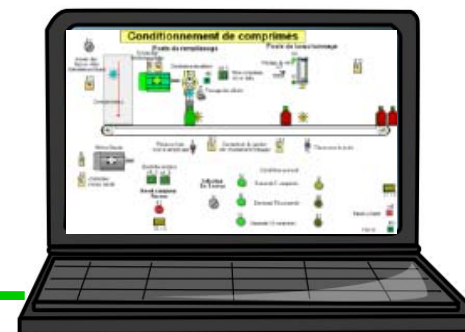
## Verbinding en bediening : Industrial Ethernet



PC 1

Ip : 192.168.10.10

ProcesSim verbonden  
Met PLC 1

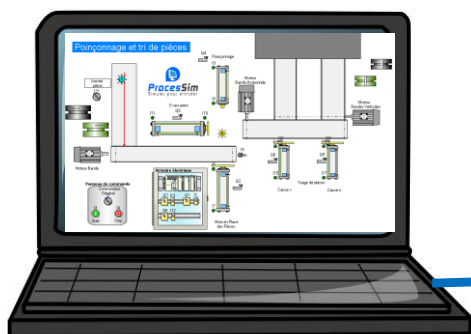


PC 2

Ip : 192.168.10.11

1 sessie ProcesSim

ProcesSim verbonden met  
PLC 1



PC 3

Ip : 192.168.10.09

ProcesSim verbonden

PLC 2



PLC 1

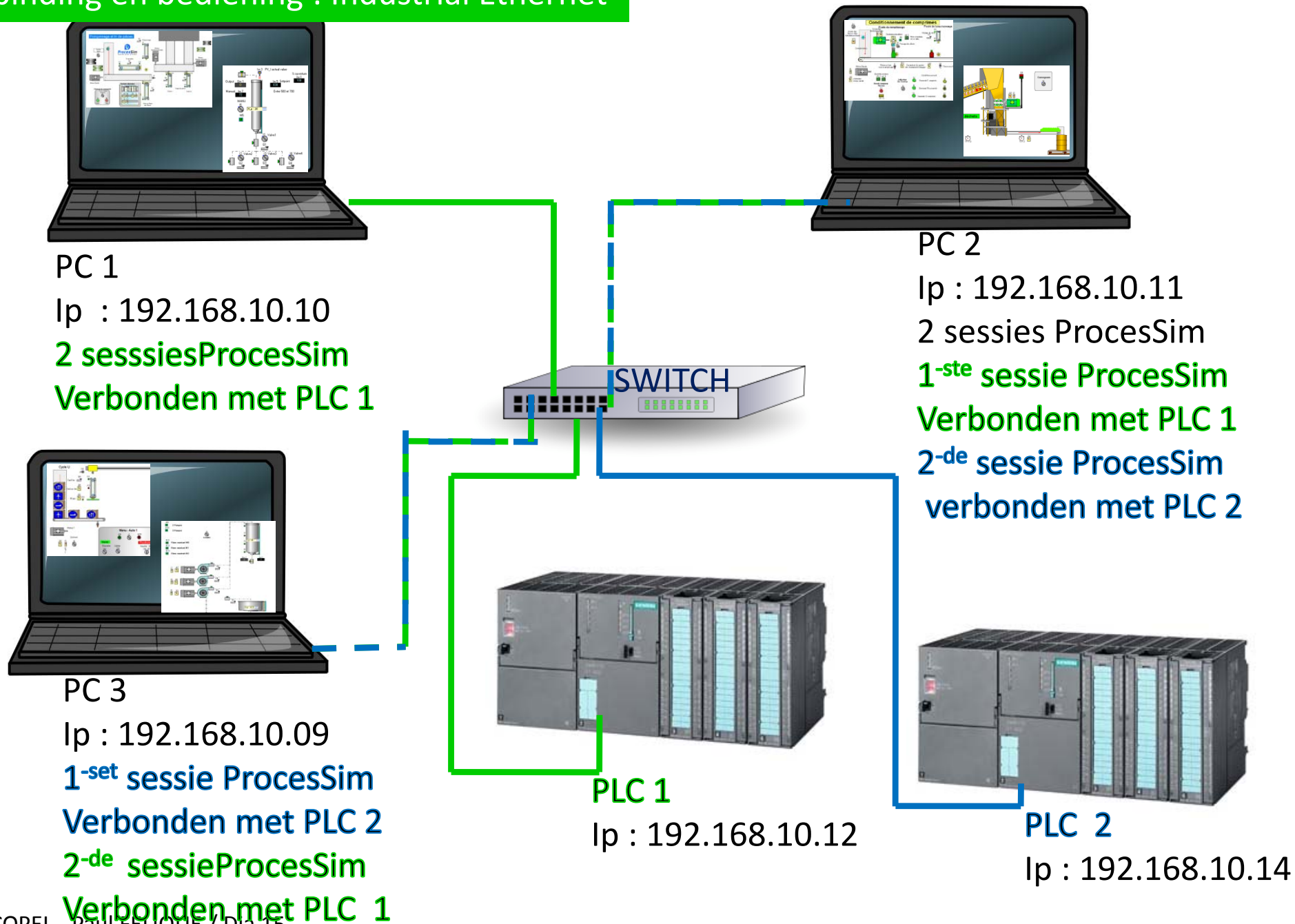
Ip : 192.168.10.12



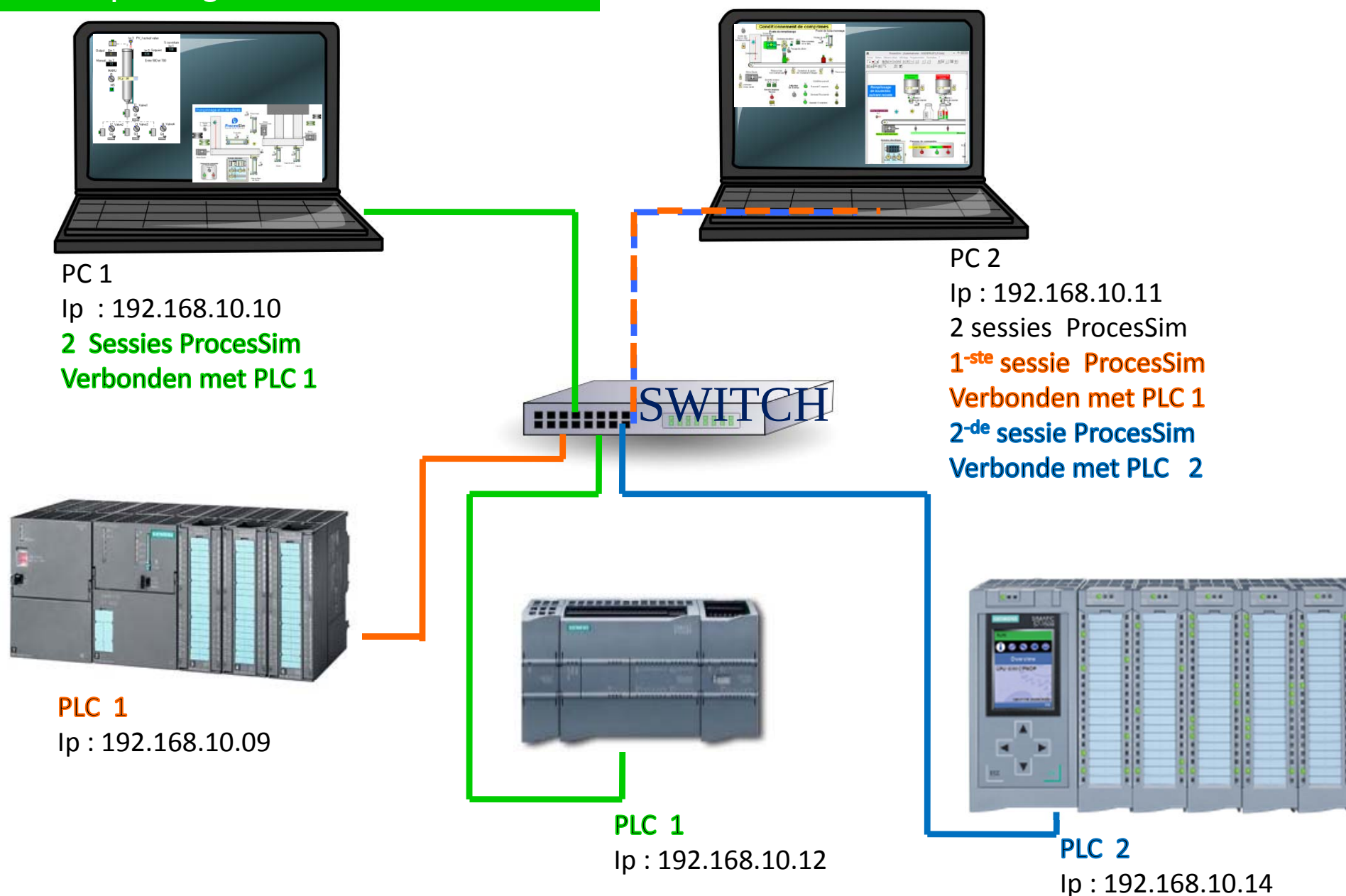
PLC 2

Ip : 192.168.10.14

## Verbinding en bediening : Industrial Ethernet

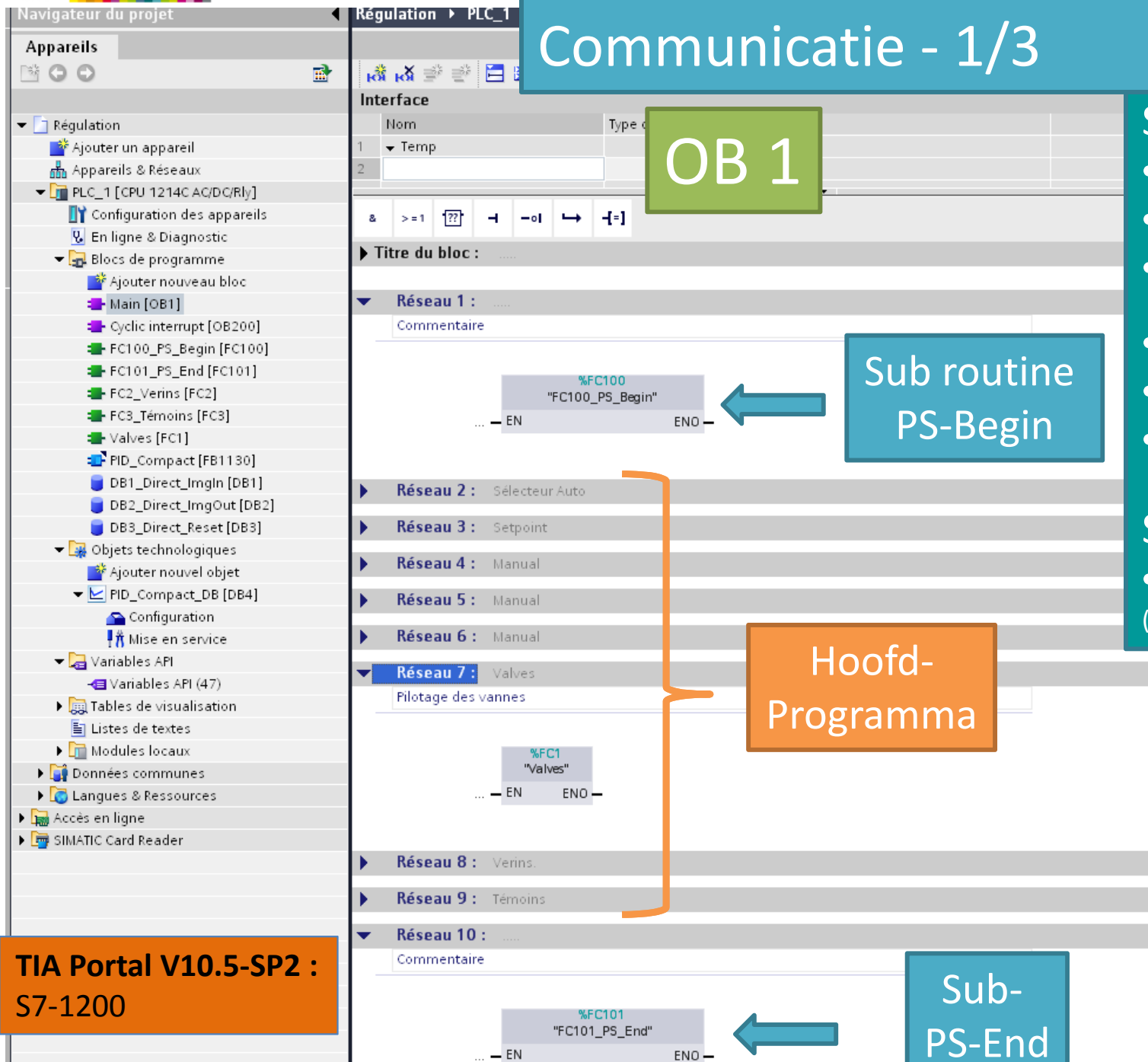


## Liaison et pilotage : Industrial Ethernet





# TIA V10.5 → S7-1200 : Communicatie - 1/3



OB 1

Sub routine  
PS-Begin

Hoofd-  
Programma

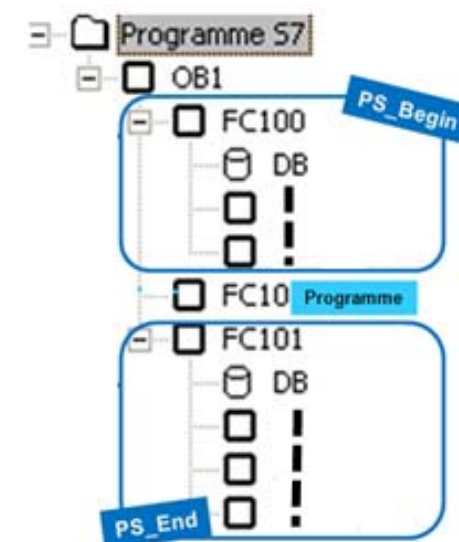
Sub-  
PS-End

## Sub routines PLC

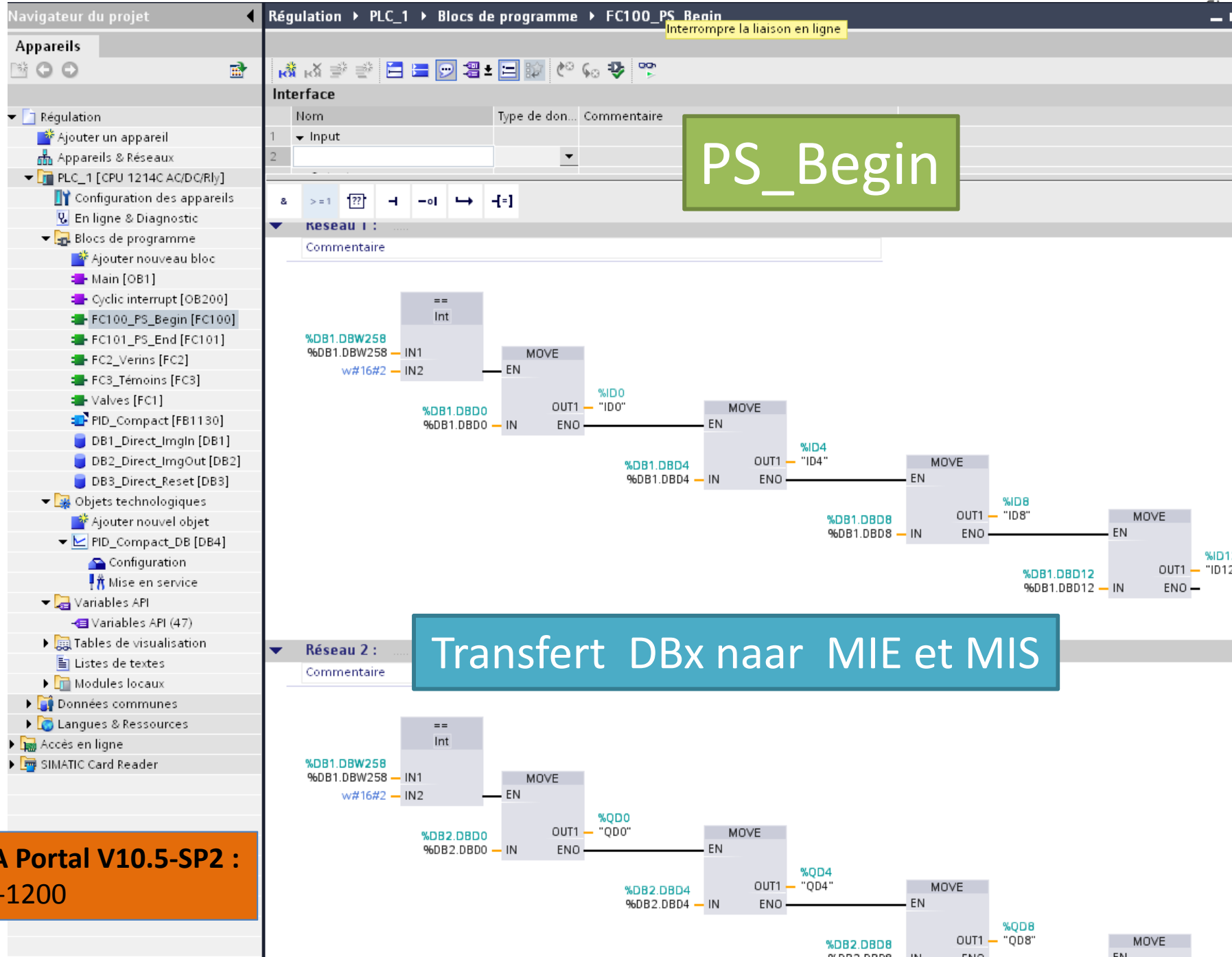
- FC 100 : PS\_Begin
- FC 101 : PS\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset

