



CASE STUDY SOLAR, WIND & HYBRID ANPR SYSTEMS

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CASE STUDY

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INSTALL OVERVIEW

Over the last 2 years, we have worked hard to find and create sustainable parking solutions. In summer of 2020, HX Car Park Management (HX) won a three Retail Park tender with a large UK based managing agent. The instruction was to install hybrid ANPR systems at all three Scotland-based sites.

This document refers to the first installation of the above mentioned sites. At this site, we installed a 12 metre hybrid camera due to the retail park entrance being wider than average. The hybrid camera is connected to a 3/4G router and works in exactly the same way as a mains-powered ANPR camera. Each vehicle registration number and overview image is sent to our management system, in real time, via a dedicated camera protocol. The data transfer is further protected by being sent through a dedicated VPN.

We can remotely monitor the camera's power consumption and view the ratio from the solar panel vs mains. The system is powered at all times from stored battery power, which is generated from the solar system. As this is a hybrid system, a mains-powered battery charger is connected to top-up the battery overnight, when required.

Remote Power Management

Using our power management software, we can remotely view and manage power. The software provides real time email notifications if a system generates insufficient power or if it uses more power than our normal expectation. This management software allows us to maintain the maximum uptime of the hybrid system.





CORPORATE SOCIAL RESPONSIBILITY

At HX Car Park Management Ltd, we recognise that our corporate and social responsibilities are crucial in showing our commitment to our values and to our stakeholders; customers, employees, suppliers, clients, the community and the environment.

| Eco-friendly ANPR Systems |
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| Promote green business within our head office |
| We plant a tree for every new contract |
| We sponsor Grass Roots sport |
| Living Wage Employer |



SOLAR FACTS

Solar is becoming a world leading eco energy source



THE CAMERA

POWER CONSUMPTION

BATTERY TECHNOLOGY

SOLAR TECHNOLOGY The MAV IQ boasts a dual core Digital Signal Processor (DSP) running proprietary software with no Operating System (OS) which offers significant power use reductions compared to a traditional Windows or Linux embedded processor. At Gala Water Retail Park the key to a successful hybrid system is efficient power consumption, which is significantly reduced by using a DSP. The infrared (IR) design is capable of reaching distances in excess of 50m whilst consuming <14w at peak, around 30% less than an electric shaver!

Power consumption of the Camera: 14w @ 12v = 1.167ah (amp hours) Camera when in sleep mode = 1.5w @ 12v = 0.125ahSleep mode is where the camera or IR turns off, but DSP remains powered and wakes/ sleeps based on a schedule defined by HX. Sleep mode is only applicable for sites where 24/7 operation isn't required.

HX use Absorbed Glass Mat (AGM) batteries which are a quality alternative to the traditional "wet" lead-acid ranges. They are robust and able to deep cycle more than wet batteries. The electrolyte is contained in a glass mat which will not leak even if the casing is broken, making them ideal for applications within public spaces.

Solar technology has advanced considerably over the last 10 years and the orientation of solar panels is key to utilising their full potential. In an off-grid application, it is important to get the maximum output from the panels during winter months, when the least amount of solar energy is available. In the Northern Hemisphere, solar panels must face south. The optimum tilt angle from the horizontal is calculated for each camera location using the number of degrees of latitude of the location plus 15°. We normally simplify this to 65° from the horizontal in England and Wales and 70° from the horizontal in Scotland.

A partially shaded solar panel will produce extremely low power levels, therefore it is important to install the system away from any potential shading objects on site. During winter months, when the sun is lowest in the sky, we use an install measurement of 14° above the horizon to ensure maxiumum catchment of solar energy.

3 MONTH TEMPERATURE (HYBRID)



voltage1

THE RESULTS

Looking after the environment is key to our business plan. Over the last few years we have developed our solar, wind and hybrid systems and, more recently, have finalised the product to maintain the required level of energy output to provide all our eco-powered sites with 100% uptime. Achieving this was a breakthrough for us as a company and a positive for reliable, energy efficient ANPR systems available within the UK. We now have several eco-powered sites across England and Scotland.

The specific benefits of using this system are:

- Renewable energy source
- Sustainability
- Over 2500 kw of electric saved per year
- Reduced energy bills (£1419 based on 18p per KW/H)

On sites where these systems have been installed, we have achieved 100% uptime with the following KPIs:

- 17°c average temperature
- Average voltage of 12.6v
- Average hourly consumption 2.5a p/h



SOME FACTS ABOUT SOLAR ANPR

BASED ON A ONE CAMERA/ROUTER INSTALLATION AND ELECTRIC COST OF £0.18 PER KW/H



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