Scene 4 Factory IO

Objective: Deliver a set amount of pallets, record the pallet number and its respective Conveyor Speed for each pallet into a database.

Solution : TIA portal and S7-PLCSIM are used to control Factory IO, Ignition Scada software is used for supervisory control along with data acquisition with MySQL as the database management system.

Software Used : Factory IO, TIA portal, Ignition Scada, MySQL and Nettoplcsim.

Communication Protocol : Modbus Protocol is used.

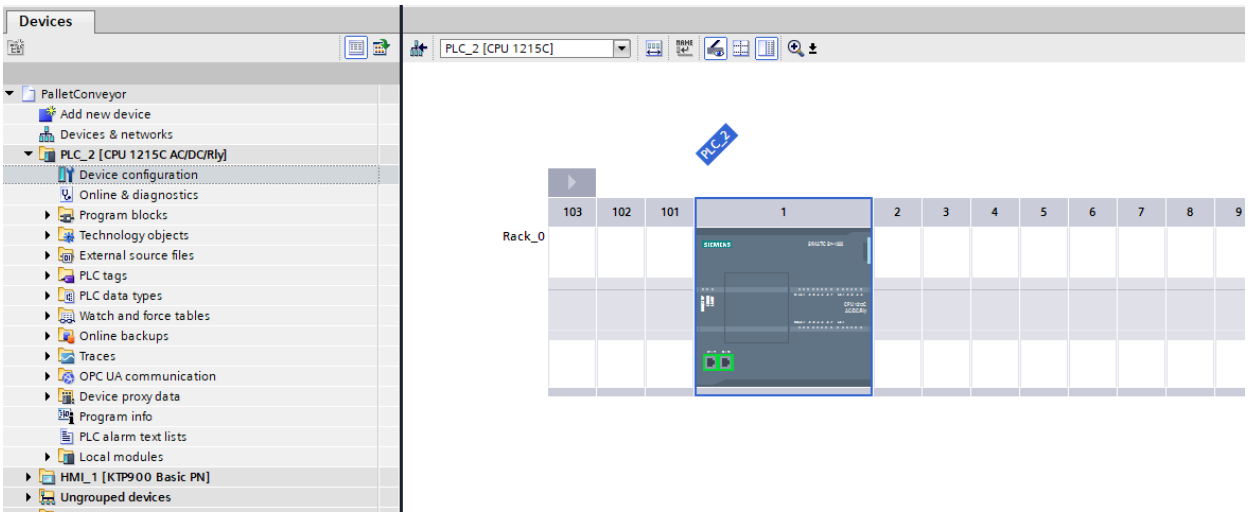

Figure 1 PLC hardware setup

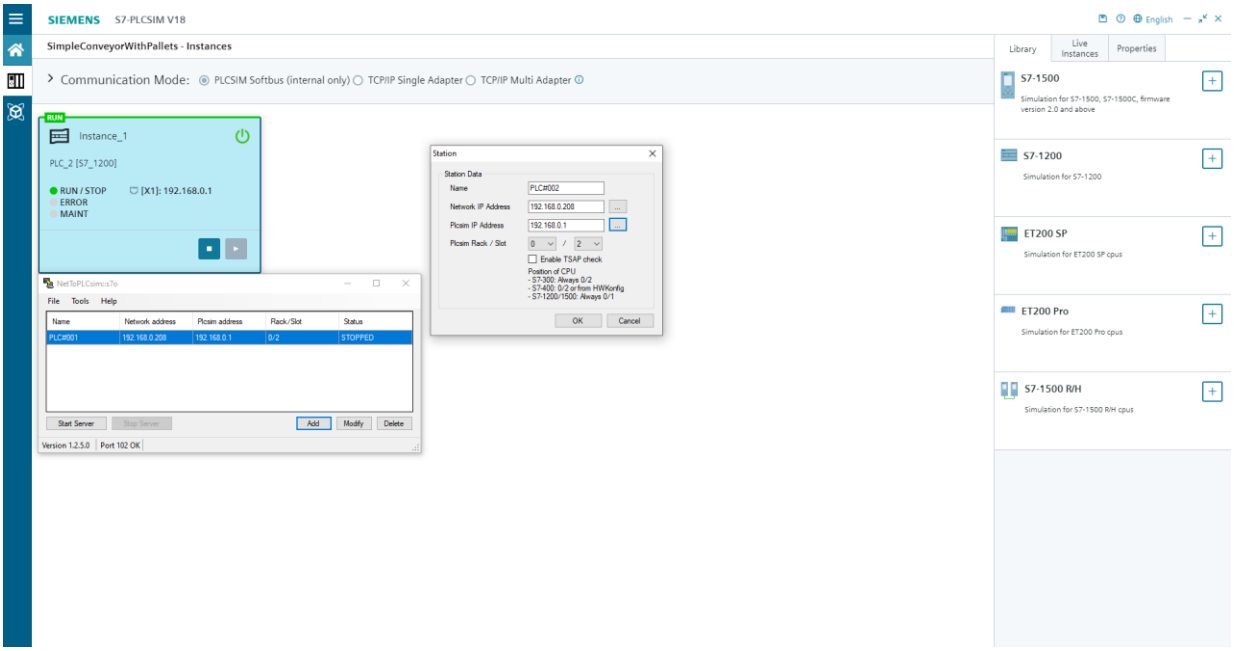

Figure 2 PLCSIM and Nettoplcsim Setup

