

동진기업(주)

DONG JIN INDUSTRY CO., LTD

BY WORLD-MOVING QUALITY AND TECHNOLOGY, WE WILL DO WITH YOU.

DONG-JIN PROVIDES THE TOTAL SOLUTIONS IN THE SECONDARY CYLINDRICAL BATTERY EQUIPMENT INDUSTRY.

WE ARE GOING TO RUN FORWARD AS A GLOBAL LEADER IN THE UPCOMING ERA OF THE POPULARIZATION OF ELECTRIC VEHICLES.





Company Introduction

COMPANY
VIEW



PROCESSING
LINE



ASSEMBLY
LINE

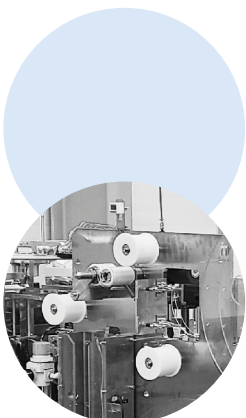


COMPANY NAME	DONG JIN INDUSTRY CO., LTD
CEO	YANG OH YOUL
ESTABLISHMENT	DEC. 10, 2009
SALES REVENUE (USD/MIL.)	40
NUMBER OF EMPLOYEES	55
BUSINESS AREAS	SPECIAL PURPOSE MACHINE MANUFACTURING, SUPERCAPACITOR
MAIN PRODUCT	CYLINDRICAL SECONDARY BATTERY FACILITY
ADDRESS	BIT-DONG, 14 RO-11 GWANGSAN-GU, GWANGJU
HOME PAGE	WWW.DONGJINFA.COM



History

-
- 2022** Awarded the small and medium business innovation management grand prize
(Social contribution sector)
-
- 2021** Awarded by the minister of SMEs and startups, registered as a samsung SDI partner
-
- 2020** Selected as a youth-friendly strong SMEs, selected as a management innovation business SMEs.
Selected as the 9th luxury small and medium enterprise in Gwangju.
Selected as a good small business to work for. Family-friendly company certifications.
-
- 2019** Awarded the 10 million dollar export tower on the 56th trade day, the prime minister's
commendation, and the minister of commerce, industry, and energy award.
Established of the corporate subsidiary research institute.
Patent right acquisition of the "perpendicular switching unit for cylindrical steel can".
Selected as a candidate company for IPO by korea credit guarantee fund.
Become a member of the korea international trade association.
-
- 2018** Registered as a subcontractor of LG chem (current LG energy solution),
Registered as an appointed company for military service (skilled industry personnel),
Citation for excellent workplace certificate, quality management system (ISO 9001) certificate
-
- 2017** Cooperated with Bestec co., ltd, on the 18650, 21700 cylindrical secondary battery assembly line
-
- 2015** Began assembly facility of 18650 cylindrical secondary battery
-
- 2014** Registered as an agency for machine tool of samsung smec
-
- 2013** Trade with foreign companies in the field of factory automation (F.A.)
(Indonesia, China, Malaysia)
-
- 2012** Built part processing facility and base in company, participated in EMO Hannover exhibition
-
- 2011** Established the second F.A. Automation Facility
-
- 2010** Acquired part development patent
-
- 2009** Establishment of Dongjin industry co., ltd, registered as a venture company,
registered as an affiliated company of Hwacheon



02

Certification and Awards

- 1 ISO9001 QUALITY MANAGEMENT SYSTEM CERTIFICATE
- 2 EXCELLENT WORKPLACE CERTIFICATE
- 3 CERTIFICATE OF MEMBERSHIP, KOREA INTERNATIONAL TRADE ASSOCIATION
- 4 KODIT TRUST GUARANTEE FUNDS IPO CANDIDATE COMPANY CERTIFICATE
- 5 SELECTED AS A MANAGEMENT INNOVATION BUSINESS SMEs
- 6 ISO9001 QUALITY MANAGEMENT SYSTEM CERTIFICATE
- 7 SELECTED AS A GOOD SMALL BUSINESS TO WORK FOR
- 8 MANAGEMENT INNOVATION SMEs
- 9 CORPORATE SUBSIDIARY RESEARCH INSTITUTE
- 10 SELECTED AS A GWANGJU LOCAL STAR COMPANY
- 11 GWANGJU METROPOLITAN CITY MAYOR'S COMMENDATION-1
- 12 GWANGJU METROPOLITAN CITY MAYOR'S COMMENDATION-2
- 13 PRIME MINISTER'S AWARD
- 14 MINISTER OF TRADE, INDUSTRY AND ENERGY-1
- 15 MINISTER OF TRADE, INDUSTRY AND ENERGY-2
- 16 AWARD CERTIFICATE FOR OUTSTANDING EXPORT PERFORMANCE (\$10-MILLION EXPORT TOWER)
- 17 AWARD FOR OUTSTANDING SMALL BUSINESS MAN
- 18 AWARD FOR TRADER WHO SHINED KOREA



03

Vision & Management Philosophy

"We are practicing our core values through challenge and passion."

