PBSControl
SCADA SOFTWARE SOLUTIONS

pbsHMI

2025

info@PBSControl.com
www.PBSControl.com
pbsControl LTD
Registered in northern ireland , UK,
no NI723363

pbsHMI

pbsHMI is the HMI/SCADA platform from pbscontrol. It is developed by Microsoft .NET X64 technology, and has been in the market since 2009.

pbsHMI Supports following protocols : ModbusTCP/RTU,DNP3,IEC104 ,Beckhoff ADS , Siemens S7 ,MQTT , Redis , OPC UA , Vestas Wind Turbine and GSP.
pbsHMI has more than 3000 ready-made graphic symbols and user can create or import any type of graphic symbol from svg.
pbsHMI supports MS SQL Server, MS Access and MySQL as the default database format for data, alarms and events. User can communicate with any other database with pbsHMI C# language.

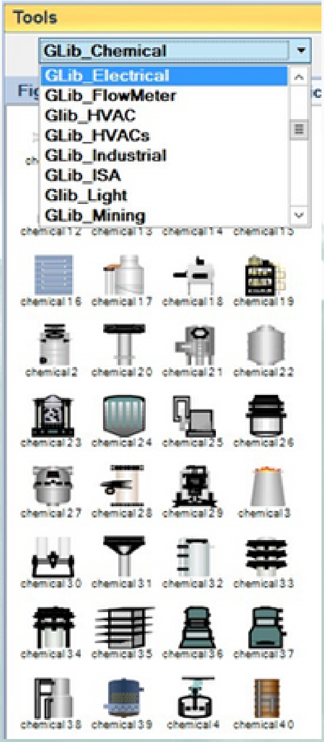
pbsHMI can be run on a standalone PC or distributed as a client server on a network.

pbsHMI has a variety of dynamics for creating animations on graphics screens: blink, brush, move, rotate, height, switch and hide dynamics.

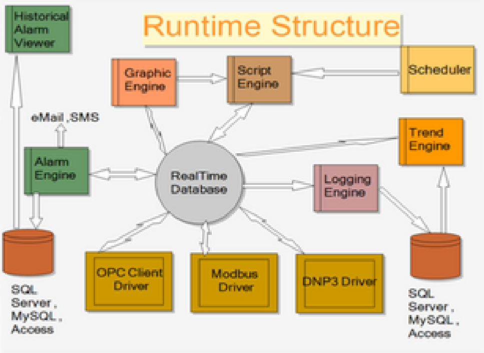
Dynamics can be applied to any symbol and user-defined symbols. Page zooming and declutring is supported for Graphic pages. There is no limitation for number of graphic pages , 64K Device tags , no limitation for internal tags , 16K alarms and events.

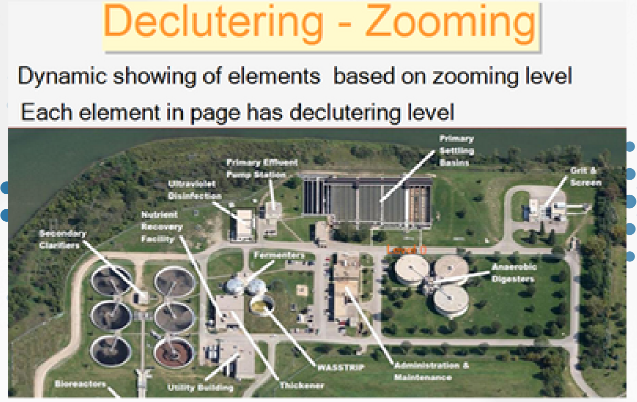
FREE

The development version of pbsHMI is free and the license applies only at runtime.



There are many types of Events for any symbol or user define symbols to make action , set signal , toggle , make pulse , load page , load popup and execute scripts .User defined left mouse menu is supported for all symbols.