## Step 7 Basic V10.5 :

- Service Pack 2\*
- (Adressage absolu)



TIA Portal V10.5-SP2 :  
S7-1200



**TIA Portal V10.5-SP2 :**  
**S7-1200**

**Navigateur du projet** | Régulation > PLC\_1 > Blocs de programme > FC101\_PS\_End

**Appareils**

- Régulation
  - Ajouter un appareil
  - Appareils & Réseaux
  - PLC\_1 [CPU 1214C AC/DC/Rly]
    - Configuration des appareils
    - En ligne & Diagnostic
    - Blocs de programme
      - Ajouter nouveau bloc
      - Main [OB1]
      - Cyclic interrupt [OB200]
      - FC100\_PS\_Begin [FC100]
      - FC101\_PS\_End [FC101]
      - FC2\_Verins [FC2]
      - FC3\_Témoins [FC3]
      - Valves [FC1]
    - PID\_Compact [FB1130]
    - DB1\_Direct\_ImgIn [DB1]
    - DB2\_Direct\_ImgOut [DB2]
    - DB3\_Direct\_Reset [DB3]
  - Objets technologiques
    - Ajouter nouvel objet
    - PID\_Compact\_DB [DB4]
      - Configuration
      - Mise en service
  - Variables API
    - Variables API (47)
  - Tables de visualisation
  - Listes de textes
  - Modules locaux
  - Données communes

**Interface**

| Nom | Type de don... | Commentaire |
|-----|----------------|-------------|
| 1   | Input          |             |
| 2   |                |             |

**Titre du bloc :** ...

**Réseau 1 :** ...

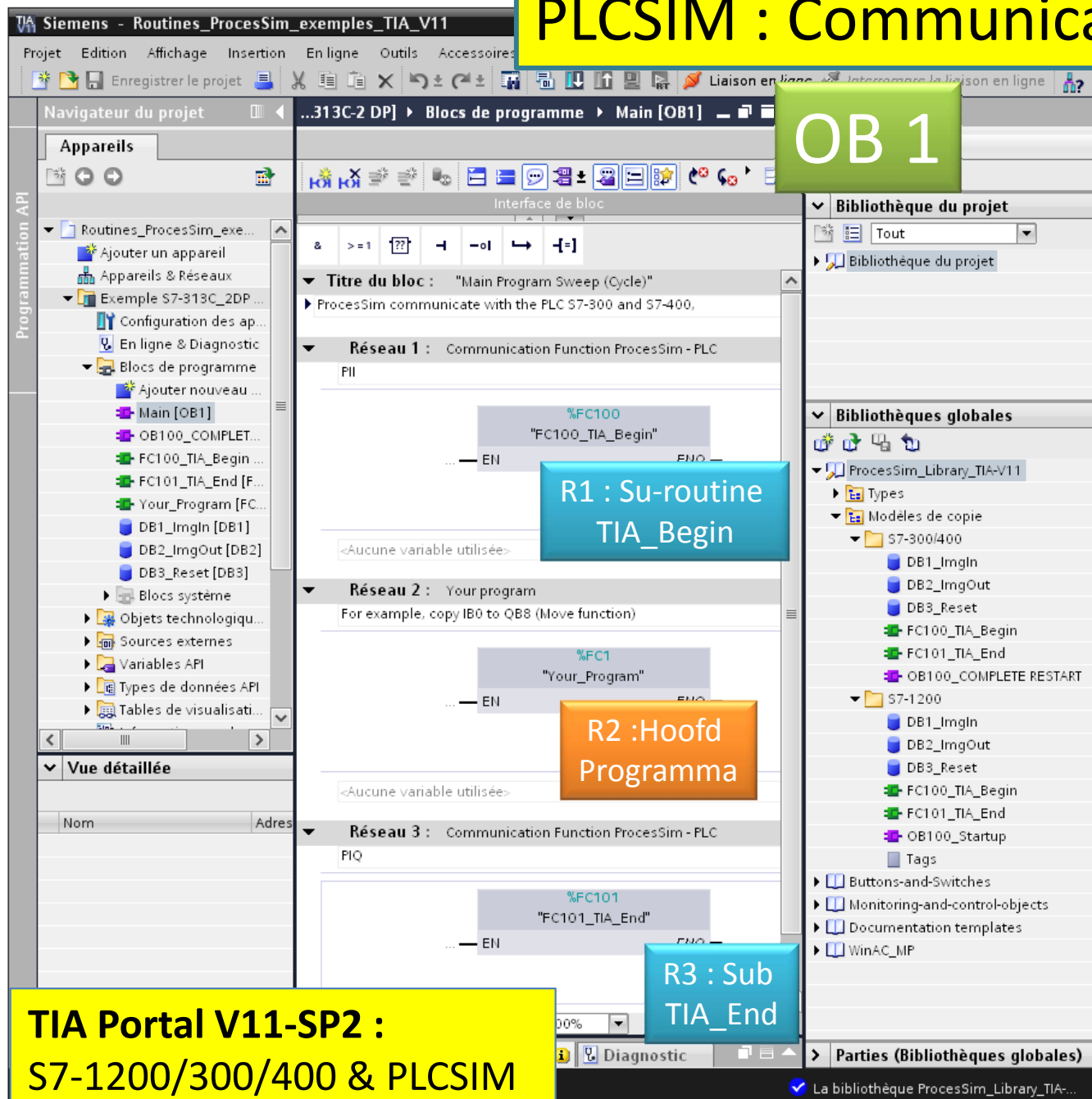
**Transfert MIS naar DBx**

```

graph LR
    Int[Int] --> MOVE1[MOVE]
    DB1[%DB1.DBW258] -- IN1 --> MOVE1
    W16[w#16#2] -- IN2 --> MOVE1
    MOVE1 -- EN --> OUT1_1[%DB2.DB00]
    QD0[%QD0 "QD0"] -- IN --> MOVE2[MOVE]
    MOVE2 -- EN --> OUT1_2[%DB2.DB04]
    QD4[%QD4 "QD4"] -- IN --> MOVE3[MOVE]
    MOVE3 -- EN --> OUT1_3[%DB2.DB08]
    QD8[%QD8 "QD8"] -- IN --> MOVE4[MOVE]
    MOVE4 -- EN --> OUT1_4[%DB2.DB12]
  
```

**TIA Portal V10.5-SP2 :**  
**S7-1200**

# TIA V11 → S7-1200/300/400 & PLCSIM : Communicatie



**OB 1**

**R1 : Su-routine TIA\_Begin**

**R2 : Hoofd Programma**

**R3 : Sub TIA\_End**

**Bibliothèque du projet**

- Tout
- Bibliothèque du projet

**Bibliothèques globales**

- ProcesSim\_Library\_TIA-V11
  - Types
  - Modèles de copie
    - S7-300/400
      - DB1\_ImgIn
      - DB2\_ImgOut
      - DB3\_Reset
      - FC100\_TIA\_Begin
      - FC101\_TIA\_End
      - OB100\_COMPLETE RESTART
    - S7-1200
      - DB1\_ImgIn
      - DB2\_ImgOut
      - DB3\_Reset
      - FC100\_TIA\_Begin
      - FC101\_TIA\_End
      - OB100\_Startup
      - Tags
  - Buttons-and-Switches
  - Monitoring-and-control-objects
  - Documentation templates
  - WinAC\_MP

**Parties (Bibliothèques globales)**

La bibliothèque ProcesSim\_Library\_TIA-V11 est sélectionnée.

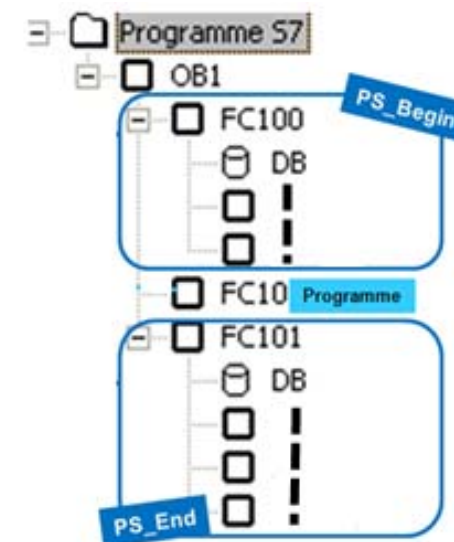
## Globale bibliotheek:

### ProcesSim\_Library\_TIA-V11

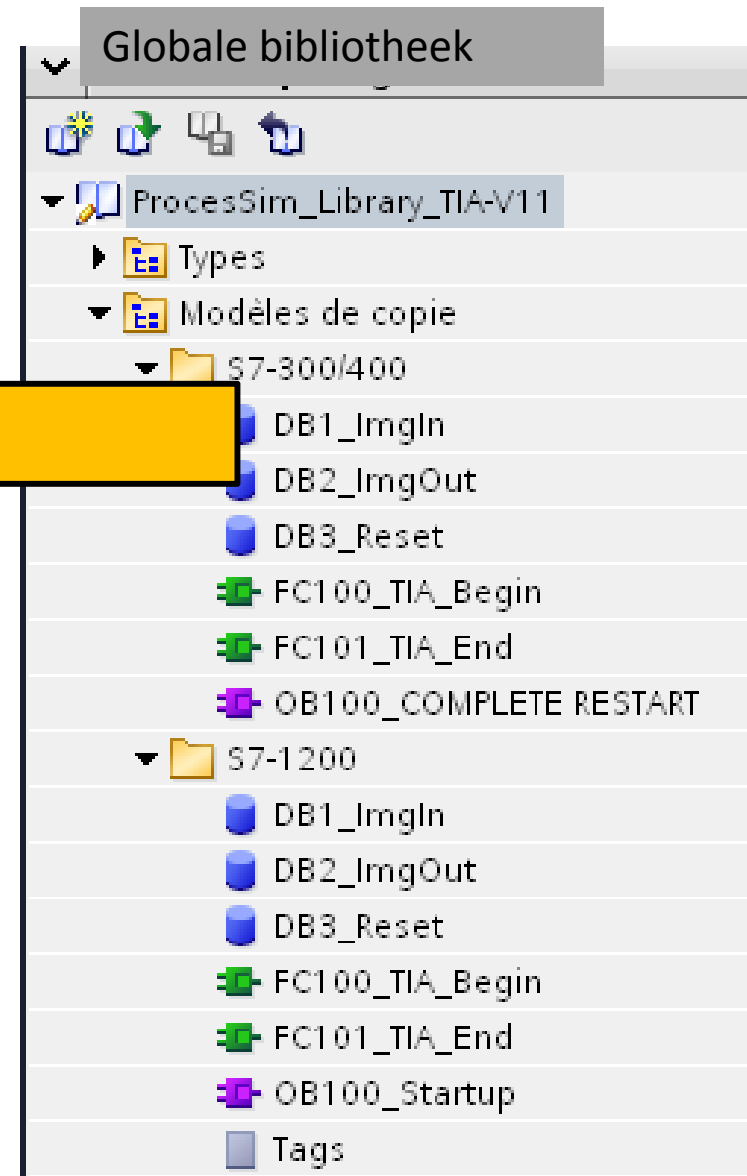
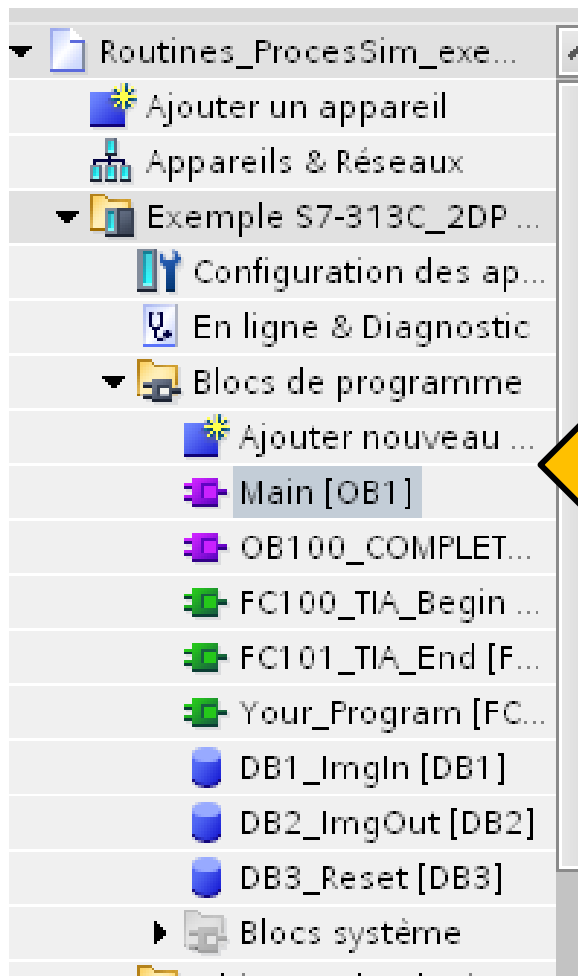
- FC 100 : TIA\_Begin
- FC 101 : TIA\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset
- *Tags (pour S7-1200)*

## TIA Portal V11 – SP2 Professional

**TIA Portal V11-SP2 :  
S7-1200/300/400 & PLCSIM**



# TIA V11 → S7-1200/300/400 & PLCSIM : Communicatie



## Globale bibliotheek:

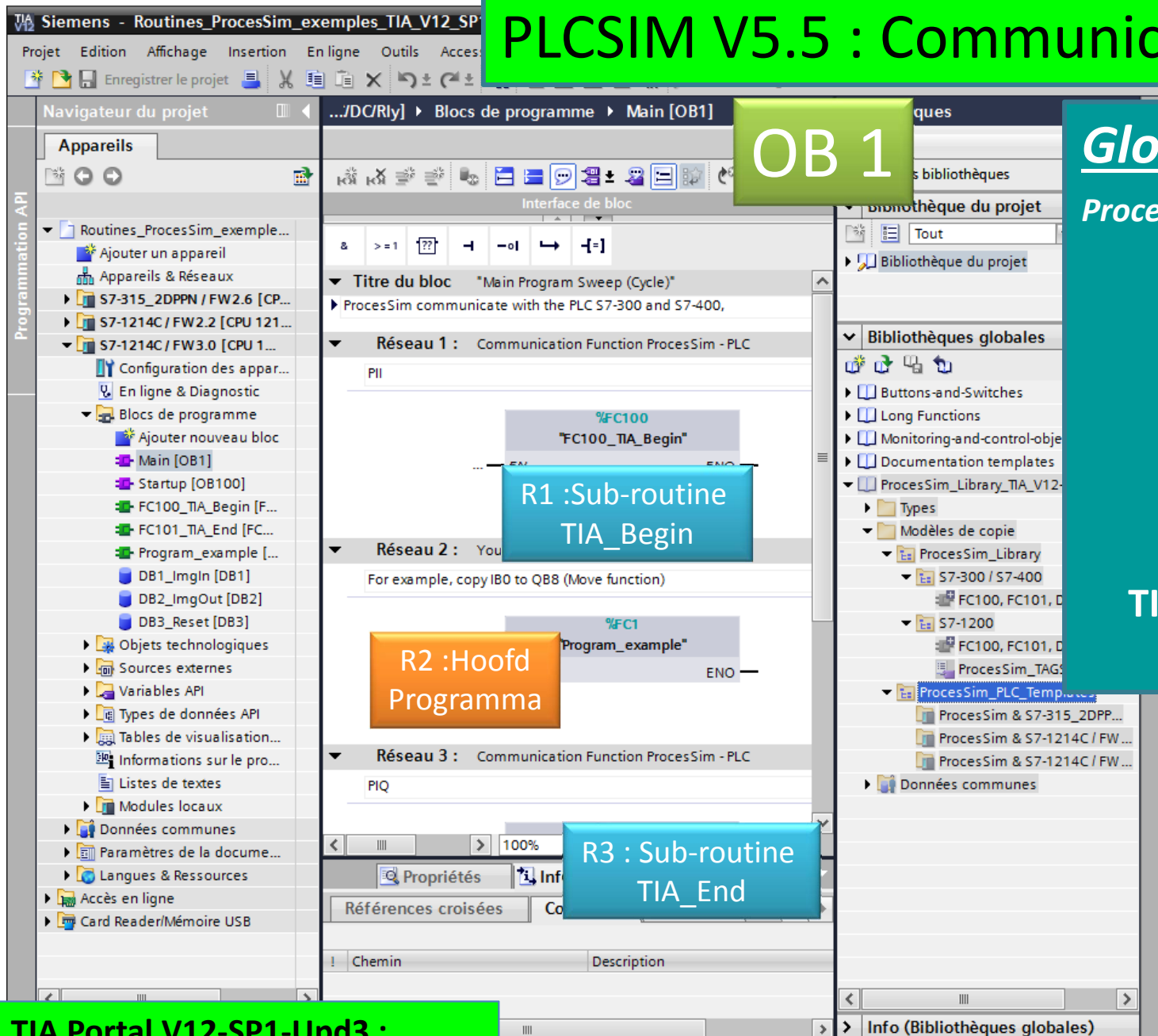
### *ProcesSim\_Library\_TIA-V11*

- FC 100 : TIA\_Begin
- FC 101 : TIA\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset
- Tags ( voor S7-1200)

**TIA Portal V11-SP2 :**  
**S7-1200/300/400 & PLCSIM**



# TIA V12 → S7-1200/300/400 & PLCSIM V5.5 : Communication



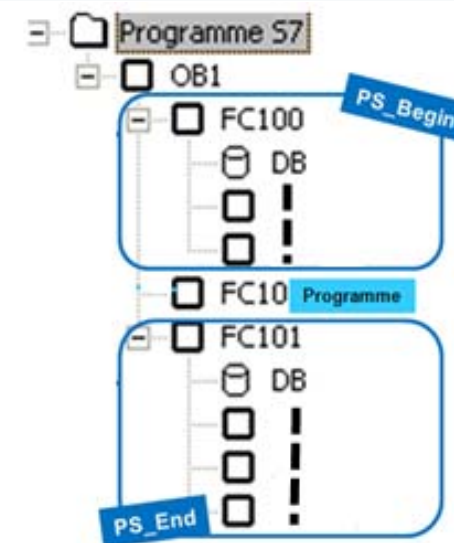
## Globale bibliotheek:

