



**Energy Solutions Company**  
**ESS Battery Division**

**Headquarters**

**Korea** LG Twin Towers, 128, Yeoui-daero, Yeongdeungpo-gu, Seoul  
Tel. : +82-2-6924-3690  
e-mail : jadenlee@lgchem.com

**Local Contacts**

**USA** 1857 Technology Drive, Troy, MI 48083, USA  
Peter Gibson  
Tel. : +1-248-205-9066  
e-mail : pgibson@lgchem.com

**Europe** Otto-Volger-str. 7C, 65843 Sulzbach (Taunus), Germany  
Joern Juergens  
Tel. : +49-6196-5719-617  
e-mail : jjjuergens@lgchem.com

**Japan** 14F, Kyobashi Trust Tower, 2-1-3, Kyobashi, Chuo-ku, Tokyo, 104-0031, Japan  
Hideki Morita  
Tel. : +81-3-6369-8580  
e-mail : jpmorita@lgchem.com

**China** Room 33C, Time Fortune Building, No.88 Fuhua RD 3th, Futian District, Shenzhen.P.R.C  
Nanhao Song  
Tel. : +86-755-2396-0202-132, +86-13823769794  
e-mail : songnanhao@lgchem.com

**India** 5th Floor, Building No. 8, Tower C, DLF Cyber City, Phase II, Gurgaon-122002 (Haryana), India  
Prashant Kumar  
Tel. : +91-124-469-2600, Direct : +91-124-4692639,  
e-mail : prashant@lgchem.com

**Australia** Unit 12, 35 Dunlop Rd, Mulgrave, Victoria, Australia, 3170  
Jamie Allen  
Tel. : +61-1300-178-064  
e-mail : esssalesau@lgchem.com

**Company Websites**

LG Chem Website : <http://www.lgchem.com>  
LG Chem ESS Partner Portal : <http://www.lgesspartner.com>

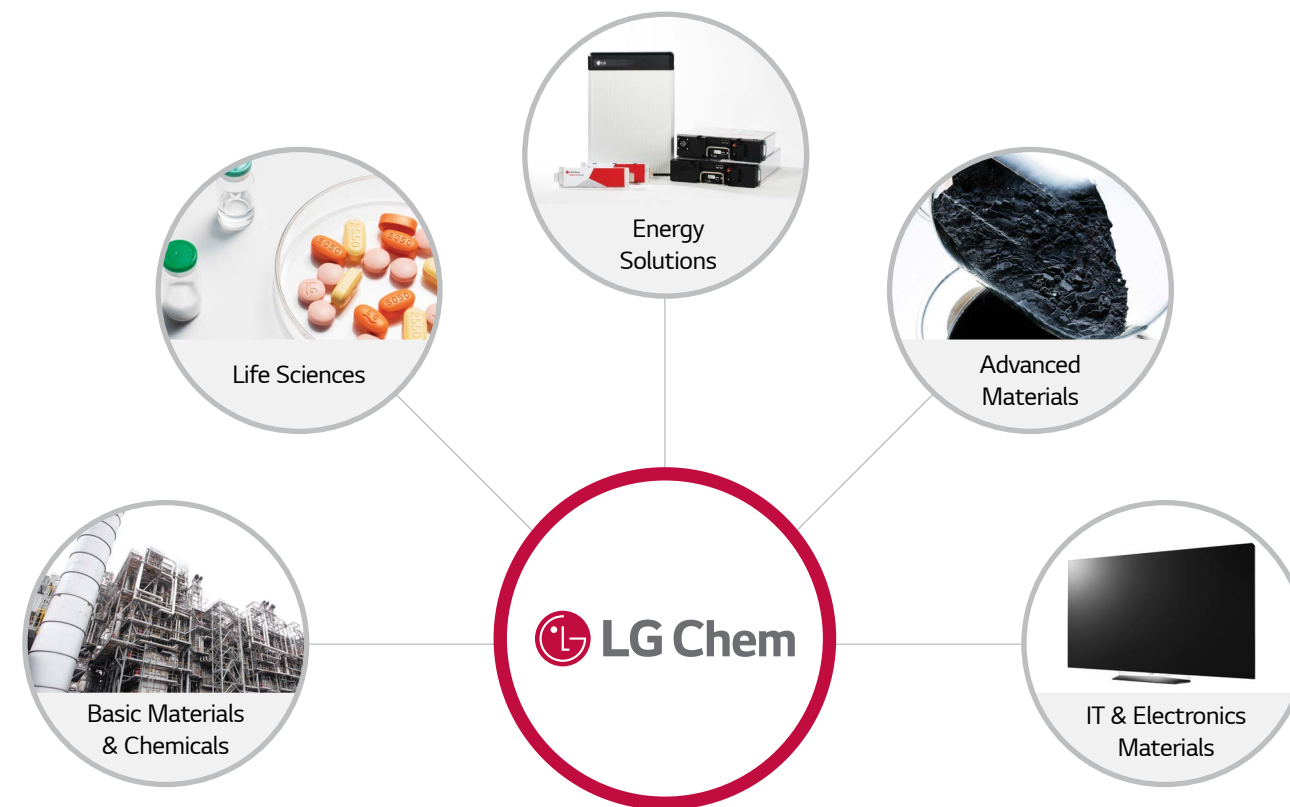


**CHANGE YOUR ENERGY  
CHARGE YOUR LIFE**

**ADVANCED BATTERIES  
FOR ENERGY STORAGE**

# Introducing LG Chem

## LG Chem at a Glance



Foundation	1947	Employees	33,694
Headquarters	Seoul, Korea	Sales Revenue	USD 25B (FY2018)