We will be a company that cherishes the value of sweat, grows with clients, and realizes the future value.

Main Value

Strong Faith

With our strong faith, we always aim for a new goals and create a bigger future.

New Ideas

New ideas come from the power of accepting, and based on this mindset, we create a creative corporate culture.

Confident Attitude

We realize the dreams of human society by creating a new future through endless challenges.



Organization

Dong-jin has a team of experienced experts and engineers, each with more than 15 years of knowledge and proficiency in the field of secondary cylindrical battery assembly equipment & solutions.



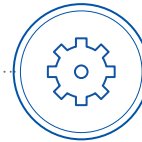
DESIGN TEAM

- REVIEWING HIGH-SPEED LINE FACILITY SPECIFICATION (200~350PPM)
- DESIGN (PART, SECTIONAL P&ID, ASSEMBLY & LAY-OUT DESIGN)



PROCUREMENT TEAM

- RAW MATERIAL SUPPLY
- PART PURCHASE & GRN SYSTEM
- ISSUING ORDER TO SUPPLIERS



PROCESSING TEAM

- PROGRAM DEVELOPMENT
- SHELF AND FORM PROCESSING (MACHINING CENTER)
- PLATING



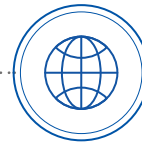
QUALITY MEASURING ROOM

- GENERAL MEASUREMENT & 3D MEASUREMENT
- PART YIELD / FAILURE ASSESSMENT
- KEEPING SPECIFIC & VALUABLE DIMENSION



PRODUCTION TEAM

- RESOURCE PLAN AND SCHEDULE MANAGEMENT BY MPP
- FACILITY ASSEMBLY
- TEST DRIVE AND FACILITY SET-UP
- VERIFY EQUIPMENT PERFORMANCE & SEQUENCE



CORPORATE R&D CENTER

- PLANNING OF NEW BUSINESS UNIT & DEVELOPMENT
- SEARCHING FOR NEW BUSINESS UNIT
- FULFILLMENT OF GOVERNMENT MISSION



Our Equipment

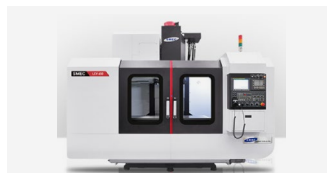
At dong-jin, we machine critical parts with our state-of-the-art specialized tools and verify the critical dimension points using advanced 3D measurement technology at our quick response center. Our qrc operates round the clock and is fully equipped to meet all customer requirements with unparalleled efficiency and speed.



HL460, HL580
Precision universal lathe



HMV-110
Precision universal milling



LCV 650 MACHINING CENTER



BM2740 MACHINING CENTER



3D measuring machine
(measurement and verification of processed parts)



Main Business

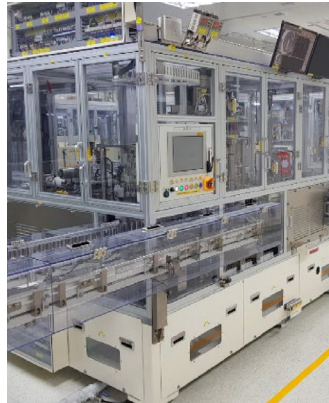
The main business is the manufacture and provision of tailored high-speed automated assembly equipment for cylindrical secondary batteries.