### *ProcesSim\_Library\_TIA-V12-SP1-Upd3*

- FC 100 : TIA\_Begin
- FC 101 : TIA\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset
- Tags (pour S7-1200)

## TIA Portal V12 – SP1-Upd3 Professional

**TIA Portal V12-SP1-Upd3 :  
S7-1200/300/400 & PLCSIM V5.5**



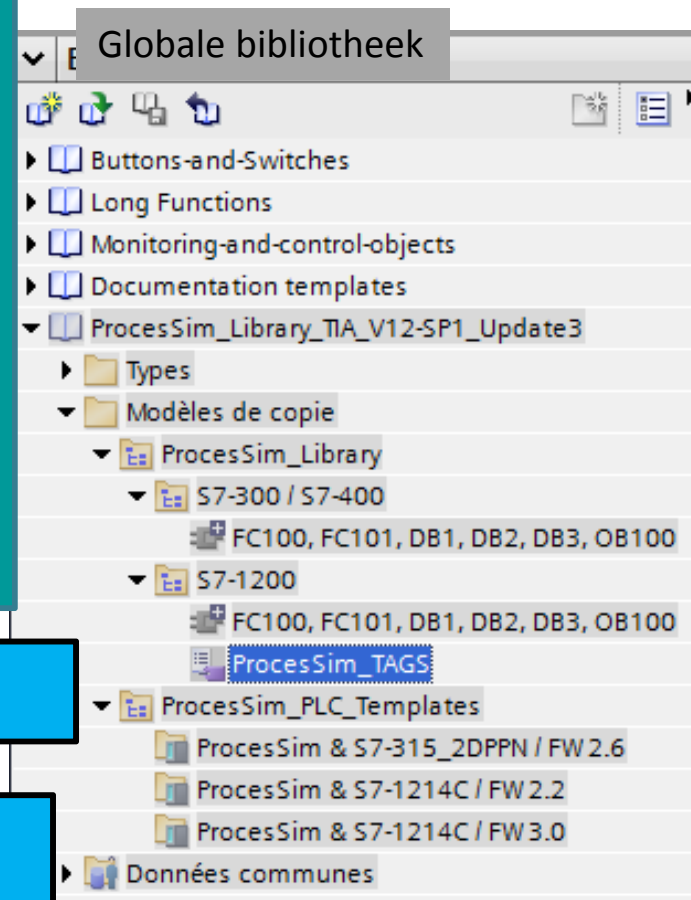
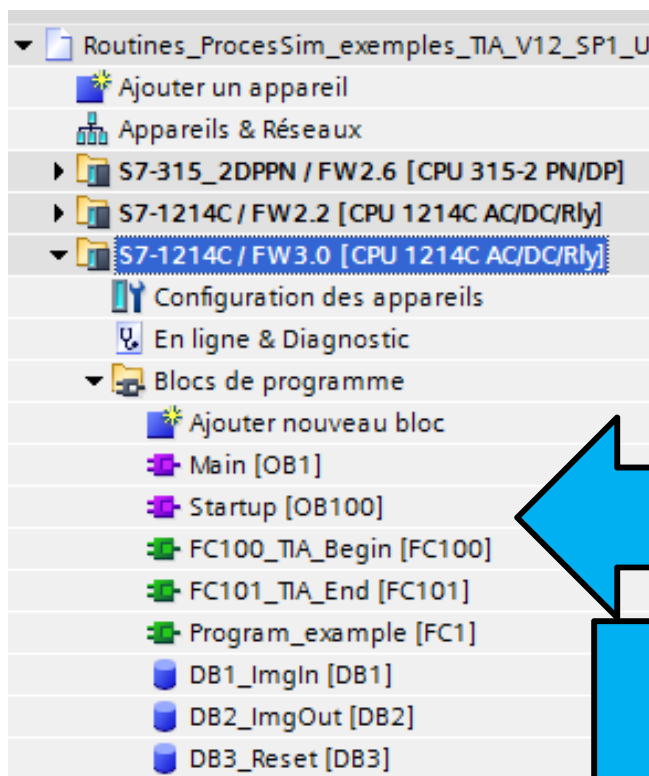
# TIA V12 → S7-1200/300/400 & PLCSIM V5.5 : Communication

## Globale bibliothek:

### *ProcesSim\_Library\_TIA-V12-SP1-Upd3*

- FC 100 : TIA\_Begin
- FC 101 : TIA\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset
- Tags (pour S7-1200)

**TIA Portal V12 – SP1-Upd3  
Professional**



**Drag & Drop**

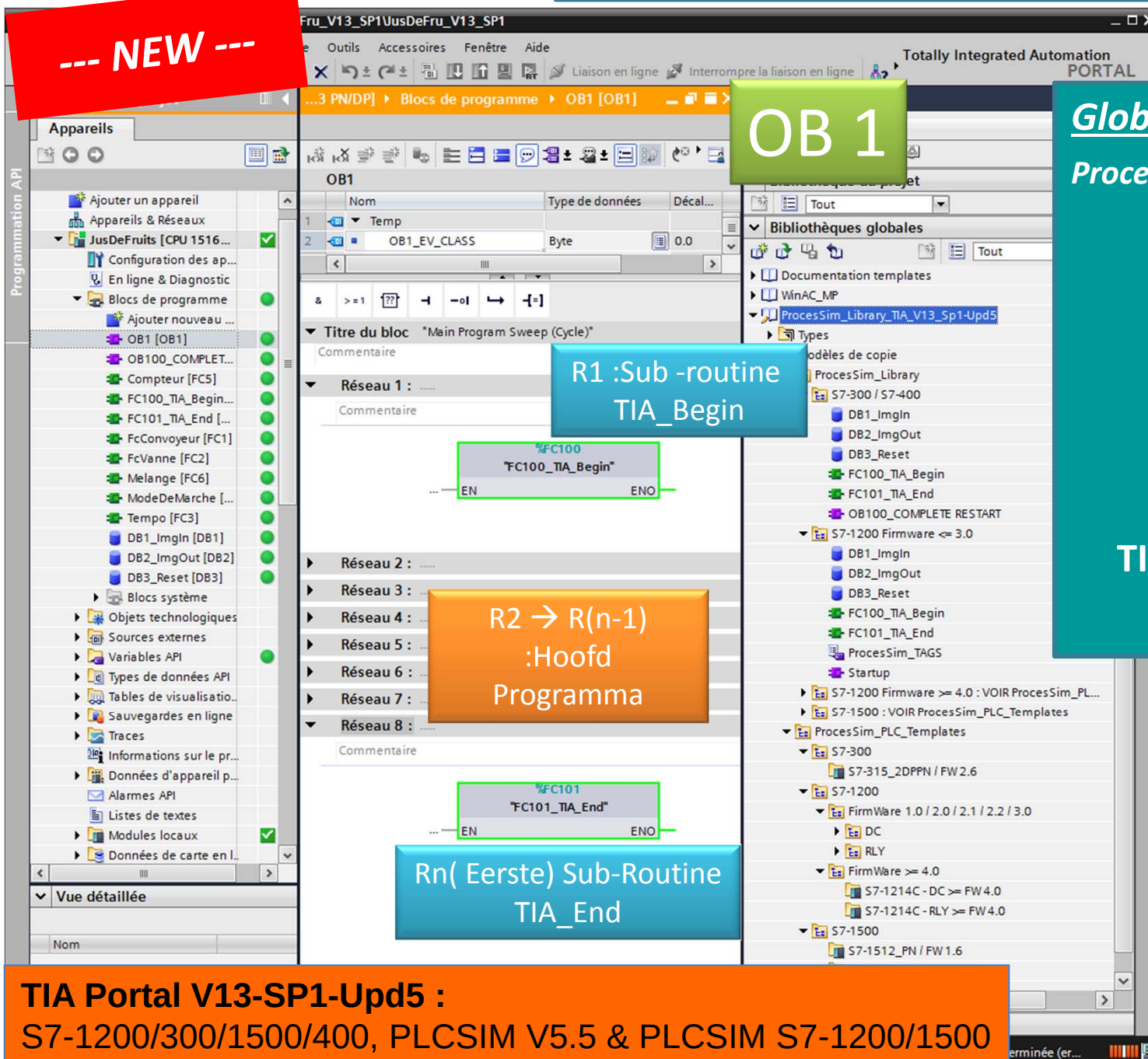
**Directe intégration**

+

**Template (S7-1214C, S7-315  
2DPPN, etc.)**

**TIA Portal V12-SP1-Upd3 :  
S7-1200/300/400 & PLCSIM V5.5**

--- NEW ---



**OB 1**

**R1 :Sub -routine  
TIA\_Begin**

**R2 → R(n-1)  
:Hoofd  
Programma**

**Rn( Eerste) Sub-Routine  
TIA\_End**

**Bibliothèques globales**

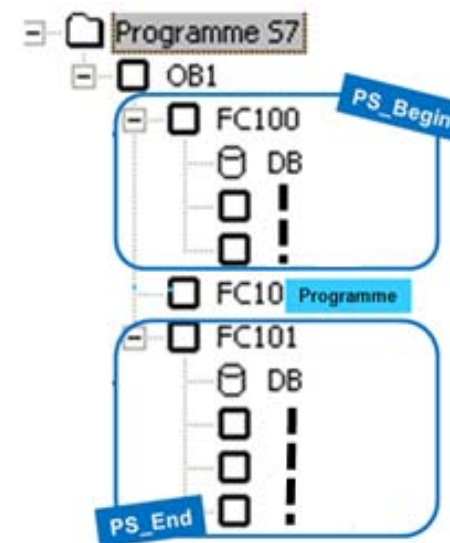
- Documentation templates
- WinAC\_MP
- ProcesSim\_Library\_TIA\_V13\_Sp1-Upd5
  - Types
    - Modèles de copie
    - ProcesSim\_Library
    - S7-300 / S7-400
      - DB1\_ImgIn
      - DB2\_ImgOut
      - DB3\_Reset
      - FC100\_TIA\_Begin
      - FC101\_TIA\_End
      - OB100\_COMPLETE RESTART
    - S7-1200 Firmware <= 3.0
      - DB1\_ImgIn
      - DB2\_ImgOut
      - DB3\_Reset
      - FC100\_TIA\_Begin
      - FC101\_TIA\_End
      - ProcesSim\_TAGS
    - Startup
    - S7-1200 Firmware >= 4.0 : VOIR ProcesSim\_PL...
    - S7-1500 : VOIR ProcesSim\_PLC\_Templates
    - ProcesSim\_PLC\_Templates
      - S7-300
        - S7-315\_2DPPN / FW 2.6
      - S7-1200
        - FirmWare 1.0 / 2.0 / 2.1 / 2.2 / 3.0
          - DC
          - RLY
        - FirmWare >= 4.0
          - S7-1214C - DC >= FW 4.0
          - S7-1214C - RLY >= FW 4.0
      - S7-1500
        - S7-1512\_PN / FW 1.6

## Globale bibliotheek :

### *ProcesSim\_Library\_TIA-V13-SP1-Upd5*

- FC 100 : TIA\_Begin
- FC 101 : TIA\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset
- Tags (pour S7-1200)

## **TIA Portal V13 – SP1-Upd5 Professional**



**TIA Portal V13-SP1-Upd5 :**

**S7-1200/300/1500/400, PLCSIM V5.5 & PLCSIM S7-1200/1500**



--- NEW ---

### Globale bibliotheek:

#### *ProcesSim\_Library\_TIA-V13-SP1-Upd5*

- FC 100 : TIA\_Begin
- FC 101 : TIA\_End
- OB 100 : Warm Start
- DB1 : ImgIn
- DB2 : ImgOut
- DB3 : Reset
- Tags (pour S7-1200)

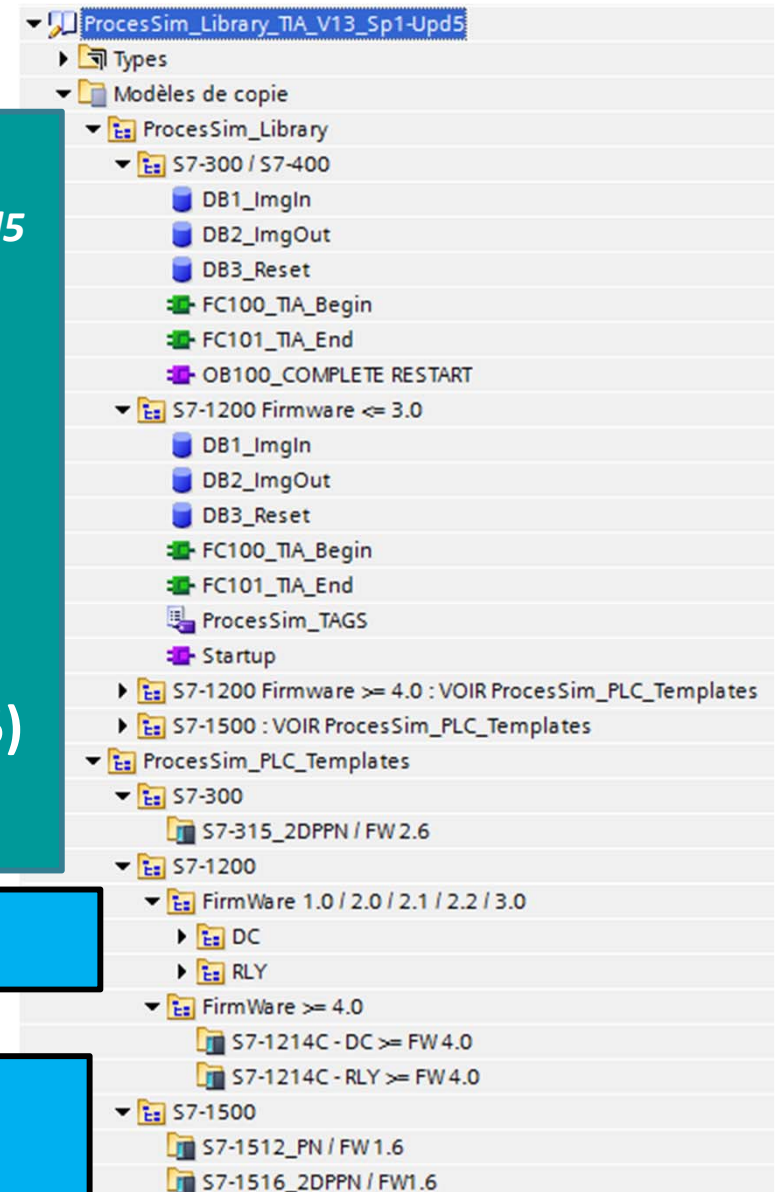
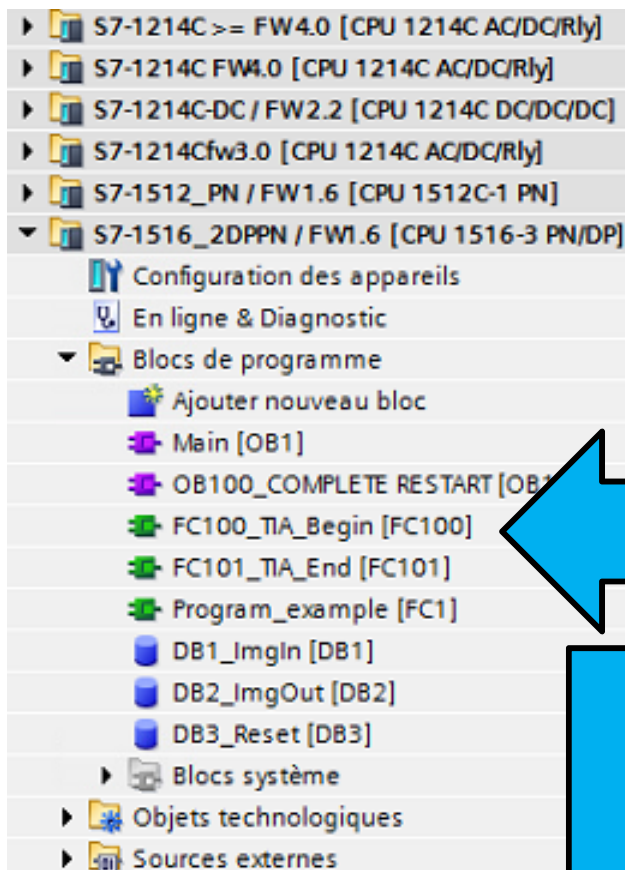
### TIA Portal V13 – SP1(Upd5) Professional

**Drag & Drop**

**Directe integratie**

+

**Template (S7-1516DPPN,  
S7-1214C, S7-315 2DPPN, etc.)**



**TIA Portal V13-SP1-Upd5 :**  
 S7-1200/300/1500/400, PLCSIM V5.5 &  
 PLCSIM S7-1200/1500

## S7-300/1500/400

☐ CASE WORD\_TO\_INT(#MotCommande) OF

//PLC works as an interface card I / 0

//Copy PII to ImgIn (ProcesSim)

```
1: #Source.Source_DB_Nummer:= W#16#0;
   #Source.Source_Byte_Pointer:= DW#16#81000000;
```

```
#Desti.Destin_DB_Nummer:= W#16#1;
#Desti.Destin_Byte_Pointer:= DW#16#84000000;
```

```
#ResFct:= BLKMOV(SRCBLK:= #pAny_source, DSTBLK=> #pAny_destin);
```

