

PD5740 – AutoCAD® P&ID and AutoCAD® Plant 3D: Hidden Treasures in Your Databases

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Class summary

You will learn:

- how AutoCAD® P&ID/Plant 3D uses databases
- what the difference between Table and View is
- what are relationship tables for
- how you create your own views
- how you get the result of a view into your drawing

Key learning objectives

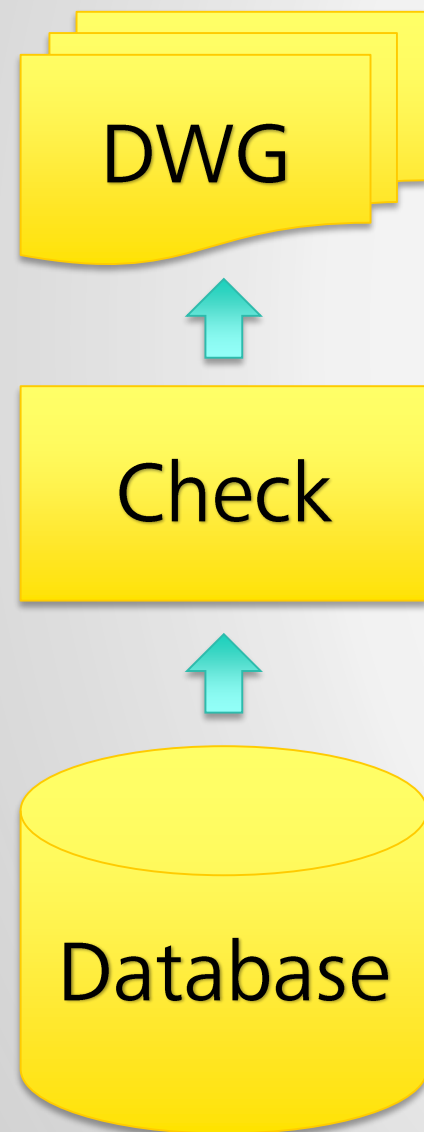
At the end of this class, you will be able to:

- Understand how AutoCAD P&ID software and AutoCAD Plant 3D software handle databases
- Learn where and how the data is stored in the database
- Learn how to create database views
- Discover ways to use the view's result for your work

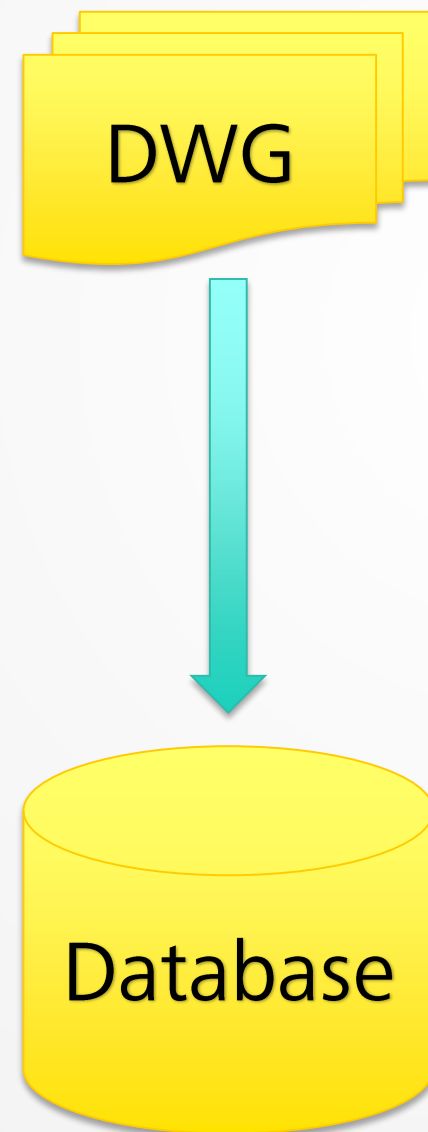
How AutoCAD® P&ID/Plant 3D uses databases