**J/R LOADER M/C &
CAN LOADER M/C**



B/I INSERT M/C



CAN INSERT M/C



(-) TAB WELDING & SWAGE M/C



T/I INSERT & HI POT CHECK M/C



BEADING M/C



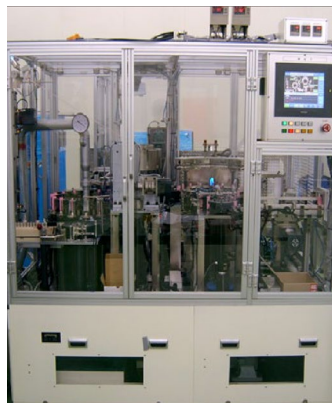
(+) TAB WELDING M/C



CRIMPING & SIZING M/C



WASHING M/C



**TUBING M/C
(with 1st Shrink M/C)**



LOT MARKING M/C



IR/OCV CHECK



Delivery Performance

DATE	Delivery Performance	Details	Customers
2018	01 09	Cylindrical 18650/200ppm/1Line For Both Cylindrical 18650&21700 220ppm/1Line For Both Cylindrical 18650&21700 220ppm/1Line Cylindrical 21700/350ppm	B Co./Chinese Brand M L Co./China (Nanjing)
	10	Cylindrical 18650/200ppm	L Co./China (Nanjing)
2019	04 08	Cylindrical 18650 & 21700 combined 240ppm/2Line Cylindrical 18650 & 21700 combined 240ppm/2Line	L Co./China (Nanjing) L Co./China (Nanjing)
2020	02 04	Cylindrical 18650/220ppm/3Line Cylindrical 14500/130ppm/1Line	L Co./Korea (Ochang) B Co./China Brand H
	07	Cylindrical 18650/220ppm/1Line	B Co./Chinese Brand S
	08 10	Cylindrical 18650/240ppm/2Line Cylindrical 21700/240ppm/2Line	L Co./China (Nanjing) L Co./China (Nanjing)
2021	03	Cylindrical 18650/200ppm/2Line Cylindrical 21700/200ppm/1Line Cylindrical 21700/260ppm/2Line	B Co./Chines Brand S B Co./Chines Brand S L Co./China (Nanjing)
	04	Cylindrical 18650 200ppm/1Line	B Co./Chines Brand S
	05	Cylindrical 21700/260ppm/2Line	L Co./China (Nanjing)
	06	Cylindrical 21700/260ppm/12Line	



Core Competitiveness (Patent)

Patents related to cylindrical secondary battery assembly equipment

- **Title of the invention** : Orthogonal direction conversion device for cylindrical steel cans
- **Patent registration number** : 10-2036495
- **Registration Date** : 2019. 10. 25
- **Effect of the invention** : Improves the productivity of lithium-ion batteries by enabling accurate and rapid conversion of steel can having a cylindrical shape to a right angle direction.



- **Title of invention** : Uniform pressurization device for outer peripheral surface of cylindrical secondary battery
- **Patent application number** : 10-2021-0041804
- **Application Date** : 2021.03.31
- **Effect of the invention** : Cylindrical secondary battery can be manufactured in a uniform target shape, thereby reducing the shape deviation of the final product and increasing the yield by minimizing the defect rate



- **Title of invention** : Oxygen supply device for circulating freshwater pond
- **Patent registration number** : 10-1204506
- **Registration Date** : 2012.11.19
- **Effect of the invention** : It is possible to increase the dissolution efficiency of oxygen by improving the contact area with oxygen in the process of dropping water pumped from the freshwater reservoir, thereby increasing the water quality improvement efficiency.



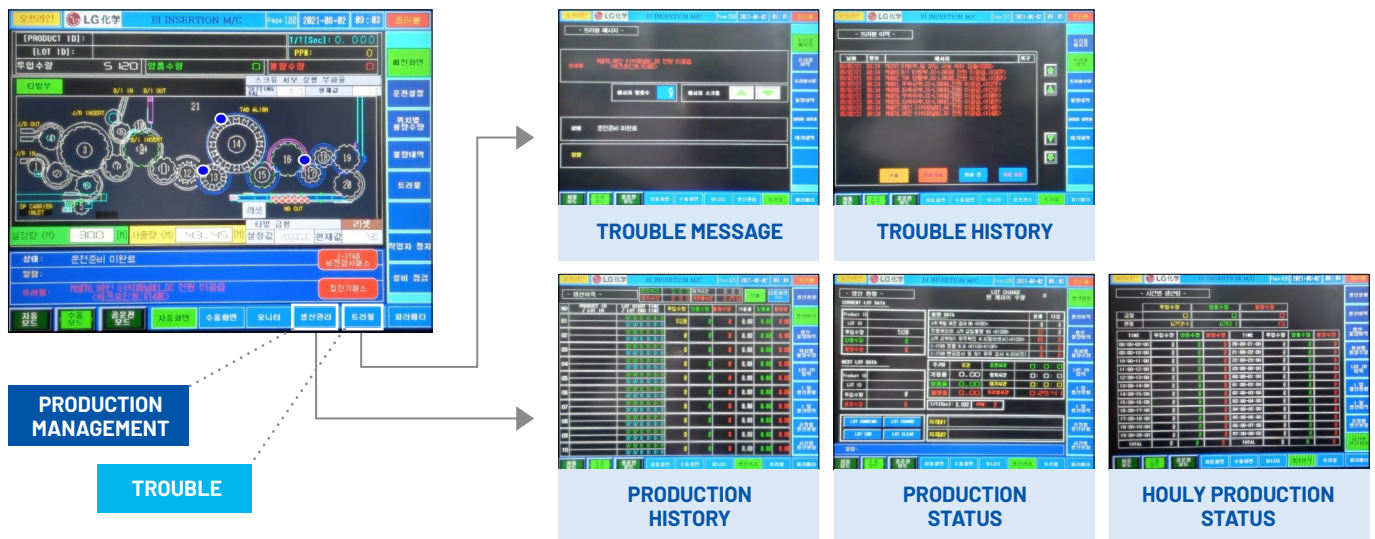
- **Title of invention** : Rotational transfer device for cylindrical secondary battery including a guide unit
- **Patent application number** : 10-2021-0041809
- **Application Date** : March 31, 2021
- **Effect of the invention** : It is possible to fundamentally prevent the occurrence of scratches on the surface of the can of cylindrical secondary battery or the deformation of the can itself and transport it safely