//PLC works with virtual process outputs activated

//Copy ImgIn (ProcesSim) to PII

//Copy ImgOut (ProcesSim) to PIQ

```
2: #Source.Source_DB_Nummer:= W#16#1;
   #Source.Source_Byte_Pointer:= DW#16#84000000;
```

```
#Desti.Destin_DB_Nummer:= W#16#0;
#Desti.Destin_Byte_Pointer:= DW#16#81000000;
```

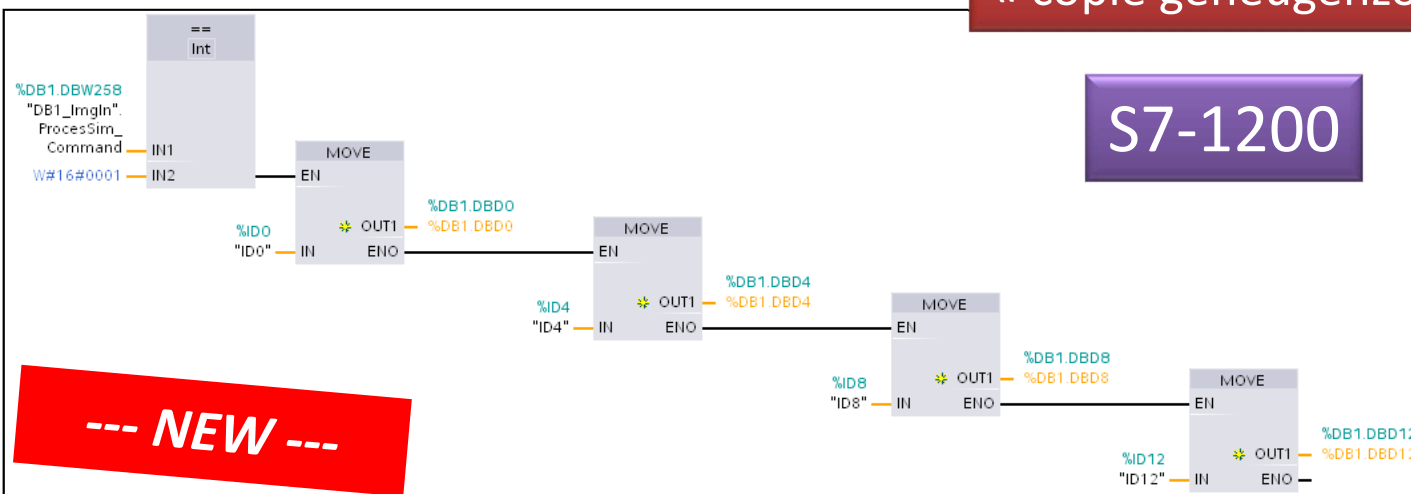
```
#ResFct:= BLKMOV(SRCBLK:= #pAny_source, DSTBLK=> #pAny_destin);
```

|                     |        |      |
|---------------------|--------|------|
| NbrBytes            | Int    | 0.0  |
| MotCommande         | Word   | 2.0  |
| Nbr                 | Word   | 4.0  |
| ResFct              | Int    | 6.0  |
| Source              | Struct | 8.0  |
| ANY_id              | Byte   | 0.0  |
| Source_DataType     | Byte   | 1.0  |
| Source_Lenght       | Word   | 2.0  |
| Source_DB_Nummer    | Word   | 4.0  |
| Source_Byte_Pointer | DWord  | 6.0  |
| pAny_source         | Any    | 8.0  |
| Desti               | Struct | 18.0 |
| ANY_id              | Byte   | 0.0  |
| Destin_DataType     | Byte   | 1.0  |
| Destin_Lenght       | Word   | 2.0  |
| Destin_DB_Nummer    | Word   | 4.0  |
| Destin_Byte_Pointer | DWord  | 6.0  |
| pAny_destin         | Any    | 18.0 |

# TIA\_Begin

## Transfert DBx naar MIE et MIS

In tegenstelling tot S7-1200,  
de S7-300/1500/400 ondersteunt de instructie  
« copie geheugenzone » met formaat Any



## S7-1200

**TIA Portal V13-SP1-Upd5 :**  
S7-1200/300/1500/400, PLCSIM V5.5 &  
PLCSIM S7-1200/1500

--- NEW ---



## S7-300/1500/400

```
//PLC works with virtual process outputs activated
//Copy ImgIn (ProcesSim) to PI1
//Copy ImgOut (ProcesSim) to PIQ
```

```
2: #Source.Source_DB_Nummer:= W#16#0;
   #Source.Source_Byte_Pointer:= DW#16#82000000;

   #Desti.Destin_DB_Nummer:= w#16#2;
   #Desti.Destin_Byte_Pointer:= DW#16#84000000;

   #ResFct:=BLKMOV(SRCBLK:=P#Q0.0 BYTE 100, DSTBLK=>P#DB2.DBX0.0 BYTE 100);

   #ResFct:= BLKMOV(SRCBLK:= #pAny_source, DSTBLK=> #pAny_destin);
```

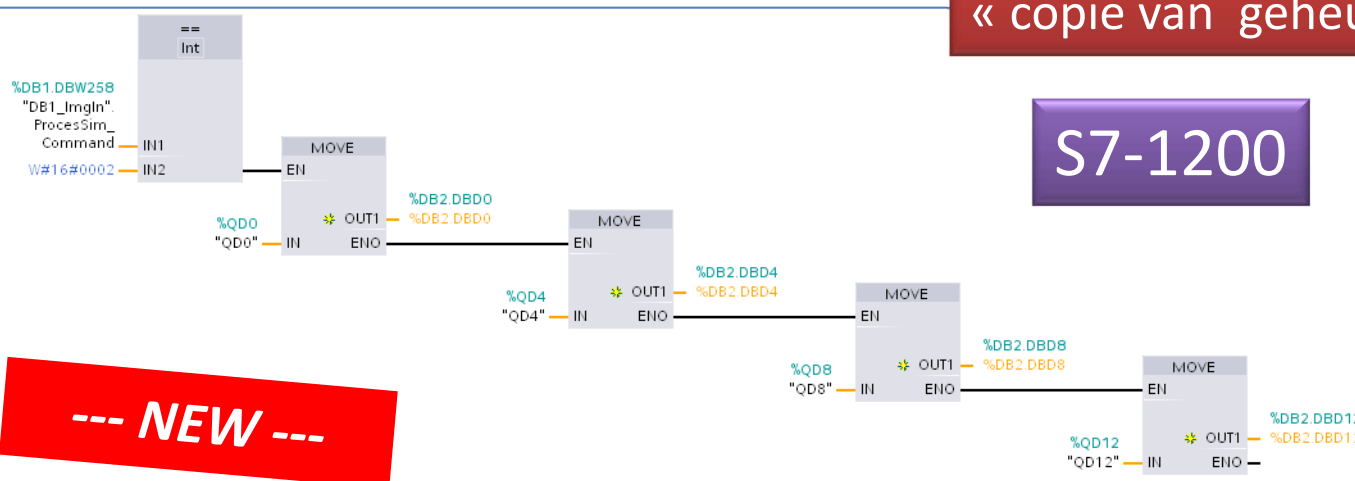
|                     |        |      |
|---------------------|--------|------|
| NbrBytes            | Int    | 0.0  |
| MotCommande         | Word   | 2.0  |
| Nbr                 | Word   | 4.0  |
| ResFct              | Int    | 6.0  |
| Source              | Struct | 8.0  |
| ANY_id              | Byte   | 0.0  |
| Source_DataType     | Byte   | 1.0  |
| Source_Lenght       | Word   | 2.0  |
| Source_DB_Nummer    | Word   | 4.0  |
| Source_Byte_Pointer | DWord  | 6.0  |
| pAny_source         | AT...  | 8.0  |
| Desti               | Struct | 18.0 |
| ANY_id              | Byte   | 0.0  |
| Destin_DataType     | Byte   | 1.0  |
| Destin_Lenght       | Word   | 2.0  |
| Destin_DB_Nummer    | Word   | 4.0  |
| Destin_Byte_Pointer | DWord  | 6.0  |
| pAny_destin         | AT...  | 18.0 |

# TIA\_End

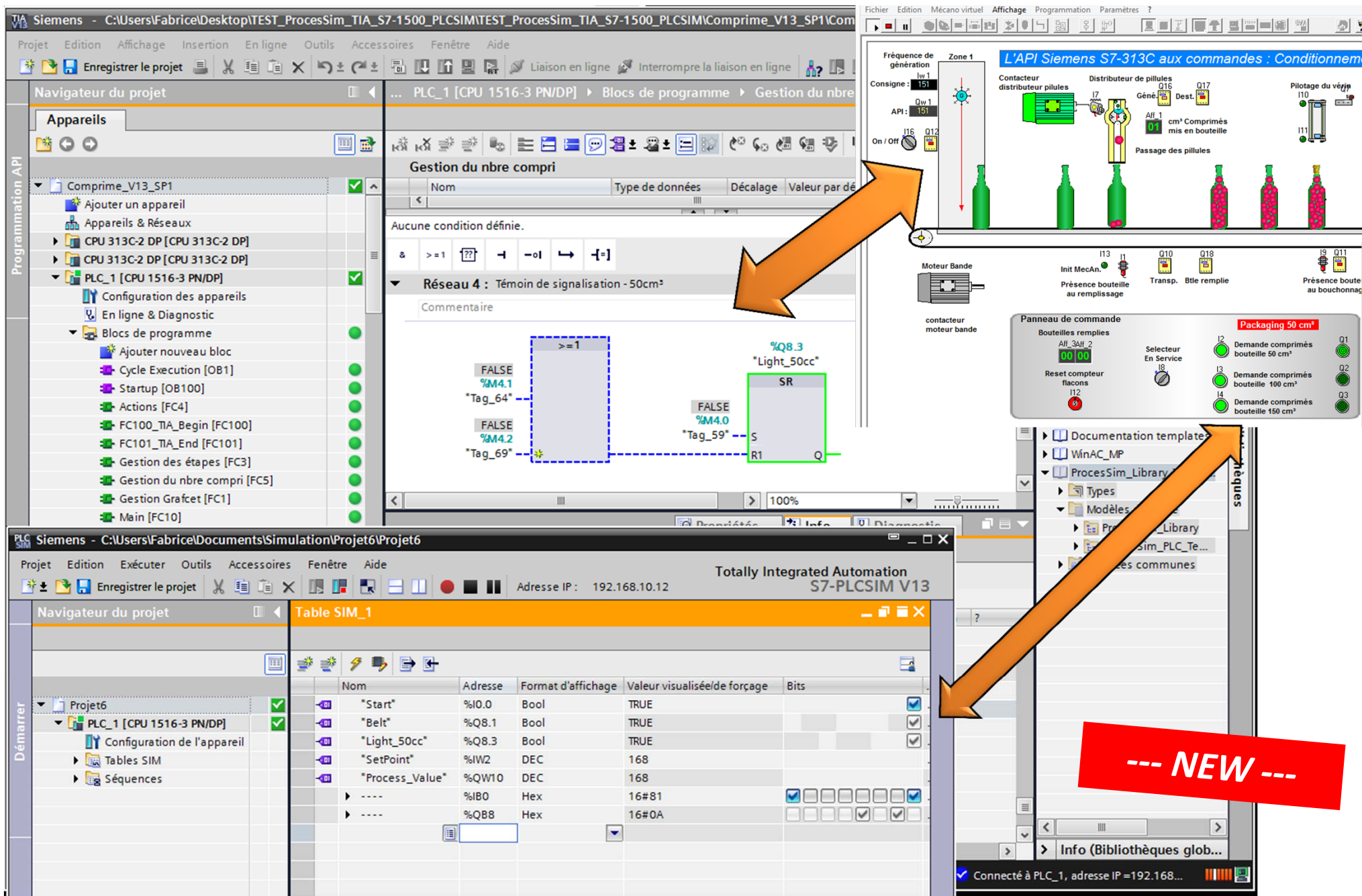
## Transfert van MIS naar DBx

In tegenstelling tot S7-1200,  
de S7-300/1500/400 ondersteunt de instructie  
« copie van geheugenzone » met het formaat Any

## S7-1200



**TIA Portal V13-SP1-Upd5 :**  
S7-1200/300/1500/400, PLCSIM V5.5 &  
PLCSIM S7-1200/1500



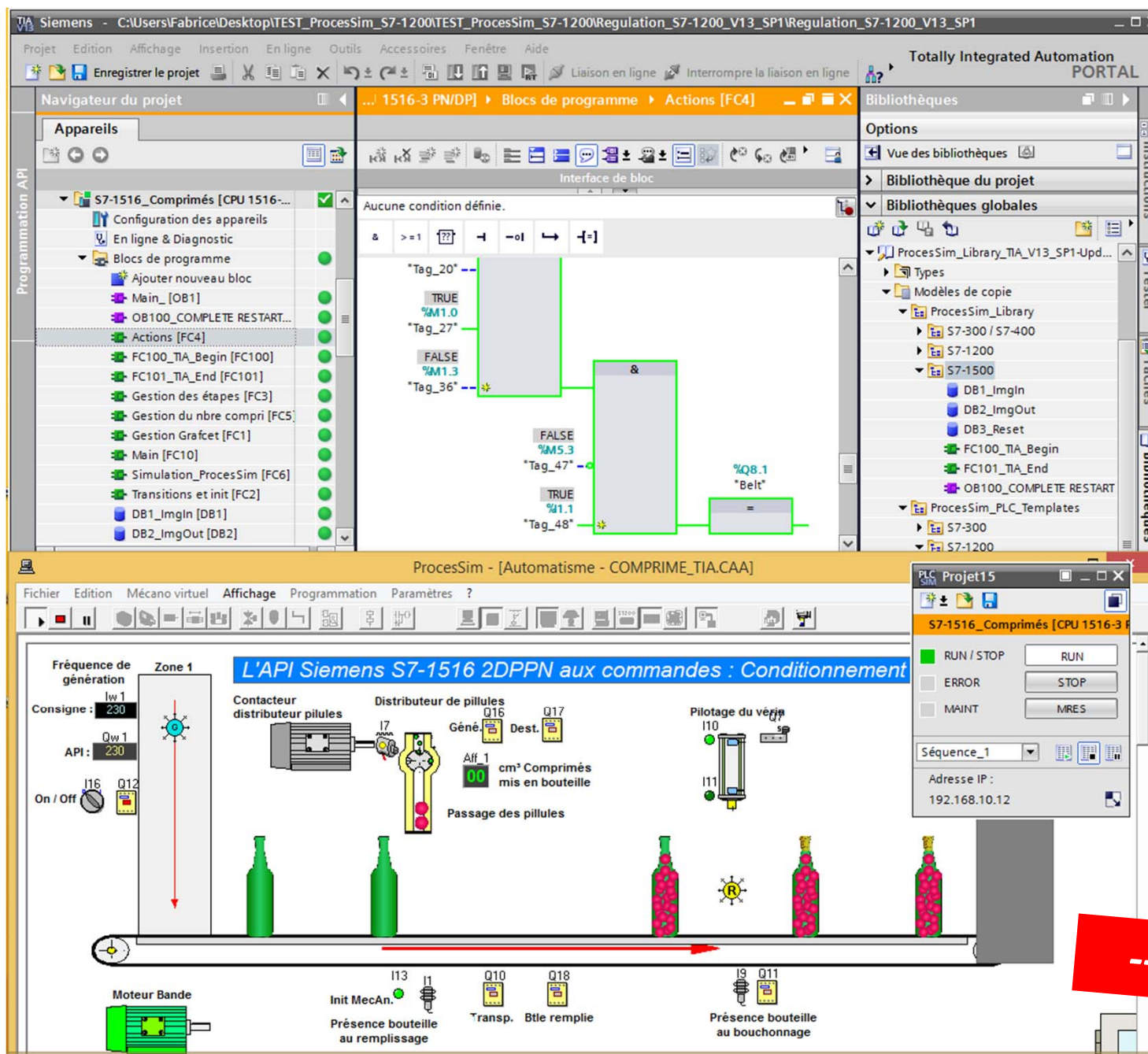
The screenshot displays the Siemens TIA Portal V13-SP1 interface, illustrating the integration of PLCSIM S7-1500. The main window shows the 'Gestion du nbre compri' (Management of the number of compressed) block, which is configured for 'Réseau 4 : Témoin de signalisation - 50cm³'. The 'Table SIM' (Simulation Table) is visible, listing various simulation parameters and their values.

**Table SIM\_1 Data:**

| Nom             | Adresse | Format d'affichage | Valeur visualisée/de forçage | Bits                                |
|-----------------|---------|--------------------|------------------------------|-------------------------------------|
| "Start"         | %I0.0   | Bool               | TRUE                         |                                     |
| "Belt"          | %Q8.1   | Bool               | TRUE                         |                                     |
| "Light_50cc"    | %Q8.3   | Bool               | TRUE                         |                                     |
| "SetPoint"      | %IW2    | DEC                | 168                          |                                     |
| "Process_Value" | %QW10   | DEC                | 168                          |                                     |
|                 | %IB0    | Hex                | 16#81                        | <input checked="" type="checkbox"/> |
|                 | %QB8    | Hex                | 16#0A                        | <input checked="" type="checkbox"/> |

Additional features shown include the 'Panneau de commande' (Control Panel) with various indicators and the 'Séquences' (Sequences) section.

**--- NEW ---**



The screenshot displays the Siemens TIA Portal interface for a project named 'Regulation\_S7-1200\_V13\_SP1'. The left sidebar shows the 'Navigation du projet' tree with 'Blocs de programme' expanded, listing various function blocks like 'Main', 'OB100', 'FC100', and 'FC101'. The main workspace shows a ladder logic diagram for 'Actions [FC4]' with a network containing a timer 'T1' and a coil 'Q8.1'. The right sidebar shows the 'Bibliothèques' panel with 'Options' and 'Bibliothèque du projet' sections.

