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**e-light Street Light
control & dimming solution**

October 2020

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M3 Holdings – the business development partner

M3 Holdings (Pty) Ltd is a BEE company incorporated in South African with business development, project management, finance competencies and technological representation in the construction / energy industry.

Professional member of

- the Southern African Energy Efficient Confederation (SAEEC)
- Green Building Council of South Africa (GBCSA), M3 Holdings

Endeavor to ensure sustainable green living features conforming to the requirements for GBCSA star ratings including energy efficiency, energy generation, water harvesting and purification, walling and countertop production

Aim to achieve the following goals in Green buildings:

- § Energy Efficient;
- § Resource Efficient;
- § Environmentally Responsible

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Unique Technology - The Technology Partner:

Unique Technology (ISRAEL) is a world-leading developer and producer of **Smart Metering** systems based on sophisticated **technology** of Dynamic Power Line Communication (PLC) and RF LoRa

20 years of experience in Automatic Meter Reading (AMR) and Automatic Meter Management (AMM)

Millions of units installed worldwide

Sophisticated technology - Fully Israeli R&D, Technical innovation

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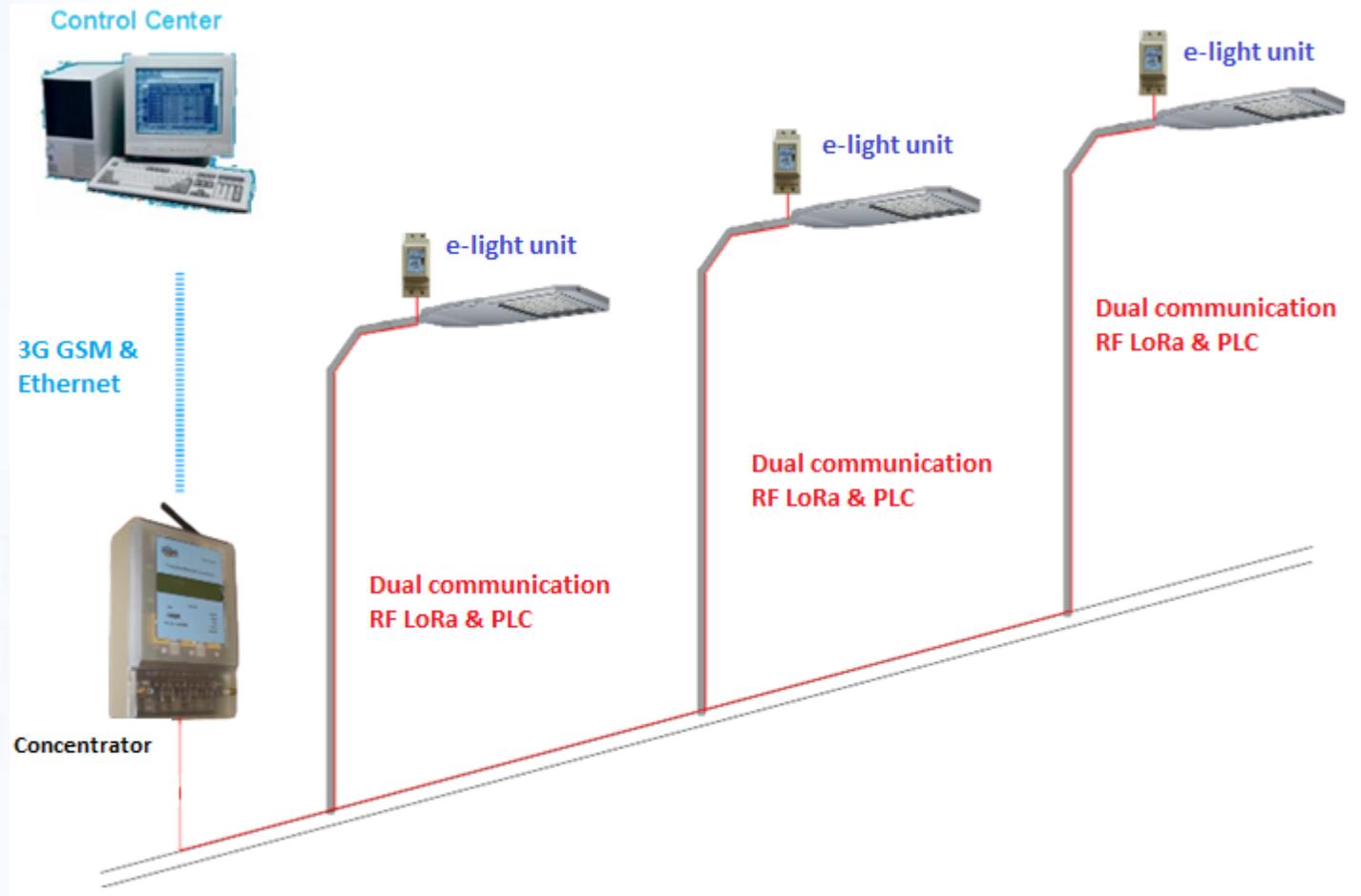
Advantages:

- Significant energy savings (60% -80%)
- Detection of faulty lamps and drivers
- Monitoring of maintenance and detection of faulty equipment
- Detection of possible theft of electricity detection
- Detection of possible cable theft detection

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System Outlay



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How the system works?

- **Unique's e-light units** are installed in each LED lamp
- Units communicate to a concentrator situated on the low voltage side of the transformer feeding the line.
- Communication between the concentrator and the e-light units is DUAL communication power line communication (PLC) and RF LoRa (RF is optional)
- The concentrator communicates to a control center using cellular, Wi-Fi, Ethernet. The system can integrate with other systems in the municipality (SCADA, CRM, ERP and other management systems)

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Features

- ✓ The two-way communication enables remote connection, disconnection and dimming of each LED lamp.
- ✓ The Concentrator can control up to 250 lamps
- ✓ The Concentrator acts as a CHECK METER measuring consumption of the electricity fed into the line.
- ✓ Energy balance can compare between the electricity fed into the line and the consumption of the LED lamps.
- ✓ The concentrator has a relay for disconnection of line.

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Features (2)

- ✓ An alert will be sent when Possible theft of electricity or possible cable theft is detected
- ✓ Each Elite unit can send information received from the driver as follows:
 - Lamp status
 - kVr
 - Voltage
 - Optional power factor
 - Optional kWh consumption

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Dimming levels according to lamp specification :

- 0 – 10 analog driver – in steps of 5%
- DALI protocol driver – as per the specification of the DALI driver

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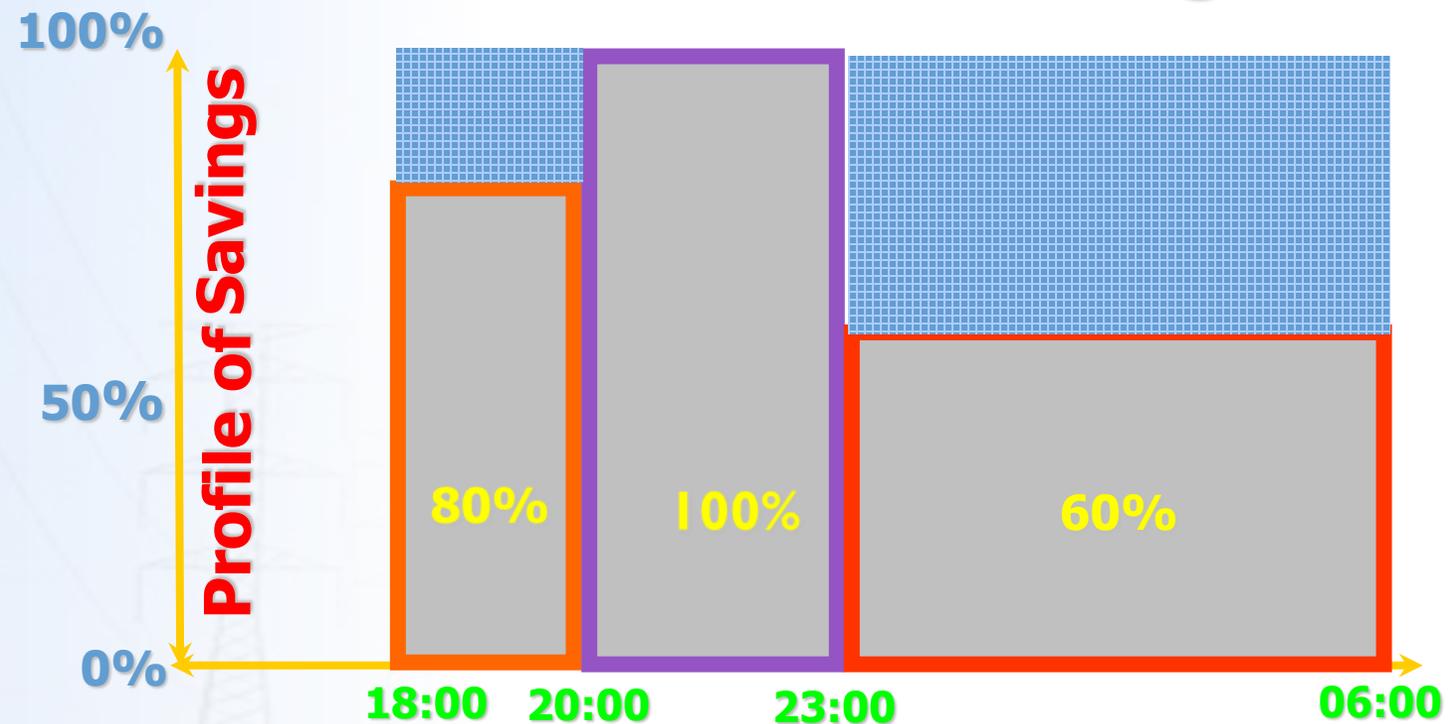
Savings are attained:

- Adjustable dimming according to hour of night
- Dimming of individual lamps according to location
- Dimming according to weather conditions (snow, rain, fog)
- Not having to turn lamps on during replacement, the system notifies the status of each lamp and ballast (faulty or not)
- An alert will be sounded when the lights are turned on during daylight

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Easily adjustable dimming schedule allows for maximum savings

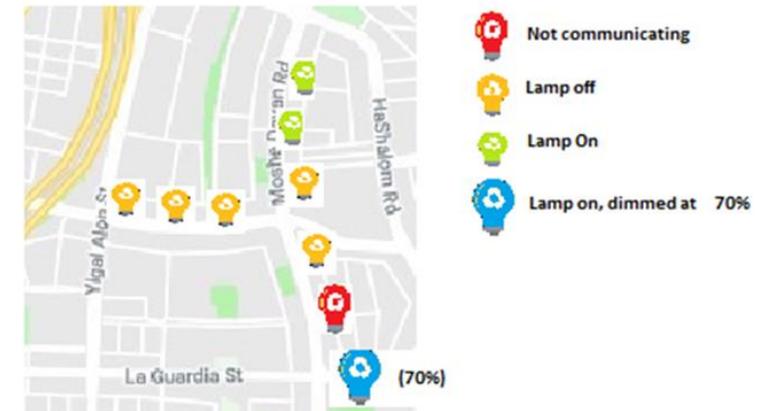
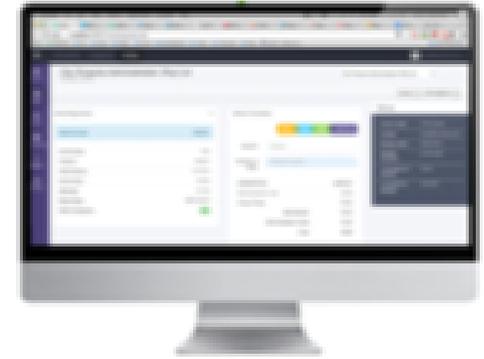


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Control software



- The management software is a tool for the municipality to manage, control, solve problems and maintain the LED street lamps
- The management software allows as follows:
 - send commands to the units like remote disconnection/reconnection and dimming. The commands can be Individual, Group and General Commands
 - checking status of lamps.
 - measuring energy consumption of the lamp and receiving information in case of power shutdown
 - Receiving alerts

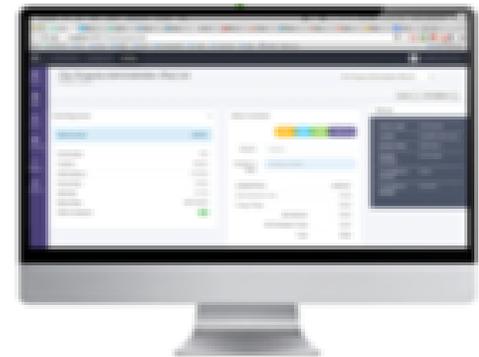


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Control software (2)

- Manage specific conditions for on/off and dimming functions: combinations of time, measured light levels (from light metering devices), daily weather conditions, changing local circumstances, day of week variations for given groups, pre-determined on/off based on astronomical calendar.
- Execute numerous scheduled commands based on the integrated real time clock (RTC)



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Control software (3)



- Integrates incoming data into systems (operational, billing, grid control and other)
- Information is available via an internet portal, allowing Municipality to view status, control and compare monthly, weekly and daily usage and cost at any given moment
- Can control digital DALI, analogue 0-10V interfaces – and simple on/off switching