How AutoCAD® P&ID/Plant 3D uses databases

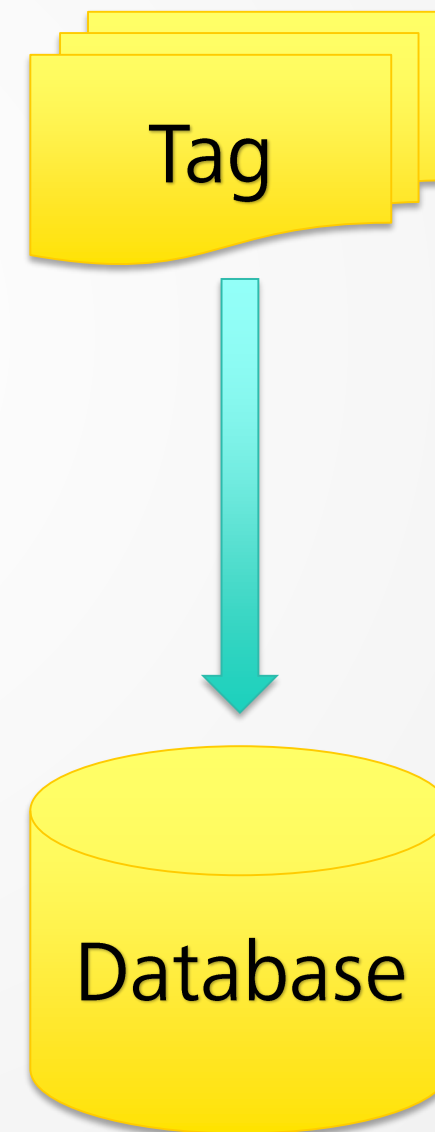
Open DWG



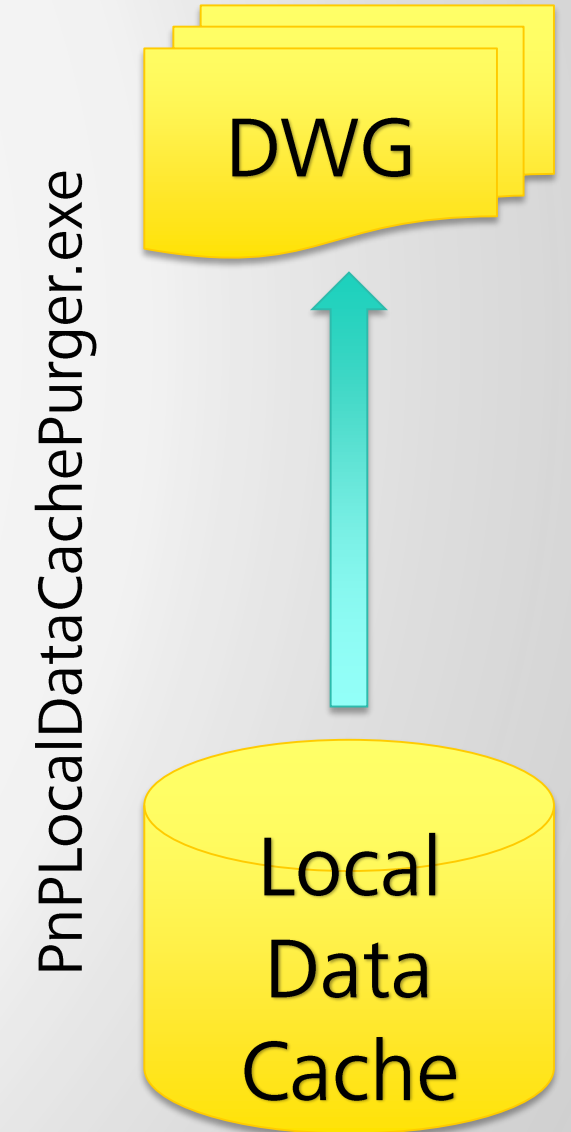
Save DWG



New Tag



Local Data Cache



What is the difference between Table and View

What is the difference between Table and View

Equipment
Table

Database: ProcessPower Table: main.Equipment File: C:\Projects\PD5740\ProcessPower.dcf

RecNo	PnPID	Tag	Type	EquipmentSpec	Weight	MaterialOfConstruction	Number	Area
1	452	P-001	P				001	(null)

EngineeringItems
Table

Database: ProcessPower Table: main.EngineeringItems File: C:\Projects\PD5740\ProcessPower.dcf

RecNo	PnPID	ClassName	Description	Manufacturer	ModelNumber	Supplier	Comment	FlagValue	AcquisitionProperties
1	452	General Pump	GENERAL PUMP					0	

Equipment_PNP
View

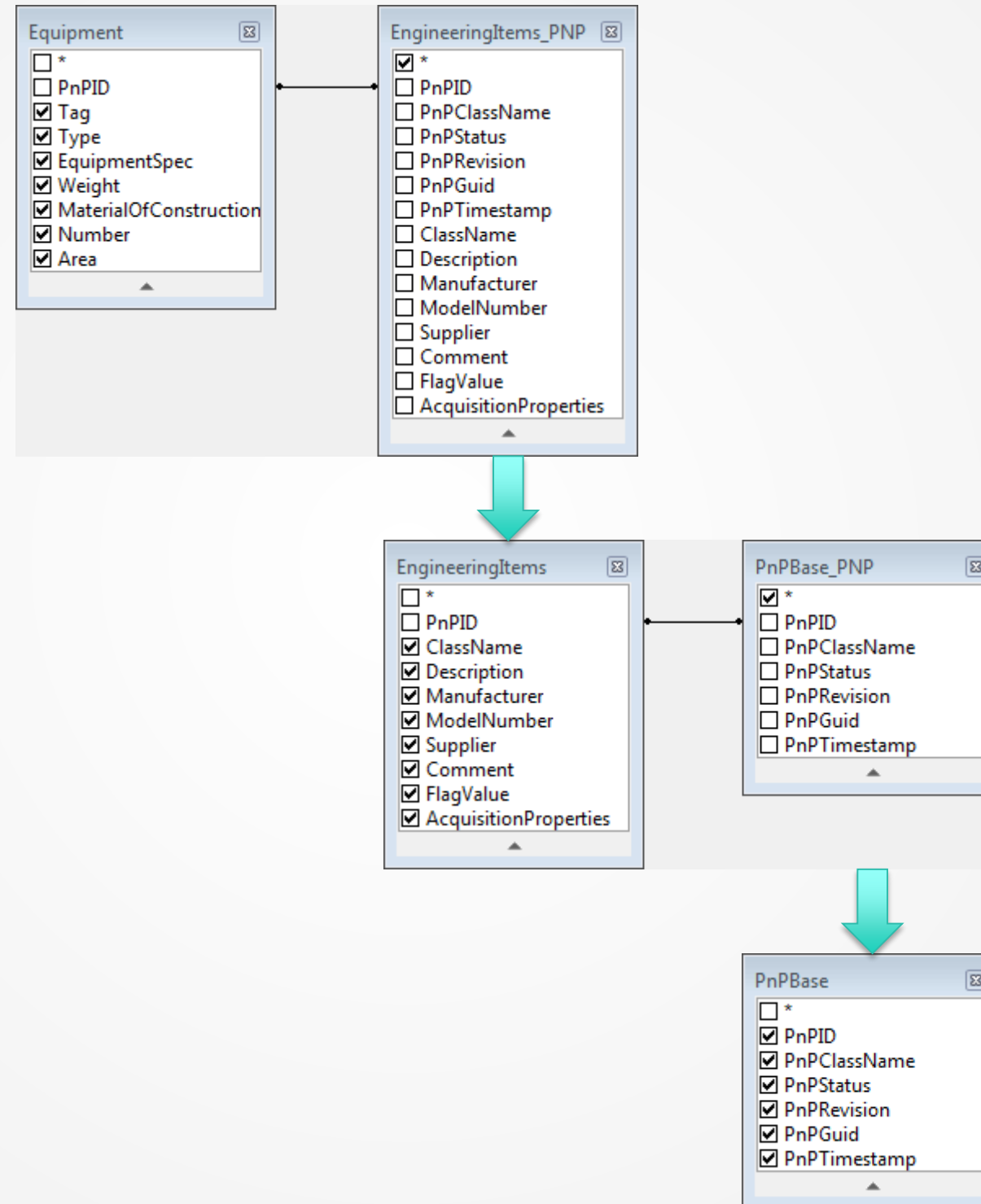
RecNo	PnPID	PnPClassName	PnPStatus	PnPRevision	PnPGuid	PnPTime...	ClassName	Description	Manufacturer	ModelNumber	Supplier	Comment	FlagValue	Acqui...	Tag	Type	Equip...	Weight	Material...	Number	Area
1	452	GeneralPump	0	0	{A7C3FD0B-D53C-4AD6-B014-FCC40A4922AA}	635515613495616859	General Pump	GENERAL PUMP					0		P-001	P				001	(null)

