

SAARC Training Workshop 'Power System Studies for Synchronization of Multiple Systems'

Introduction to PSS/E *User Interface*

Day-1-F

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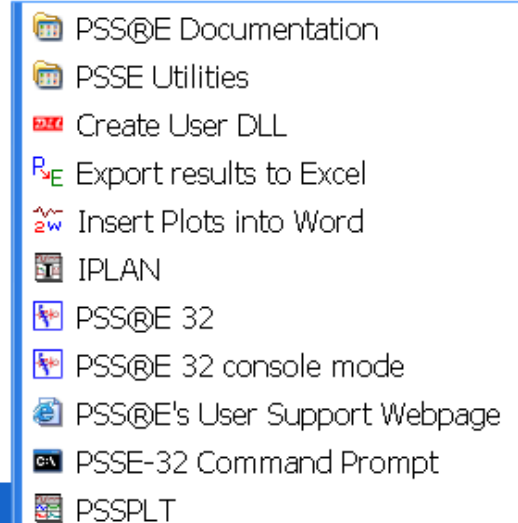
1. Software Overview
2. Environment Manager
3. Documentation
4. Starting Up
5. GUI Overview
6. Utilities

Introduction to PSS/E

- Siemens Power Technologies Incorporated (PTI) Power System Simulator for Engineering (PSS/E).
- Simulation of load flow, fault analysis, network equivalent construction and dynamic conditions can be performed.
- PSS/E is designed for transmission network and generation performance for both steady-state and dynamic simulations.
- Highly modular structure which allows a lot of flexibility in the solution of problems.
- The user can introduce own subroutines whenever standard calculation procedures are limiting.

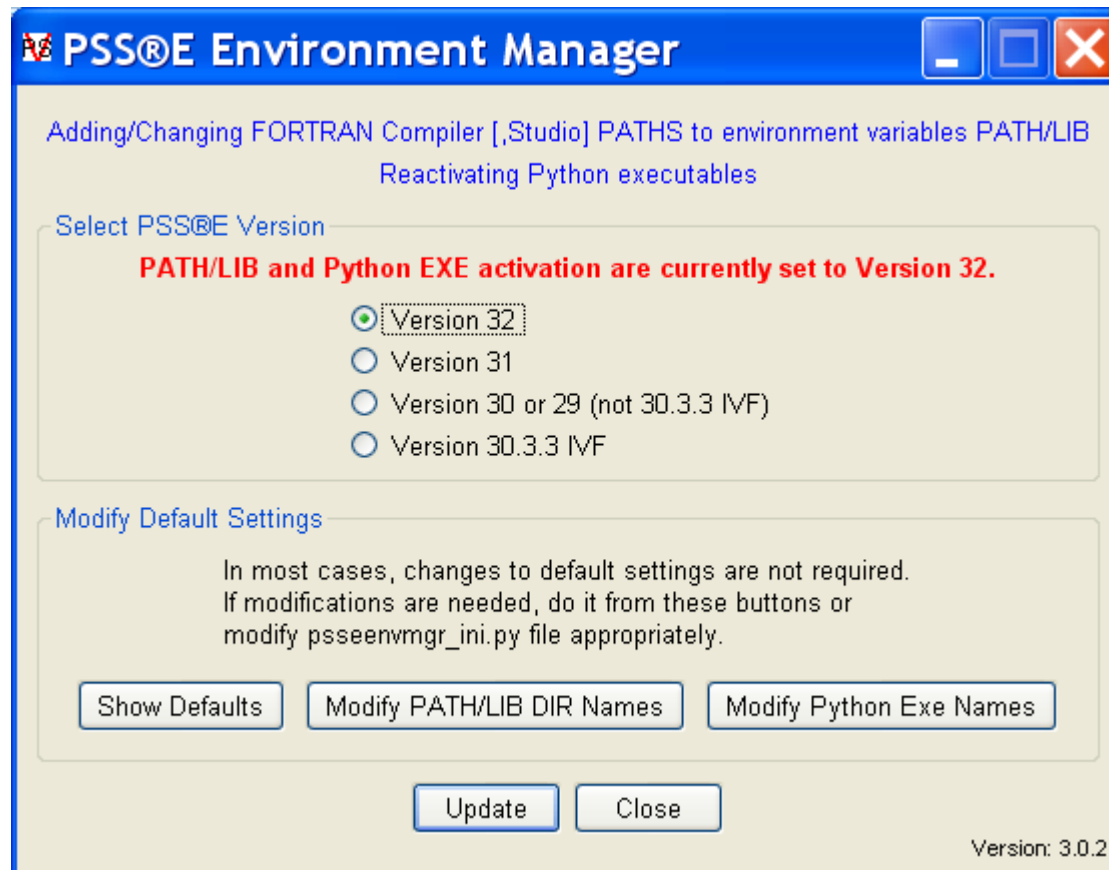
1. Software Overview – ver. 32

- PSS/E 32
 - Documentation
 - Utilities and Tools
 - Main Software
 - Automation
 - Compiling
- Environment Manager (if installed)



