



FACT SHEET

READING AND COLLECTING ENERGY DATA

Energy Efficiency Information
Fact Sheet Series
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Energy sources at a piggery may include electricity, gas (LPG, butane, natural gas) petrol and/or diesel. These power sources have different methods of measurement. Electrical energy is measured by electricity or power meters. Gas usage is measured by inline flow meters. Measurement of liquid fuel is usually metered by mechanical meters at storage facilities.

Reading the Meter

The onus is on the meter reader to collect the most accurate data possible. The meter reader will require:

- Some method of identifying the meter (a tag, location, or serial number). Important to check that it is the correct meter
- A logbook or record sheet. A permanent record is much better than numbers written on the back of an envelope
- An understanding of the system (purpose for collecting data, supply network, etc).

The meter reader should:

- Read the meter at a similar time each hour, day, week or month (if more than one meter is to be read and usage estimated by deduction then all meters should be read without significant delay)
- Immediately write the reading down in a logbook or data sheet. Compare the current reading with the previous reading as a check. It must be the same or more than the previous reading
- Check that the meter display is not cracked or glazed over
- Record the reading in consistent units (kWh, MJ, L, m³, etc).

Reading Electricity Meters

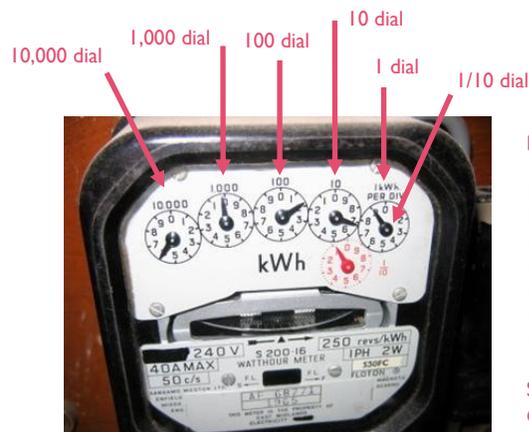
Electricity meters can be either electromechanical (rotating disc type) or solid state (digital). Power authority metering will have an electromechanical meter for each phase. Typically, only one digital power authority meter will be installed which can provide the reading for each phase.

Electromechanical (Rotating Disc)

Electromechanical meters read the total energy usage (kWh) since the meter was installed (Figure 1). These meters usually consist of a sequence of black numbers and a series of dials indicating the number of times a spinning disc has rotated.

When reading electromechanical meters:

- Read the numbers first
- Read the dials from largest multiplication factor. If the needle is between two numbers, you should record the smaller of the two numbers. If it is between 9 and 0, you should record the 9.



Example 1:

1. Read Dials:
10,000 dial = 6
1,000 dial = 0
100 dial = 1
10 dial = 6
1 dial = 9
1/10 dial = 1

So, this meter is reading **60,169.1 kWh**.

Figure 1: Electromechanical Type Electricity Meter (Note the Opposing Direction of the Dials)

Solid State Meter

Solid state meters (Figure 2) are more versatile than electromechanical meters. Some solid state meters can measure all of the main quantities of a three-phase network including voltage (phase and linked), current (phase and neutral), power (phase and three-phase active), power factor, frequency and working hours and minutes.



Example 2:

Wait until the display shows the total kWh.

The six digit line of numbers is the total reading and is the sequence of numbers to be read.

The reading is **59,410** kWh.

Figure 2: Solid State Power Authority Electricity Meter

Some meters will cycle through various other measurements (e.g. Voltage (V), current (A), etc). It is important that the reading taken is in kWh. Usually, there is only one display and each quantity is displayed for a few seconds in a continuous cycle. Therefore more care is required to record the correct reading.

An off-the-shelf solid state power monitor is shown in Figure 3. This meter may have a reset function so that usage over a period can be easily defined. Some digital meters may also have the capacity to log or record power usage overtime.



Example 3:

The top 3 figures are the voltages of each of the 3 phases.

The eight digit bottom line of numbers is the total reading and is the sequence of numbers to be read.

The reading is **81754.4** kWh.

Figure 3: Solid State Power Monitor

Gas Metering

Similar to electrical meters, gas meters can be either analogue or digital. Both types of meters will have a sequence of black only or black and red numbers.

Gas meters often measure volumes of gas in cubic meters (m³) or litres. This will be noted on the dial.



Figure 4: Analogue Gas Meter

Diesel and Petrol Metering

Diesel and petrol is usually measured by mechanical meters either at a bowser pump (Figure 5) or through a simple mechanical inline flow meter (Figure 6).



Figure 5: Diesel Bowser

