INDUSTRY MINISTER'S DECISION No. 02/2007/QD-BCN OF JANUARY 09, 2007, PROMULGATING THE REGULATION ON

THE MINISTER OF INDUSTRY

Pursuant to the Government's Decree No. 55/2003/ND-CP of May 28, 2003, on the functions, tasks, powers and organizational structure of the Ministry of Industry;

Pursuant to the December 3, 2004 Electricity Law;

Pursuant to the Government's Decree No. 105/2005/ND-CP of August 17, 2005, detailing and guiding the implementation of a number of articles of the Electricity Law;

At the request of the Director of Electricity Regulation and Legislation Department

DECIDES:

Article 1.- To promulgate together with this Decision the Regulation on Technical requirements of power metering equipments for power plants

Article 2.- This Decision shall take effect 15 days after its publication in "CONG BAO"

Article 3.-Chief of the Ministry Office, Chief Inspector of the Ministry, the Director General, the Director of the Department, the Department of Industry of the provinces and cities directly under the central government, the Viet Nam Electricity and the organizations and individuals with electricity field shall have to implement this Decision./.

Minister of Industry

HOANG TRUNG HAI

REGULATION ON TECHNICAL REQUIREMENTS OF POWER METERING EQUIPMENTS FOR POWER PLANTS

(Promulgated together with the Industry Minister's Decision No. 02/2007/QD-BCN of January 09, 2007)

Chapter I

GENERAL REGULATION

Article 1. Scope and subjects of application

1.This regulation prescribes the principles on setting of power measurement system and technical requirements on power metering equipments serving power trading of power plants.

2. This regulation applies to all power plants connected to the national electricity system and electricity grid management units where the connection point of the power plant to the national electricity system.

3. The BOT has signed long-term power trading agreements, small and micro hydroelectric plants regulated in Decision 2394/QD-BCN September 1, 2006 of the Minister of Industry connected to the power grid with voltages below 110 kV are not under the scope of this regulation

Article 2. Interpretation

In this regulation, the following terms shall be interpreted as follows:

1. Connecting point: The points connect equipments, power grids and power plants of generating units into the national electricity system.

2. Measurement Position: Physical position on primary circuits, in which power is measured and defined.

3. Power Measurement: The process of determining of power over the measurement position.

4. Power trading measuring quality: The physical quantities are measured, used in power trading.

5. Current transformer (CT): Equipments change currents, expand the range of current measurement and power for measurement system.

6. Voltage transformer (VT): Equipments change voltages, expand the range of voltage measurement and power for measurement system.

7. Power meter: Power meter equipments perform integral of capacity over time, stored and displayed the measured power values.

8. Measurement circuit: The circuit is associated modifying equipment to perform functions on power measurement.

9. Measurement system: Includes measuring devices and circuits are integrated into a complete system with power measurement function through measurement point.

10. Clip: Position to connect pilot wire installed at intermediate panel, control cabinets, measurement cabinets.

11. Wiring Box: Wiring position of power meter, voltage transformer, current transformer and other equipments with a lid to seal, lead

12. Grid management unit: The unit manages entire or a part of the transmission grid or distribution grid of the national electricity system.

13. IEC standard: The technical standards for electric technique by the Technical Committee of the International

14. BOT Power Plant: The plant is invested in the form of Building - Operating – Transferring

Chapter II

ESTABLISHING PRINCIPLES OF MEASUREMENT SYSTEM AND DETERMINING POWER MEASUREMENT POSITION FOR POWER TRADING SERVICE

Article 3. Power measurement system

1. At each connecting point should be arranged the main measurement systems and the backup measurement systems.

2. Main measurement system must determine accurately and fully of power trading qualities as the basis for the payment of electricity through the connecting point and eliminate the factors that affect the measurement results because of the cyclic structure of the power system.