Declutering - Zooming

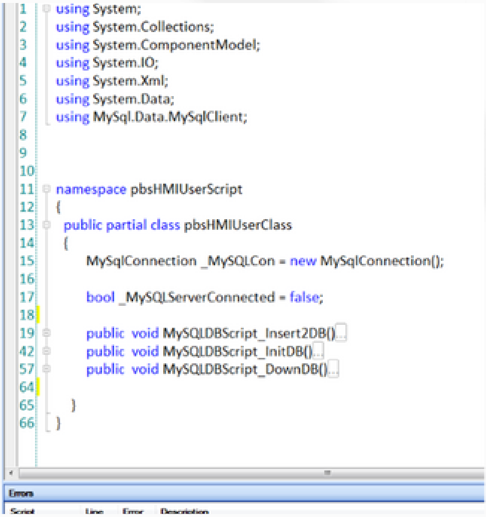
Dynamic showing of elements based on zooming level

Each element in page has declutering level

pbsHMI supports various types of scheduling to create automatic cyclic actions, run scripts, report.

Different types of users can be defined to restrict access to view pages, ACK alerts and execute events.

pbsHMI supports Function Block and C# for easy user programming . The user has access to the complete .NET platform with C# language.

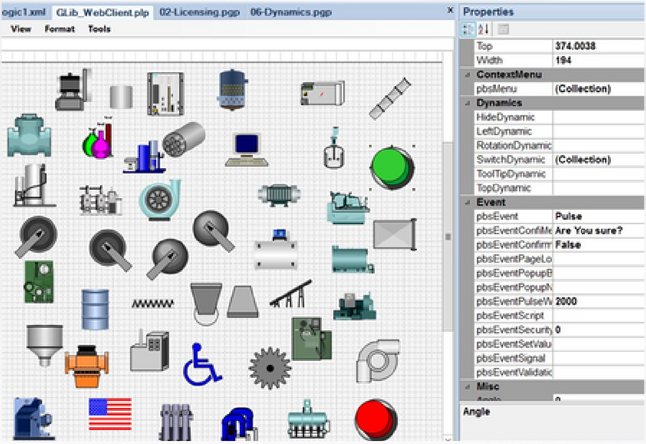


```
using System;
using System.Collections;
using System.ComponentModel;
using System.IO;
using System.Xml;
using System.Data;
using MySql.Data.MySqlClient;



namespace pbsHMIUserScript
{
 public partial class pbsHMIUserClass
 {
     MySqlConnection _MySQLCon = new MySqlConnection();

     bool _MySQLServerConnected = false;

     public  void MySQLDBScript_Insert2DB()...
     public  void MySQLDBScript_InitDB()...
     public  void MySQLDBScript_DownDB()...

   }
}
```

pbsHMI

pbsHMI can support local languages in graphics pages , Alarms , events and Reports.

pbsHMI has a built-in symbol editor to include any type of symbol into the platform.

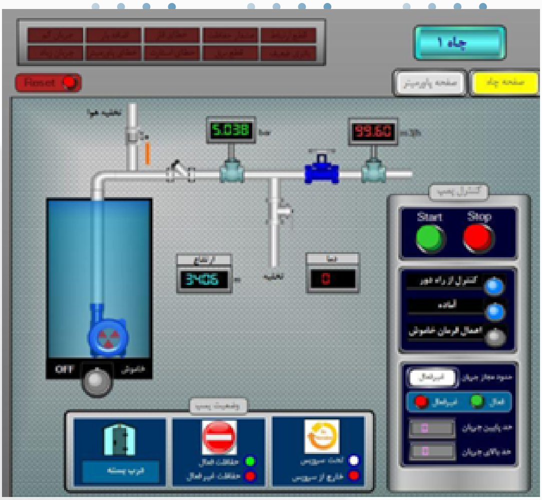


Top	374.0038
Width	194
ContextMenu	
pbsMenu	(Collection)
Dynamics	
HideDynamic	
LeftDynamic	
RotationDynamic	
SwitchDynamic	(Collection)
ToolTipDynamic	
TopDynamic	
Event	
pbsEvent	Pulse
pbsEventConfMe	Are You sure?
pbsEventConfirm	False
pbsEventPageLo	
pbsEventPopupB	
pbsEventPopupN	
pbsEventPulseW	2000
pbsEventScript	
pbsEventSecurity	0
pbsEventSetValu	
pbsEventSignal	
pbsEventValidatic	
Misc	
Angle	0

Angle

You can create a new symbol with the main pbsHMI graphics tools or import from SVG format.