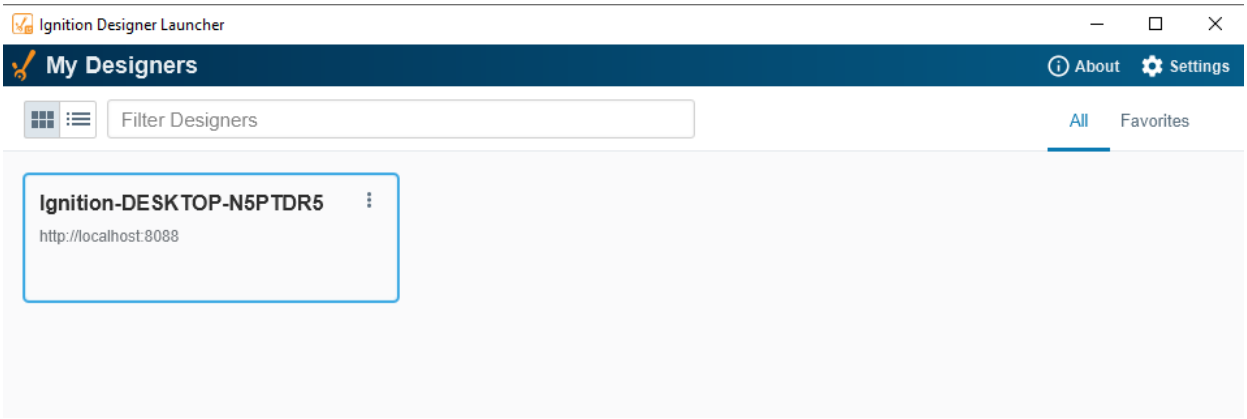

Figure 3 Ignition Designer Launcher

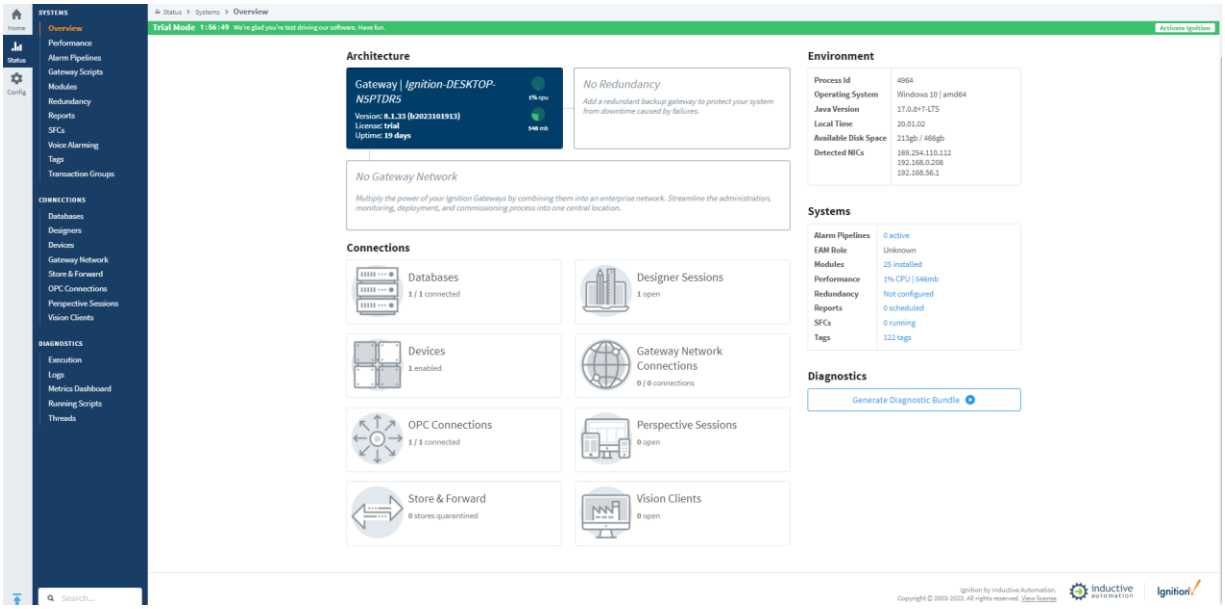

Figure 4 Ignition Gateway WebPage

Figure 5 Factory IO Sensors and Actuators

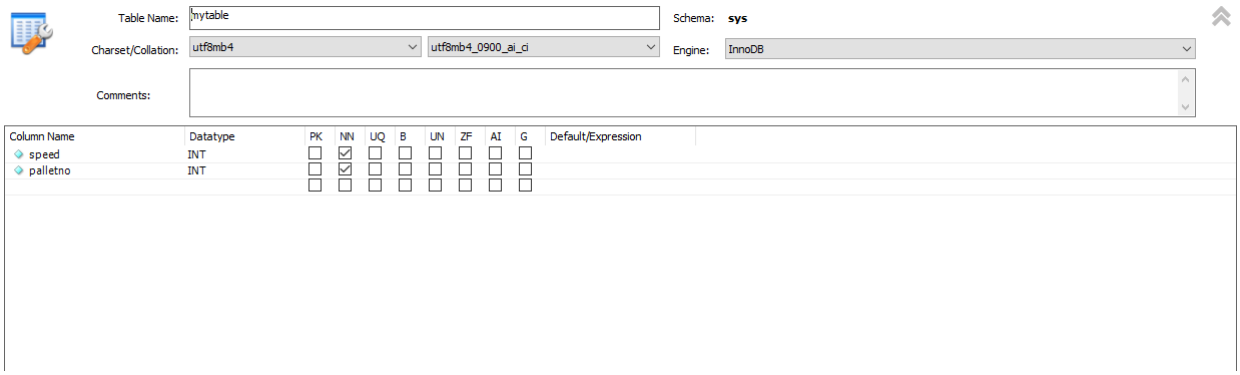

Figure 6 MySQL table variable definitions

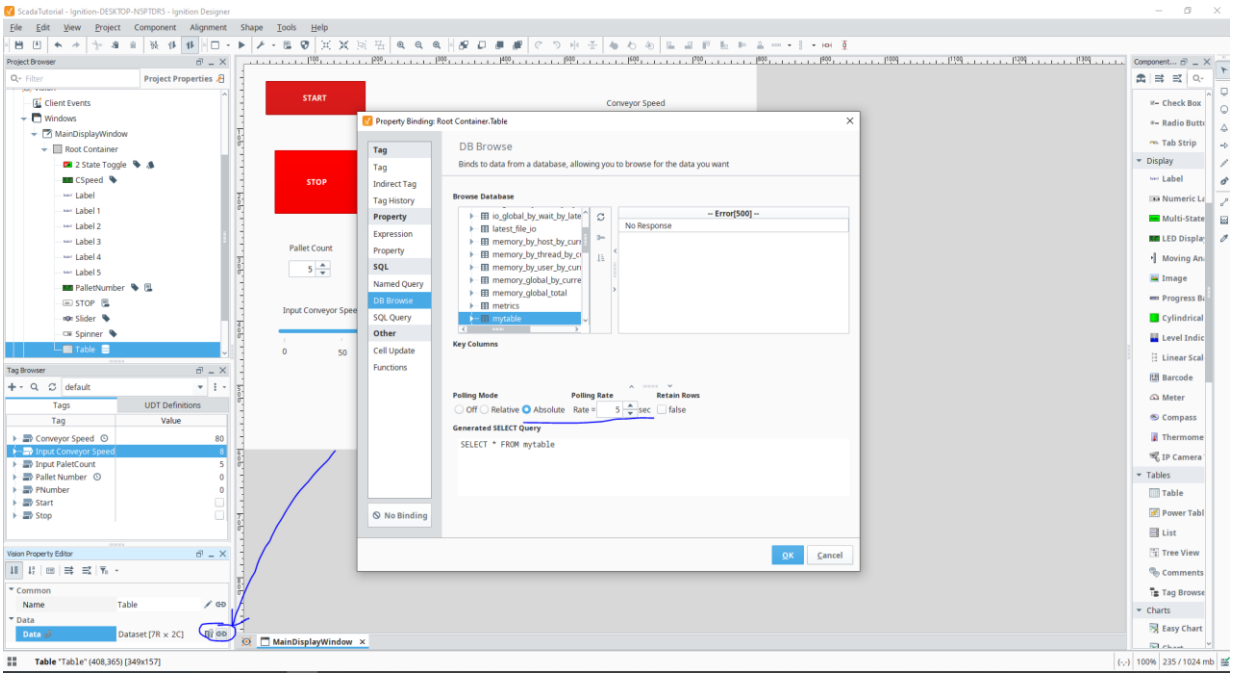

Figure 7 Linking Table in Ignition to MySQL

Default tag table

	Name	Data type	Address	Retain	Acces...	Write...	Visibl...	Comment
1	i_b_StartPB	Bool	%I0.0		☑	☑	☑	
2	i_b_StopPB	Bool	%I0.1		☑	☑	☑	
3	i_b_ResetPB	Bool	%I0.2		☑	☑	☑	
4	o_real_EntryConveyor	Real	%QD5		☑	☑	☑	
5	o_real_BufferConveyor	Real	%QD9		☑	☑	☑	
6	o_dint_SpeedDisplay	DInt	%QD1		☑	☑	☑	
