

# Smart generator TIA Portal v1

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29/03/30	Add a chapter to explain how to import datablocks containing structured variables.

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## TIA Portal overview

**TIA Portal** is the new **Siemens** engineering platform and framework regarding automation. It integrates the basic software including **Simatic Step7 TIA Portal** that continues the story of **Simatic Step7**. As its predecessors, **Simatic Step7 TIA Portal** allows configuring, programming and testing/diagnosing last generation of controllers.

**Siemens** just released the **TIA Portal V14**, and it is time for **PcVue** to have a connector allowing importing **Step7 TIA Portal** elements. **PcVue** already integrates a **smart generator Simatic Step7 V5.x**, but with the release of **TIA Portal** a new **Step7** has been developed (version directly jumped to v11, now v14) but this new version is no longer compatible with our **smart generator**, we need to rebuild a new one.

Additional info regarding **TIA Portal** [here](#)

## Importing Step7 TIA data blocks into PcVue

This first version allows importing data blocks. The **command interface** we used to address to retrieve and extract data from **Step7 v5** is no longer present in **Step7 TIA Portal**. When browsing the web and the “step7osphere” you can read that this **command interface** is highly expected by users but today there is nothing official from **Siemens** saying that it will be reintroduced in **TIA Portal**. The consequence is that before importing into **PcVue** using **Smart Generator**, user must first manually export the data blocks to files.

Manually exporting the DB (address and sometimes source for structured data) is something that can take some times, especially if there are a lot of DBs in the application, but it will still be faster than doing manually the mapping (according to system integrator, the mapping takes one week for a “two weeks” project, that means half of the time)

### Exporting the blocks to files

User must first export to file the DBs he wants to monitor in **PcVue**. To export the DB user must open them in the **Step 7 TIA**, then select the DB content, copy and paste into a text file named DBxxx.txt (for example DB300.txt). DB\_XXX.txt is also supported