The pbsHMI symbol is a combination of graphical objects and C# code.

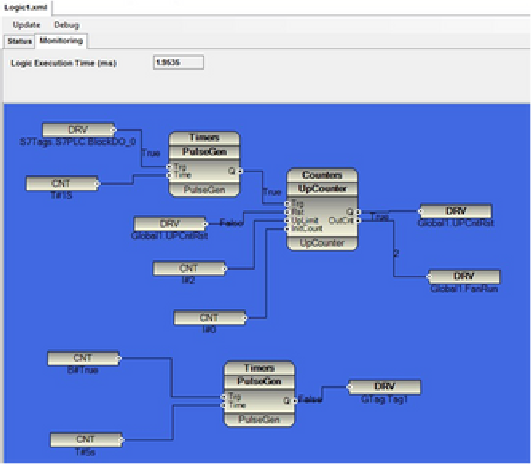


pbsHMI has a built-in OPC UA server that automatically ports all communications and tags to OPC UA.

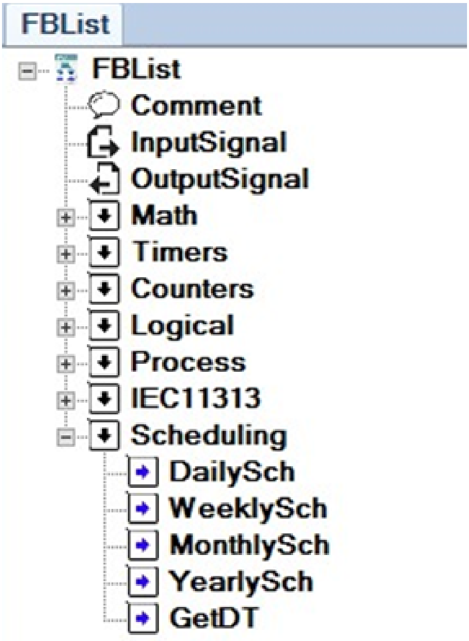
pbsHMI communication channels, tags, alerts, events and FB logics are updated at runtime. No need to restart the system

SoftLogic IDE

There is an IDE for Logic software development based on the Function Block programming language inside pbsHMI.
There are many ready FBs in pbsHMI and user can develop user defined FB in C# language.


