

6. SOLARVİZYON GÜNEŞ ENERJİSİ KONGRESİ

Yenilenebilir Enerji Ve Depolama Yatırımları



reap
battery



#itspossible



Phase 1

Modular ESS
Production Facility

5 GWh/yr

Phase 2

Lithium Battery
Cell Production

10 GWh/yr

Phase 3

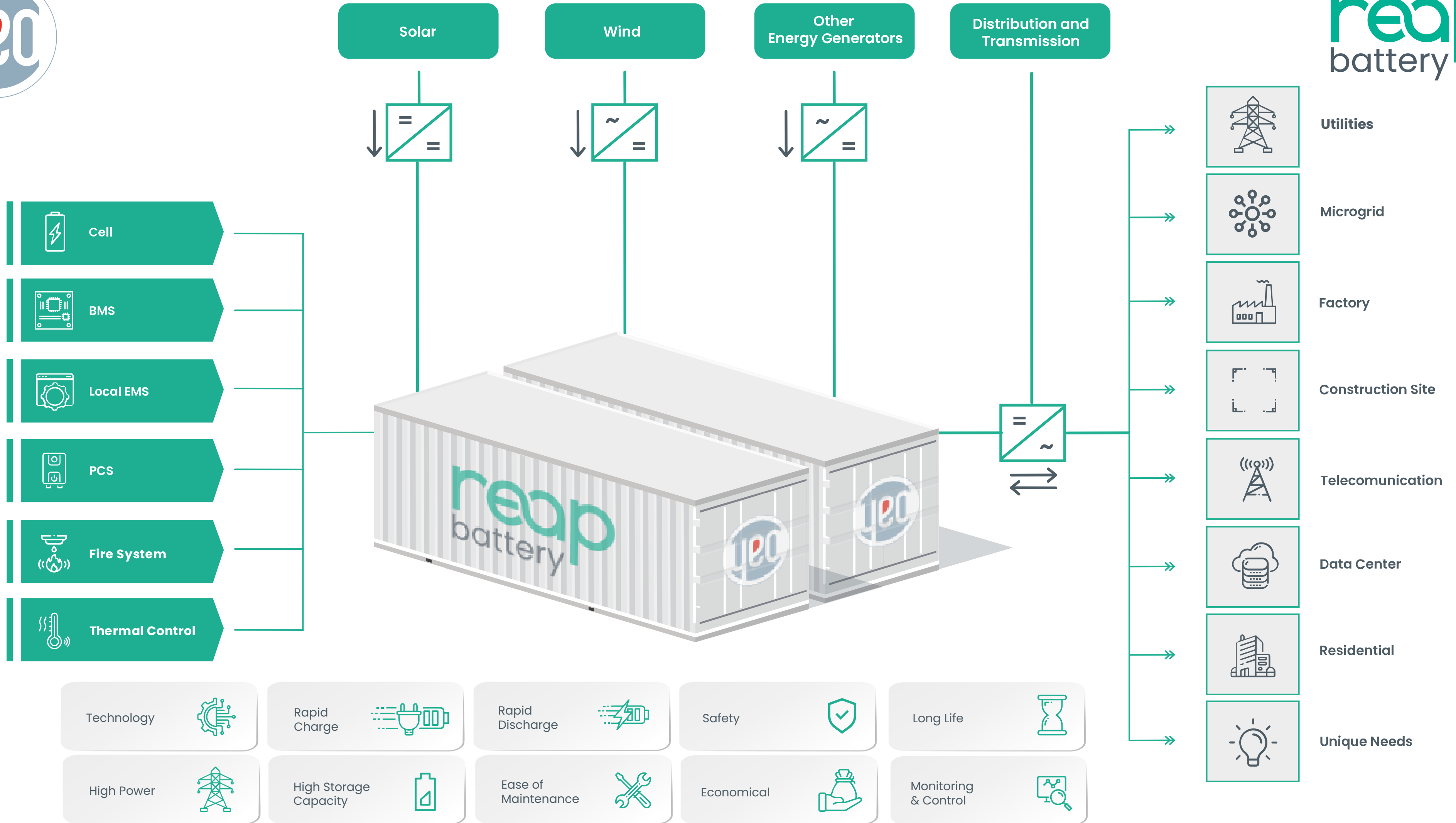
Battery Cell Second Life
and Recycling Facility