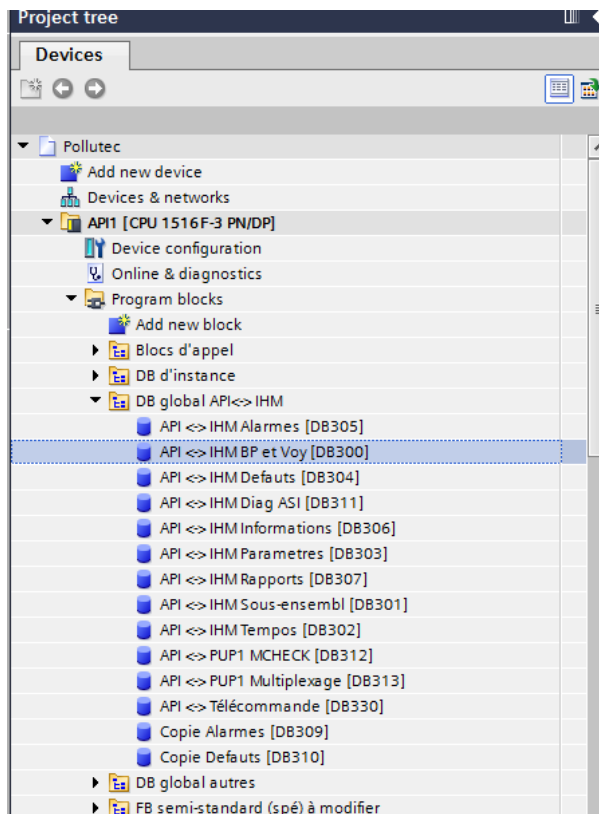


Figure 1- Select and open the DB in the editor

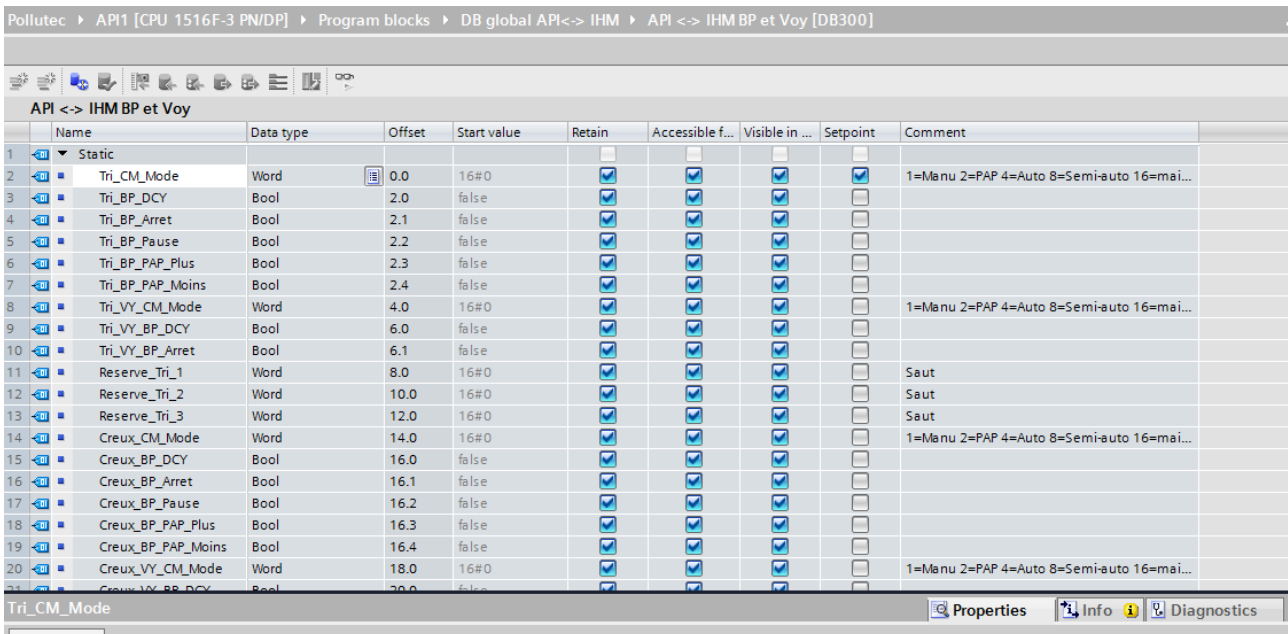


Figure 2- Select the DB content (ctrl + A) and copy it (ctrl + C)

Static	Name	Data type	Offset	Start value	Retain	Accessible f...	Visible in ...	Setpoint	Comment
auto 16=maintenance	Tri_CM_Mode	Word	0.0	16#0	True	True	True	False	1=Manu 2=PAP 4=Auto 8=Semi-
	Tri_BP_DCY	Bool	2.0	false	True	True	True	False	
	Tri_BP_Arret	Bool	2.1	false	True	True	True	False	
	Tri_BP_Pause	Bool	2.2	false	True	True	True	False	
	Tri_BP_PAP_Plus	Bool	2.3	false	True	True	True	False	
	Tri_BP_PAP_Moins	Bool	2.4	false	True	True	True	False	
auto 16=maintenance	Tri_VY_CM_Mode	Word	4.0	16#0	True	True	True	False	1=Manu 2=PAP 4=Auto 8=Semi-
	Tri_VY_BP_DCY	Bool	6.0	false	True	True	True	False	
	Tri_VY_BP_Arret	Bool	6.1	false	True	True	True	False	