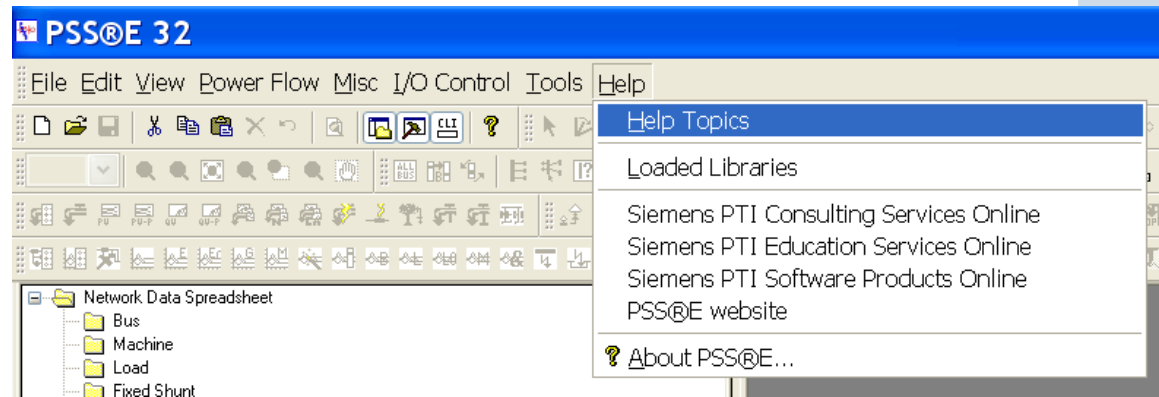
2. Environment Manager (if installed)

- Manages compiling environment for dynamics.
- Might require running once before starting PSS/E.

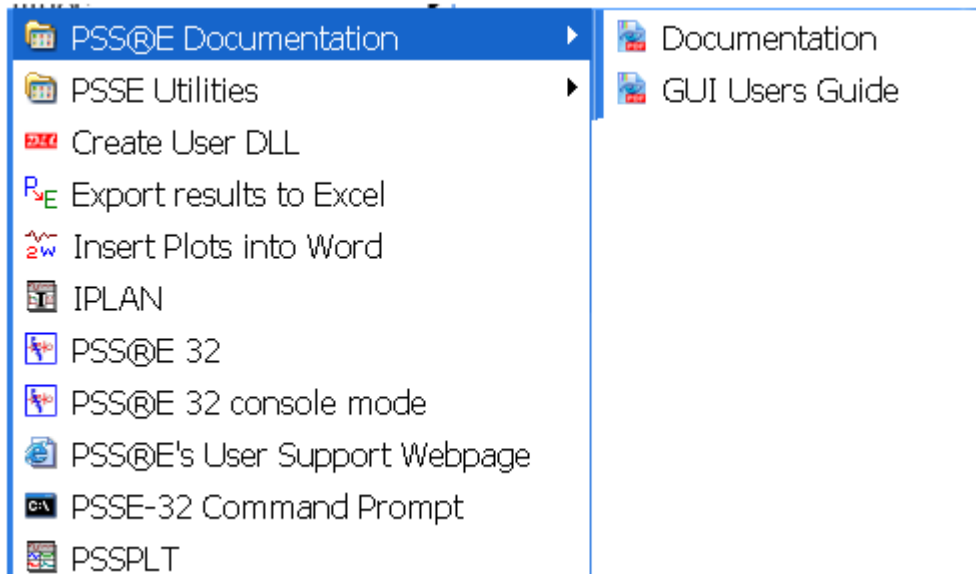


3. Documentation Access

- **Help Menu**



- **Windows Start Button**



Documentation Structure

- Installation
- Release Notes
- Program Operation
- Program Application
- Compatibility with Previous Releases
- Application Program Interface (API)
- Environment Manager
- IPLAN
- Transmission Line Characteristics
- Utilities