Logic Execution Time (ms) 1.9635

Find pbsSoftLogic catalogue in website•••

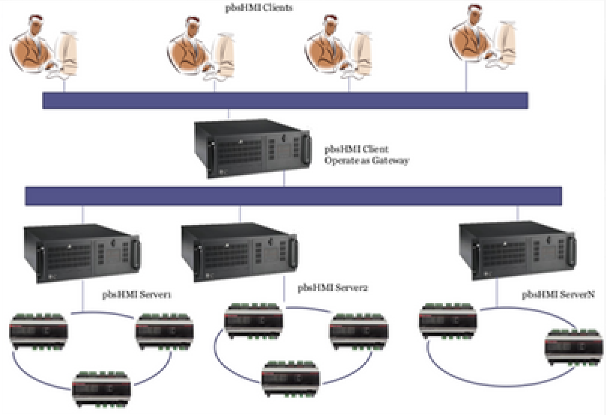

FBList

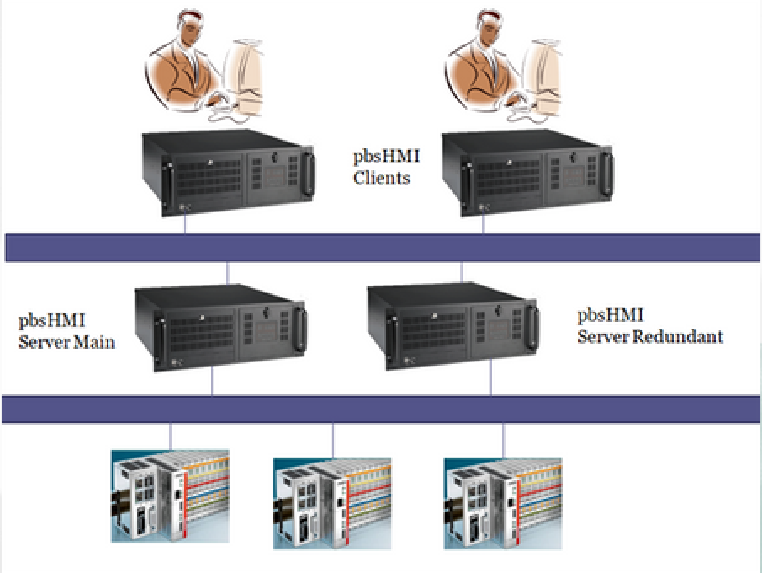
- FBList
  - Comment
  - InputSignal
  - OutputSignal
  - Math
  - Timers
  - Counters
  - Logical
  - Process
  - IEC11313
  - Scheduling
    - DailySch
    - WeeklySch
    - MonthlySch
    - YearlySch
    - GetDT

Multiple logic instances are supported and instances are running in parallel.
There is no limit to the number of FBs per logical instance.
You can use any type of pbsHMI tag in Logics.
It is possible to load new logic and unload old ones at runtime.
You can update the loaded logic with the latest version at runtime (Warm Logic Update)
You can monitor the logic at runtime and watching variables.

Network Operation, Redundancy

pbsHMI supports Client-Server architecture. A client can connect to multiple servers and merge different server projects into one client project.





The pbsHMI client project can be migrated from servers automatically or manually.

pbsHMI supports warm Server redundancy structure and in a bump less operation clients and PLC/RTUs are switching between Servers.

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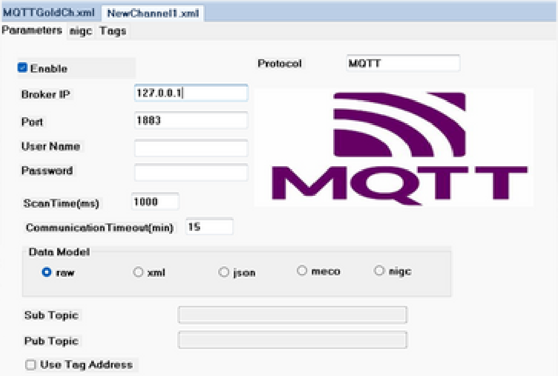
MQTT Support

pbsHMI supports MQTT driver for various data models. You can define tags as raw data, XML, json, or a user-defined data model.



MQTTGoldCh.xml | NewChannel1.xml

Parameters | nigc | Tags

☑ Enable

Protocol: MQTT

Broker IP: 127.0.0.1

Port: 1883

User Name:

Password:

ScanTime(ms): 1000

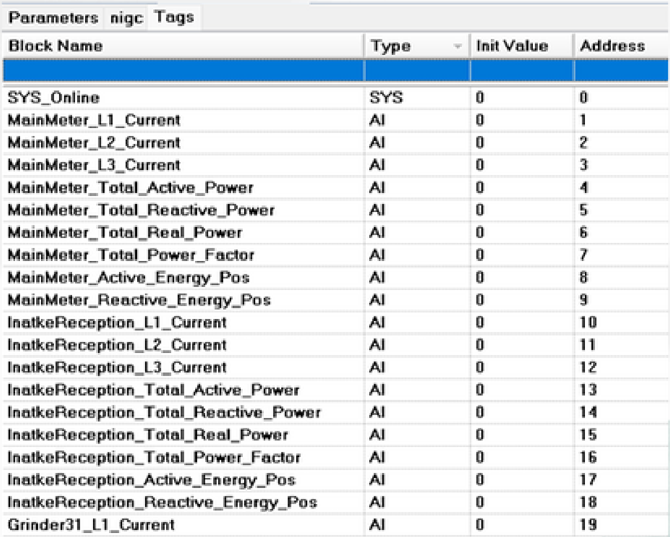
CommunicationTimeout(min): 15

Data Model: ● raw ○ xml ○ json ○ meco ○ nigc

Sub Topic:

Pub Topic:

☐ Use Tag Address



Parameters | nigc | Tags

Block Name	Type	Init Value	Address
SYS_Online	SYS	0	0
MainMeter_L1_Current	AI	0	1
MainMeter_L2_Current	AI	0	2
MainMeter_L3_Current	AI	0	3
MainMeter_Total_Active_Power	AI	0	4
MainMeter_Total_Reactive_Power	AI	0	5
MainMeter_Total_Real_Power	AI	0	6
MainMeter_Total_Power_Factor	AI	0	7
MainMeter_Active_Energy_Pos	AI	0	8
MainMeter_Reactive_Energy_Pos	AI	0	9
InatkeReception_L1_Current	AI	0	10
InatkeReception_L2_Current	AI	0	11
InatkeReception_L3_Current	AI	0	12
InatkeReception_Total_Active_Power	AI	0	13
InatkeReception_Total_Reactive_Power	AI	0	14
InatkeReception_Total_Real_Power	AI	0	15
InatkeReception_Total_Power_Factor	AI	0	16
InatkeReception_Active_Energy_Pos	AI	0	17
InatkeReception_Reactive_Energy_Pos	AI	0	18
Grinder31_L1_Current	AI	0	19

You can import tags from an XML file or from a pbsSoftLogic project.

To reduce data consumption, tag address can be used between pbsSoftLogic and psbHMI MQTT drivers instead of tag name.

To secure communications, you can use TLS or frame encryption in the pbsSoftLogic and pbsHMI drivers.

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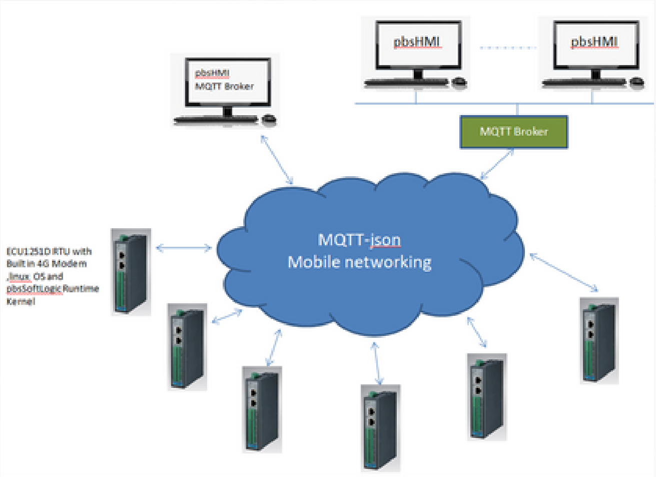
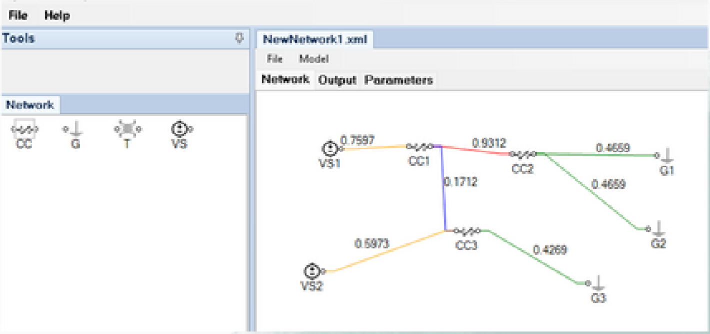
MQTT Support



pbsSoftLogic enabled RTUs can publish MQTT frames to up to eight different brokers simultaneously.

pbsHMI Network

pbsHMI has a built-in network simulation platform that is used to simulate , state estimate and power flow calculation for power grids .



User can design any number of networks and link to SCADA tags and periodically simulate it and monitor and use the calculated states in pbsHMI.