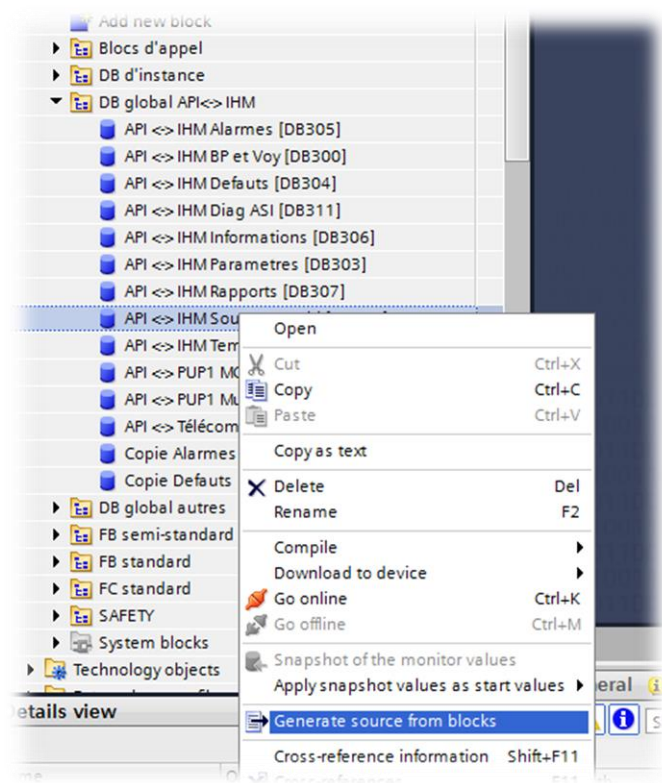
Reserve_Tri_1	Word	8.0	16#0	True	True	True	False	Saut	
Reserve_Tri_2	Word	10.0	16#0	True	True	True	False	Saut	
Reserve_Tri_3	Word	12.0	16#0	True	True	True	False	Saut	
Creux_CM_Mode	Word	14.0	16#0	True	True	True	False	1=Manu 2=PAP 4=Auto 8=Semi-	
auto 16=maintenance									
Creux_BP_DCY	Bool	16.0	false	True	True	True	False		
Creux_BP_Arret	Bool	16.1	false	True	True	True	False		
Creux_BP_Pause	Bool	16.2	false	True	True	True	False		
Creux_BP_PAP_Plus	Bool	16.3	false	True	True	True	False		
Creux_BP_PAP_Moins	Bool	16.4	false	True	True	True	True	False	
Creux_VY_CM_Mode	Word	18.0	16#0	True	True	True	True	False	1=Manu 2=PAP 4=Auto
8=Semi-auto 16=maintenance									
Creux_VY_BP_DCY	Bool	20.0	false	True	True	True	False		
Creux_VY_BP_Arret	Bool	20.1	false	True	True	True	False		

Figure 3 – Paste (ctrl + V) the content in a text file DBxxx.txt

## Dealing with structured variables

If the DB contains structured variables then the exported text file is not enough because there is no way to know that a variable is inside or outside a structure (at least for this version 1). So if the DB contains imbricated structures or combination of elementary and structured variables the Smart generator will need also the “.db” file to build the variable name.

Let consider the following DB 14



Smart Generator will need the exported file to retrieve the address

Tempo	DInt	98.0	0	True	True	True	True	True	False	Durée de la tempo
tempo	Tps	DInt	102.0	0	True	True	True	True	False	Temps en cours de la
tempo en secondes	Cpt	DInt	106.0	0	True	True	True	True	False	Compteur interne de la
temporisation	Q	Bool	110.0	FALSE	True	True	True	True	False	Sortie de la
TempoInhibVentil	"Tempo"	DInt	112.0		True	True	True	True	False	
Temporisation d'inhibition du seuil d'enclenchement de la ventilation										
Tempo	DInt	112.0	60	True	True	True	True	True	True	Durée de la tempo

tempo	Tps	DInt	116.0	0	True	True	True	True	False	Temps en cours de la
tempo en secondes	Cpt	DInt	120.0	0	True	True	True	True	False	Compteur interne de la
temporisation	Q	Bool	124.0	FALSE	True	True	True	True	False	Sortie de la
température défaut	Seuil_Def_TH	Real	126.0	-18.0	True	True	True	True	False	Seuil de
température haute zone										

**Smart Generator** will also need the exported source file to build the variable full names

```

BEGIN
Zone1.Tempo_marche_partiel.Tempo := 5;
Zone1.Tempo_marche_partiel.Tps := 0;
Zone1.Tempo_marche_partiel.Cpt := 0;
Zone1.Tempo_marche_partiel.Q := FALSE;
Zone1.Tempo_marche_integral.Tempo := 10;
Zone1.Tempo_marche_integral.Tps := 0;
Zone1.Tempo_marche_integral.Cpt := 0;
Zone1.Tempo_marche_integral.Q := FALSE;
Zone1.Tempo_Inhib_Dem.Tempo := 30;
Zone1.Tempo_Inhib_Dem.Tps := 0;
Zone1.Tempo_Inhib_Dem.Cpt := 0;
Zone1.Tempo_Inhib_Dem.Q := FALSE;
Zone1.Tempo_Inhib_Degiv.Tempo :

```

So user will have to put **DB14.txt** and **DB14.db** in the folder. Please note that **DB\_14.txt** and **DB\_14.db** are also supported.