What is the difference between Table and View

Equipment_PNP
View

EngineeringItems_PnP
View

PnPBase_PNP
View



What are relationship tables for

What are relationship tables for

Off-Page
Connector

PipeLineGroup &
PipeLineSegements

LineStartAsset &
LeinEndAsset

ConnectorsRelationship

RecNo	PnPID	PnPGuid	PnPTimeStamp	Connector1	Connector2
1	29	{6E3813A2-7A42-4A7B-8780-E01A1752D295}	635515626089217496	488	508

Connectors

RecNo	PnPID	ConnectorNumber
1	488	
2	508	



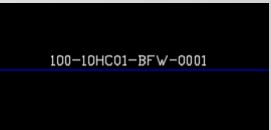
PipeLineGroupRelationship

RecNo	PnPID	PnPGuid	PnPTimeStamp	PipeLineGroup	PipeLine
1	5	{836F240F-54FD-450A-851D-0C16E55BA7A7}	635515624691559254	468	462
2	23	{54839448-D5CF-435A-87D4-38C2EA19B914}	635515625763453034	504	497
3	28				

RecNo	PnPID	Tag	Size	Spec	Tracing	InsulationType	Insulation	PaintCode	To	From	Op
1	462	100-10HC01-BFW-0001	100	10HC01					W-001	P-001	
2	478	100-10HC01-BFW-0002	100	10HC01						W-001	
3	497	100-10HC01-BFW-0003	100	10HC01							

RecNo	PnPID	Tag	LineNumber	Description	Service	NominalSize	NominalSpec	Comment	AcquisitionProperties
1	468	0001	0001	PIPE LINE GROUP	BFW	(null)	(null)	(null)	(null)
2	484	?		PIPE LINE GROUP		(null)	(null)	(null)	(null)
3	504	0002	0002	PIPE LINE GROUP	BFW	(null)	(null)	(null)	(null)

PipeLines



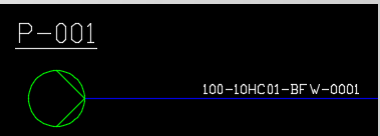
PipeLineGroup

LineStartAsset

RecNo	PnPID	PnPGuid	PnPTimeStamp	Line	Asset
1	6	{D40051A9-3533-49A1-9E9B-93282E2EB5A3}	635515624691862000	462	452
2	16	{406194BD-CDB9-48AE-BD...			

