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Sustainable Energy and Water Conservation Unit

MINISTERU GĦALL-ENERĠIJA U SAĦĦA
AUBERGE DE CASTILLE, VALLETTA, MALTA

The Implementation of Smart Meters in Malta

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Market Players

- EneMalta Plc – DSO and Electricity Generator
  - http://www.enemalta.com.mt/
- Water Services Corporation
  - http://www.wsc.com.mt/
- Automated Revenue Management Services Ltd
  - https://www.smartutilities.com.mt/
- Malta Resources Authority
  - http://www.mra.com.mt
- Ministry for Energy and Health
  - http://energy.gov.mt/en/Pages/default.aspx
- Sustainable Energy and Water Conservation Unit
  - http://energy.gov.mt/en/Pages/sewcu.aspx

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Implementation of Smart Meter Installation (1)

- Installation started in 2009;
- Collaboration between IBM and the Maltese national power and water utilities on the world's first national smart utility grid;
- It was anticipated that 250,000 analog electric meters would be replaced smart meters
- Meters that would monitor electricity usage close to real time, identify water leaks and electricity losses, and set rates that reward customers who consume less power;

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Implementation of Smart Meter Installation (2)

- . By the end of 2014, Enemalta has installed around 270,000 Smart meters, this being 90% of the total number of customer services installed. There remain around 30,000 installations that still have to be equipped with a Smart meter
- Most of these are either closed premises or premises wherein there are technical difficulties for installation.

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The Meter

- There are three types of smart meters namely,
- GISM which is a single phase (230v) <40A
- GIST which is a three phase (3* 230/400v) < 60A
- GISS which is a meter installed for heavy consumers >60A
- Other meter to read KVAh

- Dimension is approximately
  - 224x148x107.5 mm

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Remote Water Meter Reading

- For remote water reading a radio frequency module is attached to the current water meter.
- This Module transmits water meter reading in the form of radio waves

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The Installation Process

- Two Installers wearing Uniform and Identity tag will install meter and RF module. Approximately 45 minutes.
- Queries by consumers at the time of installation :
  - Understand functions of smart meters
  - Billing is correctly done....final readings of analog meter
  - Installation done in a tidy manner.

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Smart Meter Brochure (1)

How to use your new Smart Meter

ATTENTION
Your new Smart Meter is not equipped with a residual current device and therefore does not replace any safety devices currently installed on your domestic electricity installation.

SAFETY FIRST!
Always ensure that the main switch is in the off position before carrying out any works on your electrical installation.

A quick look at the meter

The switch (1) at the bottom centre of the meter is used to switch the electricity supply on or off.

In the bottom left hand corner of the display you will find one of the following symbols:

Symbol **L 1** means that the meter is energised; if the circuit breaker is ON you have power.

If Symbol ∇ is displayed and you still have electricity ignore the warning. If on the other hand you do not have supply, check whether your meter circuit breaker and main switch is on or off. If the switch is on and you do not have a supply call Enemalta Faults on 2122 3601.

The display cycles information automatically. Alternatively you can

When the two red consumption indicator LEDs (3) on the left of the display flash, electricity is being consumed. The optical interface (4) is on the right underneath the round button. This is used only by qualified personnel to service the device when necessary.

Learning to read the display and discovering all the functions of the meter

The display automatically shows useful information. You can also cycle through the menu by:

- Repeatedly pressing the button (2) on the right of the display.
- Keeping the button pressed for 5 seconds and then releasing to show an **Explanation of Symbols**. Each