### Importing into PcVue

Once all the blocks has been exported to files, user must launch the new **Smart Generator for TIA Portal** that comes with **PcVue 11.2 update 4**.

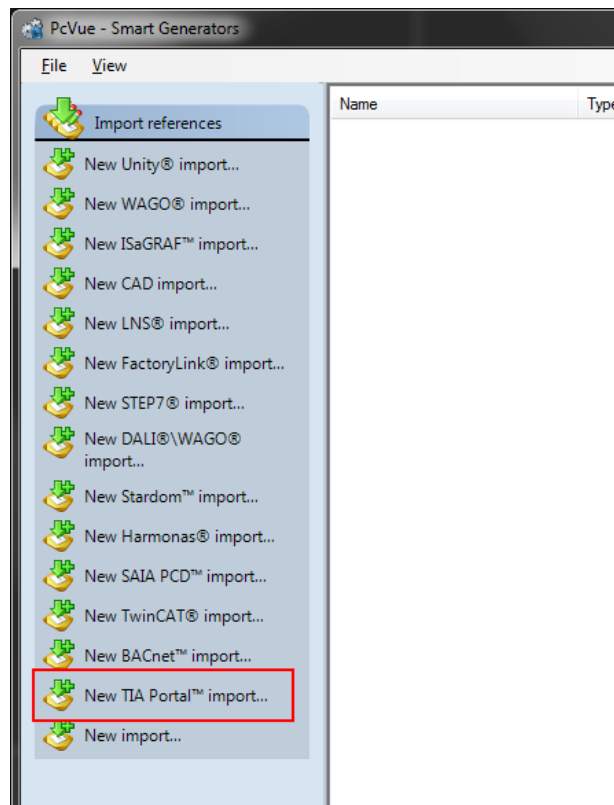


Figure 3- Launch SG for TIA Portal

In first Tab, user must enter an import for the name, then create one (or several) **API** (that will be imported as **Equipment** into **PcVue**). Then, for each API, select the data blocks that are concerned by the import.