Equipment

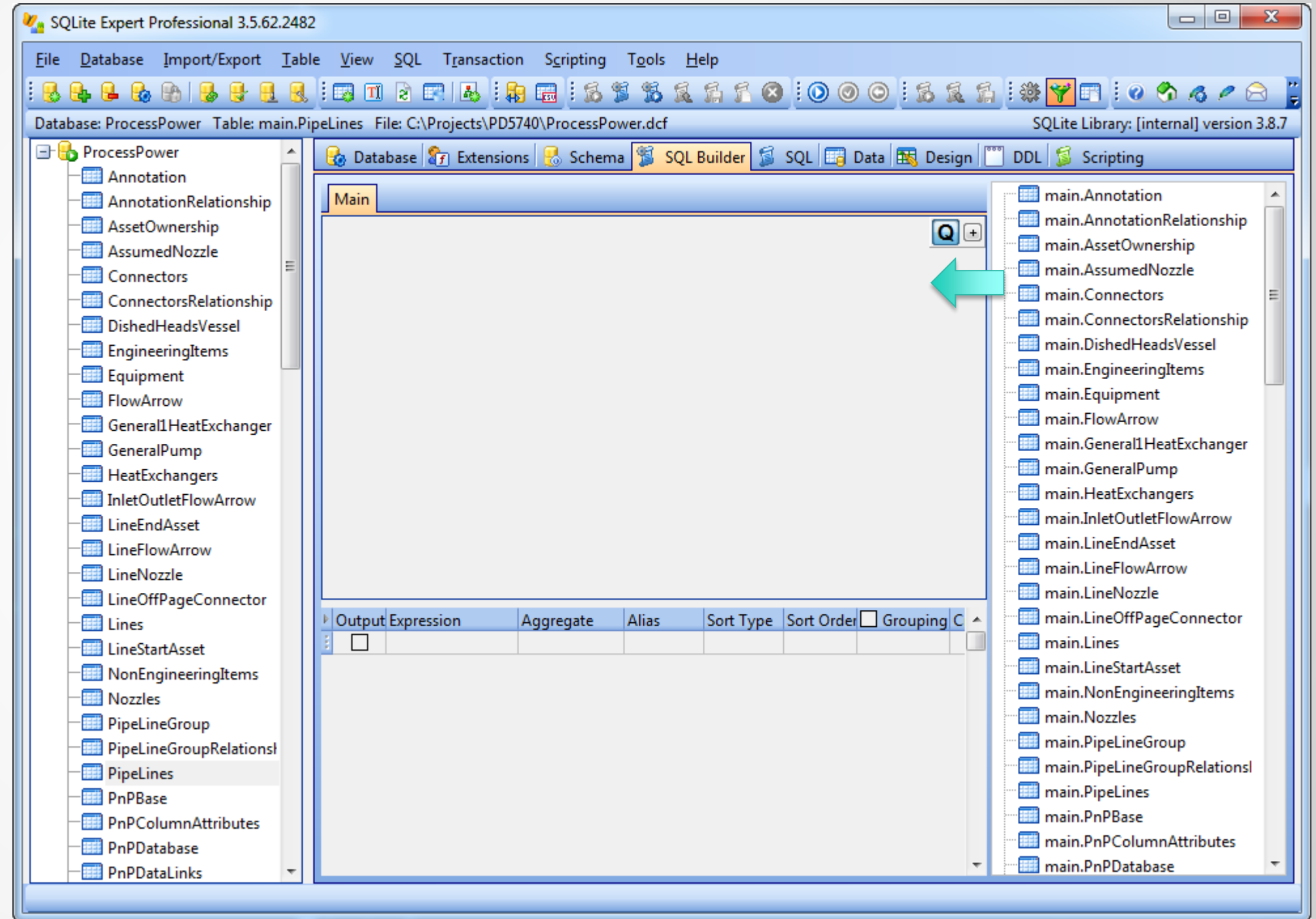
RecNo	PnPID	Tag	Type	EquipmentSpec	Weight	MaterialOfConstruction	Number	Area
1	452	P-001	P				001	(null)
2	457	W-001	W				001	(null)
3	492	K-001	K				001	(null)