Core Competitiveness (Machine)

Possession of facility control technology through touchscreen



- Show cell location tracking
- Display the history and location of each process trouble type
- Daily production data display and save
- Aggregation and display of utilization rate, production volumes, and defects

Possession of process product inspection technology through vision

VISION INSPECTION SYSTEM





Products

J/R LOADER M/C & CAN LOADER M/C



TRAY LOADING AND TRANSPORT

TRAY FEED LIFTER

TRAY TRANSFER

CARRIER SUPPLY

TRAY TRANSPORT AND EJECTION

B/I INSERT M/C

B/I, (-)TAP INSPECTION

· JR SUPPLY: 18EA * 18EA = 324EA
· CAN SUPPLY: 17EA * 18EA = 256EA

B/I INSERT M/C



J/R LOAD M/C

ADJUST (-)TAP POSITION

B/I INSERT

(-) TAP SORT

(-) TAP 1ST BANDING

(-) TAP 2ND BANDING

B/I, (-) TAP INSPECTION

CAN INSERT M/C

CAN INSERT M/C



B/I INSERT M/C

(-) OUT TAB 1ST BANDING

(-) OUT TAB 2ND BANDING

CAN SUPPLY

CAN INSERT

J/R 180°TURN

(-)TAB WELDING & SWAGE M/C

(-) TAB WELDING & WAGE M/C



CAN INSERT M/C

J/R CORE INSPECTION

(-)TAB WELDING

180°REVERSE

SWAGE

180°REVERSE

EXTERNAL INSPECTION

T/I INSERT / HIPOT CHECKING M/C



Products

TI INSERT & HIPOT CHECKING M/C



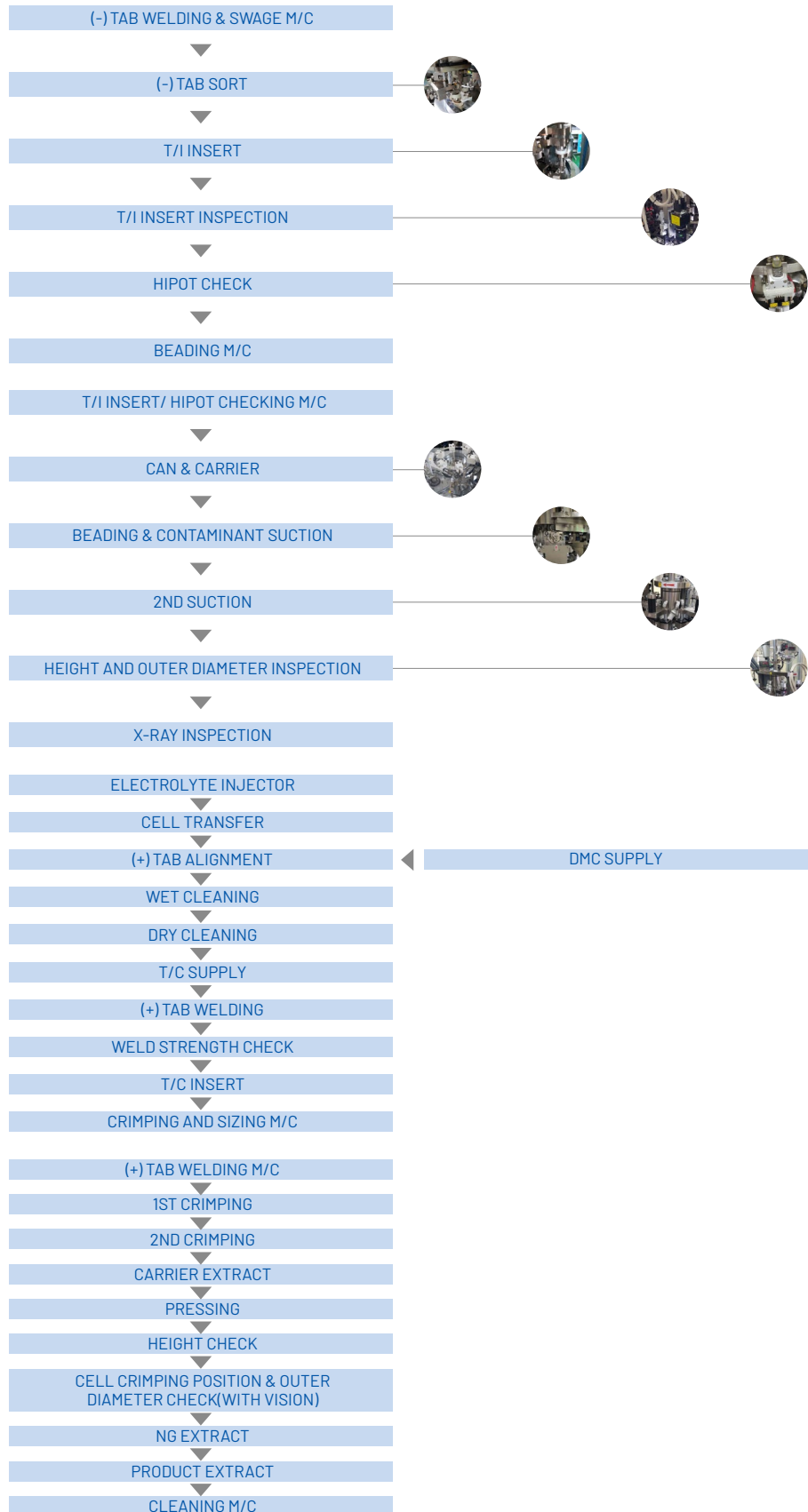
BEADING M/C

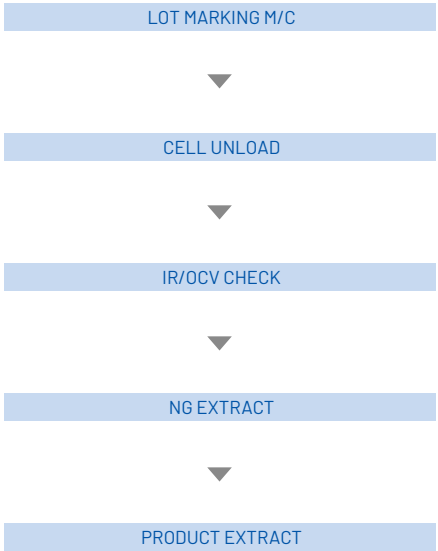
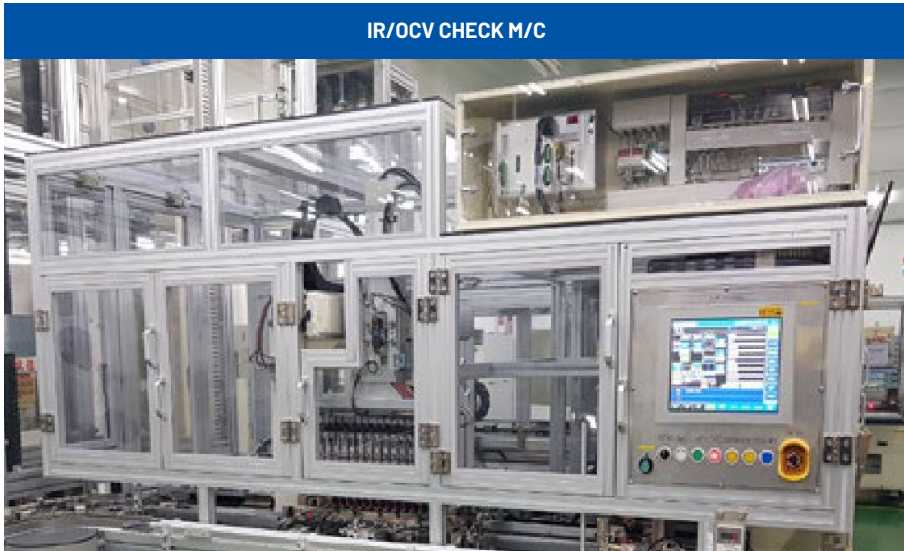
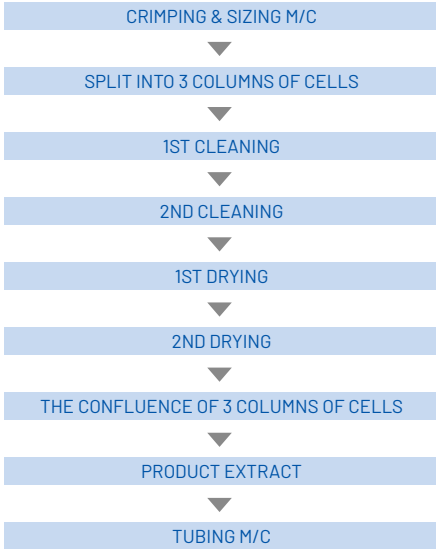