7	o_b_Emitter	Bool	%Q0.2		☑	☑	☑	
8	o_b_Remover	Bool	%Q0.3		☑	☑	☑	
9	Potentiometer	Real	%ID4		☑	☑	☑	
10	ScadaStart	Bool	%M0.0		☑	☑	☑	
11	o_b_StartLight	Bool	%Q0.4		☑	☑	☑	
12	Tag_3	DInt	%MD10		☑	☑	☑	
13	Tag_2	Real	%MD15		☑	☑	☑	
14	i_b_Sensor	Bool	%I0.4		☑	☑	☑	
15	o_dint_PalletDisplay	DInt	%QD13		☑	☑	☑	
16	Tag_4	Bool	%M0.1		☑	☑	☑	
17	Pote Value Scada	Int	%IW15		☑	☑	☑	
18	PotValueBuffer	Real	%MD20		☑	☑	☑	
19	ScadaPotentiometer	Real	%MD24		☑	☑	☑	
20	ScadaStop	Bool	%M0.2		☑	☑	☑	
21	Tag_6	Bool	%M0.3		☑	☑	☑	
22	PalletCountReached	Bool	%M0.4		☑	☑	☑	
23	PalletInput	Int	%MW34		☑	☑	☑	
24	Tag_1	Int	%MW30		☑	☑	☑	
25	<Add new>				☑	☑	☑	