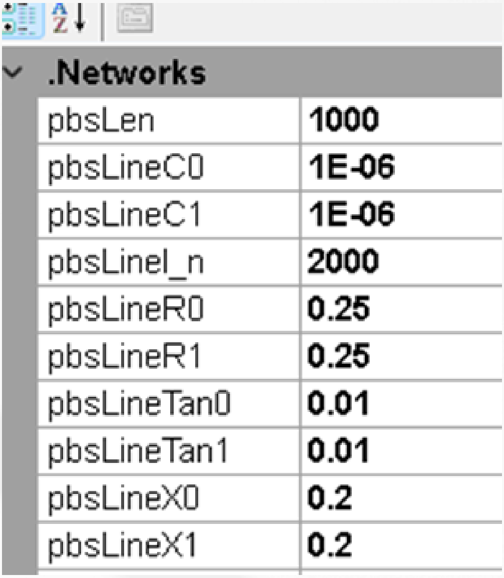
pbsHMI Network

The user can set the parameters of the transmission line and other network elements and link them to pbsHMI tags.

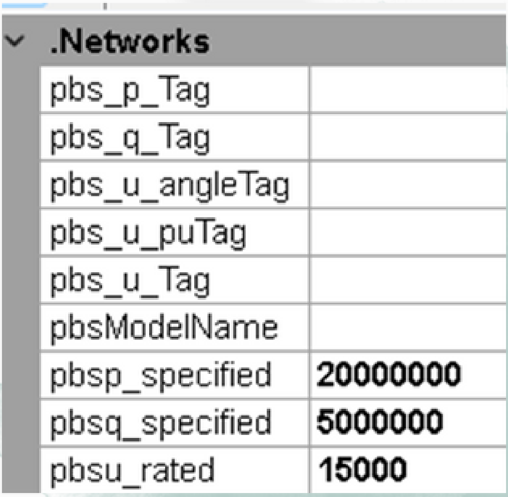
You can define Small World, Random, or Barabasi-Albert network models and analyze their performance.

pbsHMI-Network calculate network parameters like Node degree , clustering coefficient and adjacent matrix and finds hubs and most important nodes of network .

pbsHMI-NX supports network dynamics functions such as State estimation , percolation and diffusion .

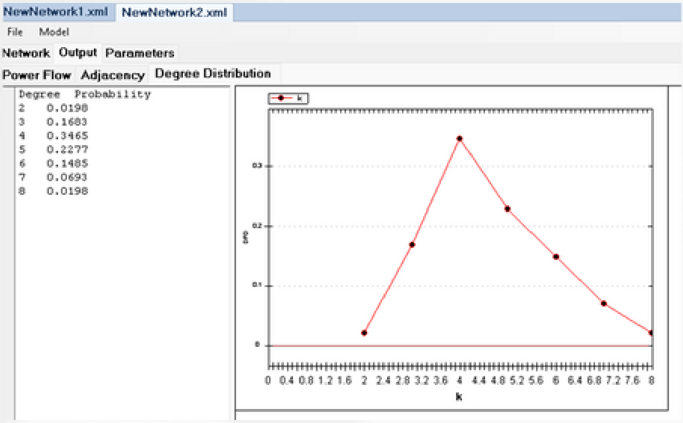


.Networks	
pbsLen	1000
pbsLineC0	1E-06
pbsLineC1	1E-06
pbsLinel_n	2000
pbsLineR0	0.25
pbsLineR1	0.25
pbsLineTan0	0.01
pbsLineTan1	0.01
pbsLineX0	0.2
pbsLineX1	0.2



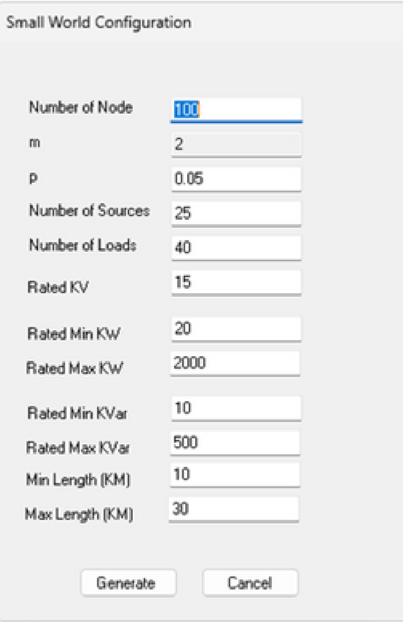
.Networks	
pbs_p_Tag	
pbs_q_Tag	
pbs_u_angleTag	
pbs_u_puTag	
pbs_u_Tag	
pbsModelName	
pbsp_specified	20000000
pbsq_specified	5000000
pbsu_rated	15000