Below the TIA Portal, the 'ProSim - [Automatisme - COMPRIME\_TIA.CAA]' window is open, showing a 3D simulation of a pill bottle filling line. The simulation includes a conveyor belt with bottles, a 'Distributeur de pilules' (pill distributor), and a 'Pilotage du vérin' (cylinder control). The simulation is titled 'L'API Siemens S7-1516 2DPPN aux commandes : Conditionnement'. A 'Moteur Bande' (conveyor motor) is shown at the bottom left. The simulation interface includes a 'Fichier' menu, a toolbar, and a 'Paramètres' panel on the right.

A red banner in the bottom right corner of the simulation window reads: **--- NEW ---**



--- NEW ---

S7-1516 2DPPN voor de besturing  
met ProcesSim

TIA Portal V13-SP1

Remplissage de bouteilles suivant recette

Détection position

Moteur d'entraînement

Armoire électrique

Local / Distant Start Stop

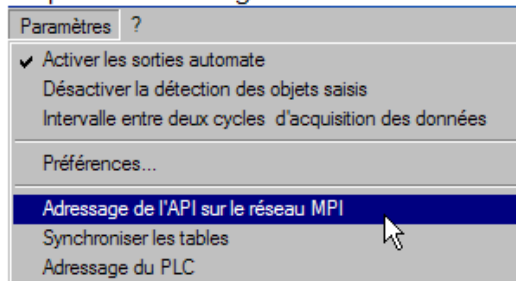
18 14 13

La bibliothèque a été fermée.  
La bibliothèque ProcesSim\_Library\_TIA\_V13\_Sp1-Upd5 a été ouverte.

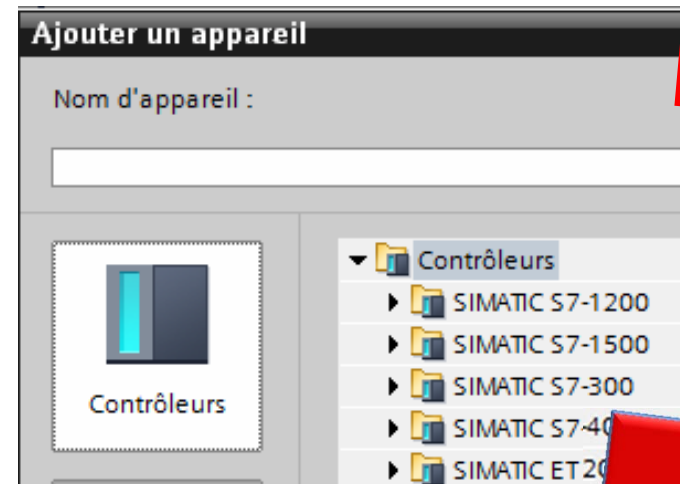
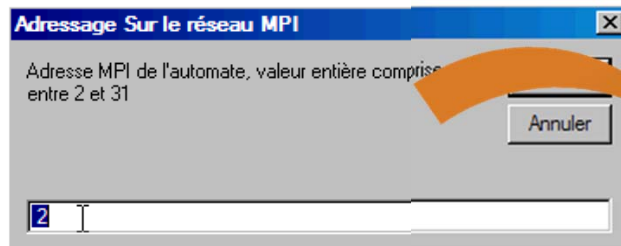
(Bibliothèques globales)

Flessenvul installatie

Le menu **Paramètres** permet de configurer la liaison.



L'adresse de l'automate sur le réseau MPI.



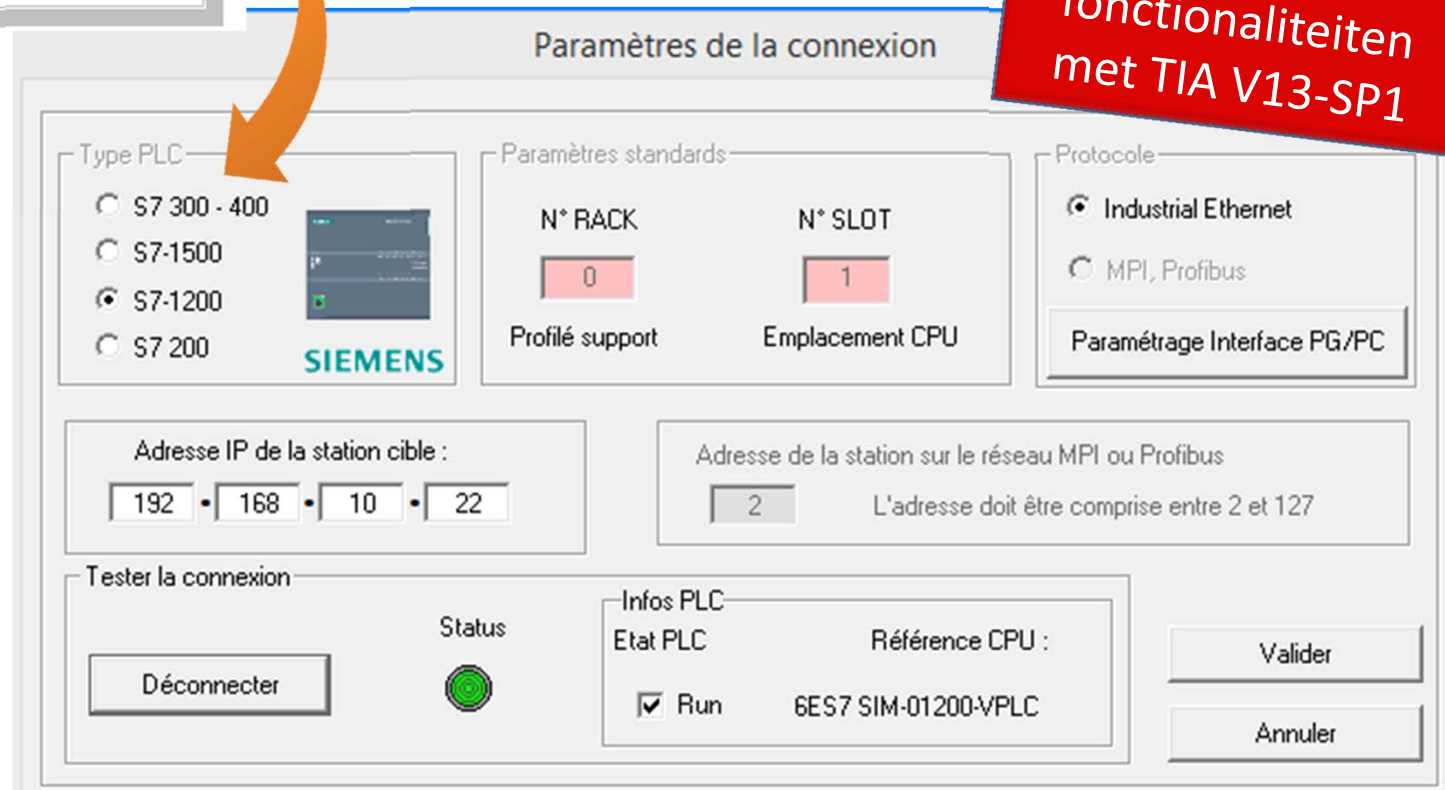
--- NEW ---

Nieuwe  
functionaliteiten  
met TIA V13-SP1

MPI

Profibus

Industrial Ethernet





# Verbinding en bediening : Parametrering 1/2

1. Type van de PLC

2. Communicatie  
protocol

3. Definitie  
van het IP-  
adres of  
MPI/Profibus,  
(Cf. Protocol)

4. Testen van de  
communicatie

6. Valideren van  
De parameters

Parameters van de verbinding

Type PLC

☐ S7 300 - 400

☐ S7-1500

☒ S7-1200

☐ S7 200

SIEMENS

Paramètres standards

N° RACK

0

Profilé support

N° SLOT

1

Emplacement CPU

Protocol

☒ Industrial Ethernet

☐ MPI, Profibus

Paramétrage Interface PG/PC

Adresse IP de la station cible :

192 • 168 • 10 • 22

OU

Adresse de la station sur le réseau MPI ou Profibus

2

L'adresse doit être comprise entre 2 et 127

Tester la connexion

Déconnecter

Status

Infos PLC

Etat PLC

☒ Run

Référence CPU :

6ES7 SIM-01200-VPLC

Valider

Annuler

MPI

Profibus

Industrial Ethernet

# Verbinding en bediening : Parametrering 2/2

4. De PLC als bediening van ProcesSim
 3. Virtueel operationeel deel

5. Activeren van het virtueel proces : Mode RUN

MPI

Profibus

Industrial Ethernet

1. Type de PLC

S7-200

S7-300

S7-400

S7-1200

S7-1500

TIA PLCSIM ou PLCSIM (> V5.4 + SP3)

PN/IE

Sélectionner...

Sélectionner...

PLCSIM

PLCSIM S7-1200/S7-1500

CPU

☐ SF ☒ RUN

☐ DP ☐ STOP

☐ DC ☐ RL

☐ RUN ☐ ST

PLCSIM(MPI)

PLCSIM(MPI)

PLCSIM(PROFIBUS)

PLCSIM(TCP/IP)

PLCSIM (<= V5.4)

2. Verbinding met de PLC

# S7-315 2DPPN : Bedienung en dynamische visualisation

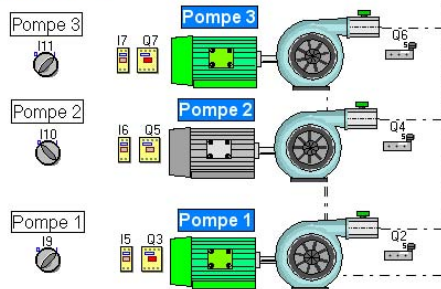
ProcesSim - [Automatisme - PERMUTATION\_POMPS.CAA]

Fichier Edition Mécano virtuel Affichage Programmation Paramètres ?

Commande de 3 pompes avec  
permutation de l'ordre de fonctionnement

Manu - Auto

Commandes  
manuelles

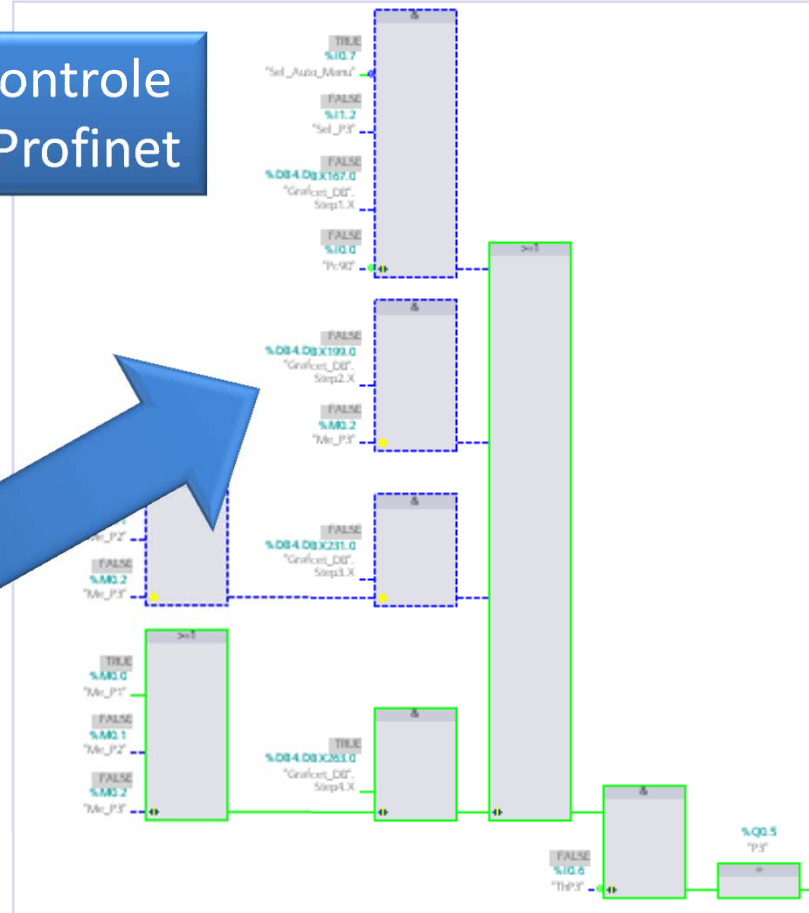
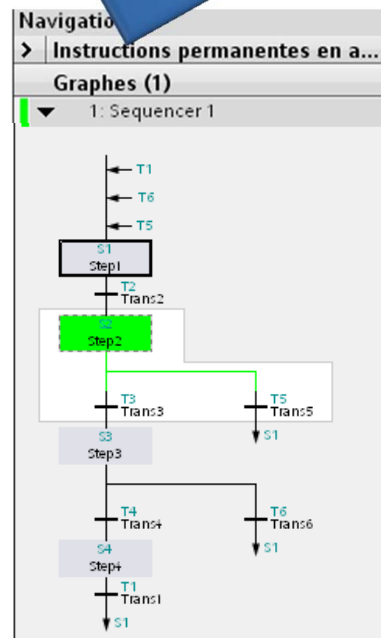
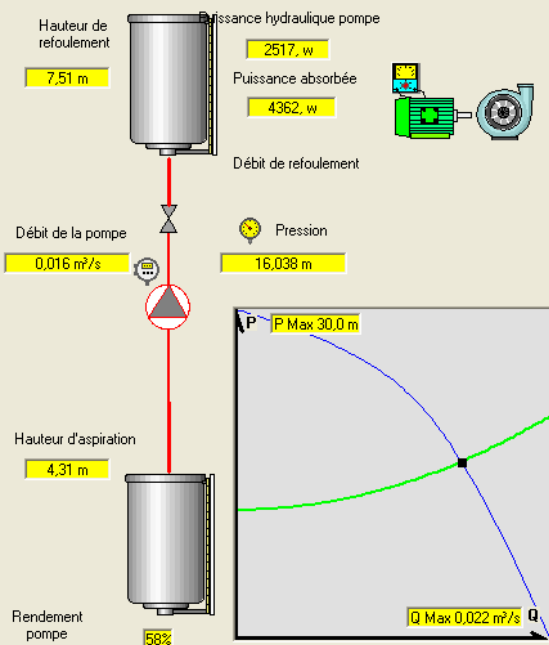


S7-315 2DPP met controle  
van ProcesSim via Profinet

Pilotage manuel  
vanne de vidange

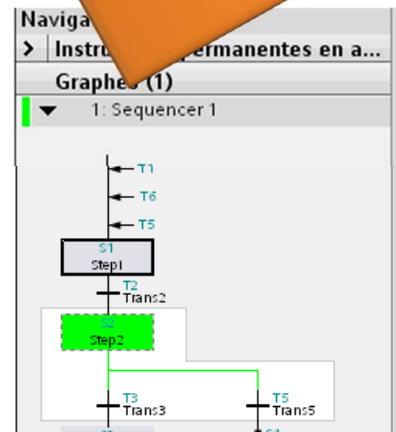
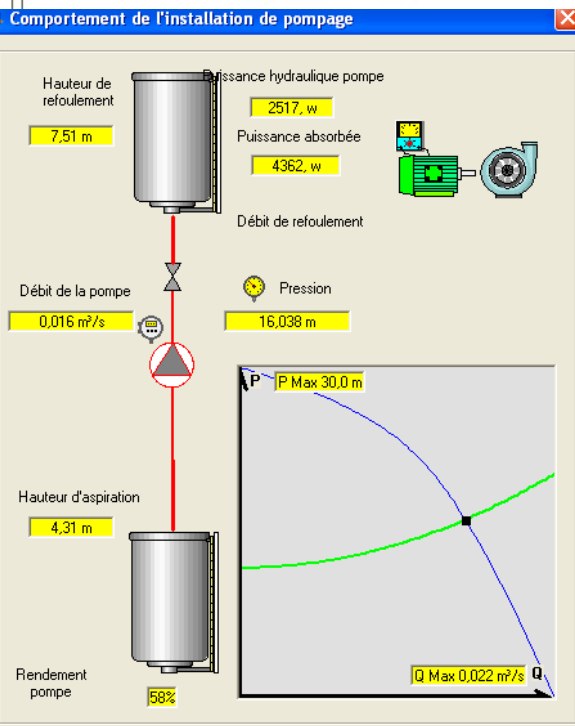
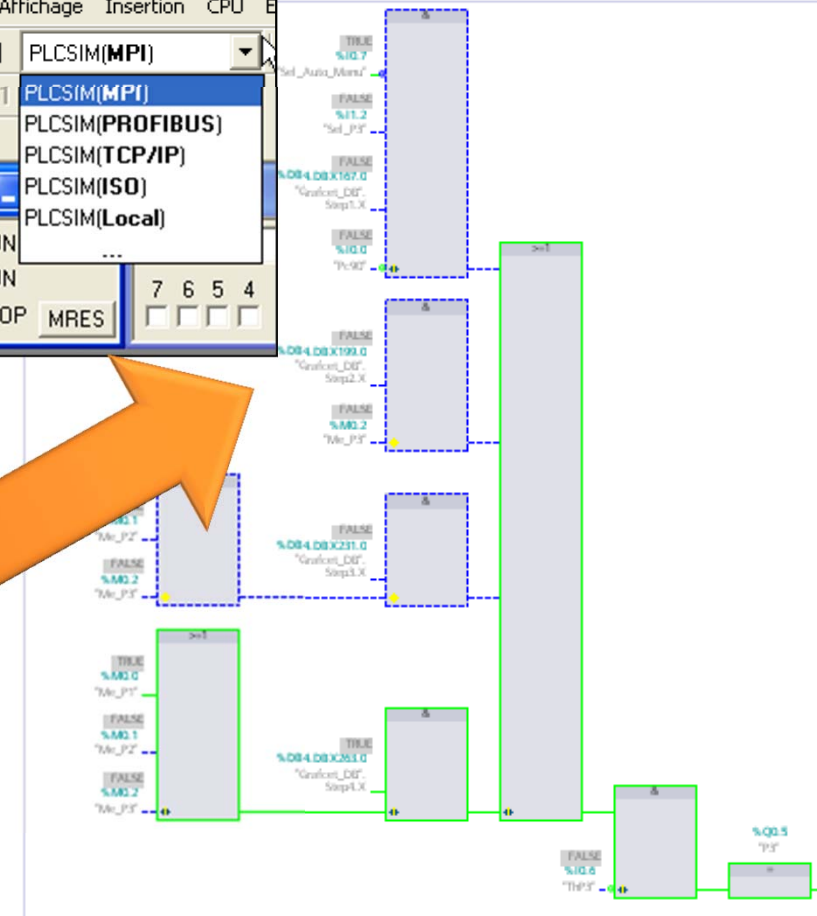
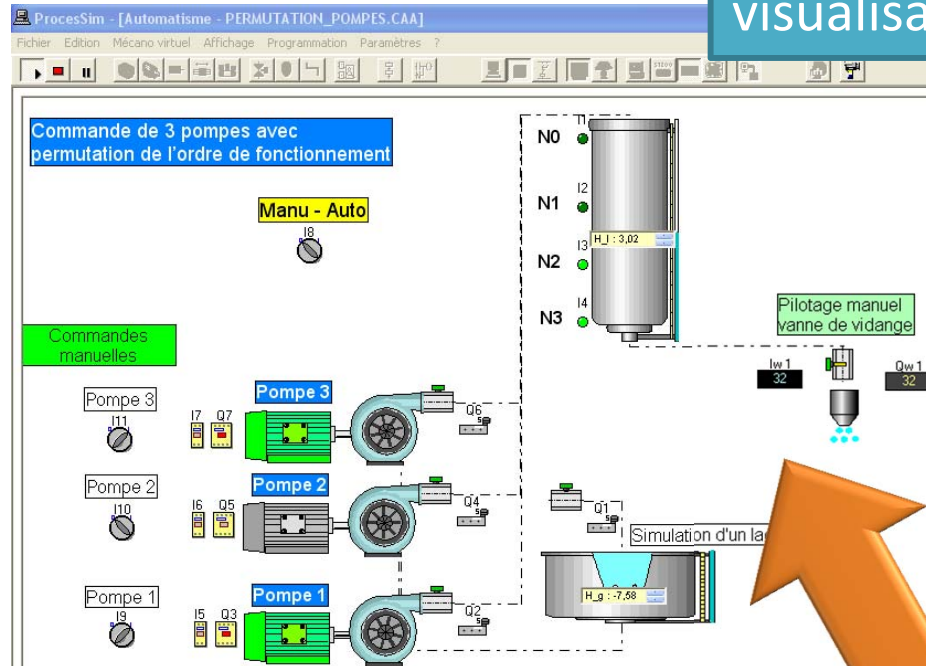
Simulation d'un lac