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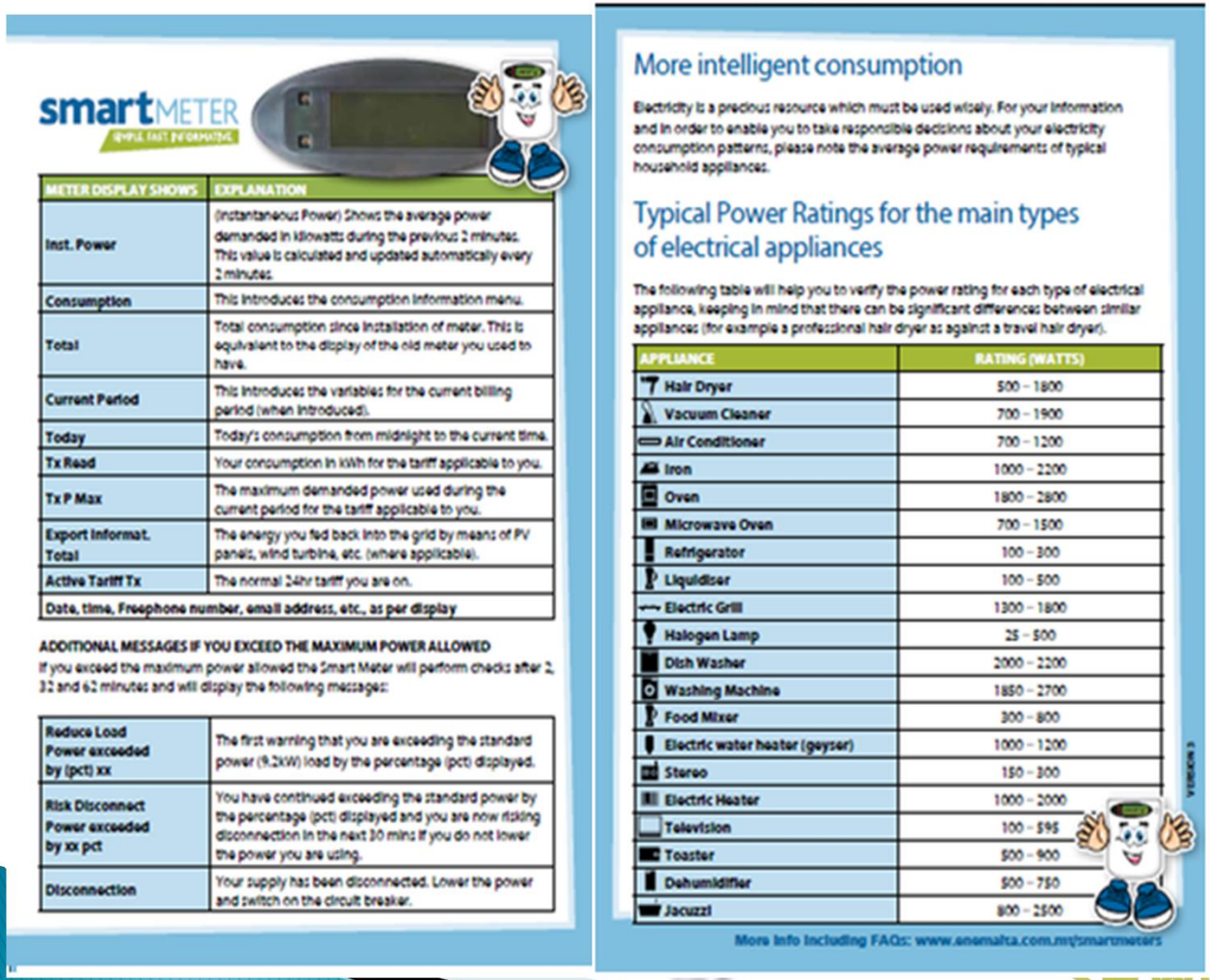
Smart Meter Brochure (2)



smartMETER

METER DISPLAY SHOWS	EXPLANATION
Inst. Power	(Instantaneous Power) Shows the average power demanded in kilowatts during the previous 2 minutes. This value is calculated and updated automatically every 2 minutes.
Consumption	This introduces the consumption information menu.
Total	Total consumption since installation of meter. This is equivalent to the display of the old meter you used to have.
Current Period	This introduces the variables for the current billing period (when introduced).
Today	Today's consumption from midnight to the current time.
Tx Read	Your consumption in kWh for the tariff applicable to you.
Tx P Max	The maximum demanded power used during the current period for the tariff applicable to you.
Export Informat. Total	The energy you fed back into the grid by means of PV panels, wind turbine, etc. (where applicable).
Active Tariff Tx	The normal 24hr tariff you are on.
Date, time, Freephone number, email address, etc., as per display	

ADDITIONAL MESSAGES IF YOU EXCEED THE MAXIMUM POWER ALLOWED

If you exceed the maximum power allowed the Smart Meter will perform checks after 2, 32 and 62 minutes and will display the following messages:

Reduce Load Power exceeded by (pct) xx	The first warning that you are exceeding the standard power (9.2kW) load by the percentage (pct) displayed.
Risk Disconnect Power exceeded by xx pct	You have continued exceeding the standard power by the percentage (pct) displayed and you are now risking disconnection in the next 30 mins if you do not lower the power you are using.
Disconnection	Your supply has been disconnected. Lower the power and switch on the circuit breaker.

More intelligent consumption

Electricity is a precious resource which must be used wisely. For your information and in order to enable you to take responsible decisions about your electricity consumption patterns, please note the average power requirements of typical household appliances.

Typical Power Ratings for the main types of electrical appliances

The following table will help you to verify the power rating for each type of electrical appliance, keeping in mind that there can be significant differences between similar appliances (for example a professional hair dryer as against a travel hair dryer).

APPLIANCE	RATING (WATTS)
Hair Dryer	500 – 1800
Vacuum Cleaner	700 – 1900
Air Conditioner	700 – 1200
Iron	1000 – 2200
Oven	1800 – 2800
Microwave Oven	700 – 1500
Refrigerator	100 – 300
Liquidiser	100 – 500
Electric Grill	1300 – 1800
Halogen Lamp	25 – 500
Dish Washer	2000 – 2200
Washing Machine	1850 – 2700
Food Mixer	300 – 800
Electric water heater (geyser)	1000 – 1200
Stereo	150 – 300
Electric Heater	1000 – 2000
Television	100 – 595
Toaster	500 – 900
Dehumidifier	500 – 750
Jacuzzi	800 – 2500