pbsHMI Network



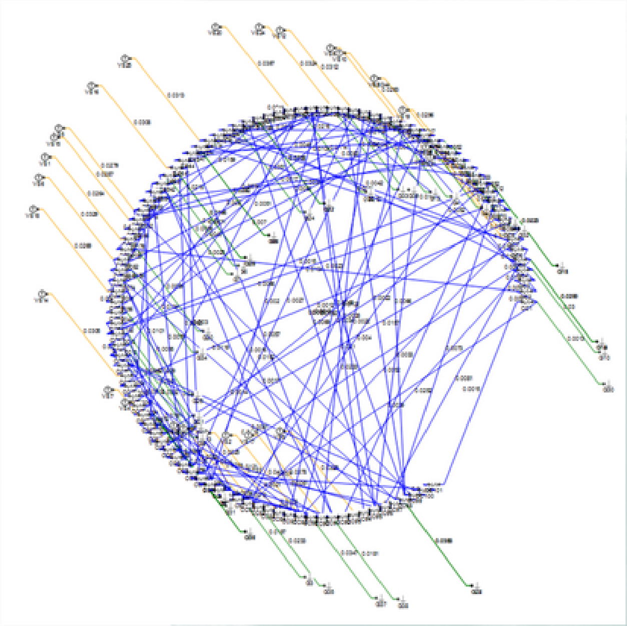
```
Degree  Probability
2     0.0198
3     0.1683
4     0.3465
5     0.2277
6     0.1485
7     0.0693
8     0.0198
```

You can define a network model with random loads, generators, and transmission lines.



Small World Configuration

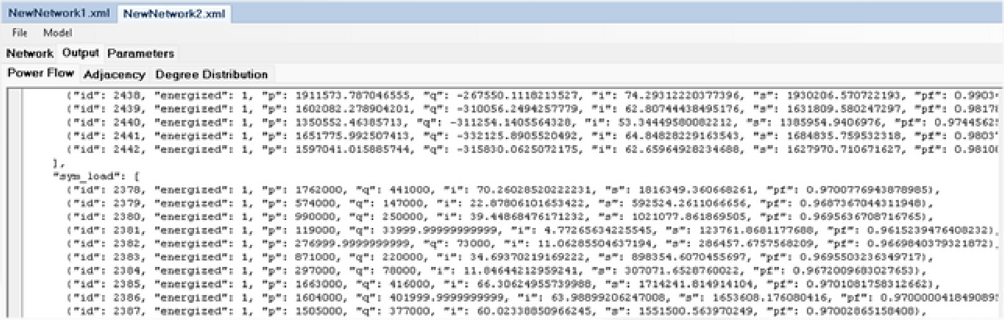
Number of Node	100
m	2
p	0.05
Number of Sources	25
Number of Loads	40
Rated KV	15
Rated Min KW	20
Rated Max KW	2000
Rated Min KVar	10
Rated Max KVar	500
Min Length (KM)	10
Max Length (KM)	30