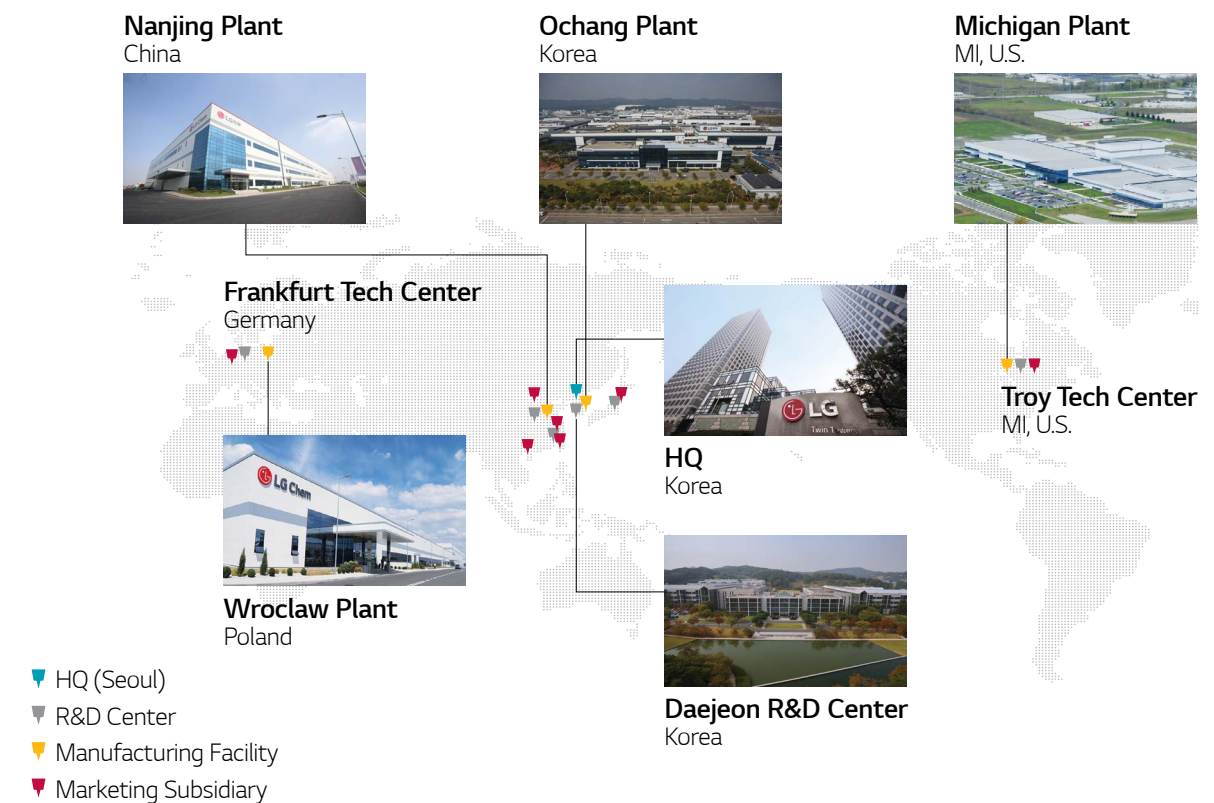
## Energy Solutions

With 23 years of experience in successfully delivering products and solutions to customers in the global energy sector, LG Chem is recognized as the industry leader in Lithium-ion batteries.

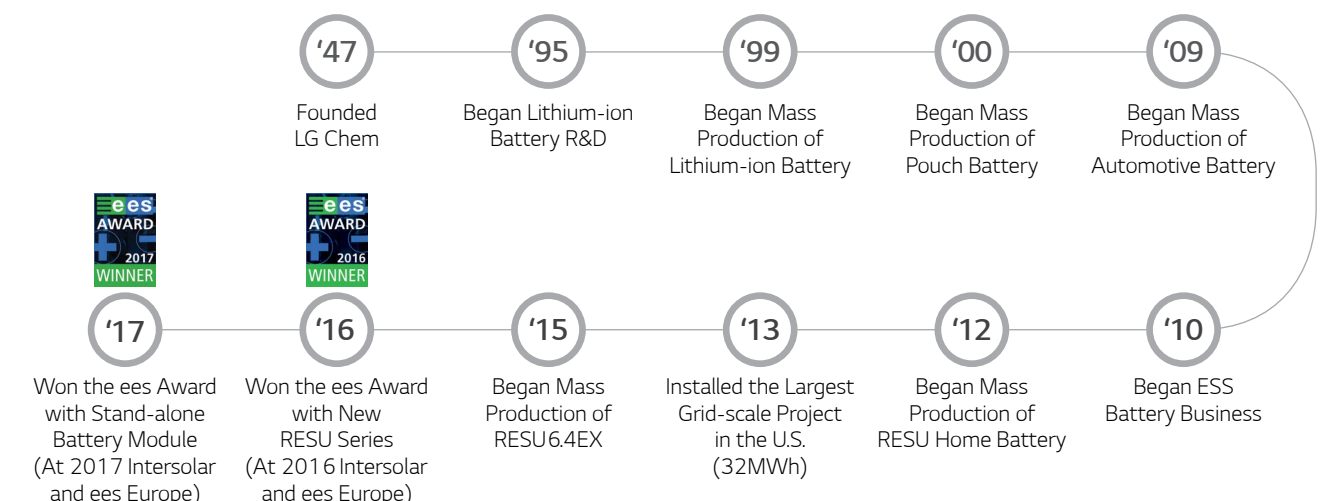


## Global Operation of Energy Solutions

LG Chem is successfully implementing rapid go-to-market strategies across its wide range of global networks. By locating manufacturing plants in four strategic locations of Korea, China, the U.S., and Poland, LG Chem supplies batteries to meet the needs of local customers in the most efficient and timely manner.



