



SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION (SAARC)

T H E R E P O R T

L a u n c h i n g C e r e m o n y

SAARC Technical Training ‘Power System Planning and Analysis through Distance Learning’



SAARC Special Project

**“SAARC Technical Training Course:
Power System Planning and Analysis Through Distance Learning”**

29 December 2017

Lahore, Pakistan



Organized by
SAARC Energy Centre, Islamabad
in collaboration with
Virtual University of Pakistan



SAARC Energy Centre

697, Street No 43, E-11/4 (NPF), Islamabad, Pakistan

www.saarcenergy.org; info@saarcenergy.org



SAARC Special Project: Technical Training
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The Report

Introduction

SAARC Energy Centre (SEC), Islamabad organized launching ceremony of the SAARC Special Project SAARC Technical Training in Lahore, Pakistan on 29 December 2017 in collaboration with Virtual University of Pakistan. The event was arranged at Muhammad Ali Jinnah Campus, Lahore. Copy of the event program is available at Annexure I. The ceremony was attended by Prof. Dr. Tahir Nadeem Malik, Dean Electrical Engineering Department UET Taxila, Engr. Dr. Suhail Aftab Qureshi, Dean Electrical Engineering Department UET Lahore, Engr. Hassan Jafar Zaidi, Managing Director, Power Planners International Pvt. Ltd, Engr. Tauseef ur Rehman, Assistant Manager, NTDC, Engr. Ahmad Usman Khan, System Studies Engineer, officials of SAARC Energy Centre and Virtual University of Pakistan.

2. In the quest of achieving and sustaining economic power dispatch, transmission adequacy and reliability, the role of power system analysts and planners can't be over emphasized. Power System Analysis is one of the core functions of the planning component of a power transmission or distribution utility; a highly skilled task that requires to be performed for transmission/distribution planning, on regular basis. On top of that, brain drain (migration of professionals to other countries for better opportunities) has affected adversely the strength of competent manpower. Developing and enhancing competence of the relevant professionals is thus the fundamental pre-requisite for managing a well-equipped professional work force in the

field of power system. However, few effective training opportunities are available and rarely available options are too expensive; further such trainings require the professionals to leave their desks and attend formal training sessions.

3. In view of the rapid growth in power demand, power system planning and analysis tools have become a vital necessity for organizations throughout the electric power industry to address increasing complexity in modern transmission and distribution network systems. Precision of the analyses depends on the quality of the software as well as the skills and experience of the engineer/planner handling the task.

4. Increasing acceptance of distance learning (education in which learners take courses by accessing information & communicating with the instructor asynchronously over internet/television channel) has opened countless opportunities for trainings, refresher courses, etc. particularly invaluable for the junior and mid-career professionals. With wider and reliable internet access, this medium of education has gained acceptance and popularity in South Asia as well during the last two decades. Benefits of such trainings include low cost, minimal time consumption, flexibility in terms of training schedule, etc. Repetition of courses facilitates the organizing entity for higher investment on quality of training.

Objective

5. Through this special project, SEC envisaged to achieve the following objectives aiming at strengthening the SAARC power planners:

- a. Build, strengthen and sustain competent professional workforce with respect to electric power system
- b. Facilitate the power system professionals with power system training covering the latest case studies based on the power system data of the Member States, at their doorstep with flexible time schedule and at a meagre cost.
- c. Capitalize on the experience gain from the development and launching of Basic Certificate Course

Project Design

6. The Special project was designed by the SEC and was accomplished by undertaking the following important activities:

- a. Identification, consent and approval of coordinating entities/knowledge partners
- b. Development of curriculum design by the SEC and its knowledge partners.
- c. Engaging Resource Person(s) for designing and delivering lectures
- d. Recording, Editing and Production of video lectures at VU Studios
- e. Launching of the course by Virtual University of Pakistan for the professionals from all SAARC Member States

Knowledge Partners

7. For the development and launching of this course, the SEC has been able to engage invaluable resource in terms of knowledge partners which include the following:

- a. National Transmission and Dispatch Company (NTDC): Power Network Operator of Pakistan
- b. Lahore Electric Supply Company – LESCO: Power Distribution Company;
- c. Power Planners International (Private) Limited: a power sector consultancy entity based in Pakistan and UK;
- d. University of Engineering and Technology (UET), Lahore;
- e. University of Engineering and Technology (UET), Taxila;
- f. University of Management and Technology (UMT);
- g. University of Central Punjab (UCP), Lahore;
- h. University of South Asia (USA), Lahore; and
- i. Virtual University of Pakistan

Technical Resource

8. For this course, SEC has managed most competent professionals from Pakistan Power Sector which include representation from Academia, transmission utility and relevant entrepreneur comprising the following:

- a. Engr. Professor Dr. Tahir Nadeem Malik, Dean, Department of Electrical Engineering, University of Engineering and Technology, Taxila
- b. Engr. Professor Dr. Suhail Aftab Qureshi, Dean, Department of Electrical Engineering, University of Engineering and Technology, Lahore
- c. Engr. Hassan Jafar Zaidi, Chief Executive Officer, Power Planners international (Private) Limited, Lahore
- d. Engr. Iran Ahmad, Renewable Energy and Power Sector Consultant, Karachi
- e. Engr. Tauseef ur Rehman, Assistant Manager, Power System Planning, National Transmission and Dispatch Company Limited
- f. Engr. Fiaz Kareem, Resident Engineer, 220 kV Grid Station, Wapda Town, Lahore, National Transmission and Dispatch Company Limited
- g. Engr. Ahmad Usman Khan, Systems Studies Engineer, Power Planners international (Private) Limited, Lahore