5 GWh/yr

"Confidential information. It cannot be shared without YEO's permission."



reap
battery





BESS Revenue Scenarios

Arbitrage Day Ahead Market

- Electricity is being purchased low-price time of the day and sold at peak hours
- Buy on price of between 00:00–04:00 and sell on 05:00–08:00
- 22% gross profit margin (calculated average in last 3 years)

Arbitrage Intra-Day Market

- Storing the electricity of installed capacity over license during daytime and selling between 18:00–24:00
- Feed-in tariff price of stored electricity is 20% higher than solar production.

Auxiliary Grid Services

- Selling in balancing market
- 3, 4, 5-hour proposal may be given in Secondary Frequency Control market

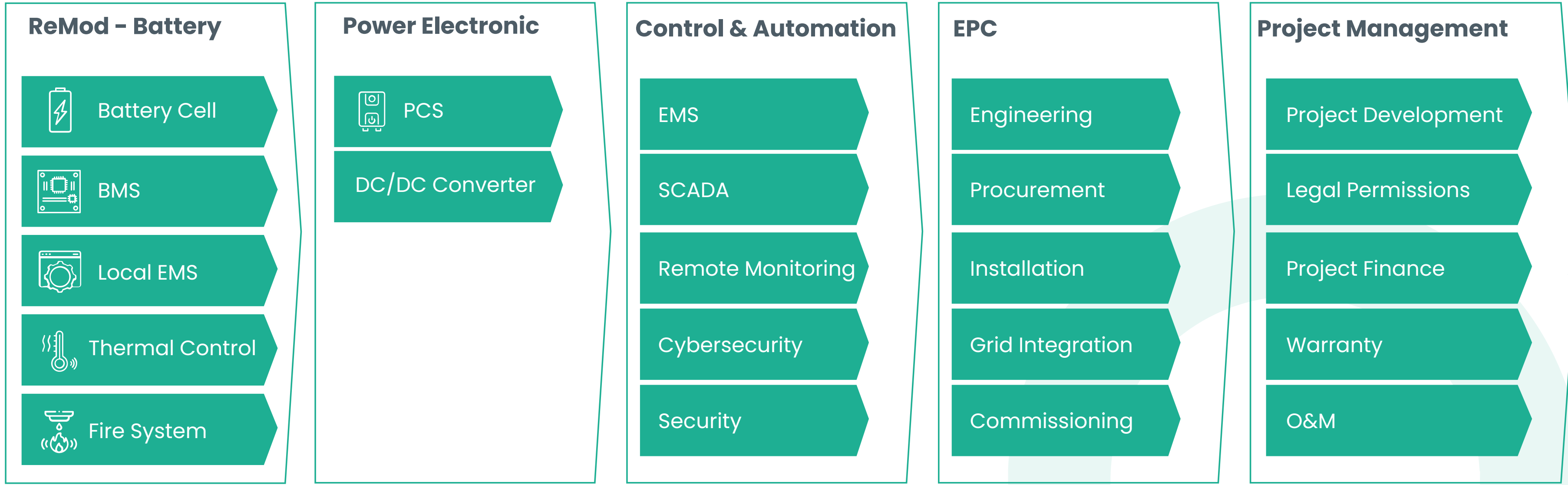
Mechanical Power

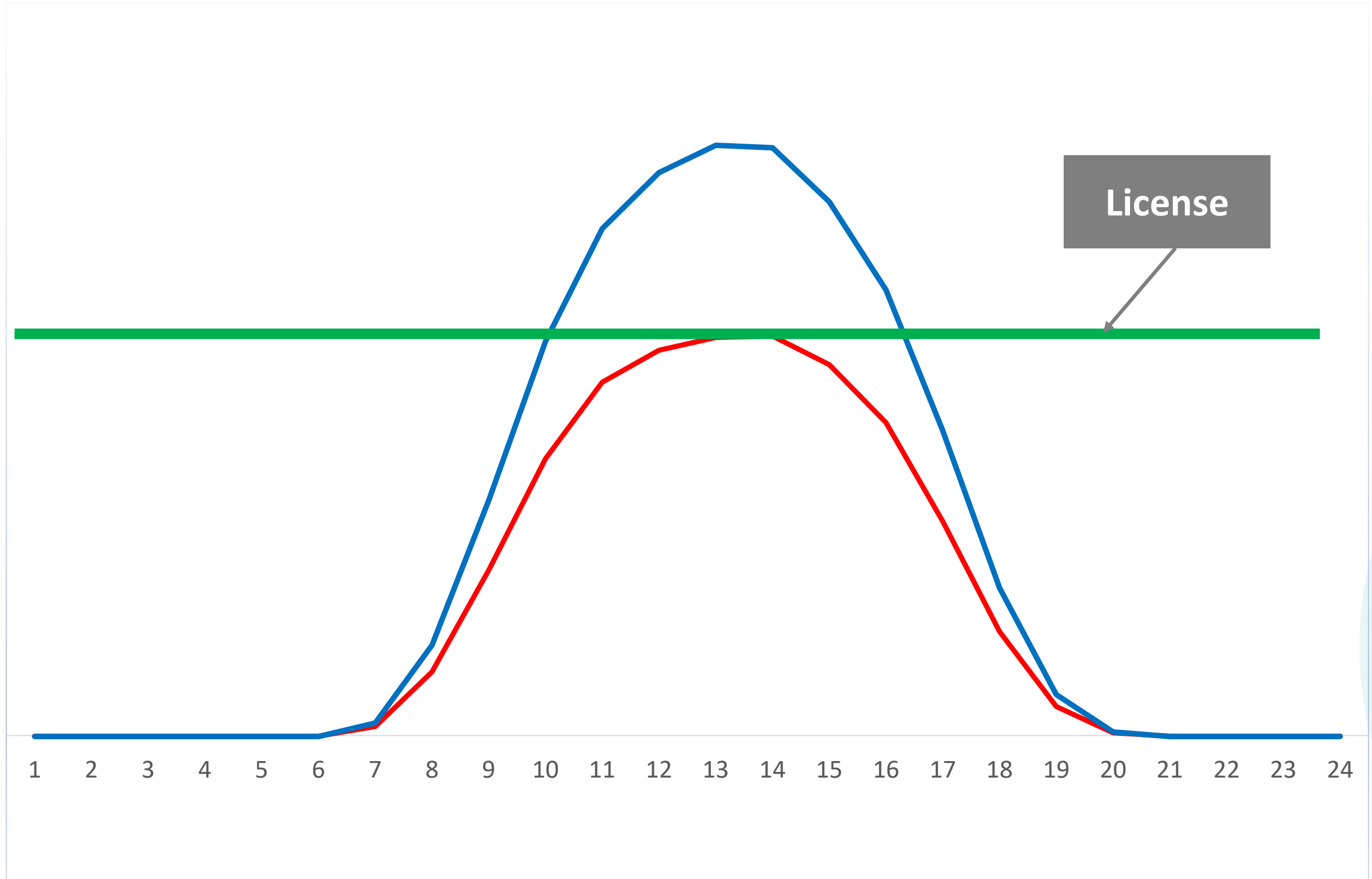
- Unusable energy regarding the power difference between installed mechanical power and license capacity could be stored and sell another time to grid.
- Expected revenue increase is 2,2% (calculated average in last 3 years)



