RIC Energy warns about the "oversized effect" of self-consumption plants

In recent months, many energy intensive consumers have been besieged with a multitude of offers that promise not inconsiderable savings on their electricity bill. The big question that one poses is, how to evaluate the veracity and competitiveness of each one of them? And the thing is, in a relatively new market and fundamentally driven by supply, making the decision on how to undertake a self-consumption project is not an easy task. The consequences of a bad decision in the medium to long term can be disastrous.

As structurers and operators of self-consumption projects we have identified that a critical aspect, if not the most critical, when designing your installation is determining the optimal power you need.

This variable is determined based on your consumption profile, reflected in the hourly load curve. The more consumption you are able to capture through the self-consumption installation, the better, since the savings that will be experienced will be greater and the unit cost of the installation will decrease. However, and this is the key point, as we increase the power, we reach a threshold at which the installation begins to generate surpluses, that is, energy that you do not need and that, in the best of cases, will be discharged to network.

If the plant is designed to discharge surpluses into the network, the unit remuneration that will be obtained will always be lower (whether the plant is covered by surplus compensation or if it is sold directly to the market) than the remuneration (in the form of savings) that it is obtained if that energy is consumed directly. The energy that you consume yourself is exempt from any type of access toll and electricity tax, which makes it more competitive than energy from the grid, assuming the same generation costs.

Surpluses directly affect the profitability of the project. A plant with a power greater than the optimal will generate an increase in the marginal volume of revenue less than the optimal plant, whose increase in the marginal volume of revenue is maximum. In other words, as we increase the power of the plant, the growth rate of the income we obtain from it decreases. This phenomenon is what makes the profitability of the project also decrease because, given a significant level of surpluses, the decrease in unit costs of a larger plant is not enough to offset the effect of surpluses.

We have often encountered cases where many companies are faced with worryingly high overstock deals. For example, in the case shown below, the company in question received offers of 700 kWp and even higher than 900 kWp when the graphs show an optimal power of about 300 kWp. The graphs also corroborate that the profitability of the project begins to decline as we begin to generate a volume of surpluses greater than 5%.

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In this case, if the company had opted for a 900 kWp installation, more than 30% of the energy it would have generated would not have been needed. This energy would have been competing with the energy generated in the same hour by large photovoltaic plants connected to the grid, much more efficient (by optimizing their orientation and inclination) and cheap. Therefore, the profitability of your project would have fallen by almost 300 basis points.

Given the solar generation profile, the optimization of the plant must be done with load curves that present an hourly frequency or higher. On many occasions, we have seen analyzes that present a totally unrealistic volume of surpluses, since the periodicity with which they carry out the analysis is weekly or monthly, which gives rise to totally imprecise results.

The consequences of installing an oversized plant can be catastrophic. In a short time, companies that opt for this model will realize that the promised savings are not such and they will have to live with their installation for at least 25 years.

From an environmental point of view, these practices are also worrying. Trying to reduce their environmental footprint, many consumers are installing self-consumption plants with powers they do not need, unnecessarily exploiting the planet's resources.

The reasons that lead the photovoltaic industry to oversize self-consumption plants are obvious. Under any form of remuneration that is not linked to power generation, the incentives to oversize are enormous, since the greater the power of the plant, the greater the remuneration and benefits of the seller. With the self-consumption sector booming, these practices can be very dangerous, putting the reputational image of the photovoltaic industry in a very fragile situation.

Creating models where the interests of the buyer and the seller are aligned helps to solve these bad practices. These models involve linking the seller's remuneration to the plant's power generation. For example, financing self-consumption plants through power purchase contracts (PPAs) obliges the seller to get the most out of the plant during a certain period, the same objective that the buyer pursues. Therefore, when making a decision, a model where the generation risk is transferred to the seller constitutes the maximum guarantee of profitability and sustainability.