How to create your own Views

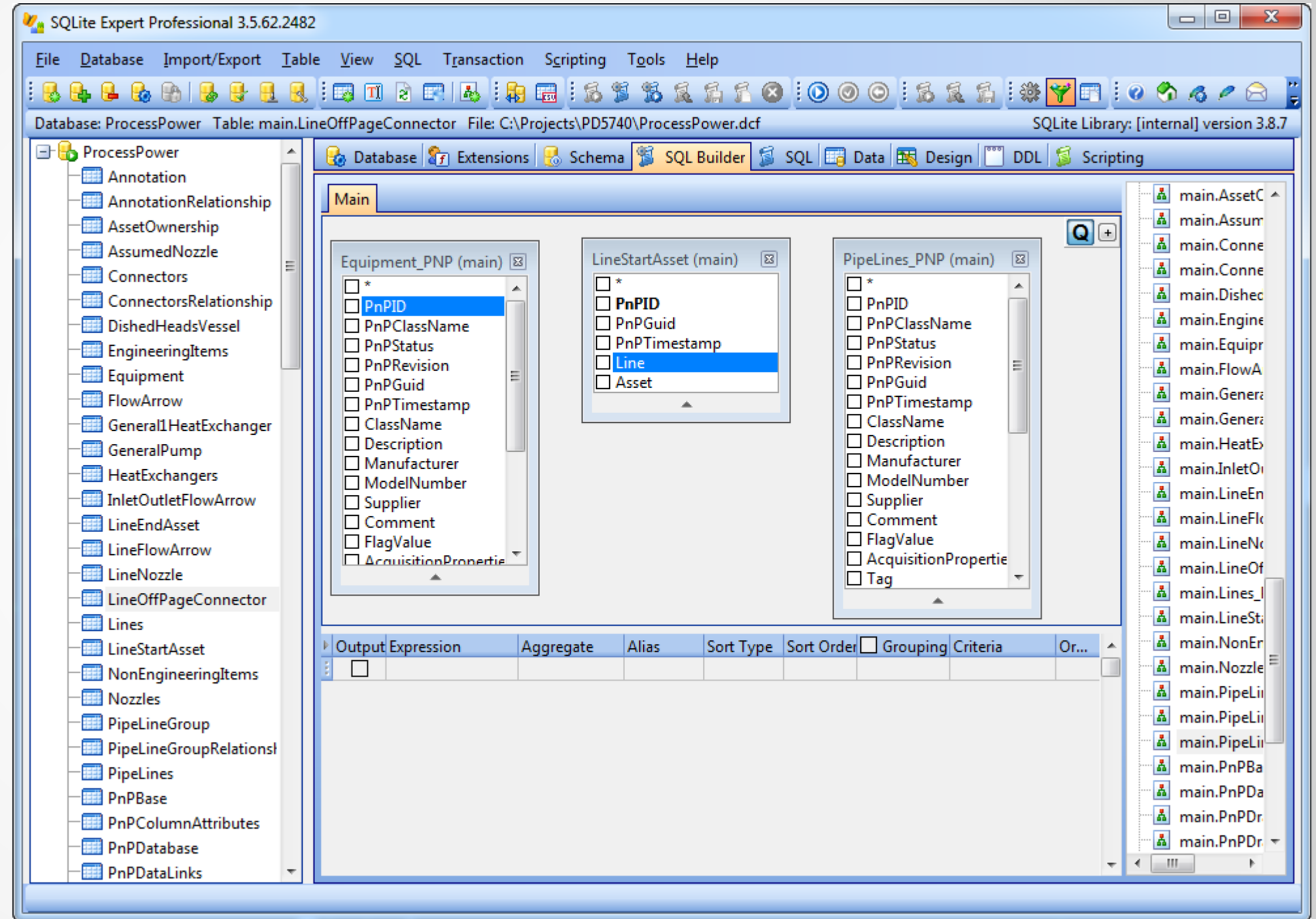
How to create your own Views

SQL Builder



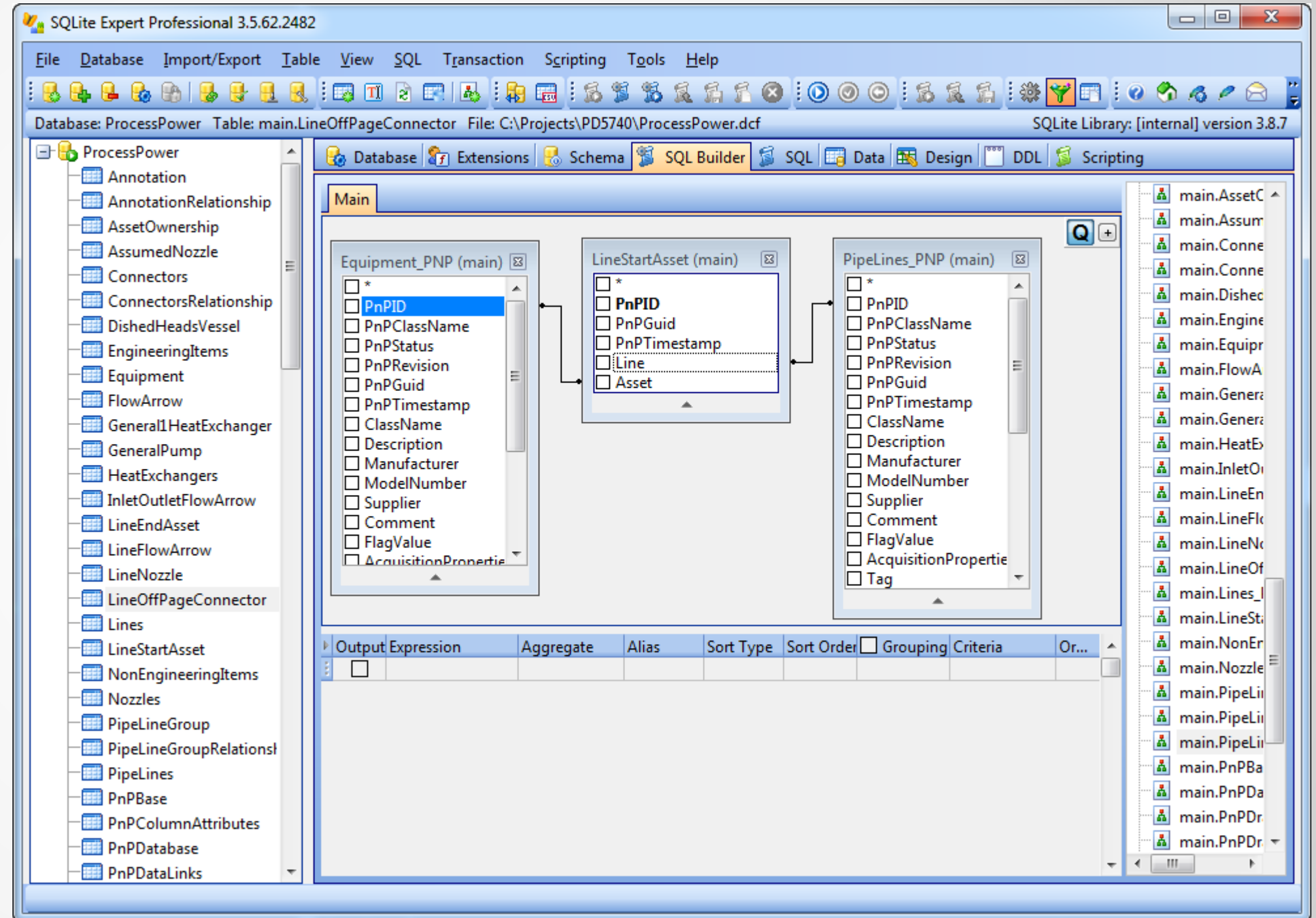
How to create your own Views

Select Tables or Views



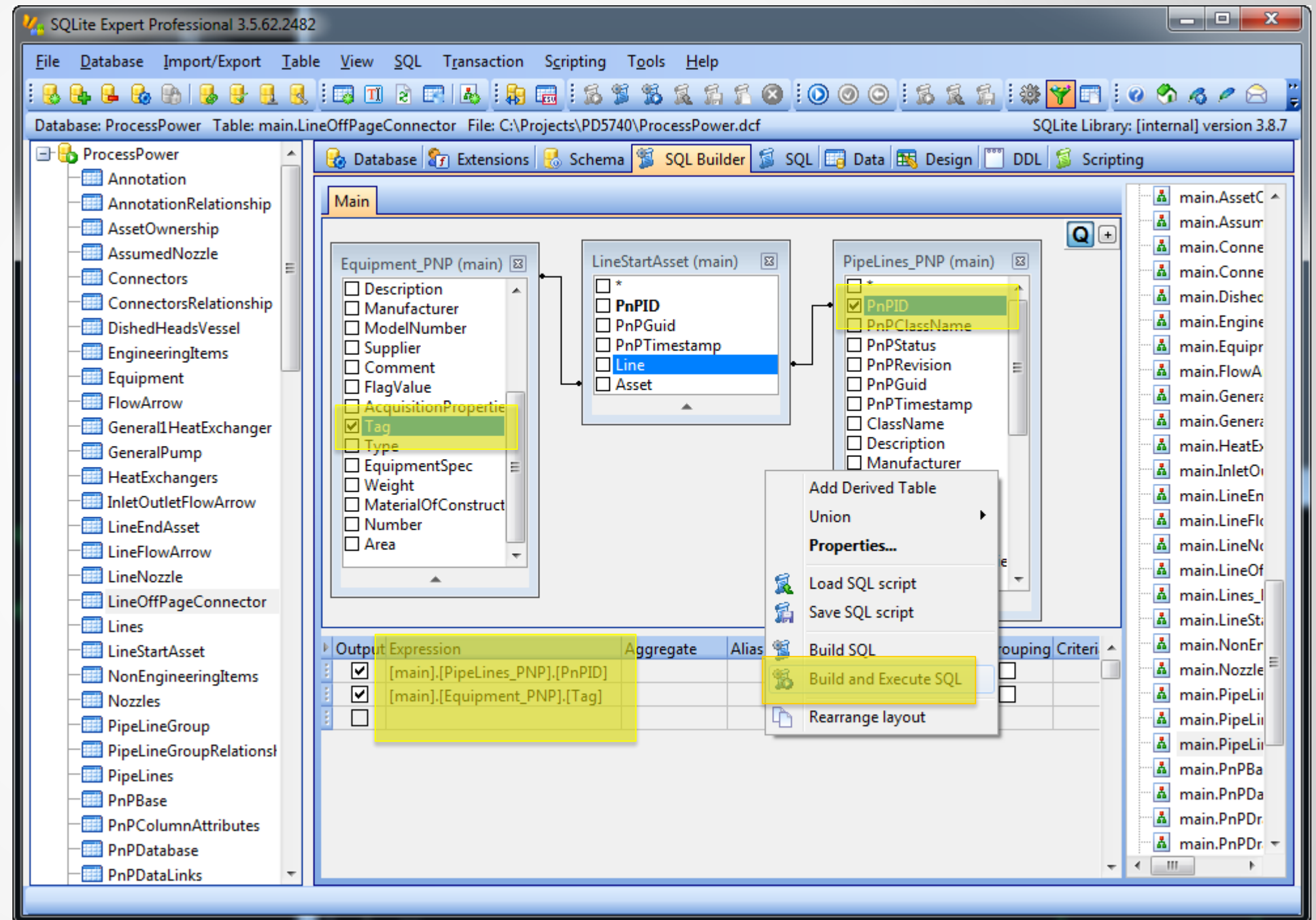
How to create your own Views

Set relationships



How to create your own Views

Set fields and
execute



How to create your own Views

Check result

