



**GCC Electrical
Testing Laboratory**

المفتبر الفليبي لفص الممدات الكهريانية



Electricity Market Course

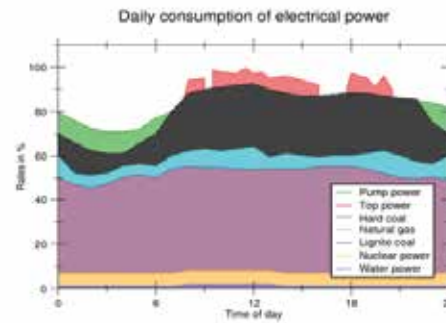
A Five-Day Training Workshop

INTRODUCTION

The objective of this proposal is to provide training to Client personnel on the topic “**Electricity Market**”. The purpose of the course is to enhance the participants’ understanding of how a liberalized electricity market with a power exchange works. Further, the course will discuss the role of the exchange, how to set up a power exchange and the various options for the exchange trading system.

PRELIMINARY TRAINING AGENDA

The course programme below should be considered as a starting point for discussion and further development. Our understanding is that this group of client employees have the task of launching a Saudi Arabian power exchange. Hence, the content of the workshop must be adapted so we spend more time discussing exchange trading and how to set up an exchange.



Course Date:

23-27 December 2018

Course Venue:

Novotel Hotel, Dammam

Course Fees:

SR 13,000 excluding VAT



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23-27 December
2018

Propositional
Course

**Electricity
Market
Course**

**A Five-Day
Training
Workshop**



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المختبر الفليبي لفحص المعدات الكهربائية

3.1 DAY – 1

The security of supply. The tasks of an ISO (Independent System Operator) and a TSO (Transmission System Operator).

- a. The rules of the electricity market.
- b. Market and technical regulation – maintaining the security of supply by using the market.
 - A case: the Nordic market for balancing energy.
 - The TSO's sale and purchase of balancing energy.
 - Price setting at the Nordic market for balancing energy.
 - The TSO's purchase of balancing capacity. Western Europe as a case.
 - Individual exercise: trading balancing energy and balancing capacity with the TSO
- c. Performance standards for ancillary services.
- d. Performance standards for the TSO/ISO.
- e. Settlement of imbalances. This is a settlement between the TSO and the commercial players.
 - A commercial player's potential imbalance. The concept of balancing energy.
 - Settlement of imbalances.
 - Measuring imbalances.
 - Setting the rules for imbalances
- f. Imbalance settlement in single buyer model and in whole-sale market.
- g. Penalty Scheme for deviations from plans and types of deviations.
- h. Process for settlement of deviations.
- i. Scheduling related interactions in single-buyer model and in whole-sale market.
- j. The role of the commercial players.
- k. Outage scheduling.
- l. Liberalizing the electricity market – discussion of the process.
- m. Tender conditions and approvals requirement.
- n. Team exercise: How to maintain the security of supply in Saudi Arabia.

3.2 DAY – 2

- a. Single Buyer model.
- b. Roles & rules for the players: retailers, Single Buyer, TSO/ISO, producers, traders.
- c. Balancing energy and black-outs.
- d. The merits of a transparent market price.
- e. More on the maintenance of the security of supply – how market players can assist the TSO/ISO. The rules & regulations for this.
- f. Providing a transparent market price: establishing a spot exchange
 - * Trading electricity via a spot exchange
 - * Sending bids to a spot exchange.
 - The spot exchange's calculation of electricity prices.
 - The consumers: setting the price for captive consumers using the exchange's prices.
- g. Individual exercise: trading with a spot exchange.
- h. Market power and the regulator's role.
- i. Electricity price for captive consumers.
- j. Team exercise: how to establish a power exchange in Saudi Arabia.

3.3 DAY - 3

More on trading at a spot exchange: block bids.

- a. Cross-border trading of electricity
 - Trading between incumbents.
 - Explicit auctions.
 - Market coupling.
 - Market coupling combined with explicit auctions.
- b. The development of cross-border trading. The rules & regulations.
- c. A case: the development of the common Baltic-Nordic electricity market.
- d. Individual exercise: market coupling and calculation of spot prices.
- e. Electricity flows in meshed grids: loop flows.
- f. Nodal pricing: the system used in parts of USA and Australia, for example. In Europe, the so-called bidding zone system is used.
- g. Team exercise: the merits of nodal pricing versus bidding zone for Saudi Arabia and the Gulf States.

3.4 DAY – 4

Intra-day trading of electricity.

- a. Trading with an exchange. Exchange trading versus bilateral trading.
- b. Different types of exchange trading.
- c. The importance of liquidity in the market.
- d. Time line for trading electricity: the European system.
- e. Cross-border trading: Fuel subsidiaries transfer settlements.
- f. Re-dispatching – the TSO's maintenance of the security of supply.

3.5 DAY - 5

Review, Wrap up, Exercises and Exam.

- a. How should Saudi Arabia reform the electricity supply business and move towards a more liberalized electricity market?
- b. Four teams A, B, C and D will be constituted. The presentation of Team A is evaluated by the members of the teams B, C and D – and so forth.