Figure 8 Tag table in TIA portal

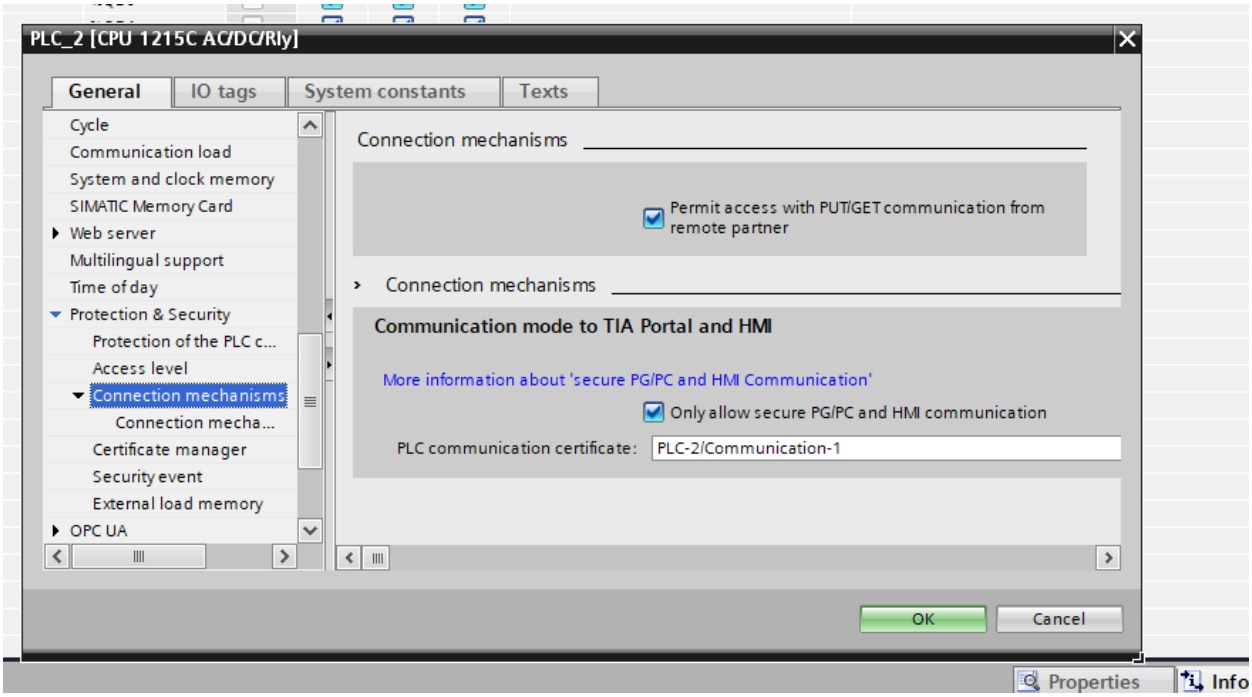

Figure 9 Important PUT/GET setting for Ignition communication

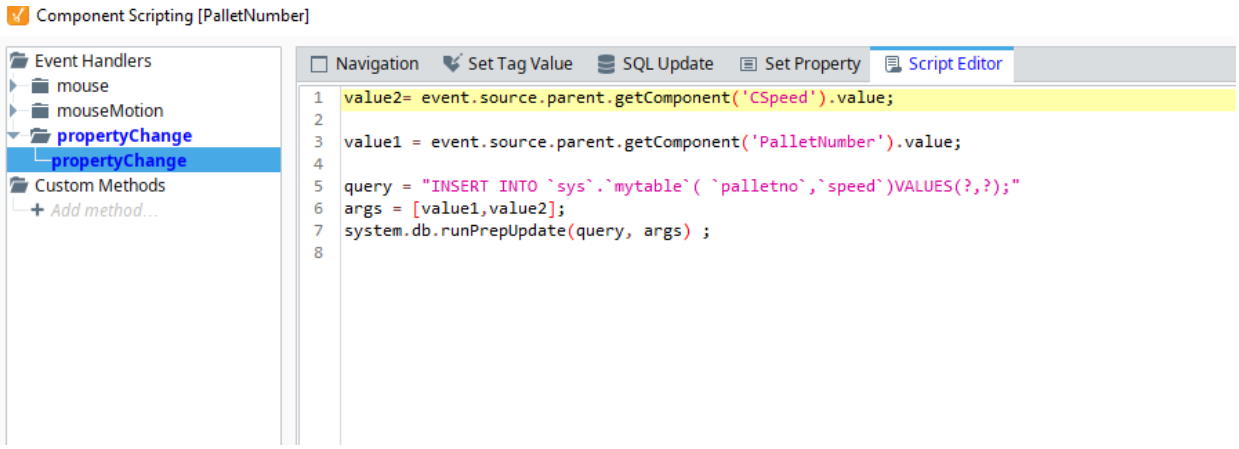