## Business History of Energy Solutions



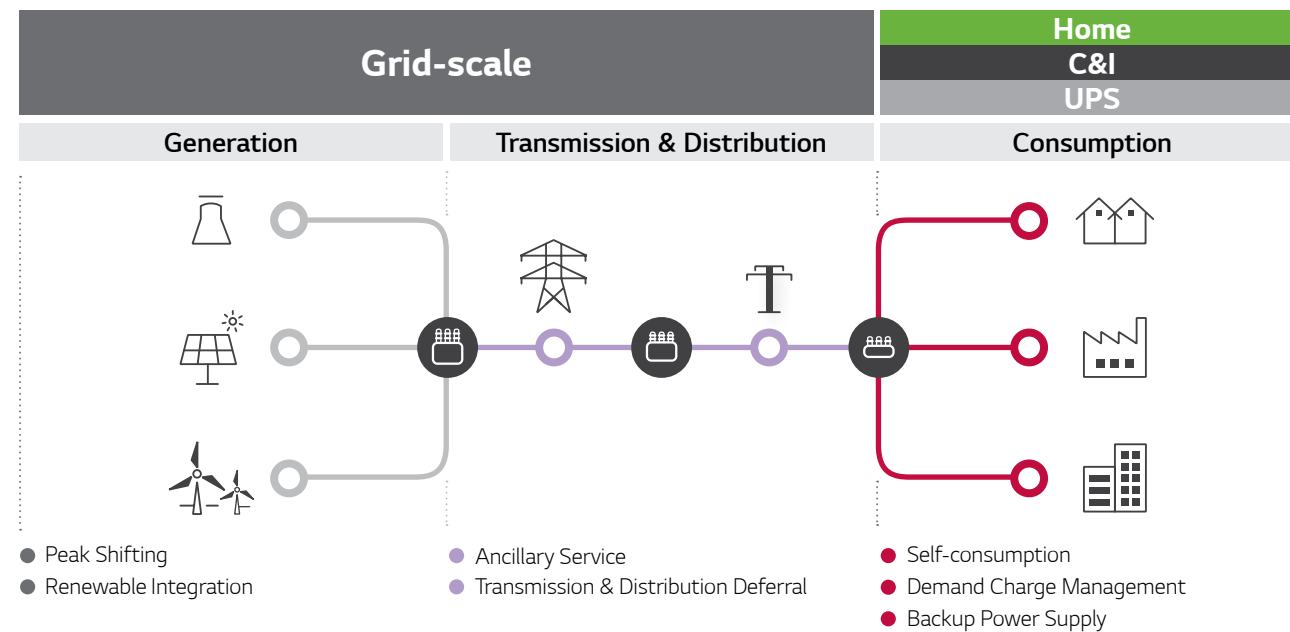
\* The ees Award is one of the most prestigious awards presented annually at ees Europe, the largest exhibition for batteries and energy storage systems in Europe, with the purpose to pay tribute to pioneering products and solutions for energy storage system.

LG Chem ESS Solutions

# Total Solutions for ESS (Energy Storage System)

## Applications of ESS

ESS (Energy Storage System) provides solutions for applications throughout power supply systems including Grid-scale, Home, C&I (Commercial and Industrial), and UPS (Uninterruptible Power Supply).



## Product Portfolio

LG Chem offers a wide variety of products, such as Battery Module, Pack, Rack, and Container that allow our customers to source total battery solutions.

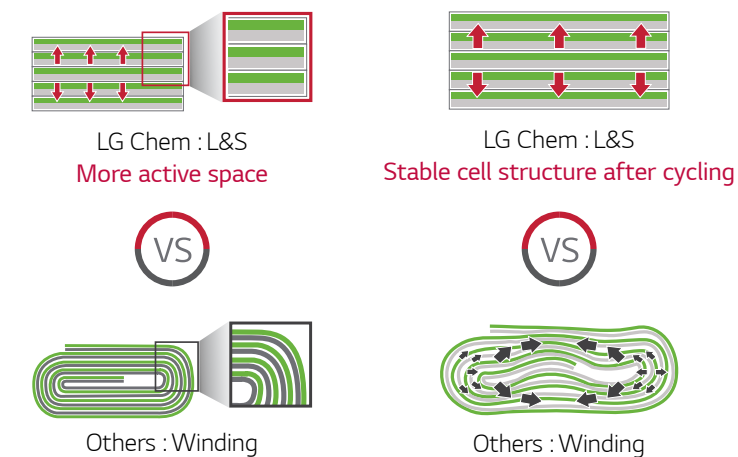


## Key Strengths

### Lithium-ion Battery Cell

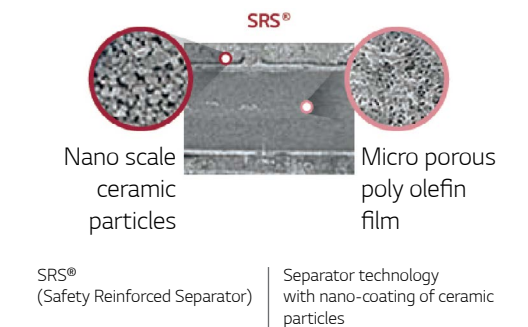
#### Compactness & Long Lifespan

LG Chem's L&S (Lamination & Stacking) process minimizes dead space, enables higher energy density, and enhances the sustainability of cell structures.