3. Backup measurement system includes functions as follows:

a) Replace the main measurement system, as a basis for calculating the quantity of power trading in case the main measurement system doesn't operate correctly or be incident.

b) Monitoring, checking the measurement results of the main measurement systems in condition that the main measurement system work normally

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Article 4. Power measurement position

1. The general principles

a) Measurement position is determined on the basis of identical or adjacent to the connecting point.

b) In case, not enough condition to arrange the measurement system at measurement position is identical or adjacent to the connecting point, power plants and power grid management unit agreed alternative energy measurement position. Power plants are responsible for investing the measurement system at alternative measurement position and agreed the grid management unit to determine the correlation of power, the loss on the transformer and associated line between alternative measurement positions with connecting points during operating for power conversion from the alternative measurement position to the connecting points in the process of the power trading and payment.

c) If the measurement position doesn't guarantee to measure the trading power accurately, the power plants and power grid management units agreed a method of calculating the equivalent power according to connecting points

2. Specific Case:

a) The connecting point of the power plant:

- Measurement position is determined at the accumulating cutter breaker or terminals of the high-side, average voltage of booster transformers and high-voltage side of the backup auxiliary transformer on identity of connecting points, except otherwise agreed.

- Backup measurement position 1 is defined in the line route of the power plant, unless otherwise agreed.

- Backup measurement position 2 is determined by agreement between the seller and buyer.

b) The connecting point not in the power plants:

- If the power plant has a contact line with connecting points and no power bypass a busbar of the power plant, main measurement position and backup measurement position 1 are identical or adjacent to the connecting point.

- Backup measurement position 2 is determined by agreement between the seller and buyer.

- If plants have 2 lines or more and power bypass the busbar of the power plant, the measurement position is chosen in accordance with point a clause 2 of this Article.

Chapter III

TECHNICAL REQUIREMENTS OF POWER MEASUREMENT SYSTEM FOR POWER TRADING SERVICE

Article 5. The minimum configuration of the power measurement system

The minimum configuration of the power measurement system includes:

1. Current transformer (CT).
2. Voltage transformer (VT).
3. Power meter.
4. Circuit and pilot cable
5. Equipment for meter data collection and data transmission.
6. Safety equipment, seal position and seal.
7. Auxiliary equipment, connection transducer and measuring circuit isolation equipment for test.
8. Special cases may include logical devices for VT voltage transfers, voltage and current test equipment.

Article 6. Technical requirements of power meter

1. General requirements:

Power meter must ensure the following features:

a) Power meter must be type of 3 phase 4 wire

b) Power meter with standard electronic type, can be programmed.

c) There are many tariff.

d) Measuring an effective and reactive power in specific two-dimensional of receiver and transmission

đ) Measuring a reactive power into 4 quadrants.

e) Ability for measuring the maximum capacity, recording load curve

g) There are features connected to the computer, collected and read the data on-site and remotely.

h) The power meter must be powered from the secondary voltage system of measurement and must maintain operations while losing any voltage with 1 or 2-phase

i) Ability to secure with many passwords levels.

k) The power meter must have the seal positions, seals to ensure after conducting seal the power meter, is inaccessible to the wiring terminals and change the setting parameters in meters without breaking sealed lead.

2. Accuracy:

a) The main measurement must achieve the exact level 0.2 with effective power according to IEC 62053-22 and 2.0 for reactive power according to IEC 62053-23 or other equivalent standards

b) The backup measurement achieve the exact level 0.5 with effective power according to IEC 62053-22 and 2.0 for reactive power according to IEC 62053-23 or other equivalent standards

Article 7. Technical requirements of current transformer used for power measurement purpose

1. General requirements:

a) The current transformer must have the measurement secondary coil used for measuring devices and the power meter.

b) The value of the nominal secondary current of the current transformer is 1A or 5A.

c) The current transformer must have seal position in the lid of wiring box of measurement secondary coil granted to measuring device and power meter to ensure after conducting seal, can not be impact on connection circuit without breaking seals.

2. Accuracy:

a) The current transformer for main measurement must achieve the exact level of 0.2 according to 60044-1 or other equivalent standards.

b) The current transformer for backup measurement must achieve the exact level of 0.5 according to 60044-1 or other equivalent standards.