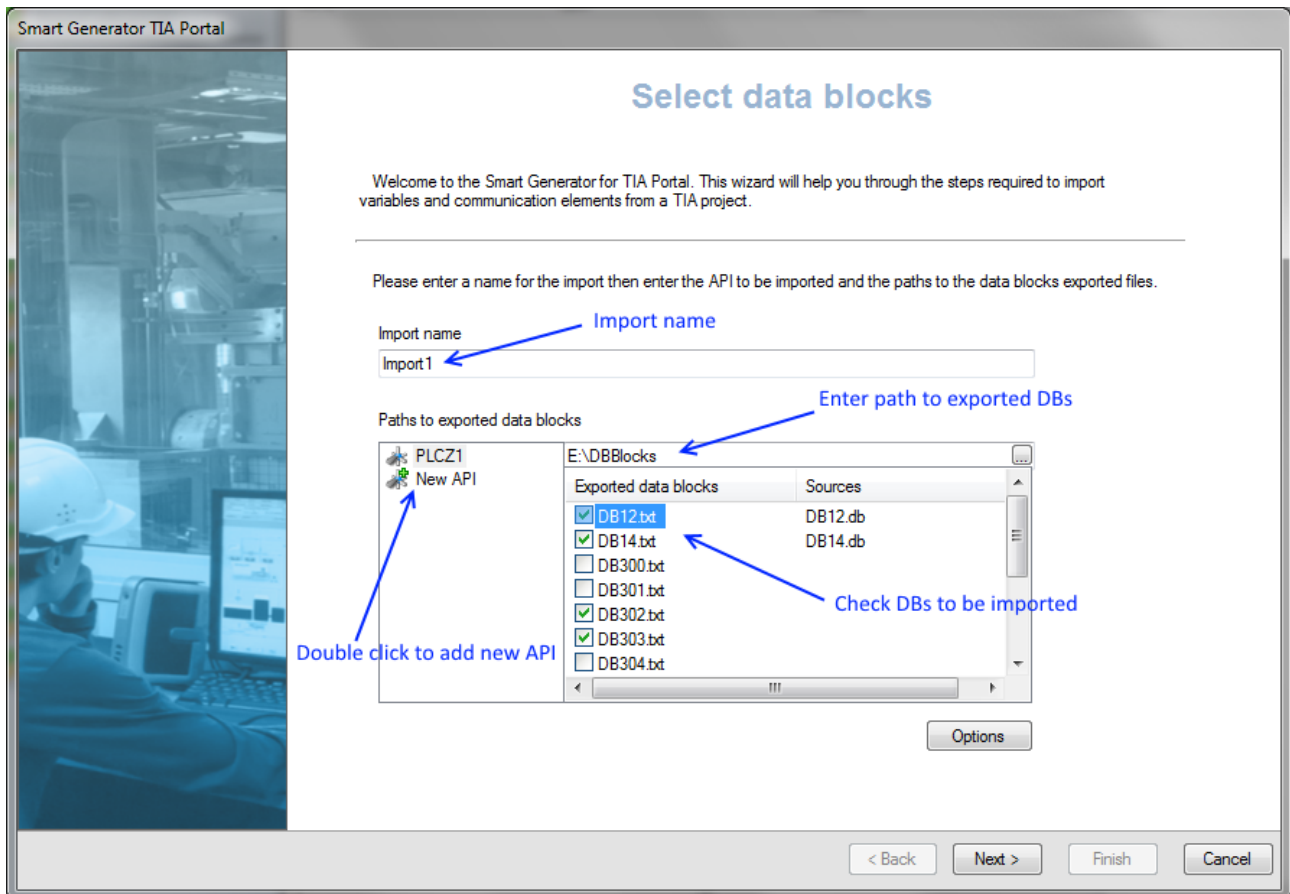
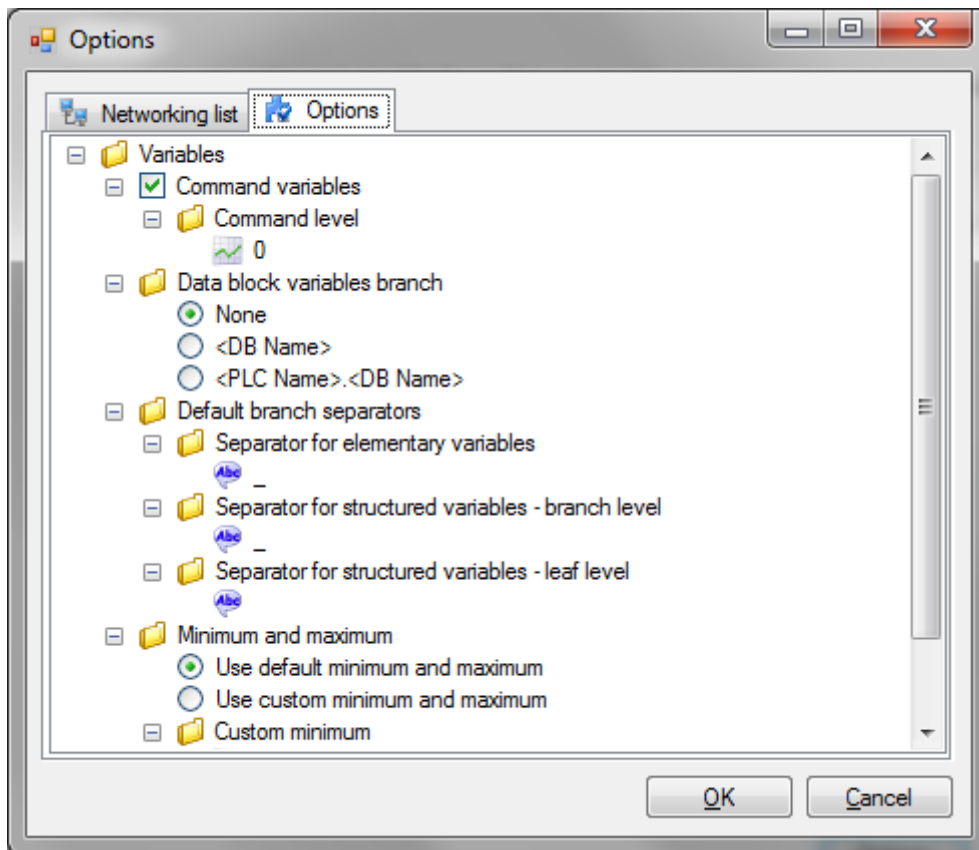


Figure 4- select data blocks

We can see in the example that some “.db” files can be found for structured DBs.