Figure 10 Script to update database when property change is detected

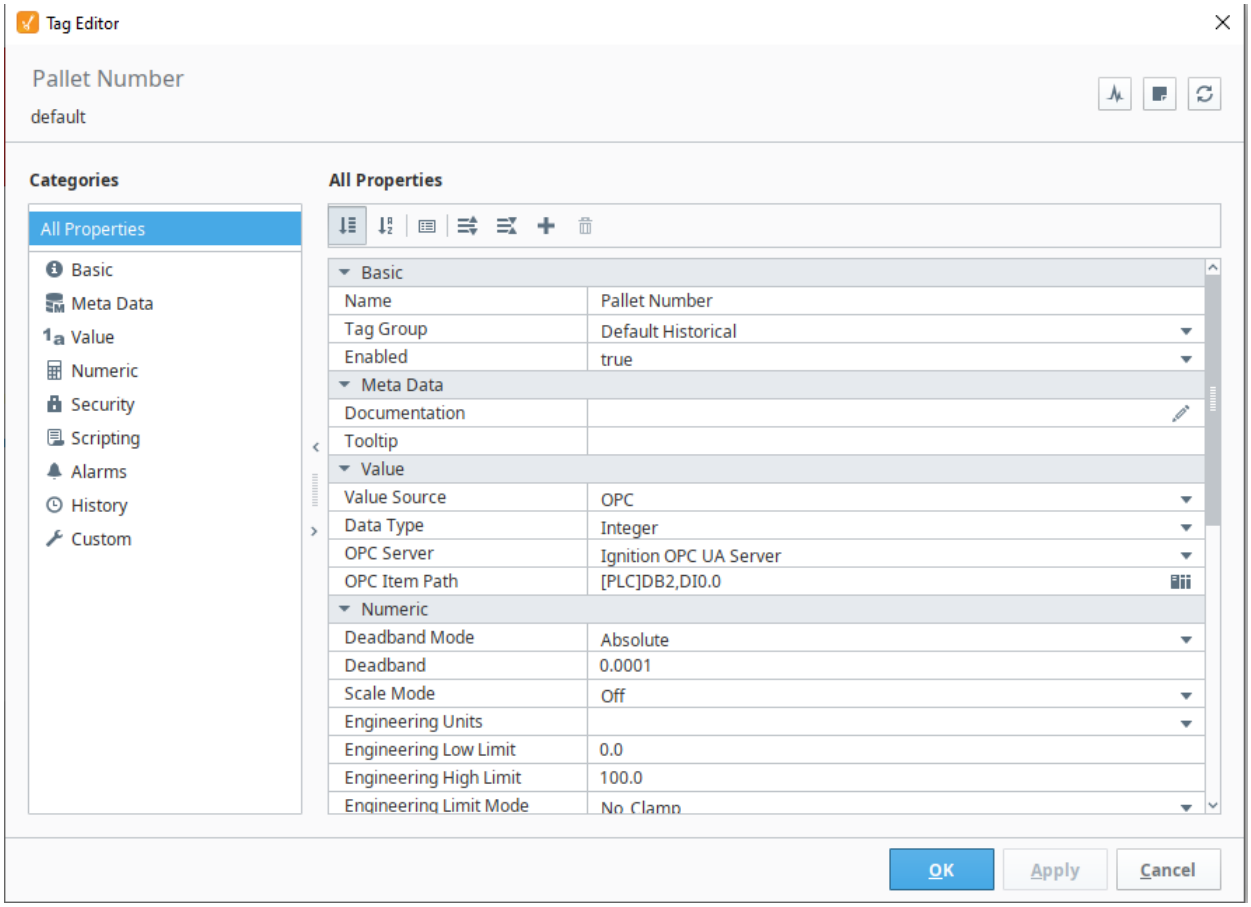

Figure 11 OPC Historical Data Access(OPC HDA) setting used to exchange archived processed data e.g.: data table.