More info including FAQs: www.enemalta.com.mt/smartmeters

VERSION 3

Benefits of Smart Metering

- Eliminating estimated billing
- Provide social and environmental benefits by reducing electricity theft and CO2 emissions
- The possibility of differential tariffs
- Display useful information
  - Daily consumption
  - Total consumption
  - Daily peak current
  - Instantaneous Consumption
  - Further General Info Helpline

- Customers will securely access consumption online to better understand consumption patterns enabling them to reduce their consumption

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Functionalities of the Smart Meter

- Provide readings directly to the customer
- Allows remote reading by the operator
- Provides two way communication between the smart metering system and the external network
- Supports advanced tariff systems
- Allow remote on/off control of supply and/or power flow limitation
- Provide secure data communication
- Fraud prevention
- Provide import /export and reactive metering

Problems encountered

- Different size of new meter from previous one;
- No of residences closed:
  - Procedures developed prior to restoring to a final warning;
- Attempts at tampering:
  - Tampering attempts were short lived due to that meter is equipped with sensors and alarms. Also as details of consumption can be analyzed and any theft trends identified.

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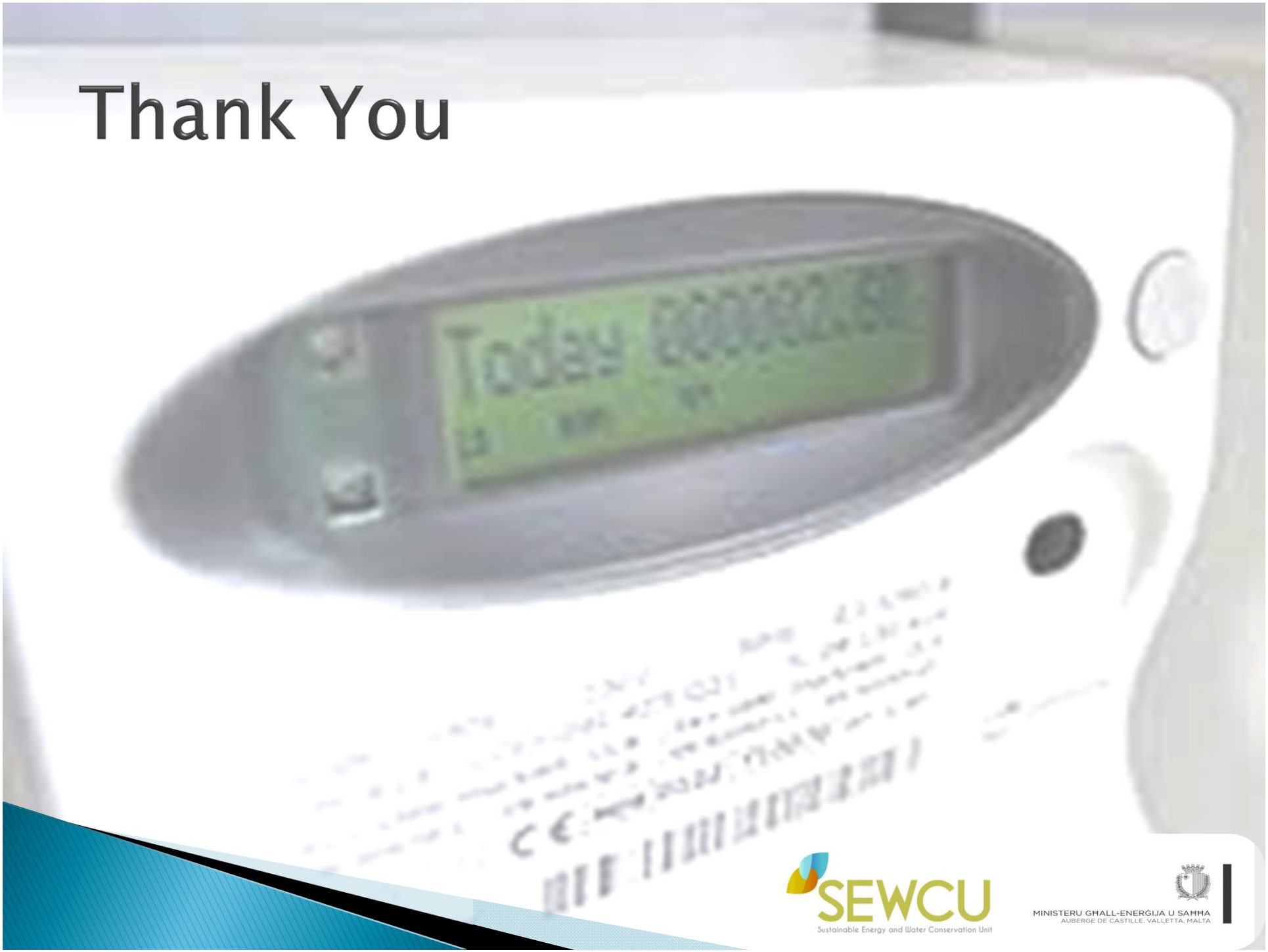
Thank You



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