

Microgrid Simulation Report

Virtual Labs 2026 • Digital Twin Experiment

Performance Summary

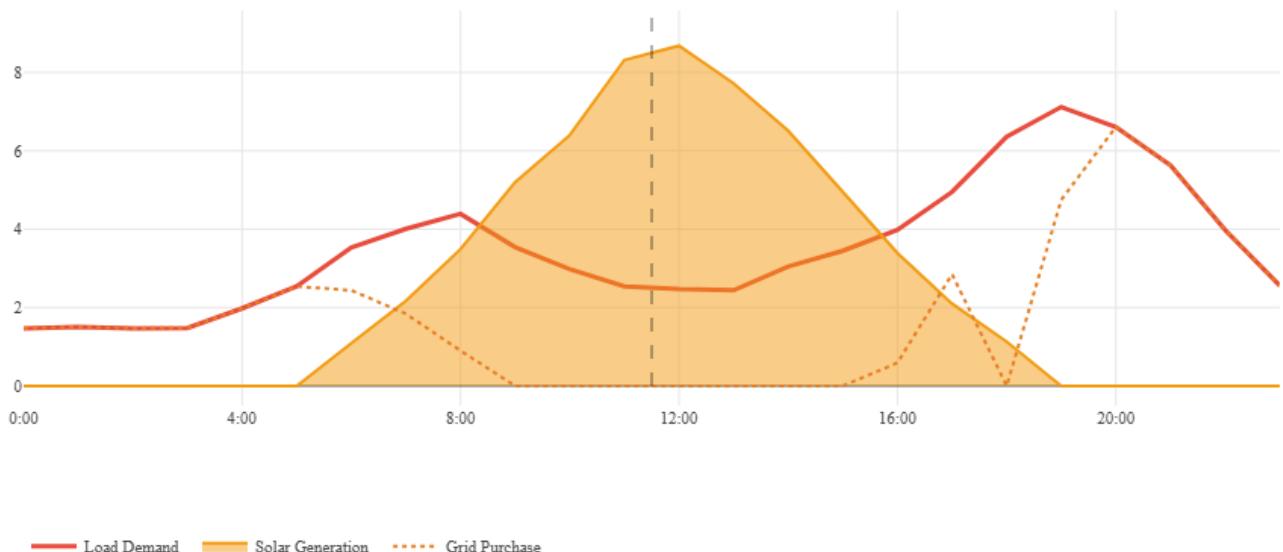


Total Cost	Solar Used	Grid Used	CO2 Saved	Self-Sufficiency
Rs. 268.40	61.1 kWh	42.6 kWh	50.1 kg	72.7%

Strategy Comparison

Metric	Baseline	Smart	Savings
Daily Cost	Rs. 333.01	Rs. 268.40	Rs. 64.60 (19.4%)
Grid Usage	50.2 kWh	42.6 kWh	7.6 kWh (15.1%)

24-Hour Energy Flow Analysis



24-Hour Breakdown

Hour	Solar	Load	Battery	Grid (Base)	Grid (Smart)	Savings
00:00	0.0	1.5	50%	1.5	1.5	-
01:00	0.0	1.5	50%	1.5	1.5	-
02:00	0.0	1.5	50%	1.5	1.5	-
03:00	0.0	1.5	50%	1.5	1.5	-
04:00	0.0	2.0	50%	2.0	2.0	-
05:00	0.0	2.5	50%	2.5	2.5	-
06:00	1.1	3.5	50%	2.4	2.4	-
07:00	2.2	4.0	50%	1.8	1.8	-
08:00	3.5	4.4	50%	0.9	0.9	-
09:00	5.2	3.5	66%	0.0	0.0	-

Hour	Solar	Load	Battery	Grid (Base)	Grid (Smart)	Savings
10:00	6.4	3.0	98%	0.0	0.0	-
11:00	8.3	2.5	100%	0.0	0.0	-
12:00	8.7	2.5	100%	0.0	0.0	-
13:00	7.7	2.4	100%	0.0	0.0	-
14:00	6.5	3.0	100%	0.0	0.0	-
15:00	4.9	3.5	100%	0.0	0.0	-
16:00	3.4	4.0	100%	0.6	0.6	-
17:00	2.1	5.0	100%	2.9	2.9	-
18:00 (Peak)	1.1	6.4	45%	5.2	0.0	Rs. 44.45
19:00 (Peak)	0.0	7.1	20%	7.1	4.8	Rs. 20.15
20:00 (Peak)	0.0	6.6	20%	6.6	6.6	-
21:00 (Peak)	0.0	5.6	20%	5.6	5.6	-
22:00	0.0	4.0	20%	4.0	4.0	-
23:00	0.0	2.6	20%	2.6	2.6	-