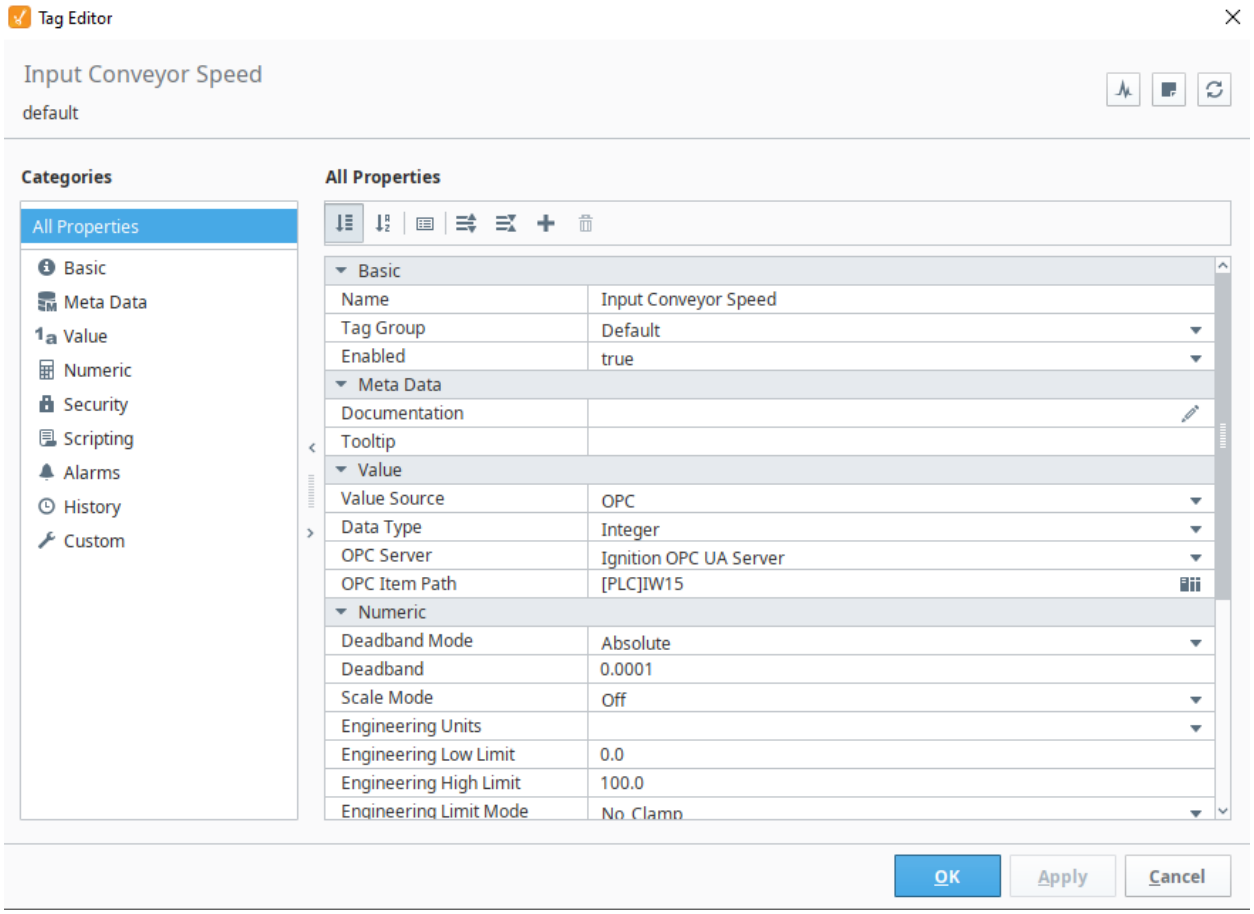

Figure 12 OPC Data Access (OPC DA) used for real time data , e.g. : Start button