Comportement de l'installation de pompage



|                      |               |
|----------------------|---------------|
| "Sel_Auto_Manu"      | %I0.7         |
| "Pc90"               | %I0.0         |
| "Me_P1"              | %M0.0         |
| "Me_P2"              | %M0.1         |
| "Me_P3"              | %M0.2         |
| "Sel_P3"             | %I1.2         |
| "ThP3"               | %I0.6         |
| "P3"                 | %Q0.5         |
| "Grafcet_DB".Step1.X | %DB4.DBX167.0 |
| "Grafcet_DB".Step2.X | %DB4.DBX199.0 |
| "Grafcet_DB".Step3.X | %DB4.DBX231.0 |
| "Grafcet_DB".Step4.X | %DB4.DBX263.0 |

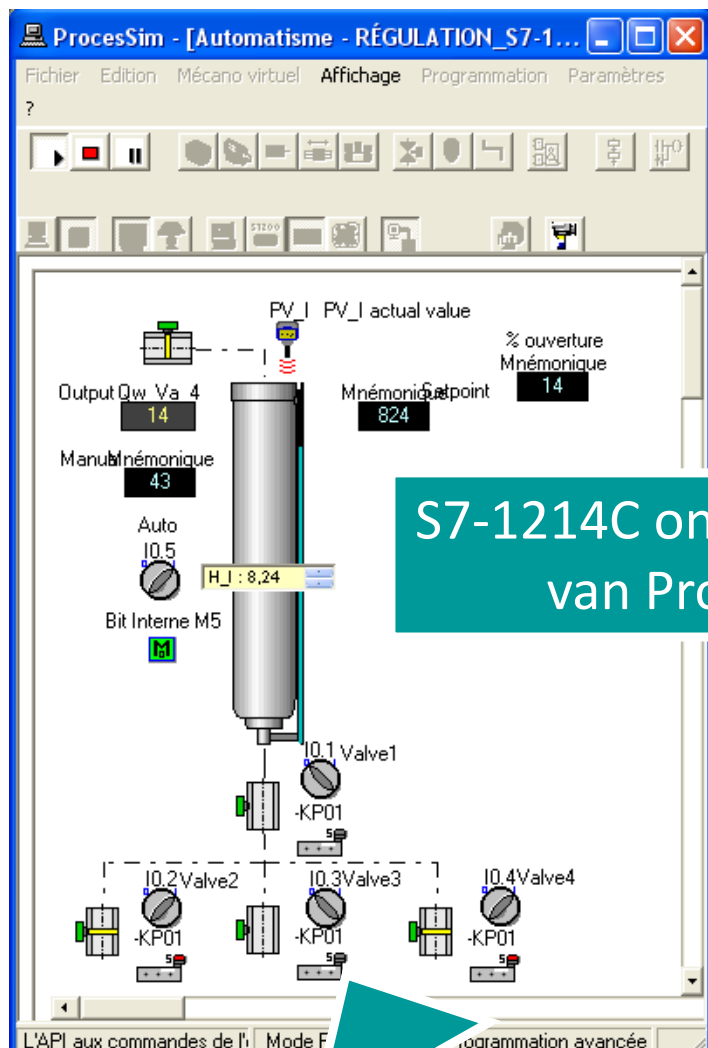
# PLCSIM(S7-315 2DPPN) : Bedienung en visualisatie



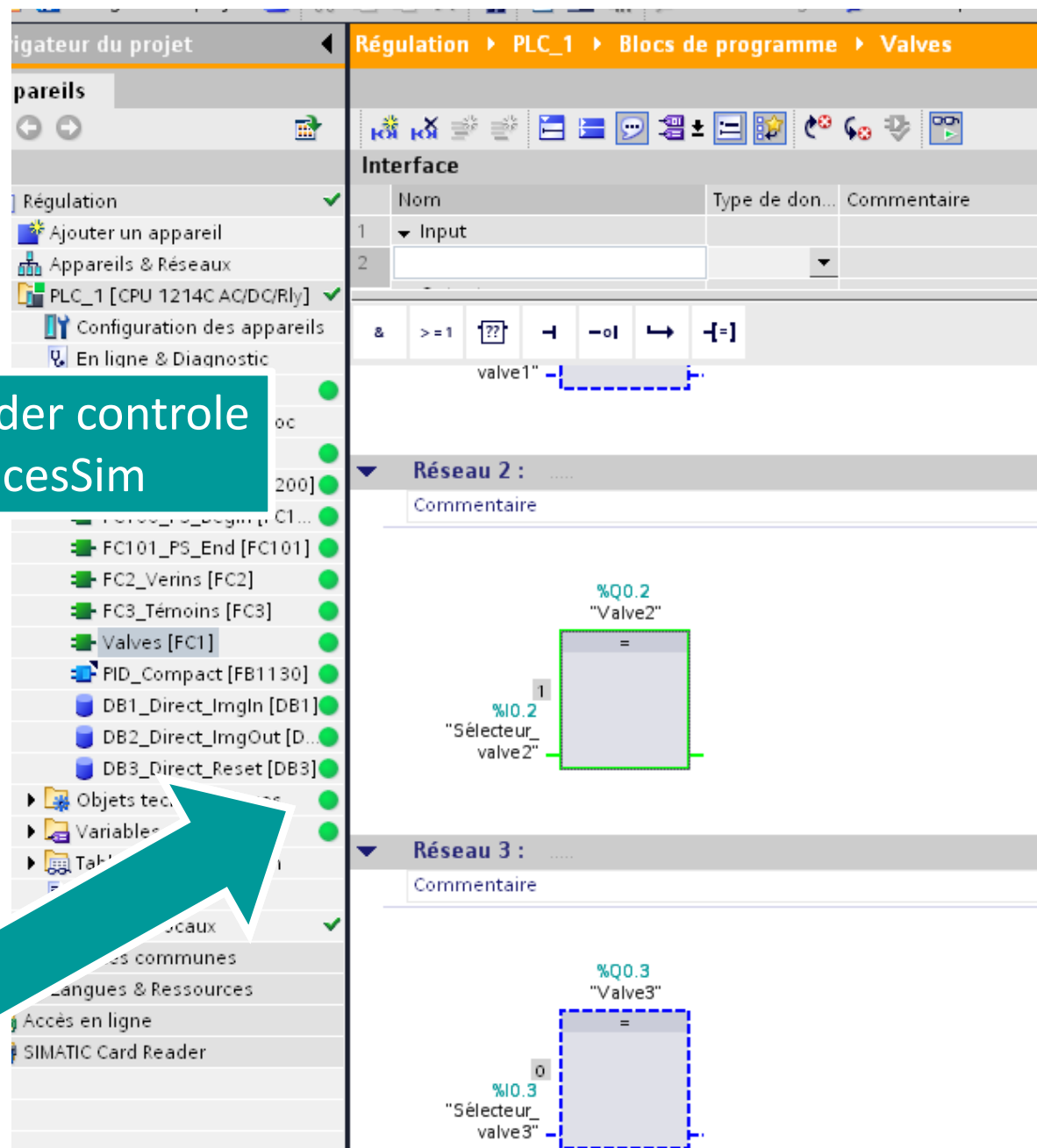
**PLCSIM(S7-315 2DPPN)  
met controle door  
ProcesSim**

|                      |               |
|----------------------|---------------|
| "Sel_Auto_Manu"      | %I0.7         |
| "Pc90"               | %I0.0         |
| "Me_P1"              | %M0.0         |
| "Me_P2"              | %M0.1         |
| "Me_P3"              | %M0.2         |
| "Sel_P3"             | %I1.2         |
| "ThP3"               | %I0.6         |
| "P3"                 | %Q0.5         |
| "Grafcet_DB".Step1.X | %DB4.DBX167.0 |
| "Grafcet_DB".Step2.X | %DB4.DBX199.0 |
| "Grafcet_DB".Step3.X | %DB4.DBX231.0 |
| "Grafcet_DB".Step4.X | %DB4.DBX263.0 |



