

Microgrid Simulation Report

Virtual Labs 2026 • Digital Twin Experiment

Performance Summary

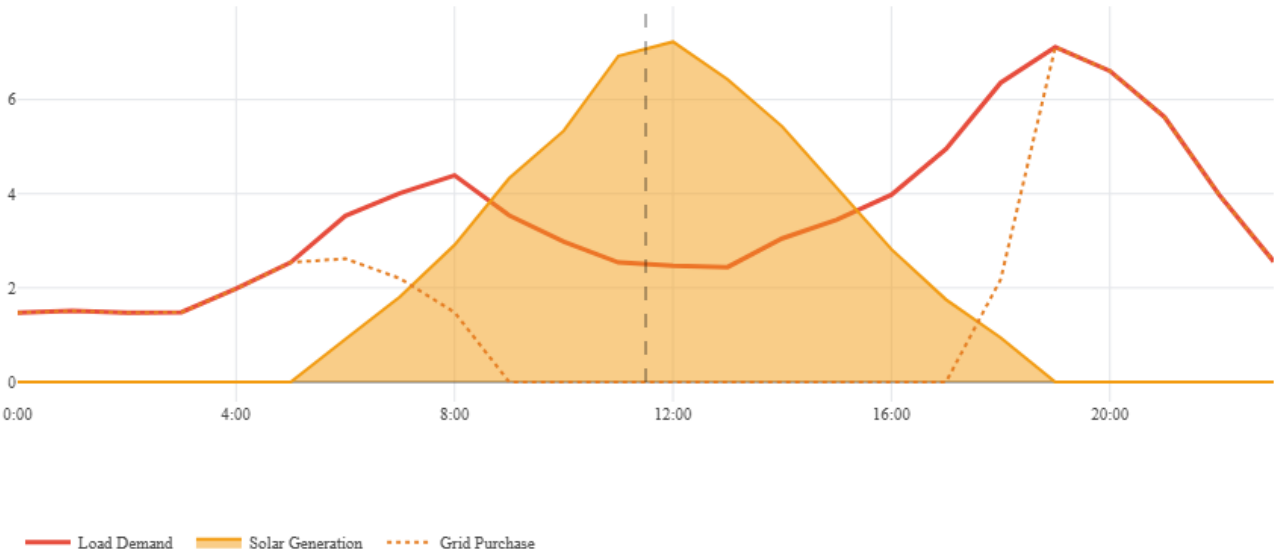


TOTAL COST	SOLAR USED	GRID USED	CO2 SAVED	SELF-SUFFICIENCY
Rs. 292.00	50.9 kWh	44.8 kWh	35.7 kg	60.6%

Strategy Comparison

Metric	Baseline	Smart	Savings
Daily Cost	Rs. 356.60	Rs. 292.00	Rs. 64.60 (18.1%)
Grid Usage	52.4 kWh	44.8 kWh	7.6 kWh (14.5%)

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	0.9	3.5	50%	2.6	2.6	-
07:00	1.8	4.0	50%	2.2	2.2	-
08:00	2.9	4.4	50%	1.5	1.5	-
09:00	4.3	3.5	58%	0.0	0.0	-

Hour	Solar	Load	Battery	Grid (Base)	Grid (Smart)	Savings
10:00	5.3	3.0	80%	0.0	0.0	-
11:00	6.9	2.5	100%	0.0	0.0	-
12:00	7.2	2.5	100%	0.0	0.0	-
13:00	6.4	2.4	100%	0.0	0.0	-
14:00 (Peak)	5.4	3.0	100%	0.0	0.0	-
15:00 (Peak)	4.1	3.5	100%	0.0	0.0	-
16:00 (Peak)	2.8	4.0	88%	1.2	0.0	Rs. 9.86
17:00 (Peak)	1.8	5.0	54%	3.2	0.0	Rs. 27.20
18:00 (Peak)	0.9	6.4	20%	5.4	2.2	Rs. 27.54
19:00 (Peak)	0.0	7.1	20%	7.1	7.1	-
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	-