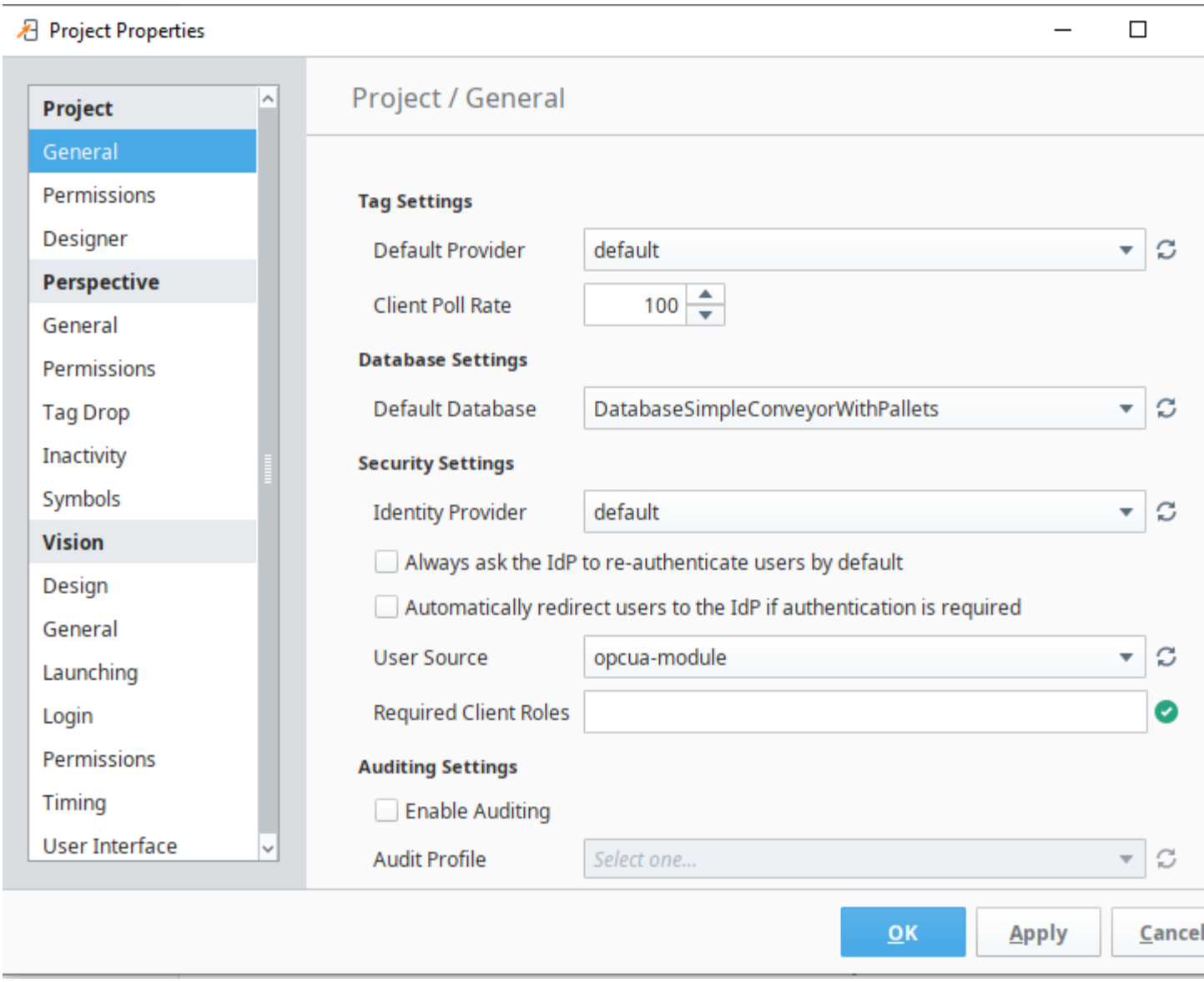

Figure 13 Project settings: Default Database , Client Poll rate .