Major Topics Covered in the Course

9. In order to maximize the value of the knowledge sharing process, the training course comprise the following areas of power system planning:

- Introduction to the Electrical Power System
- Basics of Power System Analysis
- Basic Elements of Power System
- Learning about the Per Unit System

- Elements of Power Flow
- Power Flow Solutions
- Introduction to Electric Power Sector
- Load Flow Solution Methods
- Load Tap Changing Transformer Characteristics
- Reactive Power Compensation
- Contingency Analysis
- Voltage Collapse
- Reactive Power and Voltage Control
- Balanced 3-Phase Faults
- Generator Under 3-Phase Fault
- Symmetrical Components
- Fault Current Calculations in PSS/E
- Power System Stability
- Running Stability Simulations in PSS/E
- Applying Fault Types in PSS/E
- Angle Stability
- Plotting Stability Study Results
- Essential Electrical Concepts
- Layout of SAARC Member States Power Sector
- Power Transmission Lines
- Power System Operational Planning: Economic Dispatch
- Energy Efficiency
- Active-Reactive Power Balancing
- Electrical Utility Asset Integrity Management
- Determining Utility T&D Losses
- Power Factor Improvement through Installation of Capacitors
- Load Forecast
- Power Market Survey Model
- Long Term Power Demand Forecasting Model
- Course Information

- Introduction to the SAARC Energy Centre
- Energy Nexus in South Asia
- The Way Forward
- Case Study: Power Evacuation from Wind Farms
- Documentary on NTDC 220 kV Grid Station

10. Cyber news by Virtual University of Pakistan and SAARC Energy Centre can be accessed at the following links:

- <http://www.vu.edu.pk/NewsDetails.aspx?type=&NewsId=2823>
- <https://www.facebook.com/VirtualUniversityOfPakistan/videos/799877140214433/>
- <http://www.saarcenergy.org/?p=2345&preview=true>

11. Mr. Salis Usman, Program Coordinator, SAARC Energy Centre welcomed the Rector, VU, resource persons and guests on the eve of launching ceremony of the first distance learning training course for power system planners in South Asia. Mr. Usman informed that in order to tap the modern technological advancement for creating unique opportunities of low cost, flexible schedule trainings for regional planning professionals, SEC undertook to facilitate the ever-busy power system planners and analysts. The Certificate training course comprising 39 lectures, one video documentary of a Grid Station has been designed and developed with the proactive contribution of Virtual University of Pakistan which is being offered for the South Asian professionals.

12. Subsequent to successful completion, the participants would be recognized by the Virtual University of Pakistan, through participation certificates, which is the Pakistan's premier distance learning platform recognized by the Higher Education Commission of Pakistan. Upon successful implementation of this special project, more certificate course under the thematic area of SEC would be launched at VU. Further opportunities to launch such courses form other distance learning platforms functioning in South Asia would be explored and materialized. He added that SAARC Energy Centre is totally convinced that launching of this training course through distance learning will help us in moving ahead on the vision of SAARC Leaders pertaining to managing sustainable energy for the people of South Asia in the most affordable manner. Let us start aiming at a better tomorrow through collaborative efforts, joint resources and self-belief since we have been gifted by the nature, be it intellect, resources or commitment to change the lives of our people.

13. Program Coordinator, SEC thanked Mr. Naveed A. Malik, Rector, Virtual University, for his proactive consent and ownership, without which this development would have not been possible. Through his sustained interest, throughout the course of this endeavor, the VU extended utmost support. He also highlighted the perseverance of the whole VU team whose untiring efforts throughout the execution of the course were highly commendable. He profoundly thanked all the resource persons for their invaluable input by extending their invaluable time and expertise, on which this whole project was based on.

14. Mr. Usman finished his address by apprising the participants that the SEC strongly believes that to mitigate energy poverty through sharing the best practices, consistency with the overall purpose is the key. And SAARC Energy Centre is committed to advance this great intervention which is set to open new horizons of development in South Asia.

15. Mr. Naveed A Malik, Rector, VU, Pakistan, on this occasion, commented that he is happy to be a part of this knowledge sharing initiative for power planners of South Asia and he is eager to further this process in collaboration with SAARC Energy Centre. He emphasized that for successful operation of this course, role of SAARC Energy Centre is highly important since VU aims to have students for this course across the power sectors of all SAARC Member States including Pakistan.



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Friday, 29 th December 2017	
Muhammad Ali Jinnah Campus, Virtual University of Pakistan, Lahore	
Time (Hrs)	Description
1500	Tilawat from Quran-e-Majeed
1505	National Anthem
1510	Welcome Address and Project Report: Salis Usman, Program Leader (Energy Trade), SAARC Energy Centre
1520	Multimedia Journey through Development Process
1525	Address by the Chief Guest: Dr. Naveed A. Malik, Rector, Virtual University of Pakistan
1535	Award of Certificates to VUP Team by Program Leader, SEC
1550	Award of Shields to Resource Person by Rector, VUP
1555	Award of Shield to Rector, VUP by Program Leader, SEC
1600	Cake Cutting and Refreshments

Brief Pictorial View of the Lunching Ceremony