#### Safety

LG Chem's SRS® (Safety Reinforced Separator) increases the mechanical and thermal stability of battery cells.

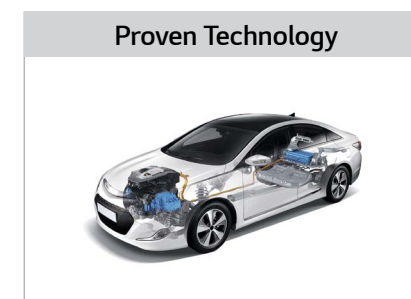


## Unsurpassed Experience and Expertise

LG Chem is a reliable battery solution partner with extensive field experience and technical expertise.



LG Chem features world class battery technology, made possible by 70 years of expertise in chemicals.



LG Chem is the global leading supplier of Lithium-ion batteries for electric vehicles.



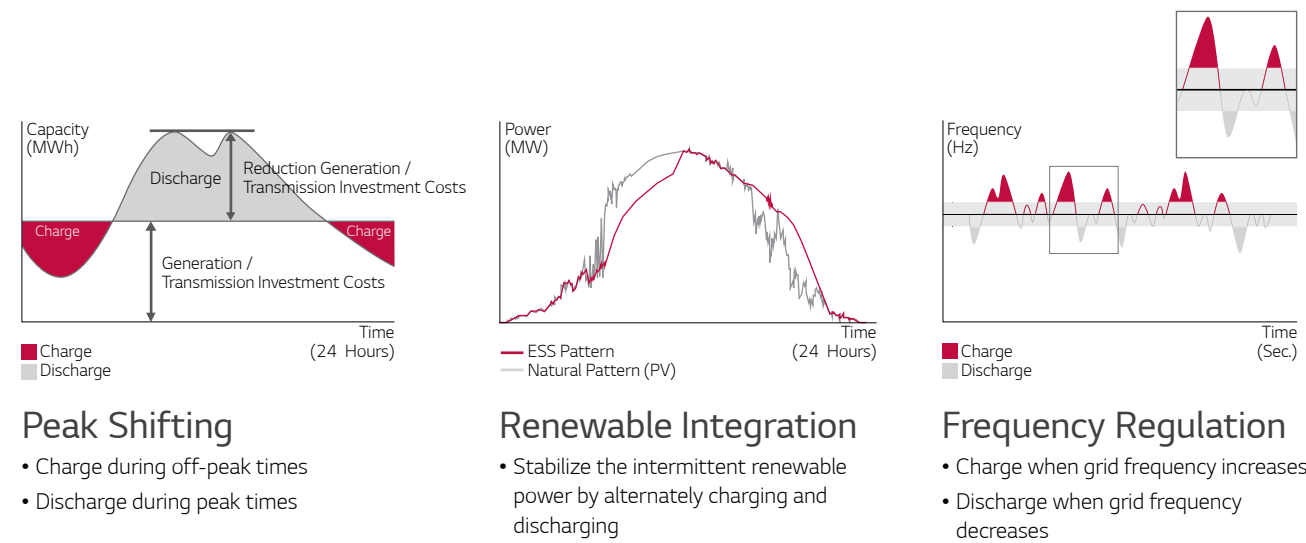
Since 2010, LG Chem has installed or been awarded ESS projects for a wide range of applications.



## LG Chem ESS Solutions

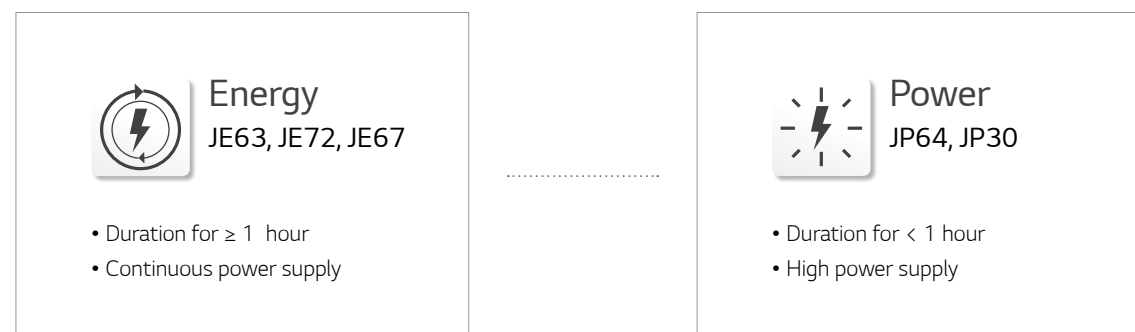
# Grid-scale Battery

For stabilizing the grid, a grid-scale battery provides capabilities such as peak shifting, renewable integration, and frequency regulation. With our world-leading Lithium-ion battery technology, LG Chem offers advanced battery systems for grid-scale ESS applications.



