ELECTRICITY METER READING

SAVE ENERGY WITH A SMILE

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**Electrical Power**

Electrical energy can be converted into heat and light as with light bulbs, or into magnetic energy, like with electric motors or chemical energy ....etc.

It is the amount of electrical consumption or the electrical loads that are usually measured by the meter approved by the electricity company.

**Electrical loads**

Electrical energy consumption is measured by a measuring unit called Joule, which is the power consumed by an electrical device (one watt per second).

One kilowatt/hour is equal to 1000 watts/hour, which is the operating unit that recorded by the meter.

The electricity consumption depends on the load of the device and thus consumption of the electrical device shall be calculated as following:

<table>
<thead>
<tr>
<th>THE TYPE OF DEVICE</th>
<th>LOADS (KW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air conditioning</td>
<td>2.5</td>
</tr>
<tr>
<td>Water heaters</td>
<td>1.5</td>
</tr>
<tr>
<td>Energy output</td>
<td>0.2</td>
</tr>
<tr>
<td>Lighting lamps</td>
<td>0.1</td>
</tr>
<tr>
<td>Fans</td>
<td>0.1</td>
</tr>
</tbody>
</table>

**Electricity meter**

When the Company connects the power supply to the consumer from the network to the home, then install electrical device called Electricity Meter, at the end of the cable and in the entrance to the house.

**Electricity meter working method**

Electricity meter is a device used to measure electrical amounts or electrical energy that consumed by the load regardless of its type, so that amount of consumption measured appears as a mechanical record or on digital screen. There are two types of meters, electro-mechanic (with a rotating disk) and electronic.

Electricity meter consists of two files to measure the intensity of the current; these two fixed files are connected with the loads in parallel mode and one moving file connected with the loads in vertical mode to measure the voltage.

As a result of the magnetic field formed by the rotor files will lead the aluminum disk to rotate several gears behind the meters faceplate which move the numbers that show us power consumption. Electricity consumption calculated in the Electromechanical Meter, based on the cycles of the rotating disk, for example, in the analogous meter: 1 kilowatt-hour is calculated when the disk completes 25 cycles, where this standard can be seen through meters faceplate.

(ex. 25 rev / kw/h)

This property is different from one to another meter, and for this reason we note a difference in the rotation of the meter while consumption is the same.
Types of Meters

Electricity meters are installed according to size of loads and therefore can be classified as follows:

- **Single phase meter – 1¢**
- **Three phase Meter – 3¢**
- **CT Meter - 1¢**

**Single phase meter – 1¢**
Single phase meter consists of two wires (phase + neural) used for homes with loads ranging between (0-20 kW), 20-100 Amp.

**Three phase Meter - 3¢**
Three phase Meter consists of four wires (3phase + neutral) used for homes with loads ranging between (20-60 kW), 50-100 Amp.

**Three phase CT meter**
Three phase CT meter consists of four wires (3phase + neutral), and three AC Adapter to be installed on the three wires.

It should be installed for homes with loads (more than 60 kilowatts), which means that we need an electricity meter that can accommodate more than 100 mA and may reach up to more than 1000 mA, this kind of meter used to convert such large electric current resulted from the large loads to a small current that can be measured by the meter.
**Three phase CT meter**
According to the specifications of Oman, there are several types of CT meter, which are selected based on size of loads in the institution.

Types of meters are as follows: 5/1600, 5/800, 5/400, 5/200

**Three phase CT meter**

**Single phase meter reading**
- As we mentioned earlier that there are different types of electricity meters, all the meters used to measure electricity consumption, which records in Kilowatts - Hour.
- Most of the single phase meters consist of five single digits and one decimal number, where they are taking and recording the single digits reading and neglect the decimal reading, and to make sure of this information, please refer to the bottom of the numbers where for more details about these figures.

**Single phase meter reading**
- Another model of single phase electricity meter
  Meter reading in this model: 73 702, please do not register reading in the red box.

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**Three Phase Meter Reading**
- Most of the Three Phase Meters consist of five or six single digits without a decimal number.
- **Model for Three Phase Meter:** meter reading in this model is: 60 157.

**Reading of Three Phase Meter with AC Adapter**
- Most of these electricity meters consist of six single digits without a decimal number.
- In this kind of meters, there is coefficient multiplication, where the multiplying factor is multiplied by the meter’s reading.
- Multiplication factor can be noted in the meter’s panel or in the bottom of the reading.
- **Reading in this model:** 55822 × 10 = 558220
- **In this model, the meter of type 400/5**

**How do you calculate the monthly electricity bill?**

- It is known that calculation of value of the monthly electricity consumption bill depends on the segments system that is applied in many countries, according to the usage. Therefore, during the summer, and because of the high temperature forced subscribers to use air-conditioners, and thus increases the value of consumption and so increase the monthly bill, as the subscriber transferred to the top segments of consumption.
  - **Steps used to calculate the consumption bill:**
    - Taking a meter reading during the month (30 days)
    - Taking the current reading of the meter, then deduct the previous reading multiplied by a factor of multiplication (if any).
• Meter Reading = (current reading - previous reading) × multiplication factor (if any).

• Divide the reading into segments and then calculate each segment according to its value.

• Accumulate the amounts resulting from each segment.

**Example: the current reading of a Residential Consumption Meter:**
20803, while the previous reading was 14803, then amount of his bill will be?

• Answer: Meter Reading = 20803 - 14803 = 6000 kW per hour.

• 0-3000: 3000 × 0.01 = RO 30.
• 3001-5000: 2000 × 0.015 = RO 30.
• 5001-6000: 1000 × 0.020 = RO 20.

• Total payable amount = RO 80.

**Example: the current reading of the Agrarian Consumption Meter:**
60157, while the previous reading was 49907, then amount of his bill will be?

• Answer: Meter Reading = 60157 - 10250 kWh

• 0-7000: 7000 × 0.01 = RO 70.
• 7001 and above: 3250 × 0.020 = RO 65.

• Total payable amount = RO 135.
Example: the current reading of governmental consumption meter: $55822 \times 10$, while the previous reading was $54722 \times 10$, then amount of his bill will be?

- Answer: 
  - Meter Reading = $558220 - 547220 = 11000 \text{ kWh}$
  - $0-3000 \quad 3000 \times 0.01 \quad = \text{ RO 30}.$
  - $3001-5000 \quad 2000 \times 0.015 \quad = \text{ RO 30}.$
  - $5001-7000 \quad 2000 \times 0.020 \quad = \text{ RO 40}.$
  - $7001-10000 \quad 3000 \times 0.025 \quad = \text{ RO 75}.$
  - $10001-11000 \quad 1000 \times 0.030 \quad = \text{ RO 30}.$
  - Total payable amount = RO 205.
Electricity Rationalization Campaign

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