- **Options**

User can set some standard options before importing as default branching or variable command level.



- **Generating variables**

Once all the APIs, blocks and options are set user can click next and he enters the standard **Smart Generator** process.

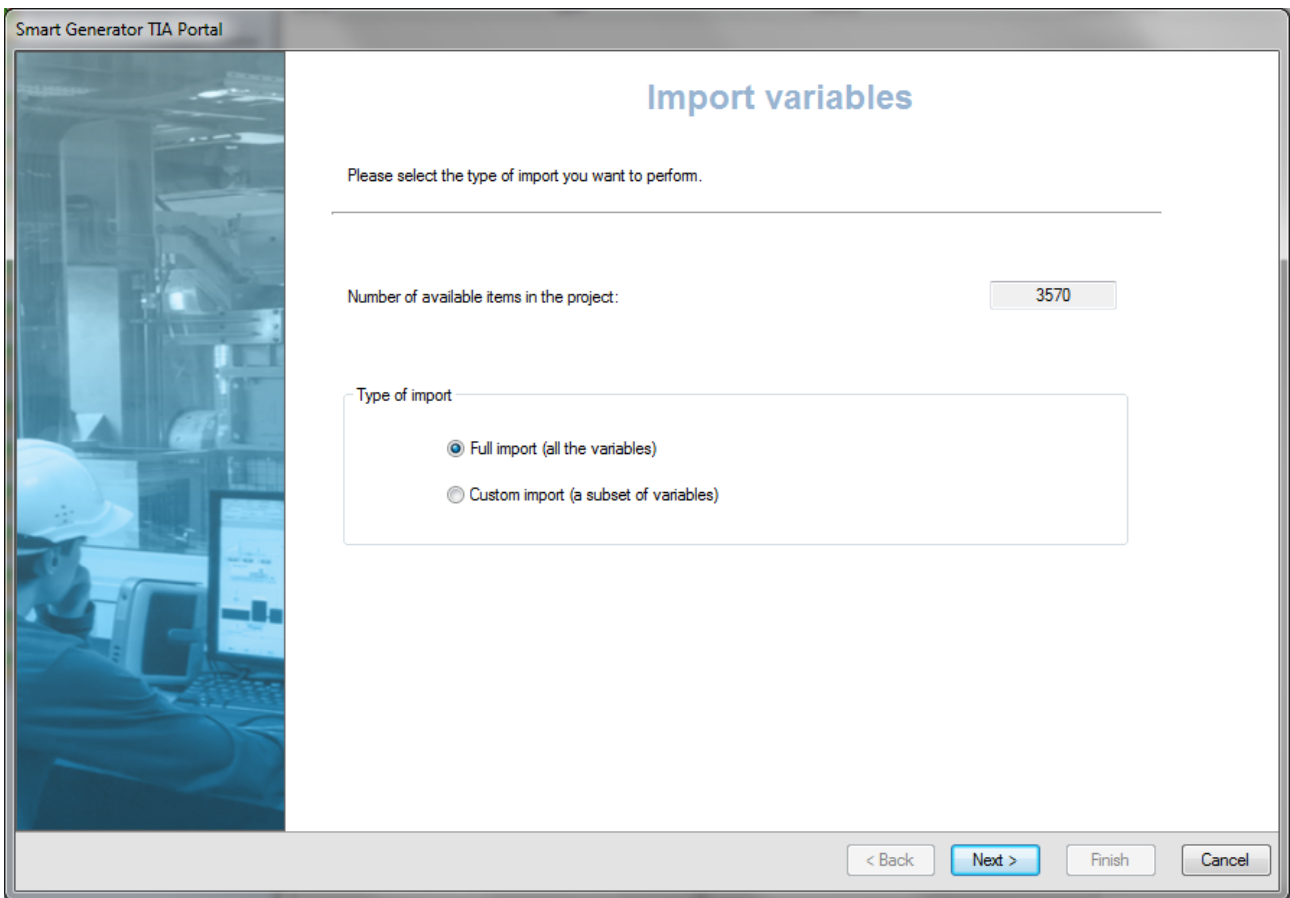


Figure 5- Select the type of import

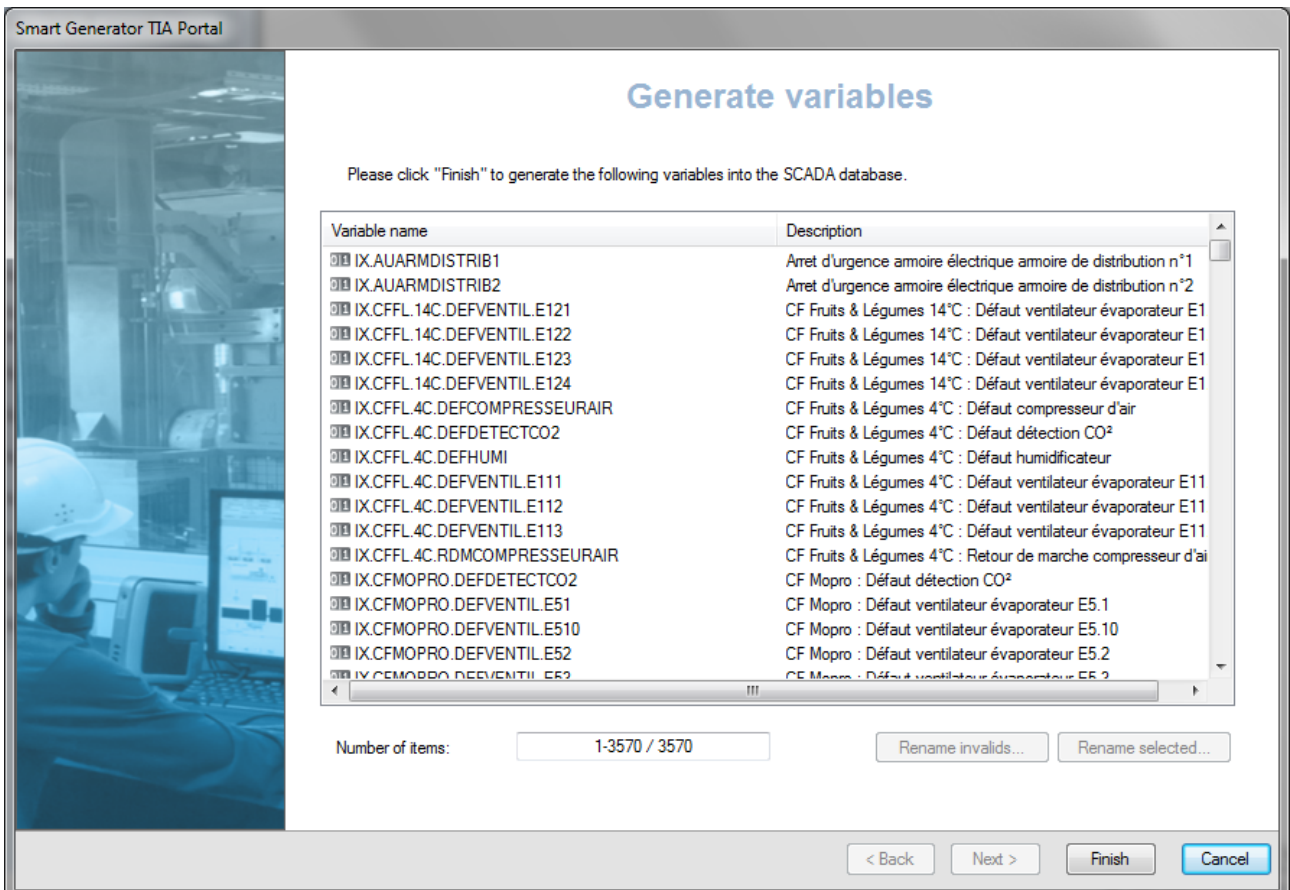


Figure 6- at then click finish to generate into PcVue

## Next step

According to customer feedbacks and to features of next TIA versions we will see how we can improve the tool. Basically there are three axes

- Try to minimize as far as possible the effort regarding manually exporting the data before import
- Try to add capability using flags in TIA variable comment to add plus-value on variable (alarm, trend, extended attributes...) during generation.
- Taking in account the PLC tags