## Product Lineup

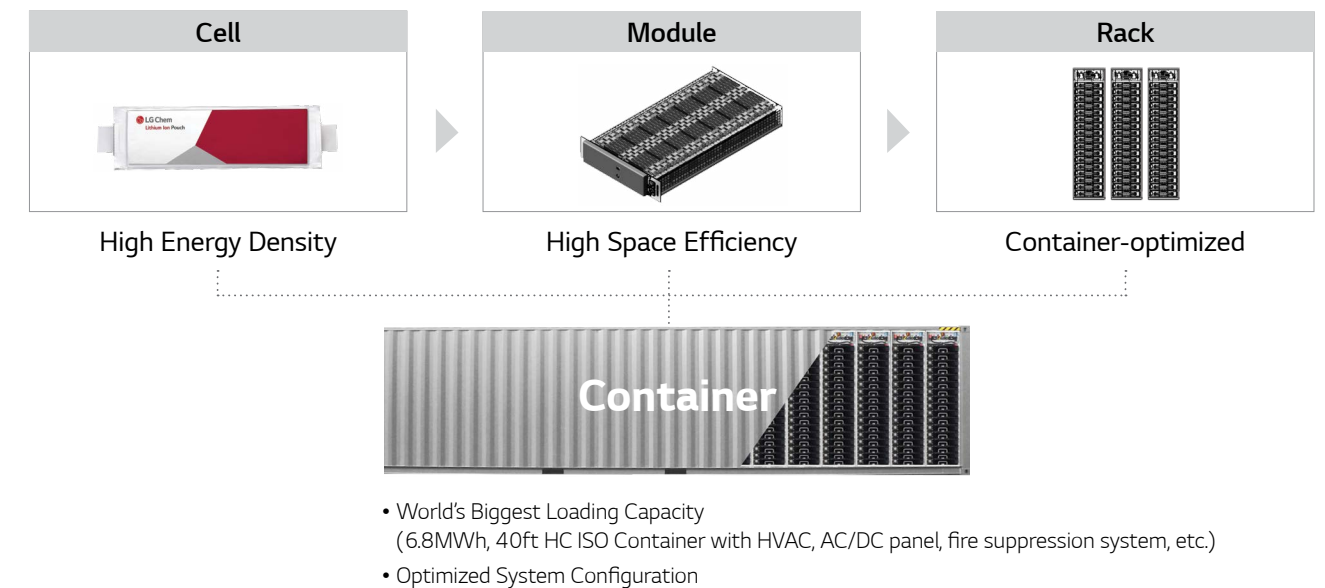
LG Chem offers two product lineups highly optimized for grid-scale customers' requirements.



## Key Features

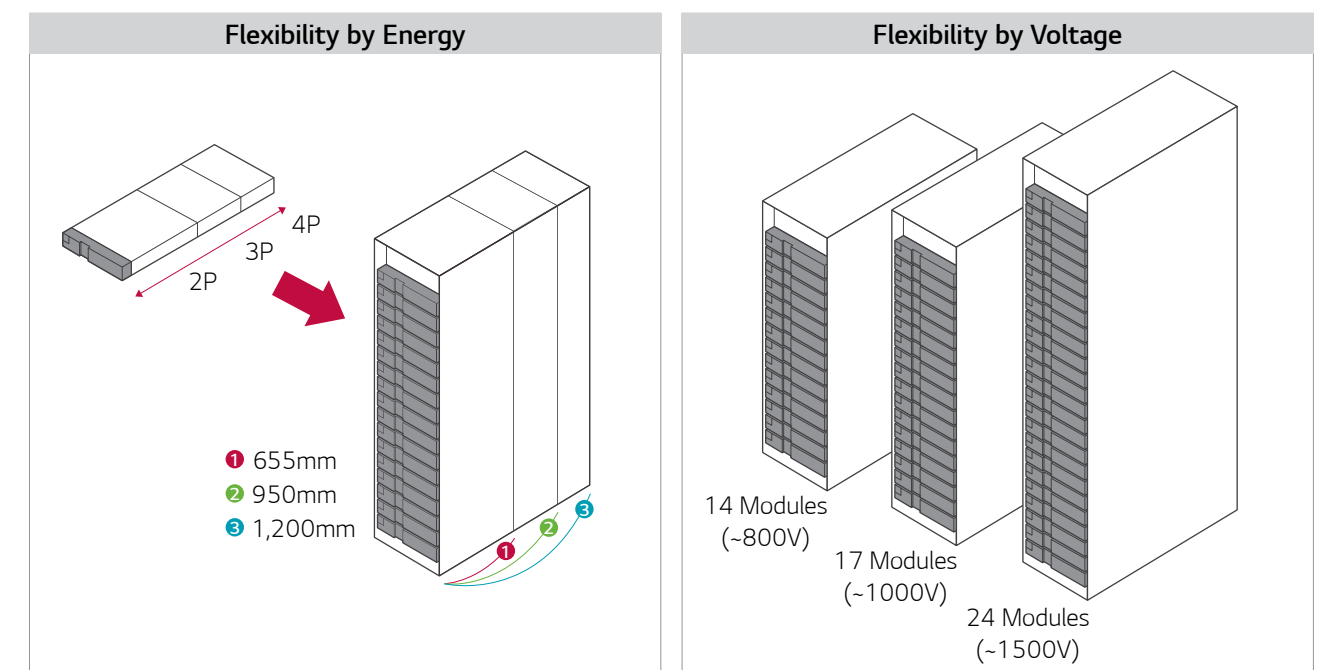
### System Optimization

LG Chem features a highly optimized battery system design which enables high energy density.