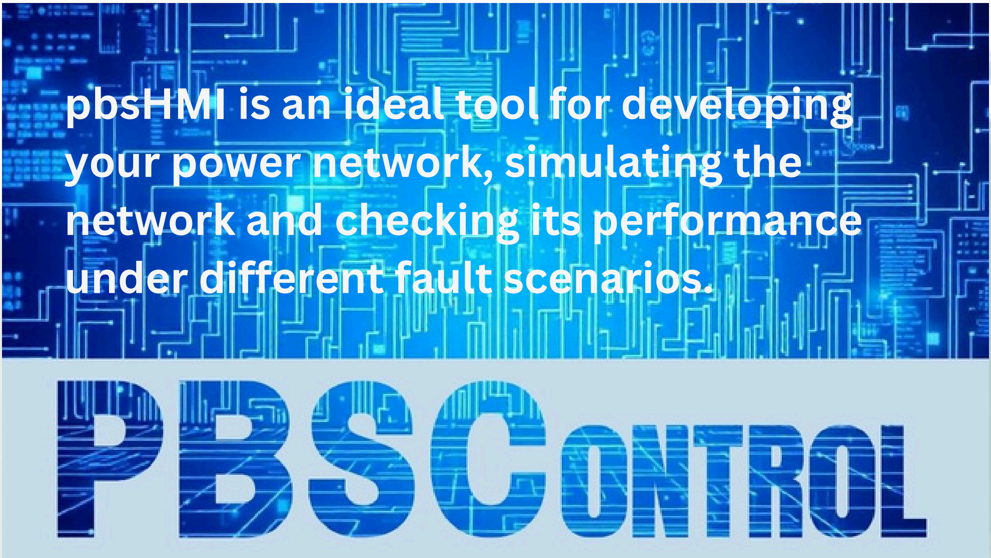
pbsHMI Network

You can run power flow calculations for the model and check the loads in different fault situations.

The JSON data model is used data presentation and connect to the pbsHMI network core.



```
        {"id": 2438, "energized": 1, "p": 1911573.787046555, "q": -267550.1118213527, "i": 74.29312220377396, "s": 1930206.570722193, "pf": 0.9903
        {"id": 2439, "energized": 1, "p": 1602082.278904201, "q": -310056.2494257779, "i": 62.80744438495176, "s": 1631809.580247297, "pf": 0.9817
        {"id": 2440, "energized": 1, "p": 1350552.46385713, "q": -311254.1405564328, "i": 53.34449580082212, "s": 1385954.9406976, "pf": 0.9744562
        {"id": 2441, "energized": 1, "p": 1651775.992507413, "q": -332125.8905520492, "i": 64.84828229163543, "s": 1684835.759532318, "pf": 0.9803
        {"id": 2442, "energized": 1, "p": 1597041.015885744, "q": -315830.0625072175, "i": 62.65964928234688, "s": 1627970.710671627, "pf": 0.9810
      ],
      "sym_load": [
        {"id": 2378, "energized": 1, "p": 1762000, "q": 441000, "i": 70.26028520222231, "s": 1816349.360668261, "pf": 0.9700776943878985},
        {"id": 2379, "energized": 1, "p": 574000, "q": 147000, "i": 22.87806101653422, "s": 592524.2611066656, "pf": 0.9687367044311948},
        {"id": 2380, "energized": 1, "p": 990000, "q": 250000, "i": 39.44868476171232, "s": 1021077.861869505, "pf": 0.9695636708716765},
        {"id": 2381, "energized": 1, "p": 119000, "q": 33999.99999999999, "i": 4.77265634225545, "s": 123761.8681177688, "pf": 0.9615239476408232},
        {"id": 2382, "energized": 1, "p": 276999.9999999999, "q": 73000, "i": 11.06285504637194, "s": 286457.6757568209, "pf": 0.9669840379321872},
        {"id": 2383, "energized": 1, "p": 871000, "q": 220000, "i": 34.69370219169222, "s": 898354.6070455697, "pf": 0.9695503236349717},
        {"id": 2384, "energized": 1, "p": 297000, "q": 78000, "i": 11.84644212959241, "s": 307071.6528760022, "pf": 0.9672009683027653},
        {"id": 2385, "energized": 1, "p": 1663000, "q": 416000, "i": 66.30624955739988, "s": 1714241.814914104, "pf": 0.9701081758312662},
        {"id": 2386, "energized": 1, "p": 1604000, "q": 401999.9999999999, "i": 63.98899206247008, "s": 1653608.176080416, "pf": 0.970000041849089
        {"id": 2387, "energized": 1, "p": 1505000, "q": 377000, "i": 60.02338850966245, "s": 1551500.563970249, "pf": 0.97002865158408},
```



pbsHMI is an ideal tool for developing your power network, simulating the network and checking its performance under different fault scenarios.