Article 8. Technical requirements of voltage transformers used for the power meter

1. General requirements:

a. The voltage transformer must have the measurement secondary coil used for measuring devices and power meter.

b. The value of the nominal secondary voltage of the voltage transformer is 100V or 110V.

c. The voltage transformer must have seal position in the lid of wiring box of measurement secondary coil granted to measuring device and power meter to ensure after conducting seal, can not be impact on connection circuit without breaking seals.

2. Accuracy:

a. The voltage transformer for main measurement must achieve the exact level of 0.2 according to 60044-2 for the voltage transformers with sensor type, IEC 60044-5 for the voltage transformers with capacitor type or other equivalent standards.

b. The voltage transformer for backup measurement must achieve the exact level of 0.5 according to 60044-2 for the voltage transformers with sensor type, IEC 60044-5 for the voltage transformers with capacitor type or other equivalent standards.

Article 9. Technical requirements of the measurement circuit

1. In all cases, the secondary coil of the CT, VT and pilot cable connected to the power meter of the main measurement system shall not be used for any other purpose and are entirely independent of the backup measurement system

2. The pilot cable of measurement circuit is arranged by the shortest way, the number of connecting points through the clip at least and must be enough conditions to implement seal mean, seal for clip cabinet or connecting point. The pilot cable of main measurement system must arrange separately and connect directly from the cabinet in CT, VT to measurement cabinets without going through the clip at intermediate cabinet.

3. For power measurement system taken the voltage from a busbar VT and more than the busbar VT, to ensure the implementation of the seal of connector of pilot voltage switch and power meter must be programmed to record the time and duration voltage switchgear.

4. Secondary circuit load CT, VT including power meter shall not exceed the nominal load recorded label in CT, VT.

5. If the circuit of the backup measurement system used in conjunction with other measurement devices, it is necessary to not affect the accuracy of the measurement system and be enough conditions to implement the seal for all the measurement circuit, measuring devices, power meter.

6. The test blocks must be installed to server for the testing on metering equipments and be enough condition for seal

Article 10. Technical requirements of data collection and read system power meter

1. The power meter for power trading should be installed a remote data reading system and appropriate to connection and protocol with a remote data collection software deployed at data collection centers.

2 The power meter for power trading must have portal, integrated communication equipment as standard RS232 (or RS485, Ethernet) and the modem in the meter allow to perform remote connection with the meter via modem and line data.

3 Depending on the model of information collection, data transmission method measured at a connecting point agreed between the seller and buyer. Data collection system must include onsite computer to read and store the data through centralized data collector. Measurement data collected on-site computer to be transmitted to the database of the host computer located in the center of data collection.

4 Communication environment can use the public telephone network, the specific telephone network, computer network (WAN, Internet), wire communications method (copper cable, fiber optic, three phase load..) television (microwave, CDMA ...). Environment and communication methods must be secured against unauthorized entry.

5 Means of communication paired with power meter must be installed lightning protection equipment appropriately to avoid the effects of lightning pulses through information networks cause damaging the meter.

6 Switch and isolation equipment, device connected to the public telecommunications (PSTN), test equipment installed in the cabinet must satisfy the requirements for safe and convenient management.

Article 11. Technical requirements of seal and security

1. All power measurement system includes components such as wiring box CT, VT, power meter, the clip, the connector, secondary circuit, auxiliary equipment, switching logic

circuits, the measurement cabinet, communication networks must be sealed to prevent unauthorized interference in power measurement system.

2. Software of power meter must have password with many levels of different access, allows decentralizing users at different levels of operation.

3. Software, the read system, communication and data aggregation of power meter should be secured to ensure the safety, accuracy and reliability of the measured data.

Chapter IV
IMPLEMENTATION ORGANIZATION

Article 12. Responsibility for implementation

1. All power plants are the application subject of this regulation if the power meter system is not appropriate, it is necessary to change plans to meet the requirements of this regulation and completed before May 01 in 2009.

2. Electricity Regulatory Authority is responsible for dissemination, guidance and inspection of the implementation of this regulation.

3. In the process of implementation, if any problems arise, the relevant units should be promptly reported to the Electricity Regulatory Agency to review and settle. /.

Minister of Industry

HOANG TRUNG HAI