### Diverse Product Options

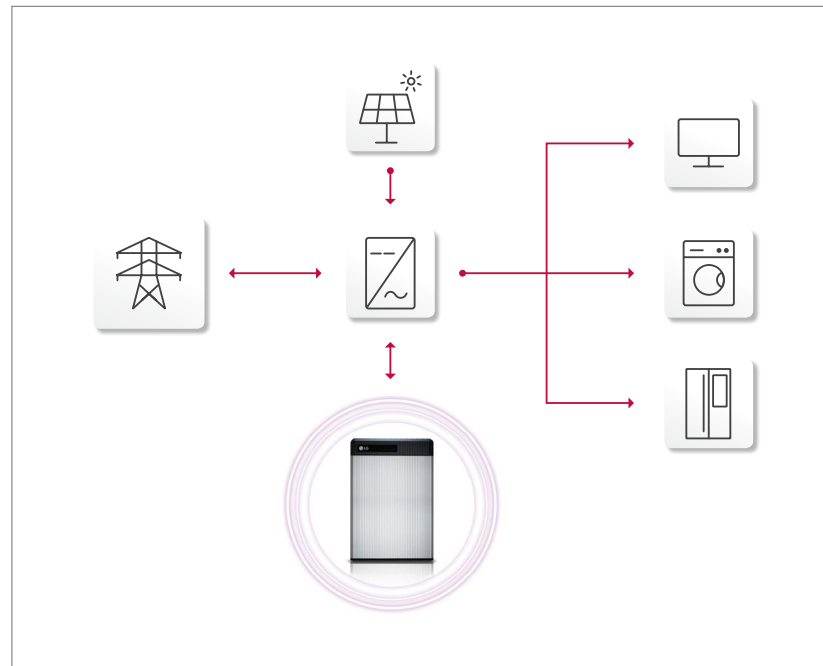
LG Chem offers a range of product options to optimally meet our customers' needs for energy, footprint and voltage.



LG Chem ESS Solutions

# Home Battery

A home battery can store surplus energy generated from rooftop photovoltaic panels for use when needed. When the sun has set, energy demand is high, or there is a black-out, you can use the energy stored in your home battery to meet your energy needs at no extra cost. In addition, a home battery helps you pursue the goal of energy self-consumption and ultimately energy-independence.



## Electricity Bill Saving

- Charge during off-peak times
- Discharge during peak times

## Self-consumption

- Store solar energy generated from photovoltaic panels for the future use

## Emergency Power Backup

- Discharge during a black-out, functioning as backup power

## Key Features



### Compact Size & Easy Installation

The compact and lightweight nature of the RESU allows easier and faster installation both indoor and outdoor.



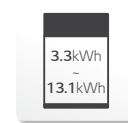
### Proven Safety

The safety of LG Chem's lithium-ion battery is proven in the automotive and ESS markets.



### Easy to Scale Up

The RESU models can be combined up to 2 units to increase energy capacity.



### Diverse Product Options

The RESU series offers diverse product options ranging from 3.3kWh to 13.1kWh.



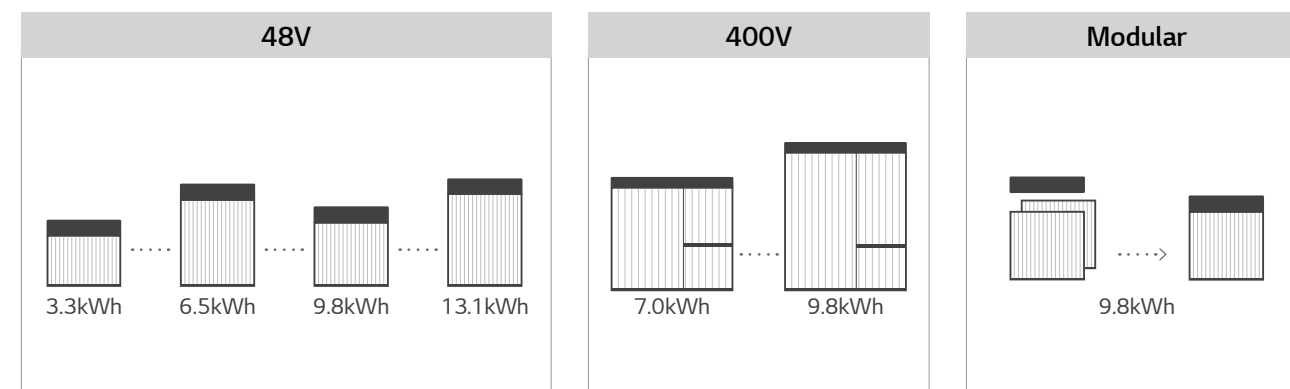
### High Compatibility

The RESU series is compatible with a wide range of inverters.

## Product Lineup

LG Chem offers seven home battery models in three product lineups to fulfill diverse capacity and voltage needs of homeowners.

# RESU



RESU Plus is an expansion kit specially designed for 48V models of the RESU series.  
With RESU Plus, RESU3.3/6.5/10 are cross-connected with each other, and RESU13 is connected with the same model.  
(Number of expandable battery units : Up to 2EA)

## Customer Testimonials



### Remarkable Self-sufficiency

"The remarkable result one year after completion and move-in :  
up to 90 percent self-sufficiency"  
- Jörg Erstling, Germany



### Simple Installation & Sleek Design

"The LG Chem RESU10H was easy to install and looks good.  
It's not overly intrusive, and it is a real conversation starter"  
- Stephen Young, Australia

# Specifications

## Grid-scale Battery



Energy

### Energy Module



Long-duration application  
with continuous power supply (≥ 4 hours)