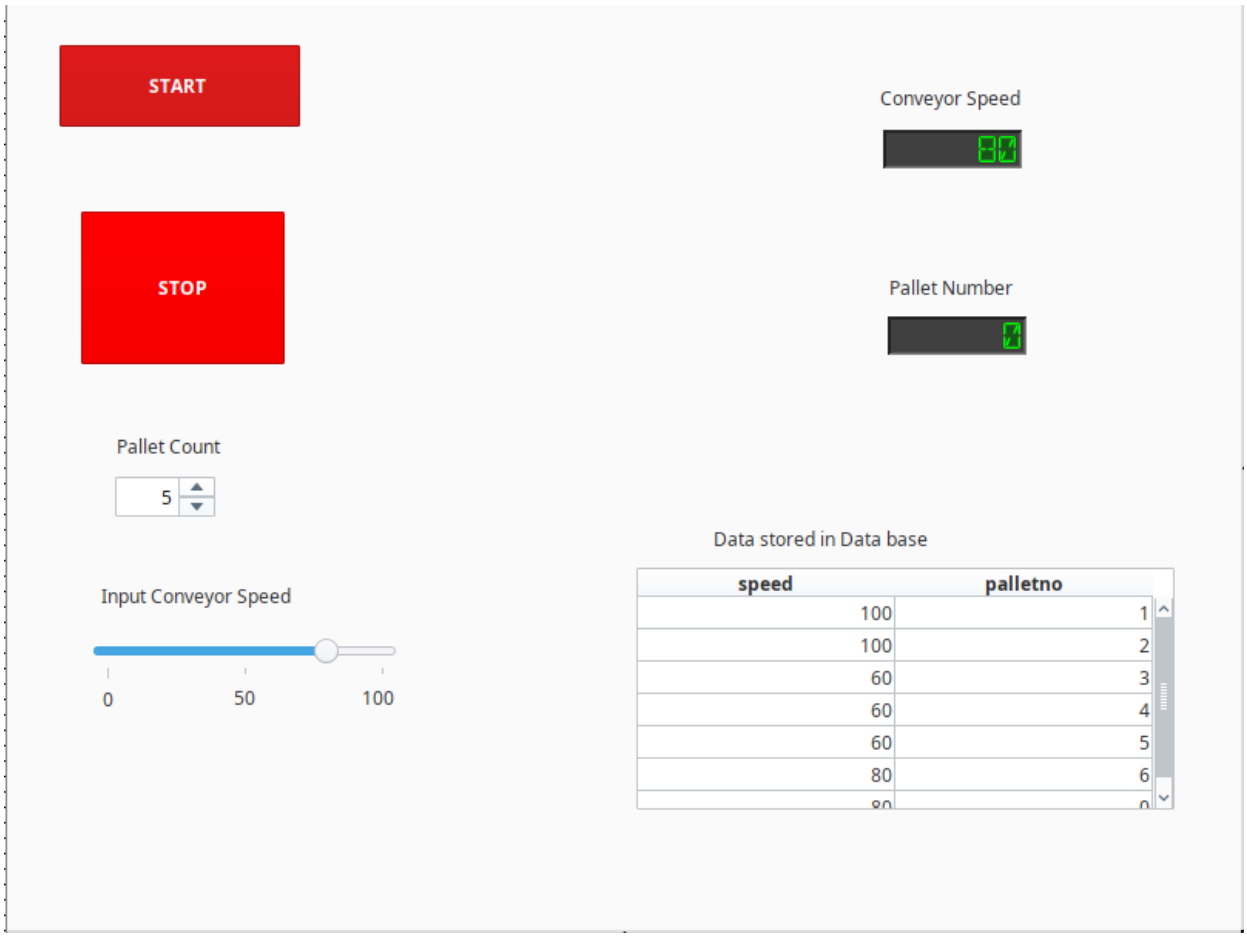

Figure 14 HMI used to control and display the control system