BESS Cost Structure

Components & Services



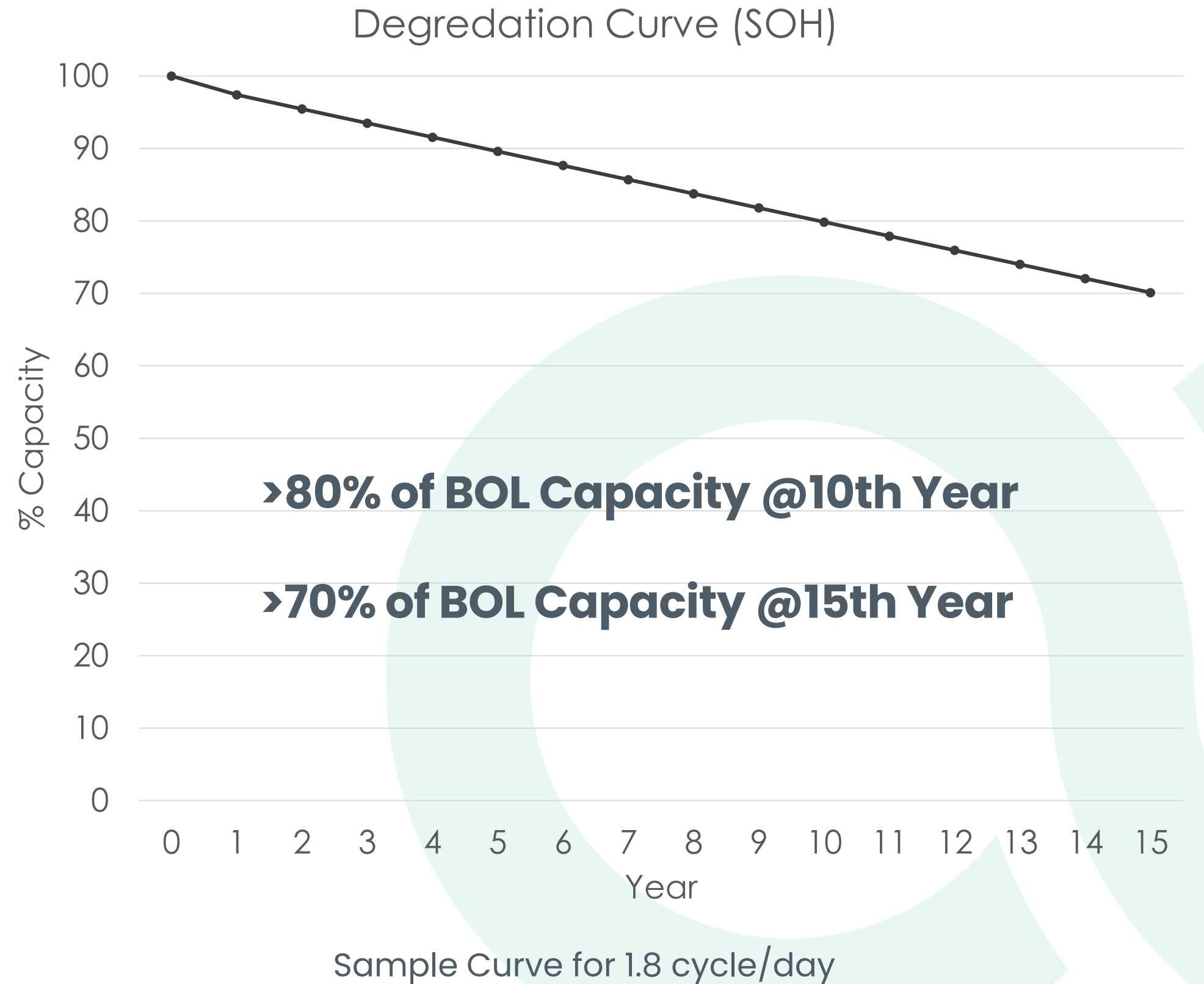


	SOLAR	DIRECT SALES	BESS
10 MWe-12 MWp	21.030	21.030	0
17 MWe-17 MWp	30.371	26.367	4.000

ADDITIONAL INVESTMENT	DIRECT SALES	BESS
SOLAR: 2 MWp	3.165	0
SOLAR: 5 MWp BESS: 10 MWh	5.337	3.500 SOLAR 2.920 SALES

Life & Performance Management of BESS

<p>Cell</p>	Price	~80 \$/kWh
		~120 \$/kWh
	Cycle Time	6.000
		10.000
	Performance	Low Density/Power
		High Density/Power
<p>BMS</p>	Charge / Discharge Rate	0.5 C / 0.5C
		1.0 C / 1.0 C
	Depth of Discharge	80%
		100%
	Thermal Control	±1°C
		±5°C
<p>EMS</p>	Capacity Control	Available
		Required
	Cycles / Day	1.0
		2.0
	Life Time	15 Years
		20 Years