The screenshot shows the SQLite Expert Professional 3.5.62.2482 interface. The left pane displays a tree view of the database schema for 'ProcessPower', with 'LineOffPageConnector' selected. The main pane shows a SQL query in the 'SQL 5' tab:

```
1 SELECT [main].[PipeLines_PNP].[PnPID],  
2 [main].[Equipment_PNP].[Tag]  
3 FROM [main].[Equipment_PNP]  
4 INNER JOIN [main].[LineStartAsset] ON [main].[Equipment_PNP].[PnPID] =  
5 [main].[LineStartAsset].[Asset]  
6 INNER JOIN [main].[PipeLines_PNP] ON [main].[LineStartAsset].[Line] =  
7 [main].[PipeLines_PNP].[PnPID]
```

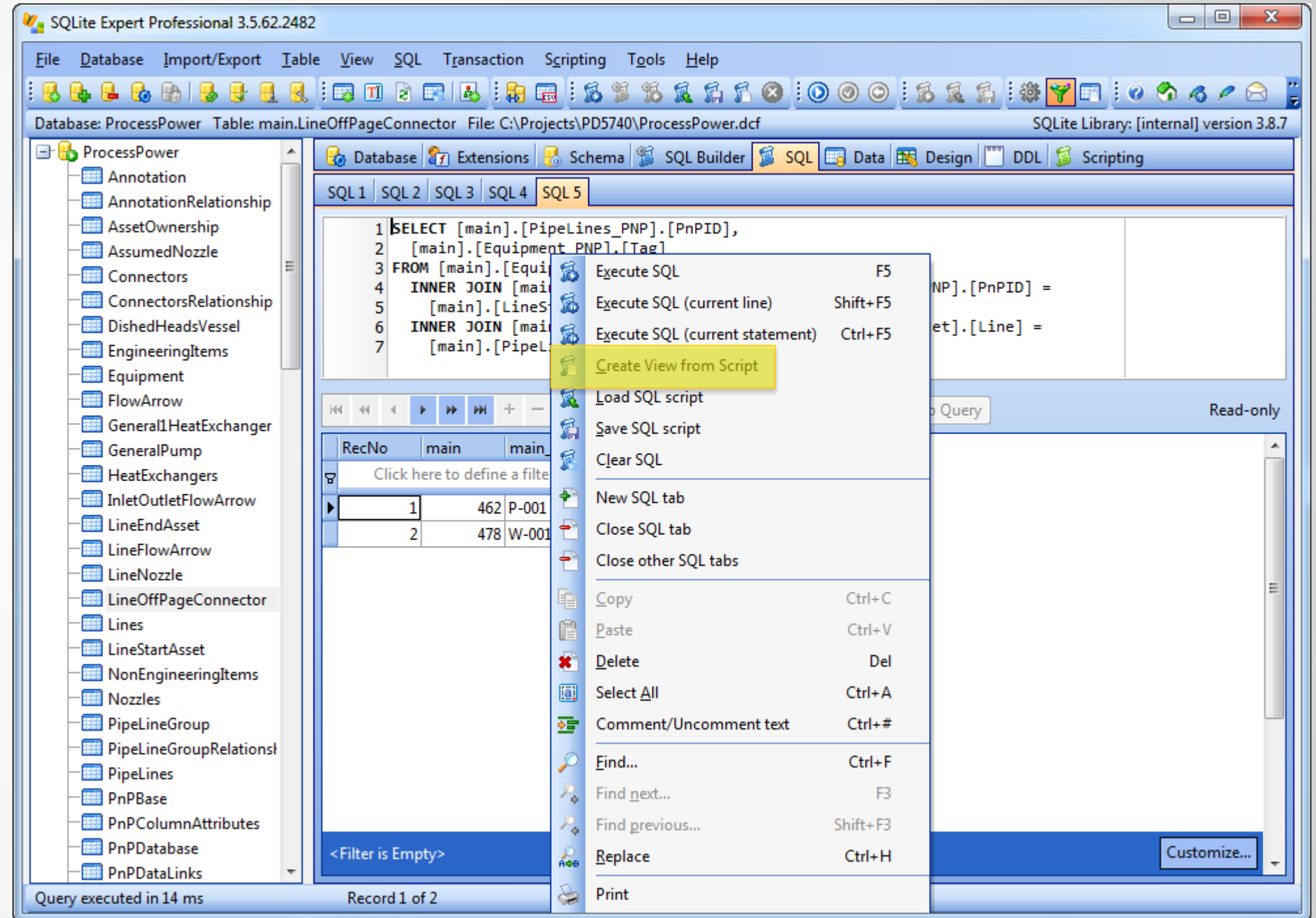
Below the query editor, the results are displayed in a table with columns 'RecNo', 'main', and 'main_1'. A yellow tooltip points to the 'main' column header with the text 'Click here to define a filter'. The results table shows two rows:

RecNo	main	main_1
1	462	P-001
2	478	W-001

The status bar at the bottom indicates 'Query executed in 14 ms', 'Record 1 of 2', and '0 rows affected, 0 total'.

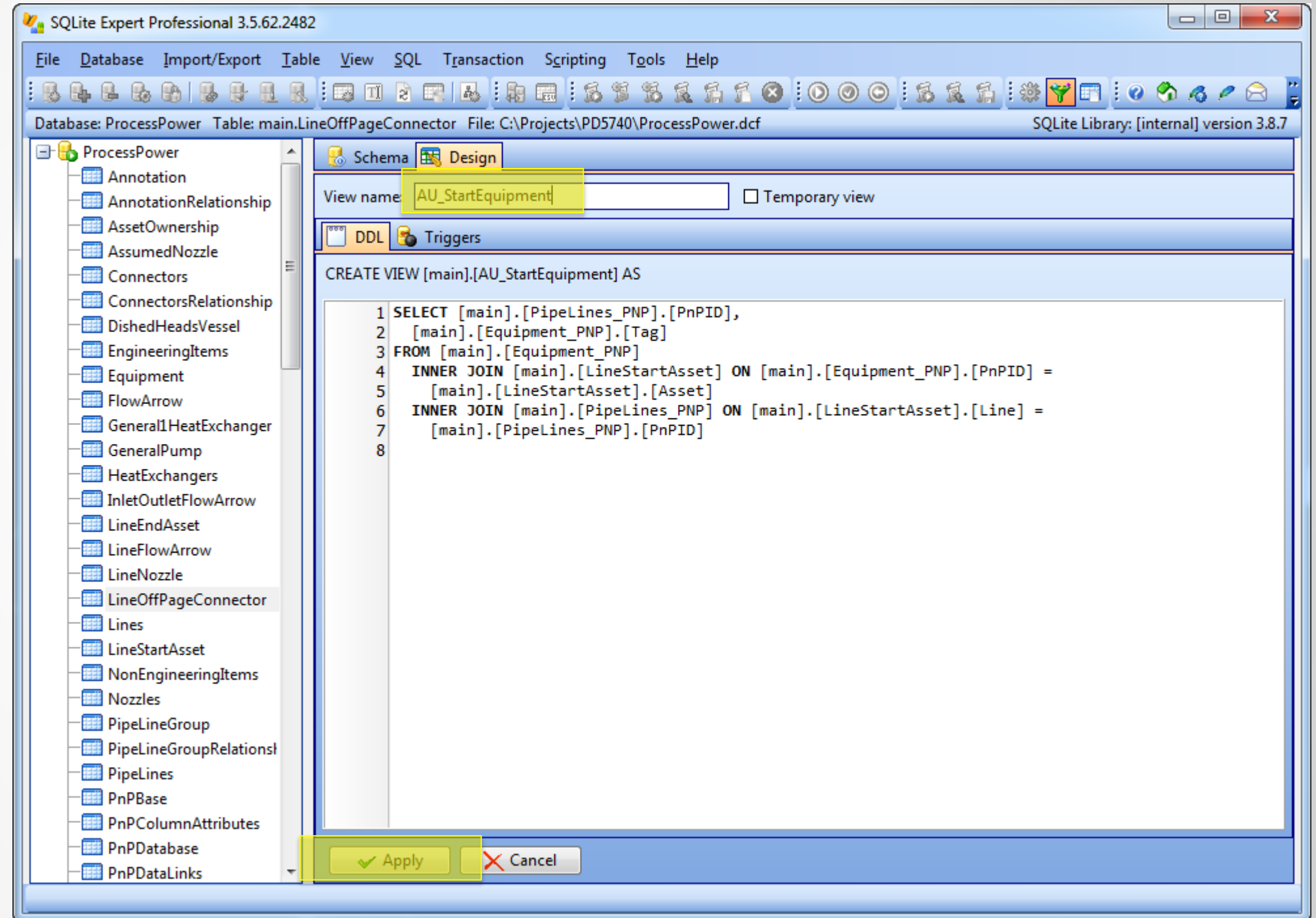
How to create your own Views

Check result



How to create your own Views

Save View

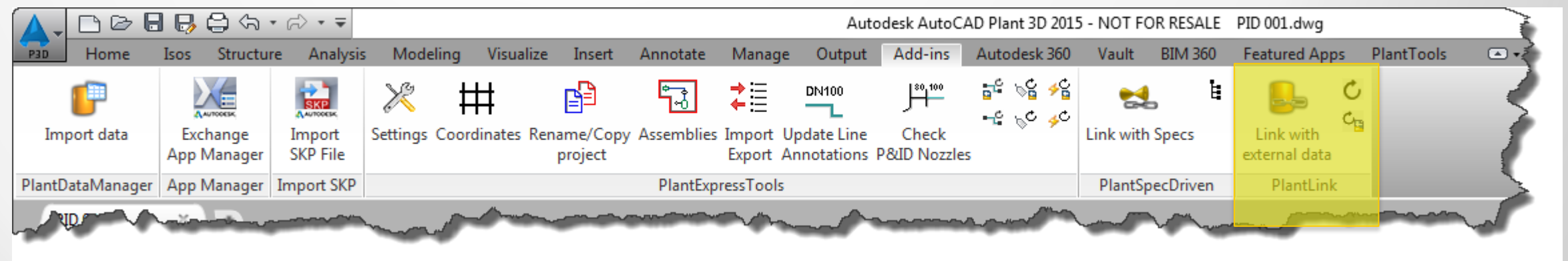
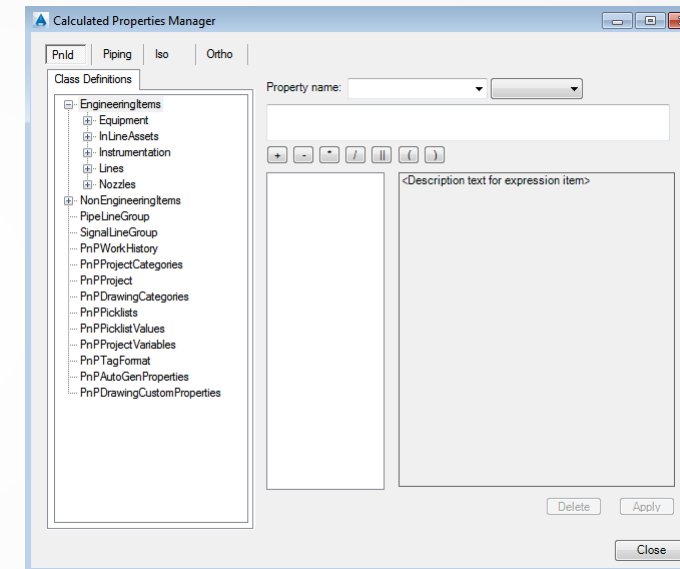


How to get the result of your view into your drawing

How to get the result of your view into your drawing

- Excel Ex-/Import + Copy & Paste
- PLANTXDBMANAGER
- PlantLink

	A	B	C	D	E	F	G	
1	Tag	Size	Spec	To	From	Design Press	Design Temp	Opera
2	100-10HC01-	100	10HC01	W-001	P-001			
3	100-10HC01-	100	10HC01		W-001			
4								



How to get the result of your view into your drawing

The image illustrates the process of creating a link configuration in Plant Link software, showing a sequence of steps in the Link Configuration Wizard.

Step 1: External data source selection
Select the external data source by providing the udl file.
OleDb data source (UDL):
Browse New Edit
SQLite data source:
Browse
C:\Projects\PD5740\ProcessPower.dcf
Variables
[PP] = Project Path
[PN] = Project Name
Example: [PP]\ProcessPower.dcf

Step 2: Link type selection
Select the desired link type.
Extend AutoCAD P&ID/Plant 3D
Data from an external data source. The data from P&ID/Plant 3D. Also data in P&ID/Plant 3D properties.
Update AutoCAD P&ID/Plant 3D
Data from an external data source. Also data in external 3D properties.
AutoCAD Properties
Data from the external data source

Step 3: Class selection
Select the class for which you want to
P&ID Classes P3D Classes
Engineering Items
Equipment
Inline Assets
Instrumentation
Lines
Nozzles
Non Engineering Items
Pipe Line Group
Signal Line Group
Selected class: Lines

Step 4: External data table selection
Select external table that will be linked with the class.
Tables Views
Annotation_PNP
AnnotationRelationship_PNP
AssetOwnership_PNP
AssumedNozzle_PNP
AU_StartEquipment
Connectors_PNP
ConnectorsRelationship_PNP
DishedHeadsVessel_PNP
EngineeringItems_PNP
Equipment_PNP
FlowArrow_PNP
GeneralHeatExchanger_PNP
GeneralPump_PNP
HeatExchangers_PNP
InletOutletFlowArrow_PNP
LineEndAsset_PNP
Selected view: AU_StartEquipment

Step 5: Linked fields selection
Select fields that will define the data link
Linked fields:
External table column Class property
PnPID PnPID
**

Step 6: Mapped fields selection
Select fields that will be mapped
Mapped fields:
External table column Class property Write back Clear value Sync mode
Tag Comment ☐ ☒ On drawing save
* ☐ ☐

Step 7: Link configuration naming
Provide a name for the link configuration.
Name:
AU_StartAssets
Synchronization interval: 60 sec
Previous

Final Plant Link Window
Project: C:\Projects\PD5740\Project.xml
Link Configurations
+ New... Edit... Delete Refresh
Name Status Disabled
AU_StartAssets Active
Details
Datasource:
Link type:
Class:
No new version is available.