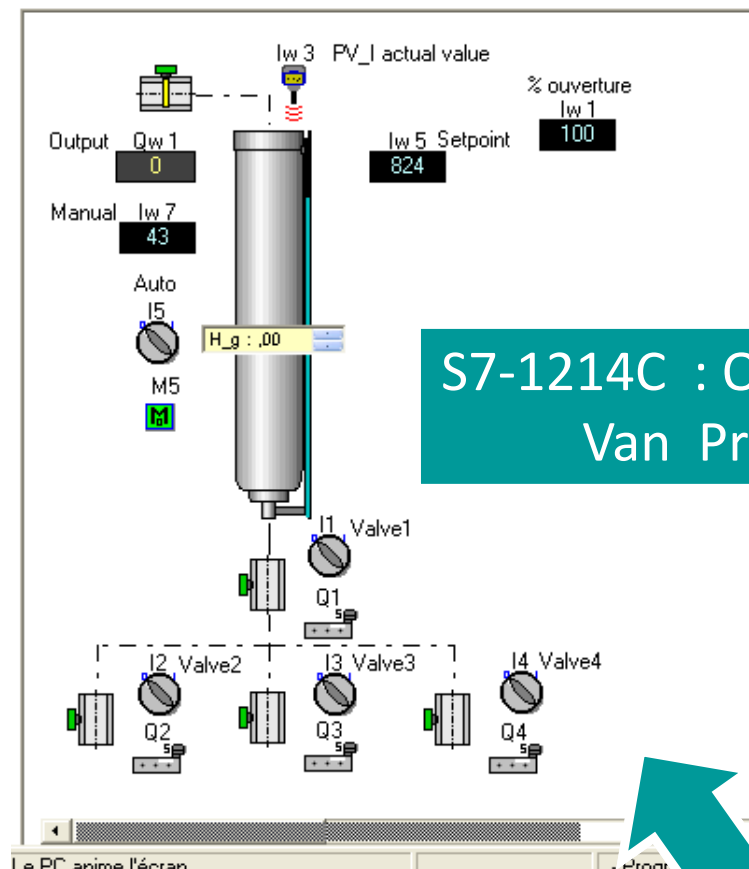


S7-1214C onder controle  
van ProcesSim

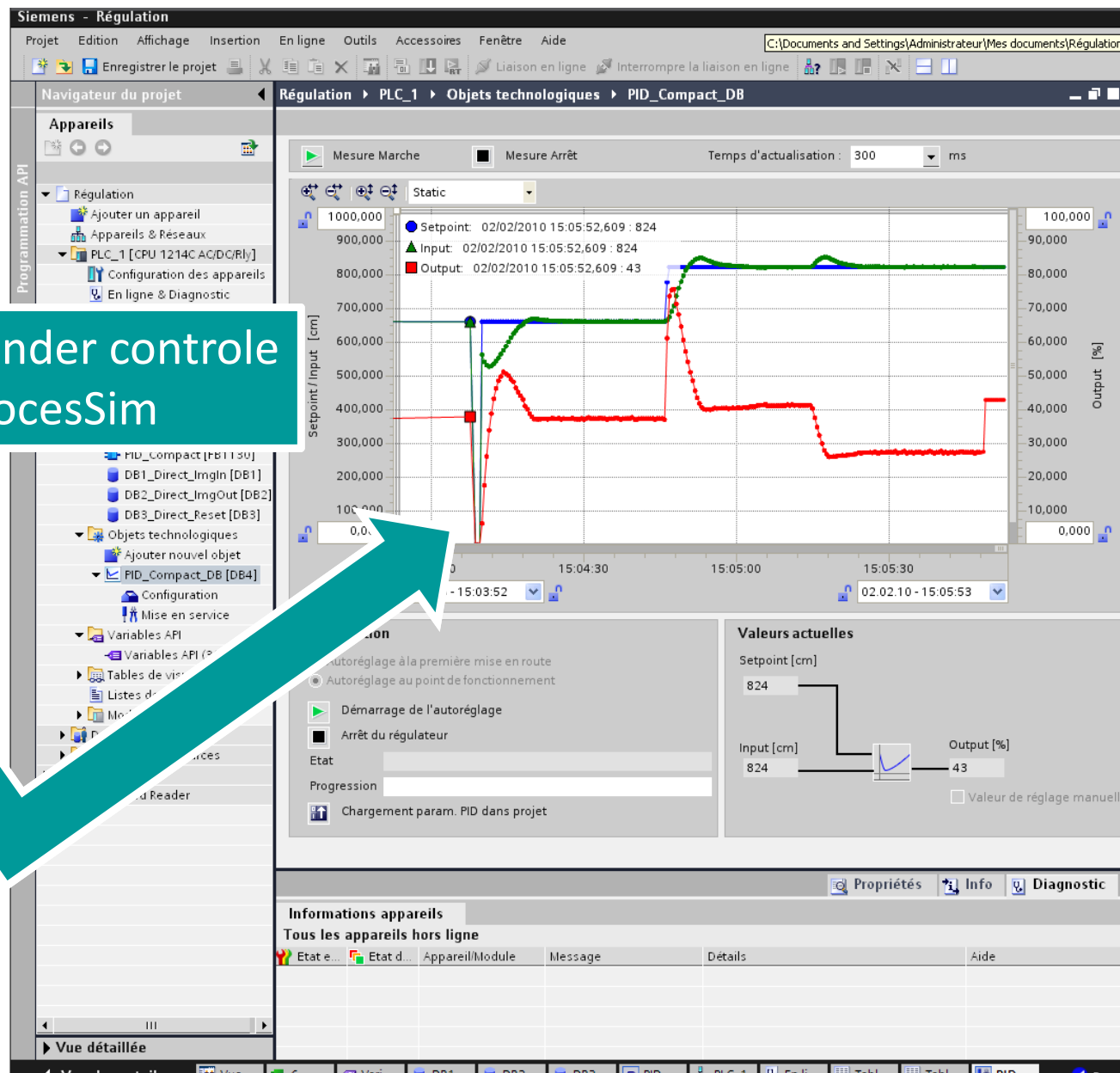


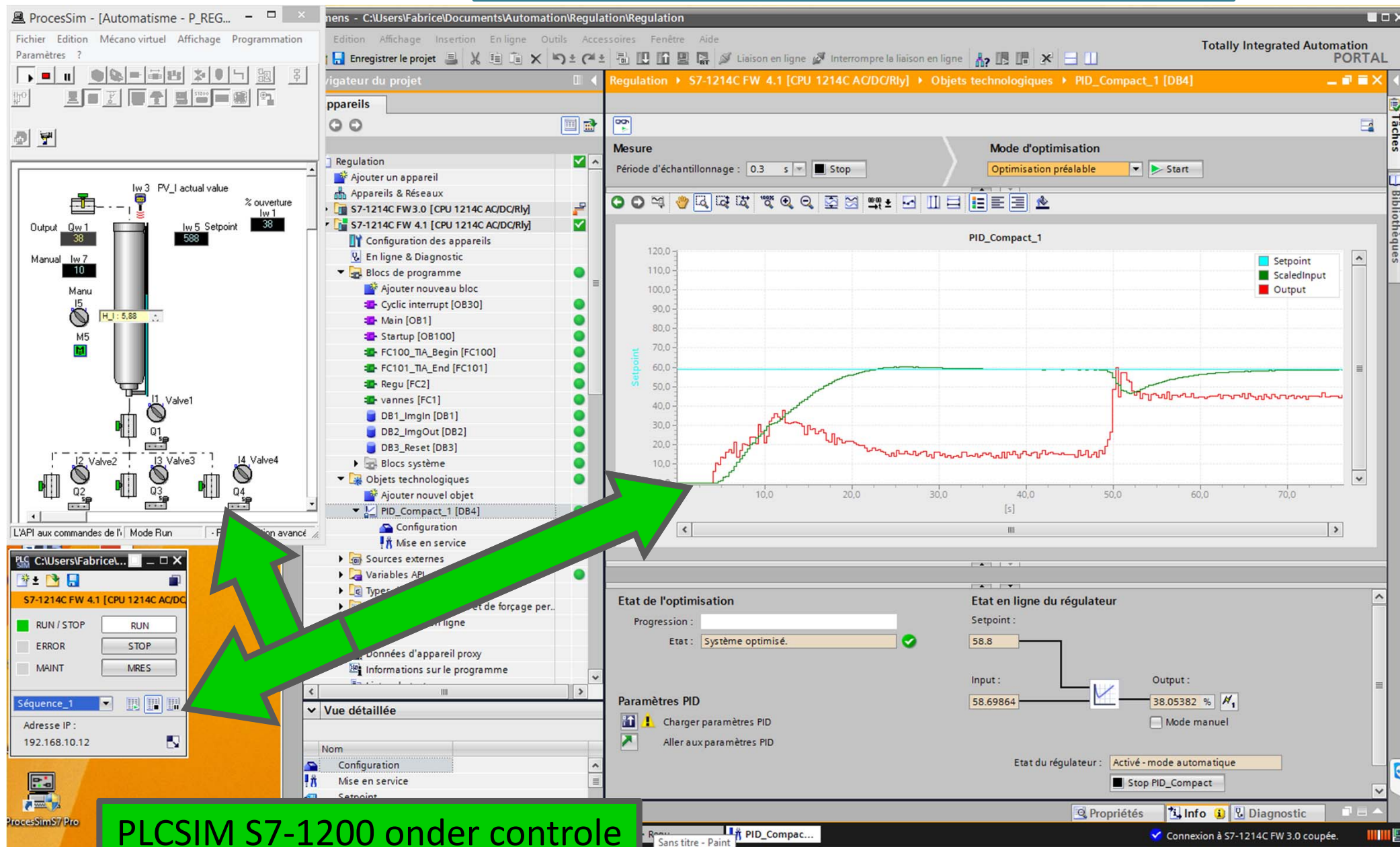
ProcesSim - [Automatisme - RÉGULATION\_S7-1200.CAA]

Fichier Edition Mécano virtuel Affichage Programmation Paramètres ?



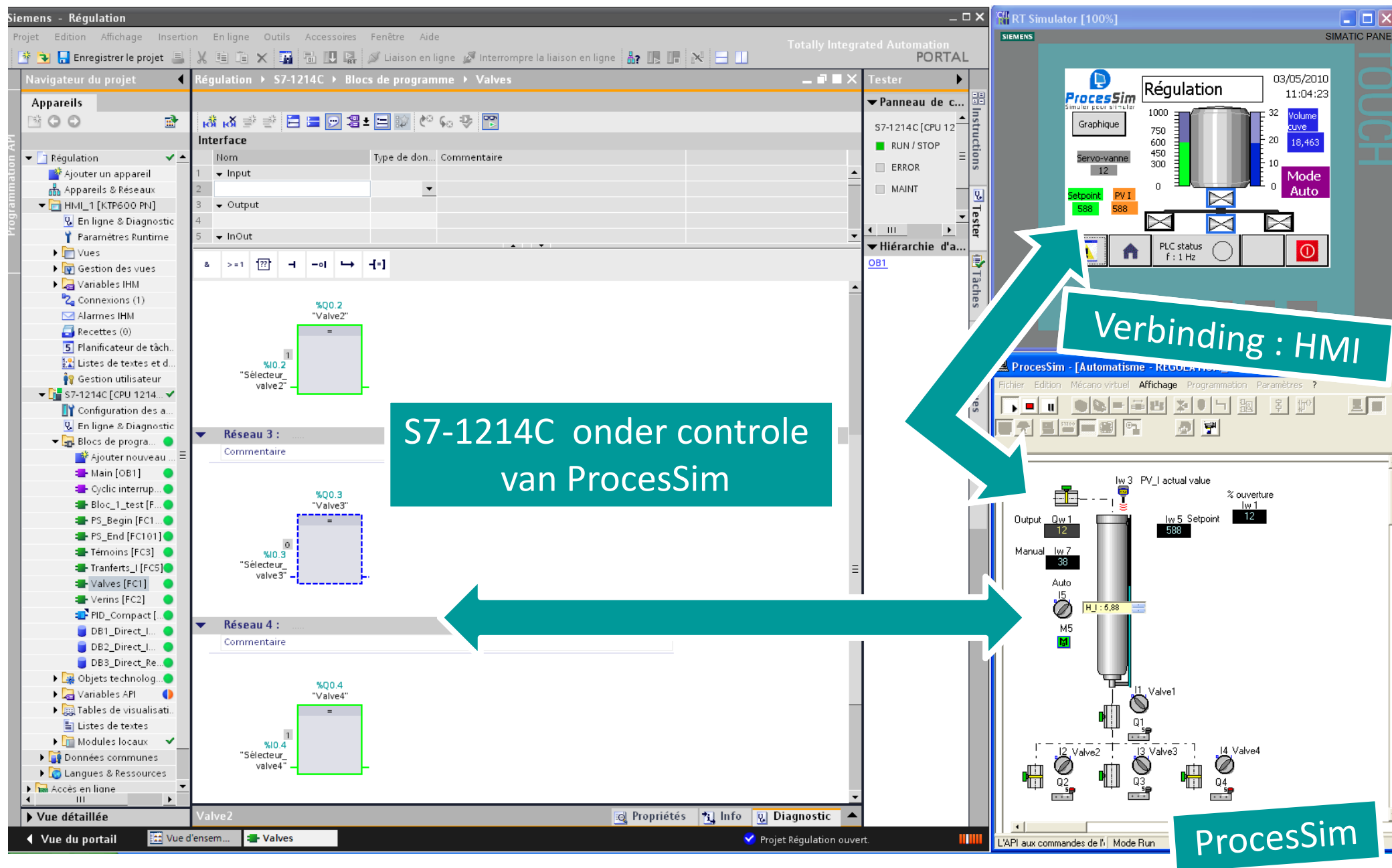
S7-1214C : Onder controle  
Van ProcesSim





PLCSIM S7-1200 onder controle  
van ProcesSim

# S7-1200 : Voorbeeld : Volledige Integratie door ProceSim - TIA



The image shows the Siemens TIA Portal interface for a regulation project (S7-1214C) and the ProceSim HMI simulation window. The TIA Portal displays the project structure on the left, including the 'S7-1214C [CPU 1214C]' and 'Blocs de programme' sections. The main workspace shows the 'Interface' tab with a ladder logic diagram for 'Valve2' and 'Valve3'. The ProceSim window on the right shows a graphical representation of the valve system with a 'Régulation' panel. A large green arrow points from the ProceSim window to the TIA Portal, indicating the connection between the two. A smaller green arrow points from the TIA Portal to the ProceSim window, indicating the connection between the two.

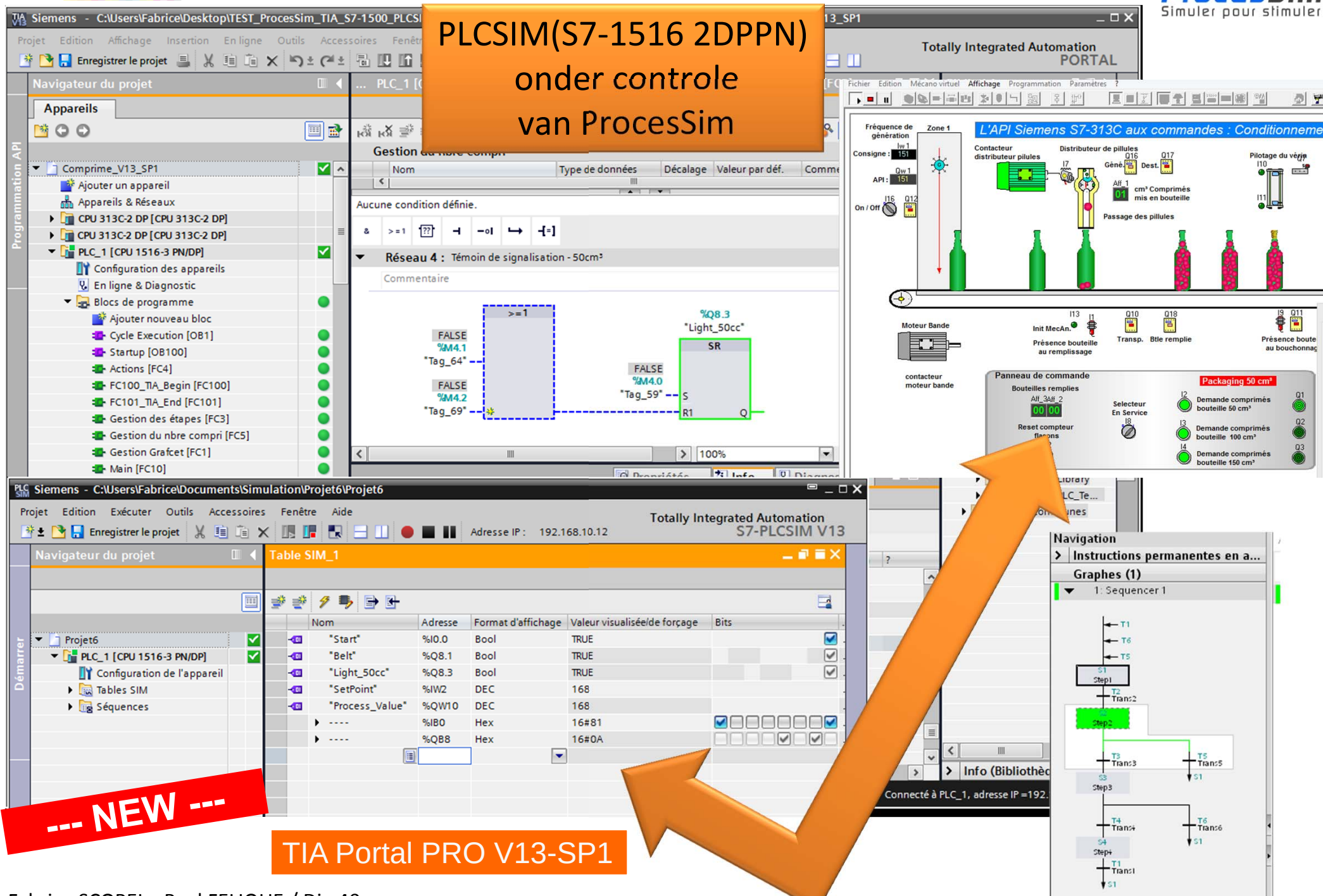
**Verbinding : HMI**

**S7-1214C onder controle van ProceSim**

**ProceSim**



PLCSIM(S7-1516 2DPPN)  
onder controle  
van ProcesSim



Siemens - C:\Users\Fabrice\Desktop\TEST\_ProcesSim\_TIA\_S7-1500\_PLCSIM

Projet Edition Affichage Insertion En ligne Outils Accessoires Fenêtre

Enregistrer le projet

Navigateur du projet

Appareils

Comprime\_V13\_SP1

Ajouter un appareil

Appareils & Réseaux

CPU 313C-2 DP [CPU 313C-2 DP]

CPU 313C-2 DP [CPU 313C-2 DP]

PLC\_1 [CPU 1516-3 PN/DP]

Configuration des appareils

En ligne & Diagnostic

Blocs de programme

Ajouter nouveau bloc

Cycle Execution [OB1]

Startup [OB100]

Actions [FC4]

FC100\_TIA\_Begin [FC100]

FC101\_TIA\_End [FC101]

Gestion des étapes [FC3]

Gestion du nbre compri [FC5]

Gestion Grafset [FC1]

Main [FC10]

Gestion du nbre compri

Nom Type de données Décalage Valeur par déf. Comm

Aucune condition définie.

Réseau 4 : Témoin de signalisation - 50cm³

Commentaire

FALSE %M4.1

\*Tag\_64\*

FALSE %M4.2

\*Tag\_69\*

%Q8.3

\*Light\_50cc\*

SR

R1 Q

100%

Siemens - C:\Users\Fabrice\Documents\Simulation\Projet6\Projet6

Projet Edition Exécuter Outils Accessoires Fenêtre Aide

Enregistrer le projet

Adresse IP: 192.168.10.12

Totally Integrated Automation S7-PLCSIM V13

Navigateur du projet

Table SIM\_1

| Nom             | Adresse | Format d'affichage | Valeur visualisée/de forçage | Bits                                |
|-----------------|---------|--------------------|------------------------------|-------------------------------------|
| *Start*         | %I0.0   | Bool               | TRUE                         |                                     |
| *Belt*          | %Q8.1   | Bool               | TRUE                         |                                     |
| *Light_50cc*    | %Q8.3   | Bool               | TRUE                         |                                     |
| *SetPoint*      | %IW2    | DEC                | 168                          |                                     |
| *Process_Value* | %QW10   | DEC                | 168                          |                                     |
| ----            | %I80    | Hex                | 16#81                        | <input checked="" type="checkbox"/> |
| ----            | %Q88    | Hex                | 16#0A                        | <input checked="" type="checkbox"/> |

Projet6

PLC\_1 [CPU 1516-3 PN/DP]

Configuration de l'appareil

Tables SIM

Séquences

Navigation

Instructions permanentes en a...

Graphes (1)

1: Sequencer 1

T1

T6

T5

S1 Step1

T2 Trans:2

S2 Step2

T3 Trans:3

T5 Trans:5

S3 Step3

T4 Trans:4

T6 Trans:6

S4 Step4

T1 Trans:1

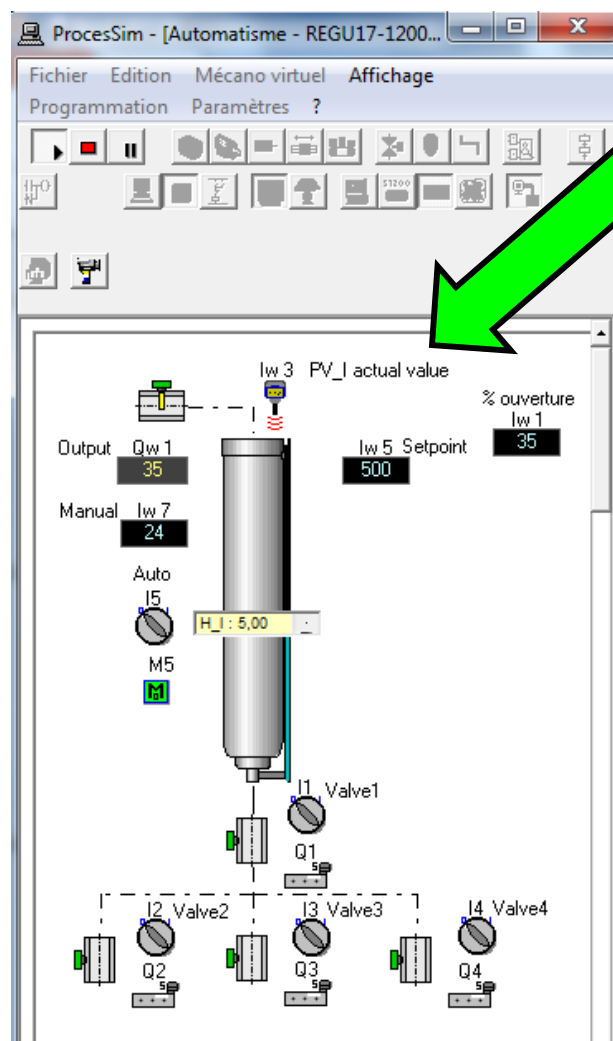
S1

Connecté à PLC\_1, adresse IP=192.