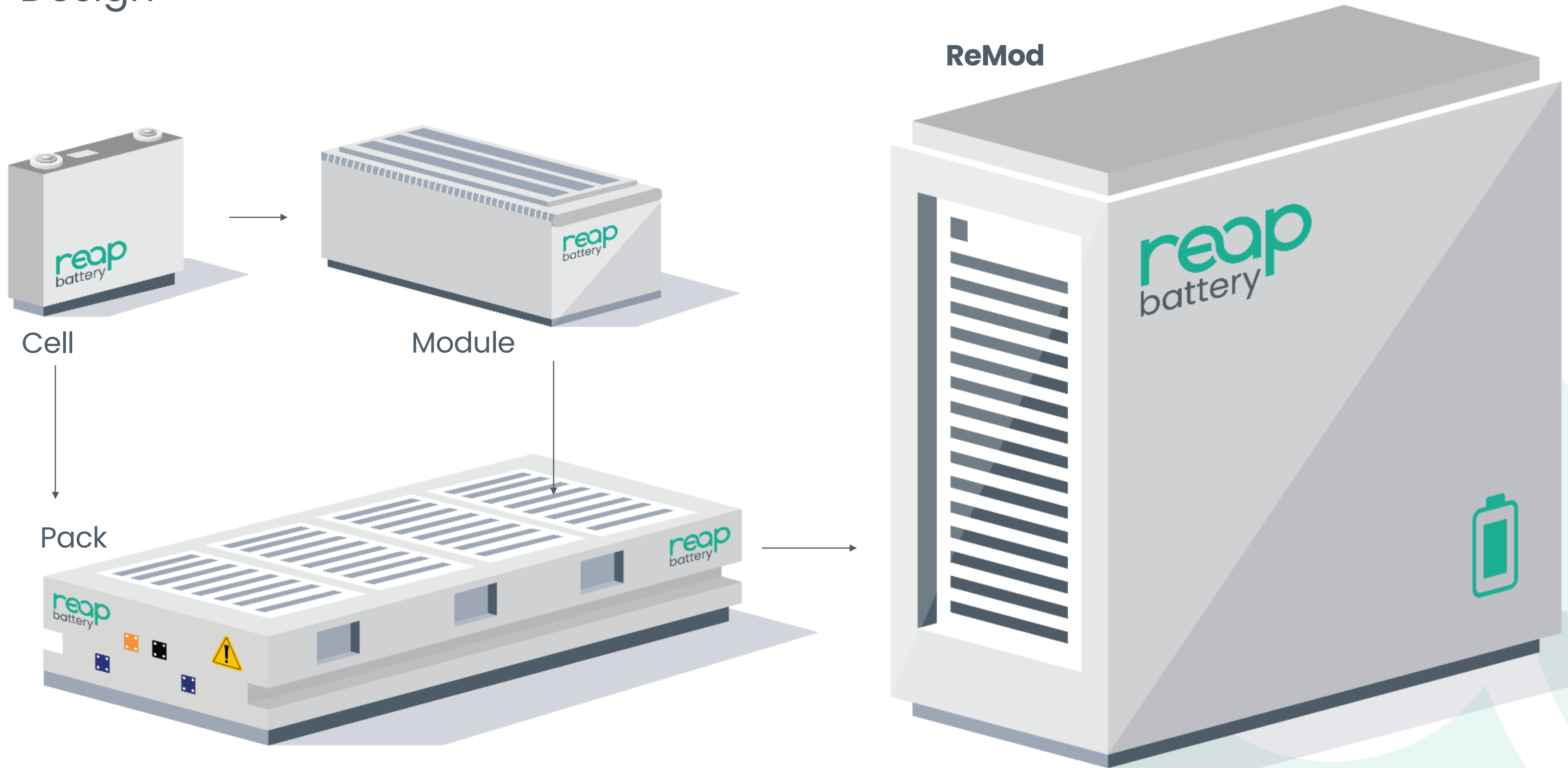
Life & Performance Management of BESS



Cycle Life	6.000
Cycle / Day	1.8
Degredation	15
C Rate	0.5
DoD	%90
Oeff	%95

	Normal	BoL-%100	EoL-20year	EoL-%100	Yearly Addition
Years	100.00	118.80	132.83	154.00	55.95
1	83.81	100.00	112.06	130.23	18.80
2	81.99	98.31	110.45	128.71	1.96
3	80.15	96.62	108.83	127.18	1.96
4	78.30	94.91	107.20	125.64	1.96
5	76.42	93.18	105.56	124.10	1.96
6	74.51	91.45	103.91	122.55	1.96
7	72.59	89.70	102.25	121.00	1.96
8	70.64	87.93	100.58	119.43	1.96
9	68.66	86.15	98.90	117.86	1.96
10	66.66	84.35	97.21	116.28	1.96
11	64.62	82.54	95.50	114.70	1.96
12	62.55	80.70	93.79	113.10	1.96
13	60.44	78.85	92.05	111.50	1.96
14	58.30	76.98	90.31	109.88	1.96
15	56.11	75.08	88.55	108.26	1.96
16	53.88	73.16	86.77	106.63	1.96
17	51.59	71.22	84.98	104.99	1.96
18	49.25	69.25	83.17	103.34	1.96
19	46.84	67.25	81.34	101.67	1.96
20	44.36	65.23	79.50	100.00	1.96
EoL	51.88%	64.22%	70.00%	75.95%	