- GUI User Guide

Documentation

POM – Program Operation Manual

1. Overview
 2. File System
 3. Startup
 4. Operating Modes
 5. Power Flow Data Entry, Modification, and Display Activities
 6. Power Flow Solution Activity Descriptions
 7. Linear Network Analysis
 8. Network Reduction
 9. Unbalanced Fault Analysis
 10. Power Flow Reports
 11. Balanced Switching
 12. Transmission Pricing and Open Access
 13. Optimal Power Flow
 14. Dynamic Simulation Activity Descriptions
 15. Program Automation
 16. Result Retrieval
 17. Miscellaneous Activity Descriptions
 18. Dynamic Simulation Setup and Procedures
 19. Example Data Files
 20. Model Writing
 21. Event Studies
 22. Scenarios
- Appendices:
- A. Activity Summary
 - B. PSS®E Documentation
 - C. Legacy Activities
 - D. Command Line Options

Documentation

PAG – Program Application Guide

Volume 1 – Load Flow, Short Circuits, Contingencies, etc.

- 1 - System Behavior and Power System Simulator
- 2 - Transmission Lines
- 3 - The Per-Unit Data System
- 4 - Transformers in the Positive-Sequence
- 5 - Power System Network Simulations
- 6 - Basic Power Flow Activity Applications
- 7 - System Manipulation and Monitoring
- 8 - Equivalents
- 9 - Switching Studies
- 10 - Fault Analysis
- 11 - Contingency Analysis

Volume 2 – Dynamics.

Starting PSS/E

- Using the Start button.
- Putting a copy of shortcut to a working folder.
- Using Console Mode or Command Prompt.
- From the Windows Start menu
- From the Windows Explorer, double-click the psse32.exe file.

(C:\Program Files\PTI\PSSE32\PSSBIN\).

- PSSE-32 Command Prompt from the Windows® Start menu, ***enter psse32.exe***
- Double-click a previously defined PSS/E shortcut icon

User Interface

- Spreadsheet-style data entry
- Graphics
- Report and Progress Windows
- Tree View

DATA ENTRY

- White boxes are for data
- Greyed out boxes contain data entered in other panels or data calculated by PSSE (not editable by the user)
- Bus Data, Bus Number, Name, kV, Zone, Area etc.
- Branch Data, R, X, B, Rating (A, B, C), Length etc.
- Generation data is separated into Machine and Plant data (Plant data has the controlled busbar and the target voltage)
- 2 Winding Transformer Data, R, X, Rating (A, B, C), Tap ratio, Tap positions etc.
- 3 winding Transformer data has a separate 'winding' data panel
- Shunts, Fixed and Switched, Capacitors and Reactors
- Other Data Panels for Two Terminal HVDC, Multi-Term-HVDC, FACTS, Area, Zone, Owner etc.

DATA ENTRY

Can be edited

The screenshot displays the Power Planners International software interface. The main window shows a table of power system data with columns for From Bus, To Bus, Id, Line R, Line X, Charging, In-Service, and Metered. The table lists various bus connections and their associated parameters. A callout points to the table with the text "Can be edited".

On the left, a network tree shows the hierarchy of buses and branches. The bottom panel displays system status information, including convergence results and a bus summary. A callout points to this panel with the text "Not Editable in this panel". Another callout points to the bottom panel with the text "Data panels".