(+) TAB WELDING M/C



CRIMPING AND SIZING M/C





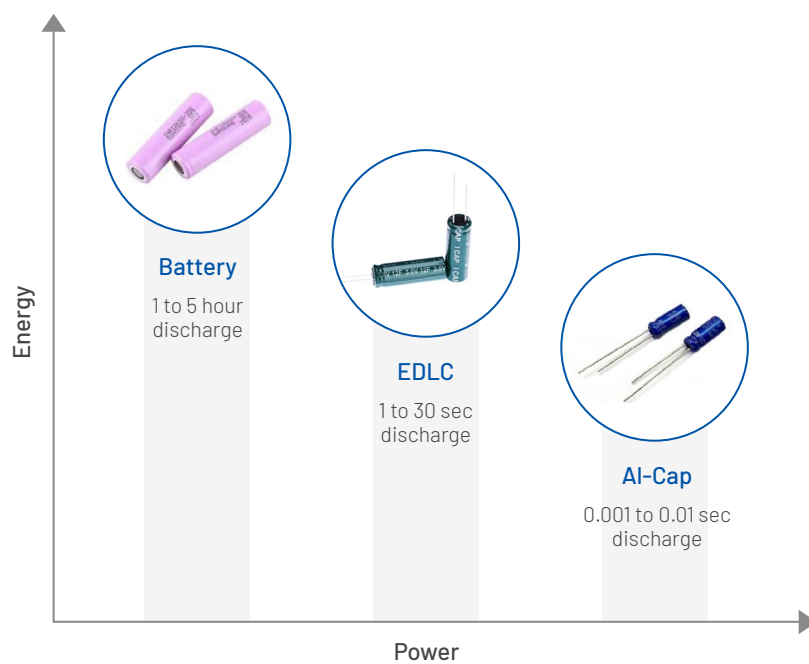




Second Business

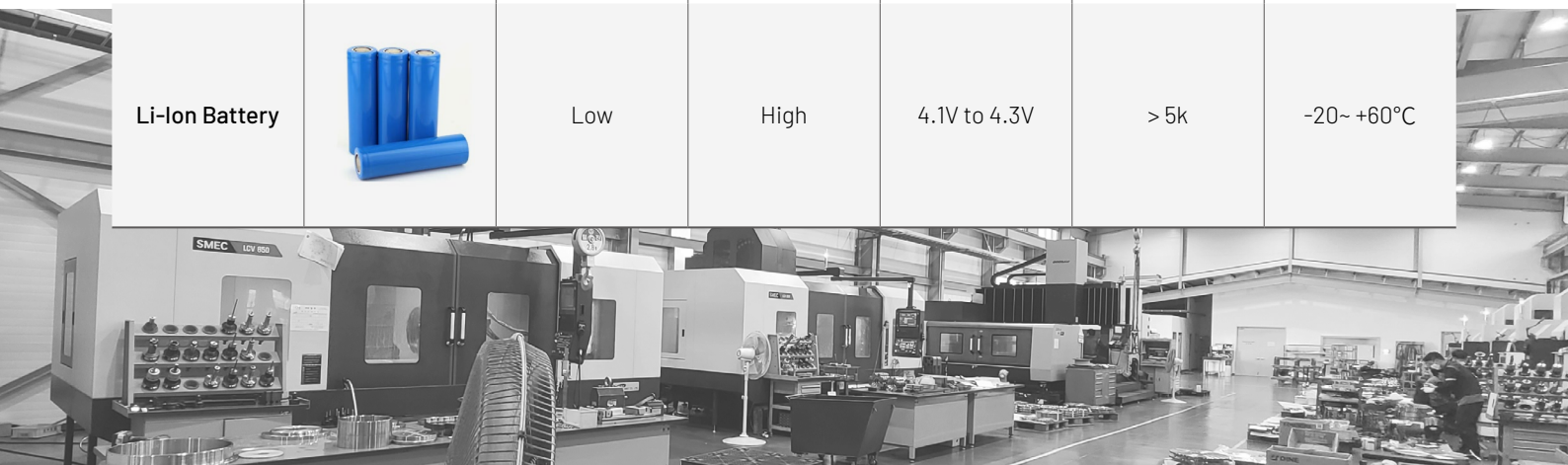
The second business is to manufacture supercapacitors (=including LIC_ Li-Ion Capacitor) and provide them to our customers.