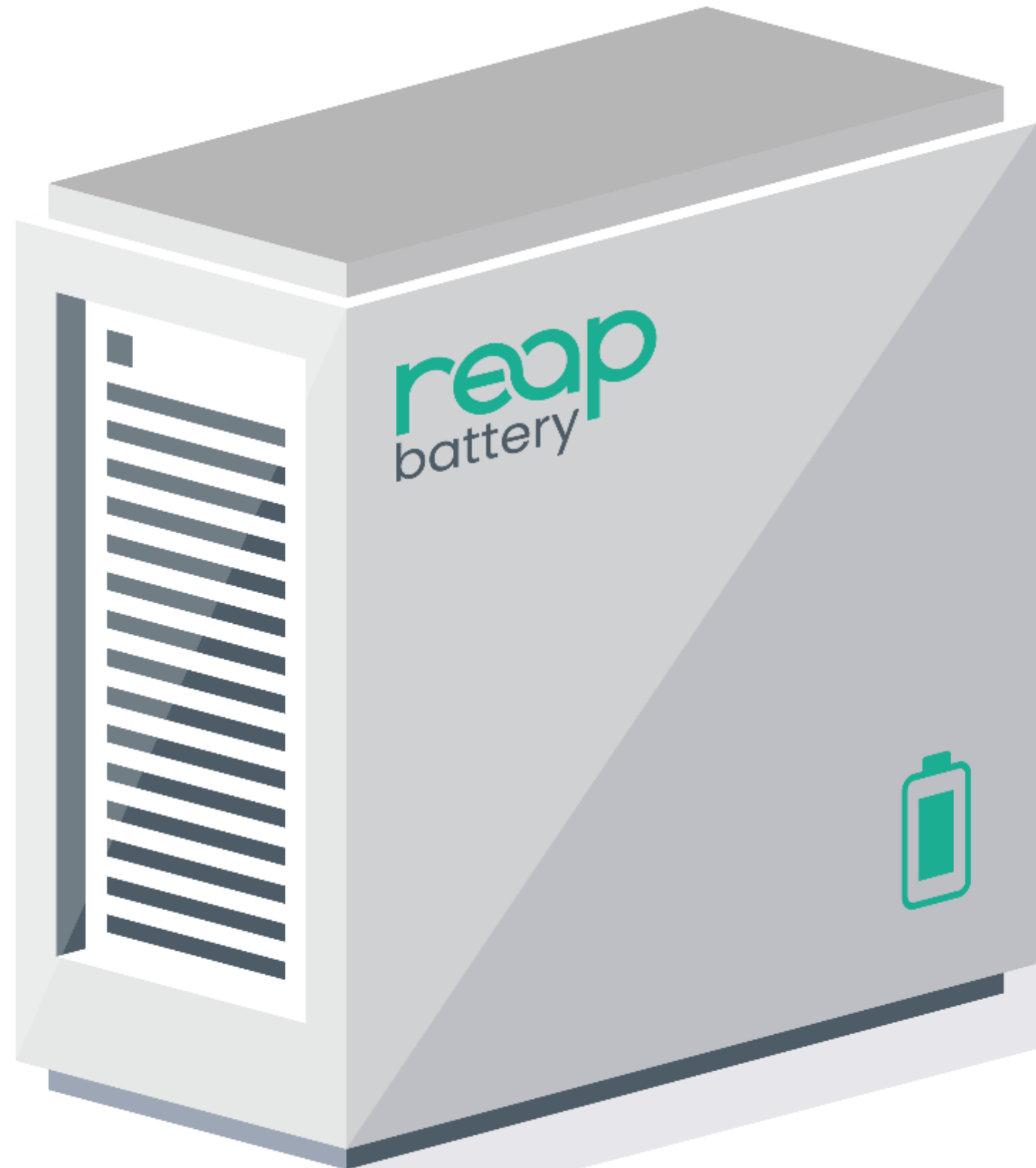
 **ReMod**
Design





ReMod

Specifications



ReMod		
Capacity	460 kWh	688 kWh
Nominal Voltage	819 Vdc	1229 Vdc
Operating Voltage Range	716 - 900 Vdc	1075-1400 Vdc
Max. Charge / Discharge Current	560 A	
Nominal C Rate	0.5C / 0.5C (@25°C)	
Max Continuous Rate	1C / 1C	
Cell	LFP Prismatic 280Ah	
Cell Balancing	1000mA/cell active balance with REAP-BMS	
Life (1C/1C, 1.8cycle/day, @80% DOD, @25°C)	>80% BOL Capacity @ 10 th Years >70% BOL Capacity @15 th Years	
Operating Ambient Temperature	-20..+55 °C	
Cooling System	Liquid Cooling	
Self Consumption (Standby/Operating)	1kW / 18kW (0.5C / 0.5C @25°C)	1.5kW / 25kW (0.5C / 0.5C @25°C)
Communication	CAN, RS485	
Dimension	W1500 x D2450 x H2590 mm	
Weight	5.000kg	7.000 kg
Protection Class	IP54	
Altitude	< 2000m	
Certificates	CE, UN 38.3, IEC 62619, UL9540, UL 1973	
Warranty	3 Years Product / 10 Years Performance Warranty	
Recycling	Managing with REAP Battery Passport	



reap
battery

YEO Teknoloji | Reap Battery

yeo.com.tr | reapbattery.com

#ItsPossible