From Bus Number/Name	To Bus Number/Name	Id	Line R (pu)	Line X (pu)	Charging (pu)	In-Service	Metered
10301 [ZAKH 132.00]	10302 [VDHK 132.00]	1	0.03060	0.13106	0.02634	☐	☒ From
10301 [ZAKH 132.00]	11301 [MSRH 132.00]	1	0.05897	0.25260	0.05076	☐	☒ From
10302 [VDHK 132.00]	10303 [EDHK 132.00]	1	0.01185	0.36565	0.00703	☐	☒ From
10303 [EDHK 132.00]	11301 [MSRH 132.00]	1	0.06912	0.14008	0.02465	☐	☒ From
11112 [MLE1 11.000]	11126 [ML12 11.000]	1	0.00000	0.00010	0.00000	☐	☒ From
11301 [MSRH 132.00]	11302 [KESK 132.00]	1	0.00725	0.04059	0.01917	☐	☒ From
11301 [MSRH 132.00]	11302 [KESK 132.00]	2	0.00725	0.04059	0.01917	☐	☒ From
11301 [MSRH 132.00]	11307 [MSL3 132.00]	1	0.03755	0.14992	0.03496	☒	☒ From
11301 [MSRH 132.00]	11307 [MSL3 132.00]	2	0.03755	0.14992	0.03496	☒	☒ From
11302 [KESK 132.00]	11303 [IT2A 132.00]	1	0.01338	0.07205	0.02323	☐	☒ From
11302 [KESK 132.00]	11304 [TLAB 132.00]	1	0.01838	0.09349	0.02754	☐	☒ From
11302 [KESK 132.00]	11305 [SNJC 132.00]	1	0.03894	0.16681	0.03352	☐	☒ From
11302 [KESK 132.00]	11306 [TLFR 132.00]	1	0.01836	0.07864	0.01580	☐	☒ From
11303 [IT2A 132.00]	11304 [TLAB 132.00]	1	0.01613	0.06911	0.01389	☐	☐ From
11305 [SNJC 132.00]	11306 [TLFR 132.00]	1	0.02058	0.08817	0.01772	☐	☐ From

REACHED TOLERANCE IN 1 ITERATIONS
 LARGEST MISMATCH: 0.00 MW -0.04 MVAR
 SYSTEM TOTAL ABSOLUTE MISMATCH: 0.21 MVAR

SWING BUS SUMMARY:
 BUS# X-- NAME --X BASKV PGEN PMAX PMIN QGEN QMAX QMIN
 12807 SBJ01 18.000 47.7* 220.0 60.0 0.5 150.0 -100.0

Progress

Select an object on which to get Help Met convergence tolerance Powerflow results MW/MVAR flow Layer - 20 (Entire System) 49.47, 30.47 Bind

DATA ENTRY

View Menu

Data Panel label

Tree View

Can hide these temporarily

Output Bar

The screenshot shows the PowerPlanners International software interface. The main window displays a table of data for various components. The table has columns for Bus Number/Name, Id, In-Service, Pgen (MW), Pmax (MW), Pmin (MW), Qgen (MVAR), Qmax (MVAR), and Q (M). The data is organized into rows for different buses and components.

Bus Number/Name	Id	In-Service	Pgen (MW)	Pmax (MW)	Pmin (MW)	Qgen (MVAR)	Qmax (MVAR)	Q (M)
10801 [DAMD01 11.000]	1	☐	0.00	7.0	1.8	3.00	3.00	
10802 [DAMD02 11.000]	1	☐	0.00	7.0	1.8	3.00	3.00	
10803 [DAMD03 11.000]	1	☐	0.00	7.0	1.8	3.00	3.00	
10804 [DAMD04 11.000]	1	☐	0.00	7.0	1.8	3.00	3.00	
10805 [TURK 11.000]	1	☐	0.00	0.0	0.0	128.00	200.00	
11801 [HMS01 5.2500]	1	☒	10.00	15.0	6.0	-2.29	5.00	
11802 [HMS02 5.2500]	1	☒	10.00	15.0	6.0	-2.29	5.00	
11803 [HMS03 5.2500]	1	☒	9.00	15.0	6.0	-2.32	5.00	
11804 [HMS04 5.2500]	1	☒	0.00	15.0	6.0	5.00	5.00	
11805 [GML01 11.000]	1	☒	17.00	20.0	5.0	8.00	8.00	
11806 [GML02 11.000]	1	☒	17.00	20.0	5.0	8.00	8.00	
11807 [GML03 11.000]	1	☒	17.00	20.0	5.0	8.00	8.00	
11808 [GML04 11.000]	1	☒	17.00	20.0	5.0	8.00	8.00	
11809 [GML05 11.000]	1	☒	0.00	20.0	5.0	8.00	8.00	
11810 [GML06 11.000]	2	☐	0.00	20.0	5.0	8.00	8.00	
11811 [GML07 11.000]	1	☐	0.00	20.0	5.0	8.00	8.00	

The interface also includes a menu bar (File, Edit, View, Power Flow, Fault, OPF, Trans Access, Subsystem, Misc, I/O Control, Tools, Window, Help), a toolbar, a tree view on the left, and an output bar at the bottom. The output bar shows a message: "ISSUED 04 AUG 2006" and "C:\Work2\Iraq\Studies\summer 2006\Iraq_summer06_36.sav WAS SAVED ON FRI, AUG 04 2006 15:09".

Can't read the labels !