--- NEW ---

TIA Portal PRO V13-SP1

## Regeling met PID en Autotuning



Regulation\_S7-1200 > PLC\_1

Mesure  
Période d'échantillonnage :



ues > PID\_Con

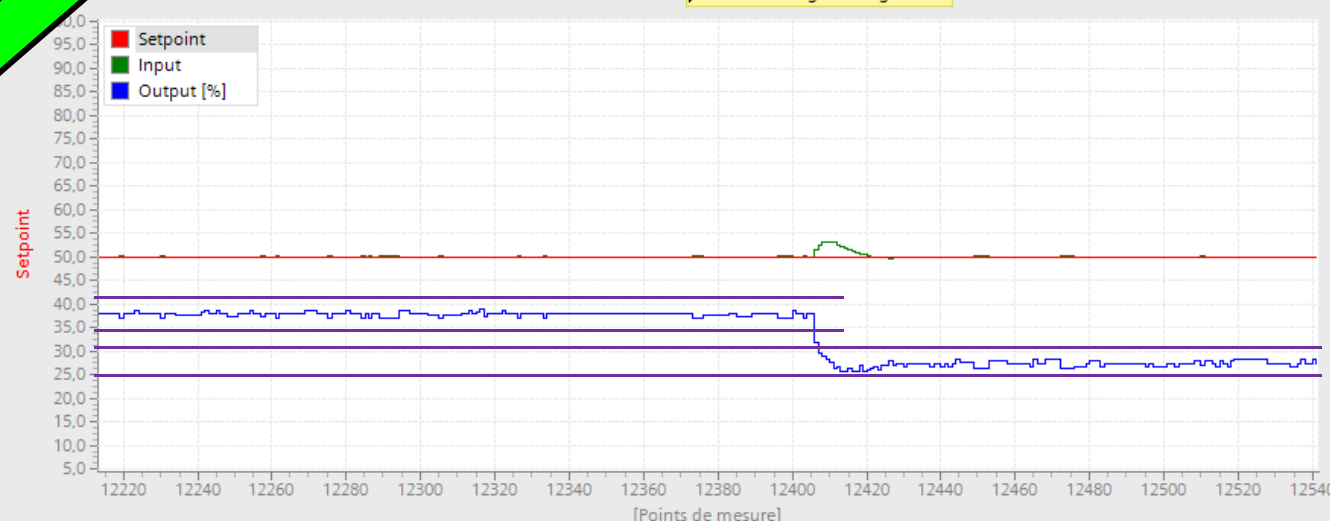
--- NEW ---

de d'optimisation

Optimisation fine

Start

Justifier la légende à gauche



|   | Nom      | Type ... | Adresse | Couleur | Echelle Y min | Echelle Y max | Unité | Commentaire |
|---|----------|----------|---------|---------|---------------|---------------|-------|-------------|
| 1 | Setpoint | Syste... |         | Red     | 5             | 100           |       |             |
| 2 | Input    | Syste... |         | Green   | 5             | 100           |       |             |
| 3 | Output   | Syste... |         | Blue    | 0             | 100           | %     |             |

Etat de l'optimisation

Progression :

Etat : Système optimisé.

Etat en ligne du régulateur

Setpoint :

50.0

Input :

50.0

Output :

34.61243 %

Mode manuel

Paramètres PID

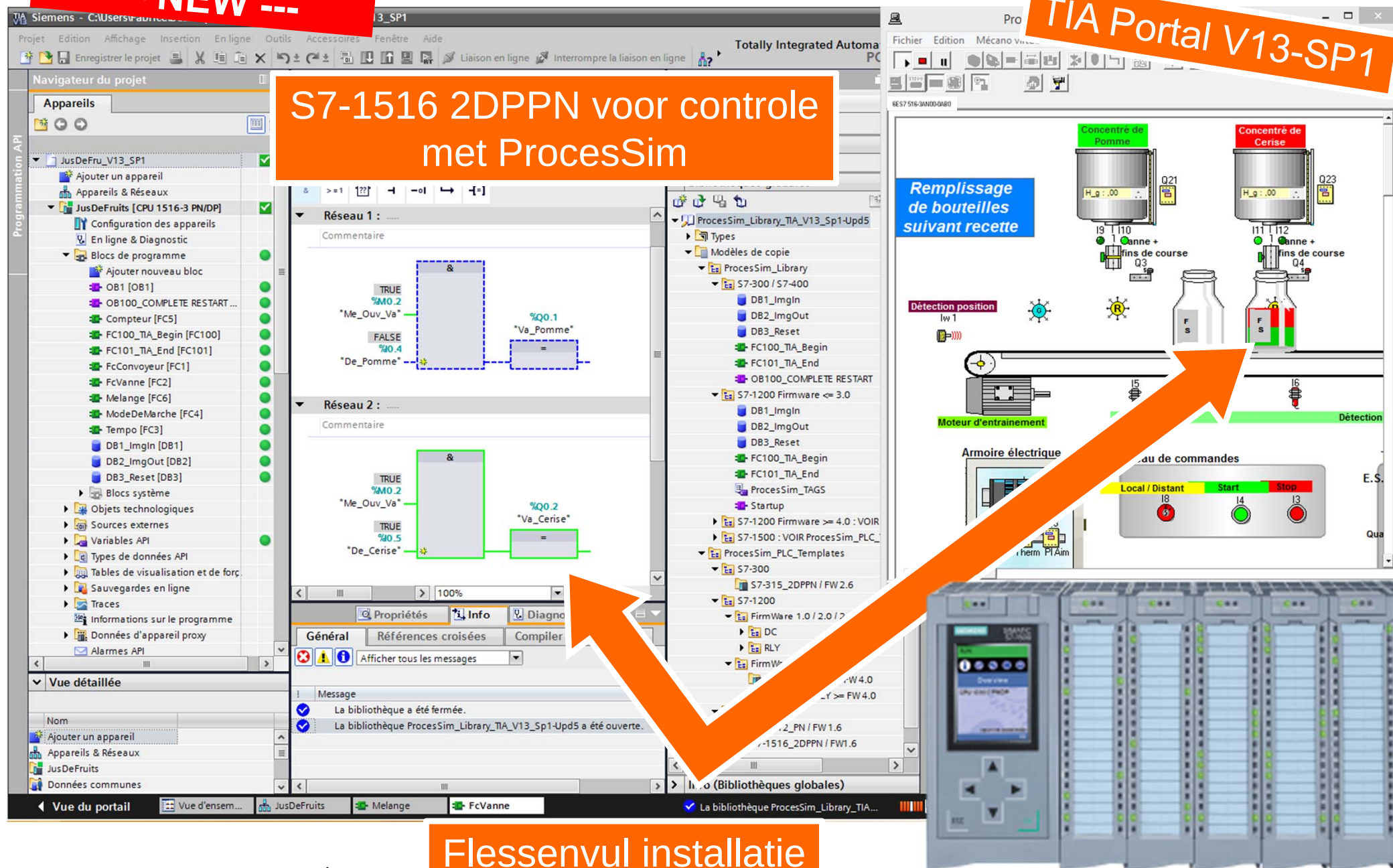
Charger paramètres PID

# Bediening vanuit een S7-1516 2DPPN

--- NEW ---

S7-1516 2DPPN voor controle  
met ProcesSim

TIA Portal V13-SP1



Remplissage de bouteilles suivant recette

Détection position

Moteur d'entraînement

Armoire électrique

Eau de commandes

Local / Distant

Start

Stop

La bibliothèque a été fermée.

La bibliothèque ProcesSim\_Library\_TIA\_V13\_Sp1-Upd5 a été ouverte.

Flessenvul installatie

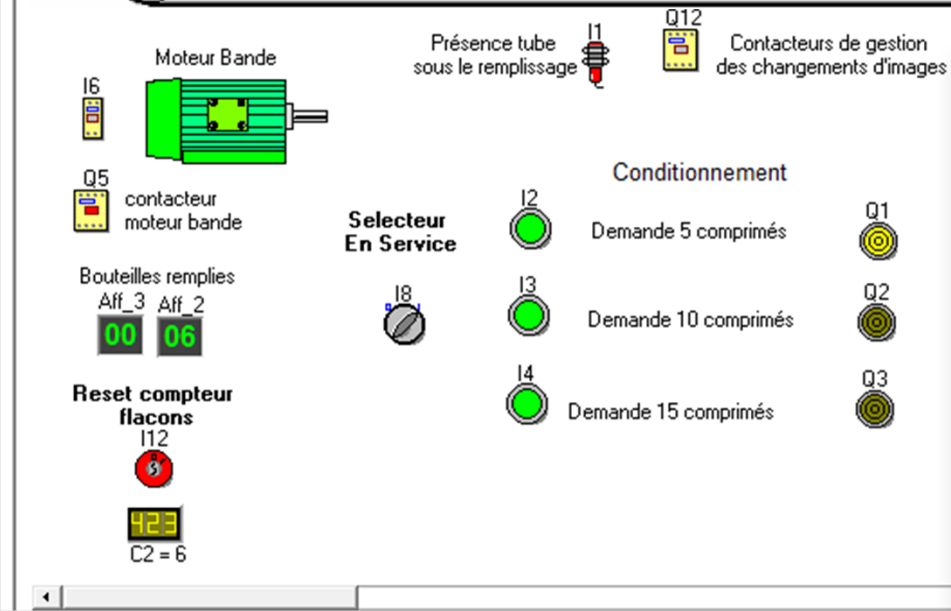
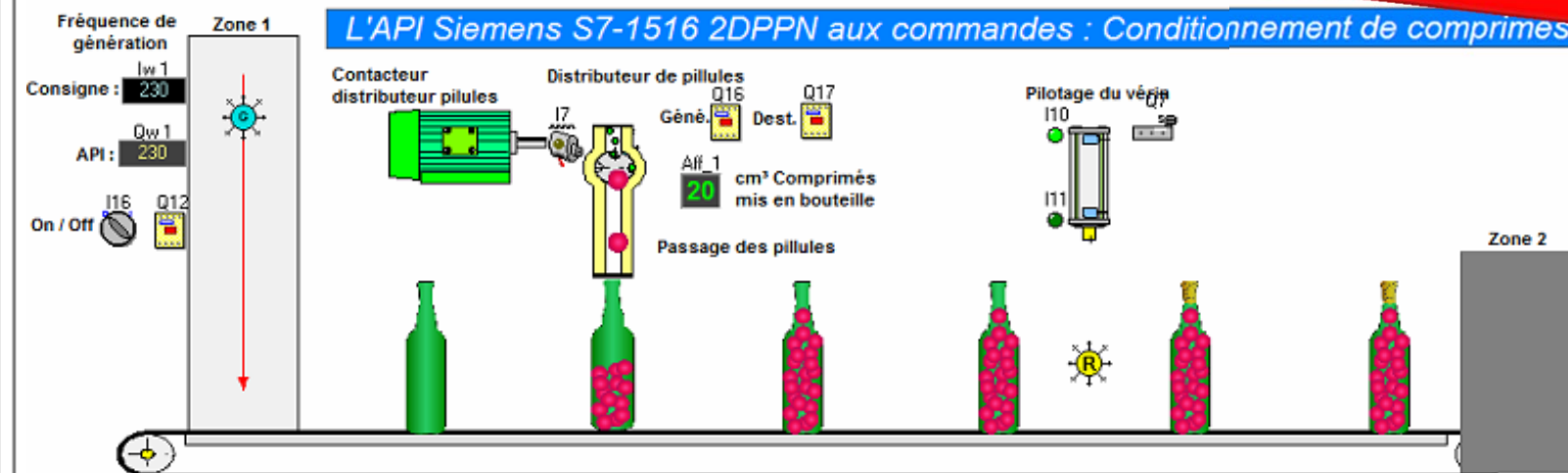


ProcesSim - [Automatisme - COMPRIME.CAA]

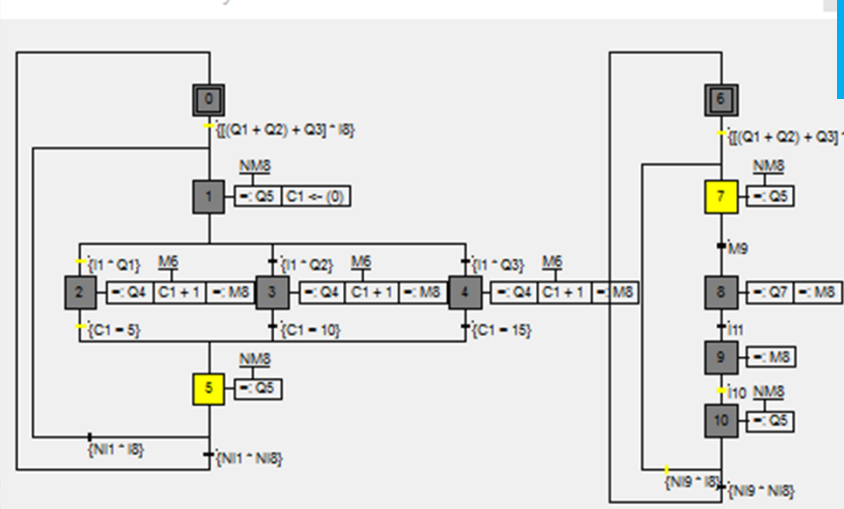
Fichier Edition Mécano virtuel Affichage Programmation Paramètres ?



→ NEWS ←



Les Graficets en "Visudyn"



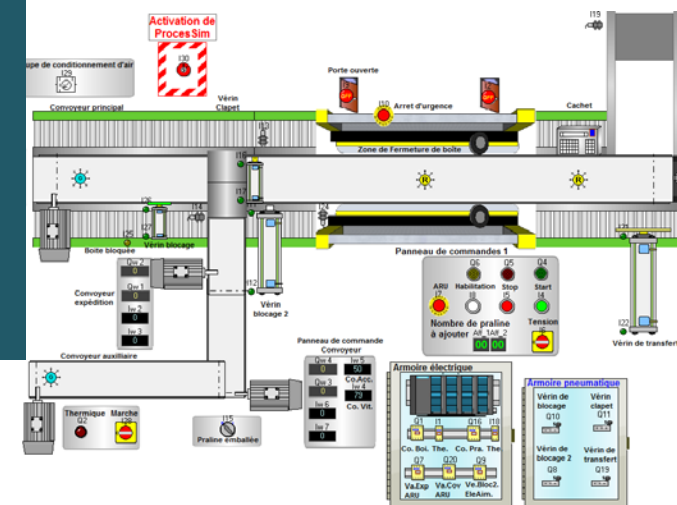
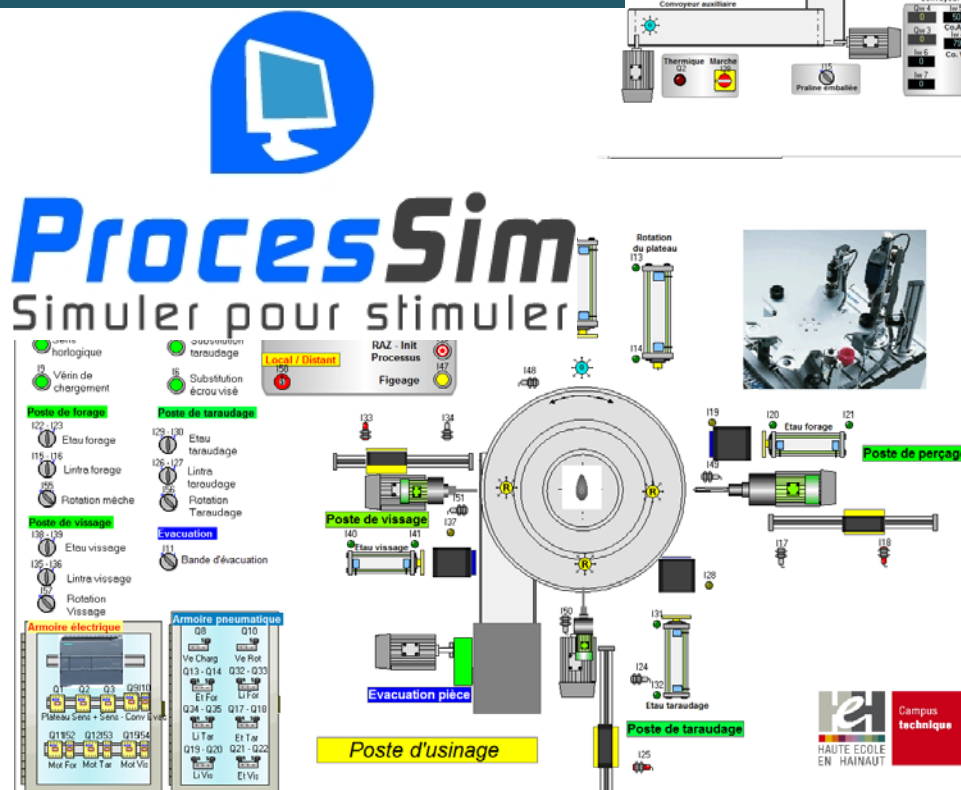
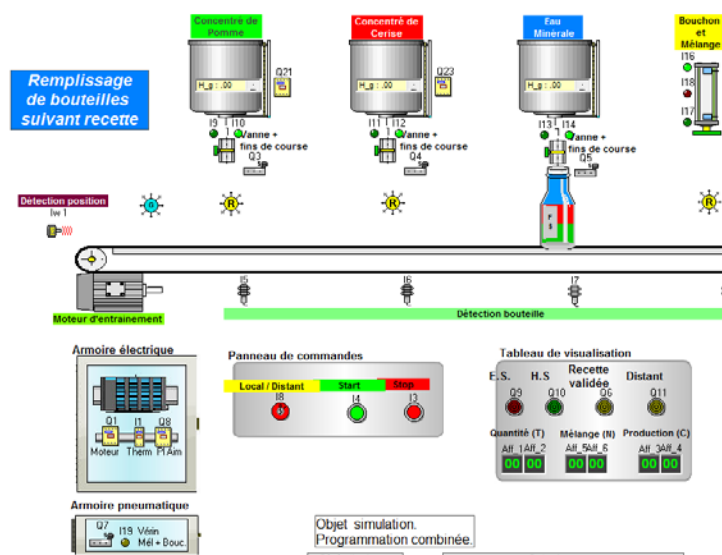
Le PC anime l'écran

Mode Run - Program



ProcesSim is compatible met TIA Portal Pro V13-SP1/Update 5  
De software is getest met volgende PLC's :

- S7-1214C (Fw : 3.0)
- S7-315 2DPPN (Fw : 2.6)
- S7-1516 2DPPN (Fw : 1.6)
- S7-PLCSIM V5.5 (Simatic Manager & TIA Portal V13-SP1)
- PLCSIM S7-1200 (TIA Portal V13-SP1 – S71214C-FW 4.1)
- PLCSIM S7-1500 (TIA Portal V13-SP1)
- ...



## *Haute Ecole en Hainaut – Campus Technique*



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7000 Mons

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<http://processim.heh.be>

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***Paul Felique***

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3390 Tielt-Winge

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E-mail : [paul.felique@skynet.be](mailto:paul.felique@skynet.be)

<http://processim.heh.be>

# Contact gegevens

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**Bezoek en demonstraties ter plaatse.**

