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What is SWOpti's MNR?

Since the sun isn't present at night, you can use batteries to store energy during the day to consume it at night. The idea is to be able to meet as much of your "background" electricity needs as possible. This is the amount of electricity your home consumes "when nothing is on." Finally, "nothing on" means no "large appliances" on. Electric heaters aside, background electricity is the fridge, the freezer, your alarm clock, your internet box, the computer where SWOpti is installed, mobile phone chargers... We could say that it is the electricity consumed when you are not at home or when you sleep at night.

A battery directly connected to your solar panels allows you to store your excess production for use at night or when there isn't much sun, but these batteries are still expensive. Most solar batteries in use today are older generation, meaning that since they're connected to your solar system, if there's a general power outage from your supplier, your solar panels stop working and so do your batteries.

There is an intermediate solution for storing electricity for use at night and reducing dependence on your electricity supplier. This solution has been optimised so that SWOpti can take maximum advantage of it. The idea is to use a so-called "backup" battery. This is the kind of battery that, during a power outage, allows you, for example, to save your work on your computer and shut down the computer "properly." The time you have to shut down your battery-backed devices depends on the power consumed by these devices and the battery capacity (and how charged it was when the outage occurred). Instead of spending thousands of euros on "official" solar batteries, you can choose a "backup" battery that could cost less than 100 euros, but it's better to budget a few hundred euros. Again, it depends on the power of the devices you want to connect to the battery.

Here are two concrete examples. In the parents' bedroom, you have two bedside lamps (10 watts each), two phone chargers (15 watts each), a clock radio with a time projection on the ceiling (15 watts), and a "bug zapper" with a soft blue light (15 watts). Although the bedside lamps and chargers won't be constantly on at night, let's assume they are. That's a total of 80 watts. To put it simply, if we consider the period between sunset and sunrise from 9 p.m. to 9 a.m., that's 12 hours. 80 watts x 12 hours = 960 watts. If you have no way of storing the electricity produced for free during the day, it's certain that every little watt you consume at night has to be paid for. In this example (at 0.25 euros, the rate per kWh at the time of writing), that's 87.60 euros per year. If you implement an MNR with SWOpti, you can find a 1000-watt battery for around 100 euros. So it would only take a little over a year to recoup this small investment.

The second example is an answer to a question I'm often asked: "To save electricity, can I safely turn off my freezer for a few hours at night or even all night?" A quick internet search shows the answer to both questions. From a health perspective, the answer is yes... a freezer can generally last 24 hours without electricity, provided of course that you don't open the door! From an electricity-saving perspective, the answer is less certain. It's obvious that we'll save electricity when the appliance is turned off, but when we turn the freezer back on, it will take as much electricity (or even more) to return to the state it had before the power was cut off. But this answer needs to factor in whether or not you have solar panels. A person without solar panels would probably lose money, because they would spend more since the freezer consumes more during the day to compensate for what was saved at night. But, if you have solar panels, this is not a problem because this electricity is free. I was also reminded that this system will not work from a sanitary point of view if you put a large quantity of food into the freezer just before the nightly power outage.

To overcome this health problem... use an MNR with SWOpti! My freezer's operating cycle is 100 watts for 20 minutes, then 2 or 3 watts for 40 minutes. Excluding the few watts for 40 minutes, this actually means the appliance consumes 100 watts in three hours (because it consumes 100 watts only a third of each hour). If we keep the same scenario of a power outage for 12 hours (that's 4 periods of 3 hours at 100 watts per 3-hour period), we need a battery that could supply 400 watts. Without a battery at all, you pay 0.10 euros each night. It's not much, but it's 36.50 euros per year, and that doesn't include the 2 or 3 watts per 40-minute period that we excluded.

When you have an MNR, SWOpti "turns on" the battery at sunrise. This powers the load (the freezer in this case) and recharges the MNR for free with the sun. At sunset, SWOpti "turns off" the battery, which is interpreted by the battery as if a power outage has just occurred. The freezer will therefore be powered by the free electricity stored in the battery. No more health problems, because, ultimately, the freezer is always powered.

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