Introduction

EDLCs are a greener solution for energy storage that offers low energy density and high power density when compared to traditional battery technology. With high current capabilities, rapid charge, and discharge rates, and an impressive cycle life of up to 1,000,000 cycles, EDLCs deliver reliable and long-lasting performance in a wide range of temperatures from -40°C to +85°C.



Item	Feature	Power Density	Energy Density	Rated Voltage	Cycle Life	Operating Temperature
EDLC (Electric Double Layer Capacitor)		High	Low	2.7V to 3.0V	> 1,000k	-40 ~ +85°C
Li-Ion Battery		Low	High	4.1V to 4.3V	> 5k	-20~ +60°C





Dongjin industry started the battery manufacturing business based on its excellent assembly equipment technology. Recently, we completed the development of a small supercapacitor with excellent output characteristics, and we remain committed to introducing new products. Dongjin's supercapacitor has a patented anti-wetting structure ensuring low resistance and high energy density.

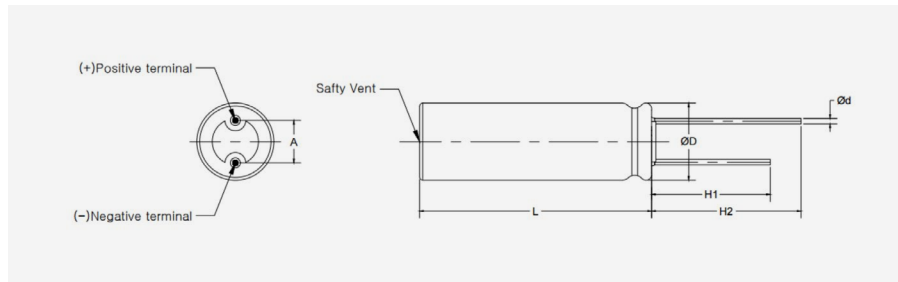
FEATURES AND BENEFITS

- Extremely high power density
- High energy density
- Low resistance (AC, DC-ESR)
- Excellent cycle life > 1,000,000 duty cycles
- Operating temperature range (-40°C ~ +65°C)
- **Anti wetting** technology applied to supercapacitor



DRAWING

Unit : mm



D(ø)	10	13	16	18
A (±0.5)	5.0	5.0	7.5	7.5
d(ø)	0.7	0.7	0.8	0.8
H	H1 : Min.15 / H2 : Min.19			

PRODUCT SPECIFICATIONS

Part number	Rated Voltage (V)	Capacitance	Internal resistance (mΩ)		Leakage current (μA, 72hr)	Size (mm) D x L	Volume (mℓ)
			AC-ESR @1kHz	DC-ESR @10msec			
DEL 3R0 905	3.0	9	20Typical/ 35Maximum	25Typical/ 40Maximum	30	10 x 25	2.0
DEL 3R0 126		12	15Typical/ 20Maximum	20Typical/ 30Maximum	30	10 x 30	2.4
DEL 3R0 116		11	20Typical/ 30Maximum	30Typical/ 40Maximum	30	13 x 20	2.7
DEL 3R0 156		15	15Typical/ 25Maximum	25Typical/ 35Maximum	45	13 x 25	3.3
DEL 3R0 356		35	10Typical/ 20Maximum	20Typical/ 30Maximum	40	13 x 46	6.1
DEL 3R0 256		25	10Typical/ 15Maximum	15Typical/ 25Maximum	75	16 x 25	5.0
DEL 3R0 506		50	7Typical/ 12Maximum	12Typical/ 17Maximum	130	18 x 35	9.0
DEL 3R0 606		60	5Typical/ 10Maximum	10Typical/ 15Maximum	150	18 x 40	10.2