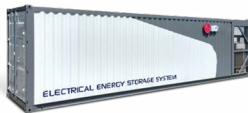
Models	M48145P5B (2P)	M48218P5B (3P)	M48290P5B (4P)
Energy [kWh]	7.4	11.2	14.9
Capacity [Ah]	145	218	290
Nominal Voltage [V]	51.4		
Voltage Range [V]	42.0-58.8		
Dimension [W x H x D, mm]	445 x 110 x 620	445 x 110 x 915	445 x 110 x 1,162
Weight [kg]	46	68	89

### Energy Rack



Models	R800 (14 Modules)			
	M48145P5B	M48218P5B	M48290P5B	
Energy [kWh]	104.3	156.4	208.5	
Capacity [Ah]	145	218	290	
Nominal Voltage [V]	719			
Voltage Range [V]	588-823			
Dimension [W x H x D, mm]	520 x 1,880 x 655	520 x 1,880 x 950	520 x 1,880 x 1,200	
Weight [kg]	760	1,097	1,396	
Models	R1000 (17 Modules)			R1500 (24 Modules)
	M48145P5B	M48218P5B	M48290P5B	M48290P5B
Energy [kWh]	126.6	189.9	253.2	357.5
Capacity [Ah]	145	218	290	290
Nominal Voltage [V]	873			1,233
Voltage Range [V]	714~1,000			1,008~1,411
Dimension [W x H x D, mm]	520 x 2,200 x 655	520 x 2,200 x 950	520 x 2,200 x 1,200	520 x 3,150 x 1,200
Weight [kg]	905	1,305	1,680	2,407

### Energy Container



Models	40ft HC ISO Container	
	M48145P5B	M48218P5B
	Manned	Unmanned
Energy [MWh]	5.4	6.8
System Voltage [V dc]	714-1,000	
Dimension [W x H x D, m]	12.2 x 2.9 x 2.5	
Weight [ton] (incl. battery)	50	60
Ambient Temperature [°C]	-20~50	
Communication	CAN2.0B, Modbus TCP/IP	

(Container system design can be changed according to customer requirements)

Long-duration application  
with continuous power supply (≥ 2 hours)

Models	M48134P8B(2P)	M48200P8B(3P)	M48267P8B(4P)	M48126P3B(2P)	M48189P3B(3P)	M48252P3B(4P)
Energy [kWh]	6.9	10.3	13.7	6.5	9.8	13
Capacity [Ah]	134	200	267	126	189	252
Nominal Voltage [V]	51.4			51.8		
Voltage Range [V]	42.0-58.8			42.0-58.8		
Dimension [W x H x D, mm]	445 x 110 x 620	445 x 110 x 915	445 x 110 x 1,162	445 x 110 x 620	445 x 110 x 915	445 x 110 x 1,162
Weight [kg]	46	68	89	46	68	89

Long-duration application  
with continuous power supply (≥ 1 hour)

Models	R800 (14 Modules)			R800 (14 Modules)		
	M48134P8B	M48200P8B	M48267P8B	M48126P3B	M48189P3B	M48252P3B
Energy [kWh]	96	144	192	91.3	137.0	182.7
Capacity [Ah]	134	200	267	126	189	252
Nominal Voltage [V]	719			725		
Voltage Range [V]	588-823			588-823		
Dimension [W x H x D, mm]	520 x 1,880 x 655	520 x 1,880 x 950	520 x 1,880 x 1,200	520 x 1,880 x 655	520 x 1,880 x 950	520 x 1,880 x 1,200
Weight [kg]	760	1,097	1,396	766	1,104	1,402
Models	R1000(17 Modules)			R1000(17 Modules)		
	M48134P8B	M48200P8B	M48267P8B	M48126P3B	M48189P3B	M48252P3B
Energy [kWh]	117	175	233	110.9	166.4	221.8
Capacity [Ah]	134	200	267	126	189	252
Nominal Voltage [V]	873			881		
Voltage Range [V]	714-1,000			714-1,000		
Dimension [W x H x D, mm]	520 x 2,200 x 655	520 x 2,200 x 950	520 x 2,200 x 1,200	520 x 2,200 x 655	520 x 2,200 x 950	520 x 2,200 x 1,200
Weight [kg]	905	1,305	1,680	912	1,314	1,687

Models	40ft HC ISO Container		40ft HC ISO Container	
	M48134P8B	M48200P8B	M48126P3B	M48189P3B
	Manned	Unmanned	Manned	Unmanned
Energy [MWh]	5.1	6.3	4.8	6.0
System Voltage [V dc]	714-1,000		714-1,000	
Dimension [W x H x D, m]	12.2 x 2.9 x 2.5		12.2 x 2.9 x 2.5	
Weight [ton] (incl. battery)	50	60	50	60
Ambient Temperature [°C]	-20~50		-20~50	
Communication	CAN2.0B, Modbus TCP/IP		CAN2.0B, Modbus TCP/IP	

(Container system design can be changed according to customer requirements)

Grid-scale Battery



Power

Power Module



Short-duration applications with fast response, high power supply (< 1 hour)

Models	M4864P6B (1P)	M48128P6B (2P)	M4860P7B (2P)
Energy [kWh]	3.3	6.6	3.1
Capacity [Ah]	64	128	60
Nominal Voltage [V]	51.5		51.8
Voltage Range [V]	42.0-58.8		
Dimension [W x H x D, mm]	445 x 110 x 344	445 x 110 x 620	445 x 110 x 494
Weight [kg]	28	47	32

