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Assuming this constraint as Scenario 2 and appropriately controlling the storage systems, the load diagrams of Figure 1(b) - Scenario 2 are obtained. Results show that the presence and the control of the storage system just slightly improve the daily load profile by increasing the minimum consumption by about 2%. It is worth to highlight that the total REC load in Scenario 2 represents 20-30% (depending on the month) of the load of the island and that the BESS has been sized without considering the needs of the grid.

Table 1 shows the most significant parameters of the four examined scenarios: the peak and minimum power and the load factor of the load profile (rated between average power and maximum power in a day). The data has been averaged over the course of one year. The values in Table 1 show that the installation of a large PV system can severely impact on the load profile of the island. Effective control of batteries and storage systems can slightly improve the situation by increasing the minimum load and decreasing the power peak, thus improving the load factor.

This smart management is useful but, as demonstrated by the numbers, still not enough to restore the more stable situation prior to the installation of the PV systems, which will require the control of other shiftable loads (dishwasher, washing machine, etc.) or an appropriate scheduling of electric vehicle charging at off-peak times. In all cases, RECs need to be integrated into a smart grid system and provide, alongside flexible resource management to maximise shared energy, a parallel management to mitigate the duck curve effect in the isolated grid.

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