Kingdom of Saudi Arabia
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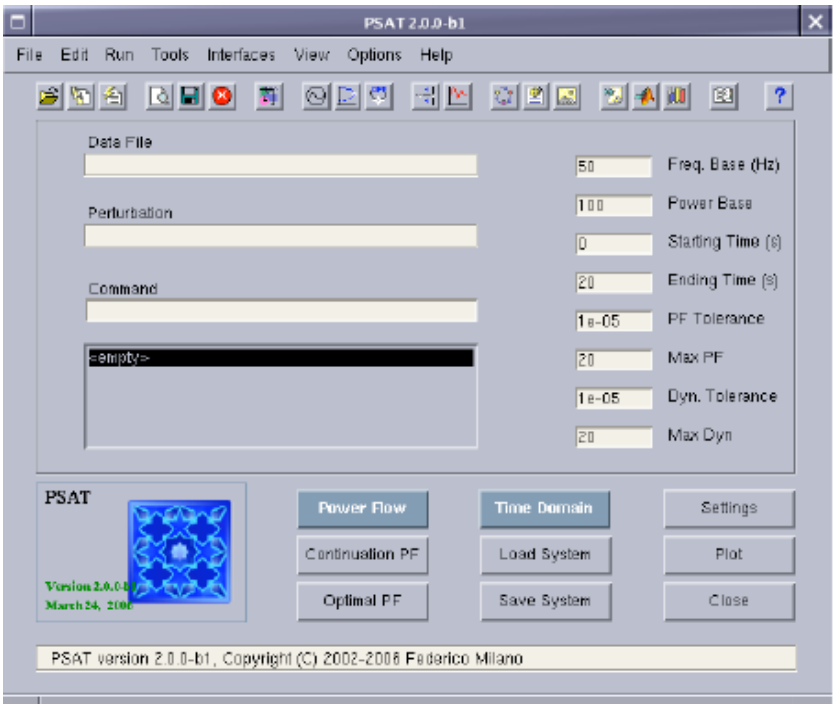
المملكة العربية السعودية
وزارة التعليم العالي
جامعة الملك خالد

كلية الهندسة /قسم الهندسة الكهربائية

Power System Analysis Toolbox PSAT

Software for Power System Education and Research

Power System Training



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1. DESCRIPTION

PSAT is a Matlab toolbox for electric power system analysis and control. It is developed by Federico Milano and currently used in more than 50 countries. PSAT is a very exible and modular tool for power flow (PF), continuation power flow (CPF), optimal power flow (OPF), small signal stability analysis (SSSA) and time domain simulation. Additionally, a variety of static and dynamic models are provided.

2. TOPICS

The core of PAST is its power flow algorithm, which contains the initialization of state variables. After completing power flow, the following routines can be executed for further static and dynamic analyses.

• Continuation power flow (CPF);
• Optimal power flow (OPF);
• Small signal stability analysis (SSSA);
• Time domain simulations (TDS);

3. PURPOSE

To enable the students gain a fair knowledge on the programming and simulation of Electric Power Systems.

4. INSTRUCTIONAL OBJECTIVES

At the end of Lab the students will be able to acquire skills of using PSAT software for power system studies.

5. LIST OF EXPERIMENTS

- Introduction to Power System Analysis Toolbox.
- Creation of Networks and One-Line Diagrams.
- Running the Power Flow Program.
- Displaying Results.
- Saving Results.
- Settings.
- Continuation Power Flow Analysis.
- Small Signal Stability Analysis.
- Time Domain Simulation.
- Eigenvalues Analysis.
- Fault Analysis.
- Voltage Stability Analysis.
- Implementation of IEEE-14 BUS Test System With **Photovoltaic Generation**.

6. REFERENCE

a. F. Milano, “PSAT, Matlab-based Power System Analysis Toolbox,” 2010, [Online]. Available: http:// www.power.uwaterloo.ca/~fmilano/.

b. Milano F (2005) An open source power system analysis toolbox. IEEE Trans Power Syst 20(3):1199–1206