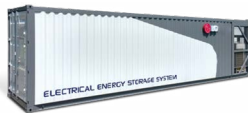
Power Rack



Models	R800 (14 Modules)	
	M4864P6B	M48128P6B
Energy [kWh]	46.2	92.3
Capacity [Ah]	64	128
Nominal Voltage [V]	721	
Voltage Range [V]	588-823	
Dimension [W x H x D, mm]	520 x 1,880 x 425	520 x 1,880 x 655
Weight [kg]	491	775

Models	R1000 (17 Modules)		
	M4864P6B	M48128P6B	M4860P7B
Energy [kWh]	56.0	112.1	52.8
Capacity [Ah]	64	128	60
Nominal Voltage [V]	876		881
Voltage Range [V]	714~1,000		
Dimension [W x H x D, mm]	520 x 2,200 x 425	520 x 2,200 x 655	520 x 2,200 x 540
Weight [kg]	584	924	645

Power Container



Models	40ft HC ISO Container	
	M48128P6B	
Energy [MWh]	4.0	
System Voltage [V dc]	714~1,000	
Dimension [W x H x D, m]	12.2 x 2.9 x 2.5	
Weight [ton] (incl. battery)	50	
Ambient Temperature [°C]	-20~50	
Communication	CAN2.0B, Modbus TCP/IP	

(Container system design can be changed according to customer requirements)

Home Battery



Models	48V			
	RESU3.3	RESU6.5	RESU10	RESU13
Total Energy [kWh] <sup>1)</sup>	3.3	6.5	9.8	13.1
Usable Energy [kWh] <sup>2)</sup>	2.9	5.9	8.8	12.4
Capacity [Ah]	63	126	189	252
Nominal Voltage [V]	51.8			
Voltage Range [V]	42.0-58.8			
Dimension [W x H x D, mm]	452 x 403 x 120	452 x 656 x 120	452 x 484 x 227	452 x 626 x 227
Weight [kg]	31	52	75	99
Enclosure Protection Rating	IP55			
Communication	CAN2.0B			
Certificates	Cell	UL1642		
	Product	UL1973 / TUV (IEC 62619) / CE / FCC / RCM		TUV(IEC 62619)/CE/FCC/RCM

1) Total Energy is measured at the initial stage of battery life under the condition as follows : Temperature 25°C

2) Usable Energy is based on battery cell only

Compatible Inverter Brands : SMA, Ingeteam, GoodWe, Sungrow, Victron Energy, Selectronic - More brands to be added



Models		400V				Modular
		RESU7H		RESU10H		RESU10M
		Type-R	Type-C	Type-R	Type-C	
Total Energy [kWh] <sup>1)</sup>		7.0		9.8		9.8
Usable Energy [kWh] <sup>2)</sup>		6.6		9.3		9.3
Capacity [Ah]		63		63		63
Nominal Voltage [V]		-		-		155
Voltage Range [V]		350~450	430~550	350~450	430~550	126~176
Dimension [W x H x D, mm]		744 x 692 x 206	744 x 907 x 206	744 x 907 x 206	744 x 907 x 206	452 x 511 x 240
Weight [kg]		75	87	97	99.8	82
Enclosure Protection Rating		IP55				IP55
Communication		RS485	CAN2.0B	RS485	CAN2.0B	CAN2.0B
Certificates	Cell	UL1642				UL1642
	Product	TUV (IEC 62619) / CE / FCC / RCM	TUV (IEC 62619) / CE / RCM	UL1973 / TUV (IEC 62619) / CE / FCC / RCM		IEC 62619 / IEC 60950(LVD) / CE

1) Total Energy is measured at the initial stage of battery life under the condition as follows : Temperature 25°C

2) Usable Energy is based on battery cell only

• Noise Level : < 40dBA

Compatible Inverter Brands (More brands to be added)

- 400V : SMA, SolarEdge, Fronius, Huawei

- Modular : SMA



C&I Battery



Models	R800		R1000	
	M48126P3B	M48189P3B	M48126P3B	M48189P3B
Energy [kWh]	91.3	137.0	110.9	166.4
Capacity [Ah]	126	189	126	189
Nominal Voltage [V]	725		881	
Voltage Range [V]	588~823		714~1,000	
Dimension [W x H x D, mm]	520 x 1,880 x 655	520 x 1,880 x 950	520 x 2,200 x 655	520 x 2,200 x 950
Weight [kg]	766	1,104	912	1,314
Certificates	UL 1973 (Listed), IEC 61000-6-2 / 61000-6-3, FCC Part15 Class A			

Telecom Backup Solution / Residential Module



Models	M4863P3S	M48126P3S
Energy [kWh]	3.3	6.5
Capacity [Ah]	63	126
Nominal Voltage [V]	51.8	51.8
Voltage Range [V]	42.0~58.8	42.0~58.8
Dimension [W x H x D, mm]	445 x 110 x 339	445 x 110 x 587
Weight [kg]	24	44

UPS Backup Solution



Models	UPS Rack		
	12 Modules (6S2P)	10 Modules	10 Modules
	M7830P7B	M4864P6B	M48128P6B
Energy [kWh]	28.0	33.0	65.9
Continuous Power [kW]	250	115	132
Nominal Voltage [V]	466	515	515
Voltage Range [V]	397~523	420~588	420~588
Dimension [W x H x D, mm]	520 x 2,292 x 500	600 x 2,000 x 650	600 x 2,000 x 800
Weight [kg]	480	390	625

Global Reference (Grid-scale)

LG Chem has installed or been awarded over 6GWh of grid-scale projects since the launch of our ESS business.