Product Characteristics

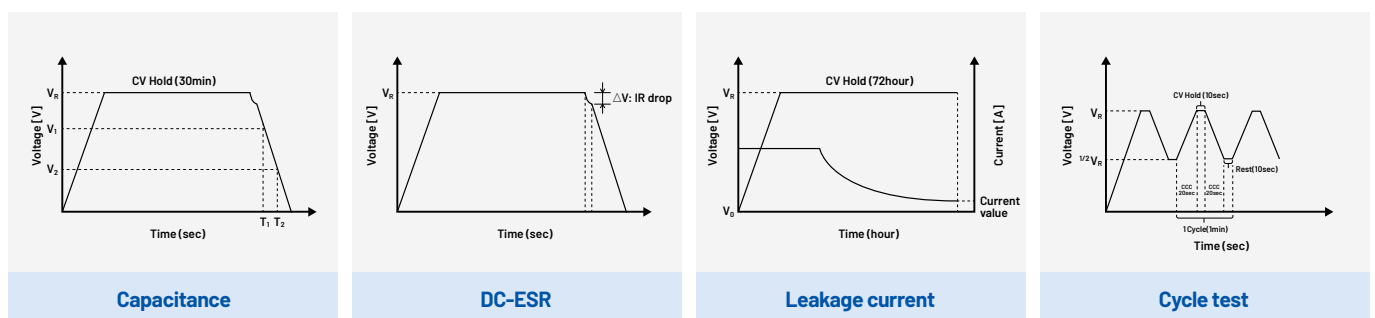
EDLCs are a greener solution for energy storage that offers low energy density and high power density when compared to traditional battery technology. With high current capabilities, rapid charge, and discharge rates, and an impressive cycle life of up to 1,000,000 cycles, EDLCs deliver reliable and long-lasting performance in a wide range of temperatures from -40°C to +85°C.

Item	Performance
Voltage range	Rated Voltage 3.0V
Capacitance tolerance	-10 ~ +20% (at 25°C)
Operating temperature range	Rated Voltage V_R @3.0V -40°C ~ +65°C
	Rated Voltage V_R @2.5V -40°C ~ +85°C
Endurance (2.5V:70°C/2.7V:65°C/3.0V:60°C)	Test time: 1,000hours
	Capacitance change ≤ 30% of specified value
	Internal resistance ≤ 2 times of specified value
Cycle life characteristics (at 25°C)	1,000,000cycles
	Capacitance change ≤ 30% of specified value
	Internal resistance ≤ 2 times of specified value
Shelflife	After 2years at 25°C without load ($\Delta C_R \leq 10\%$ of initial value / $\Delta ESR \leq 100\%$ of specified value)

NOTES

- $C_R = \frac{I \times (t_2 - t_1)}{V_2 - V_1}$
- DC-ESR = $\frac{\Delta V}{I}$ (25°C, 10msec & 50msec)
- Current measured after 72 hours of constant voltage hold at V_R and 25°C
- Current needed to discharge cell or module from V_R to $1/2 V_R$ in 1 second.
Maximum peak current $I = \frac{1/2 CV}{C \times ESR_{DC} + 1s}$
- Current measured after 72 hours of constant voltage hold at V_R and 25°C
- Energy $E = \frac{1/2 CV_R^2}{3,600}$
- Specific energy $E = \frac{1/2 CV_R^2}{3,600 \times \text{mass}}$
- Energy density $E = \frac{1/2 CV_R^2}{3,600 \times \text{volume}}$
- Specific power $E = \frac{V_R^2}{ESR_{DC} \times 4 \times \text{mass}}$
- Power density $E = \frac{V_R^2}{ESR_{DC} \times 4 \times \text{volume}}$

Measurement figure





Applications

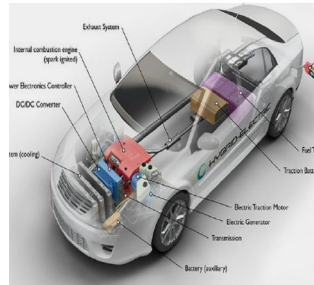
Memory Back-Up

- Black Box
- Navigation
- SSD



Power Support

- Smart Meter
- HEV Power Assist
- Automotive Fail-Safe Applications



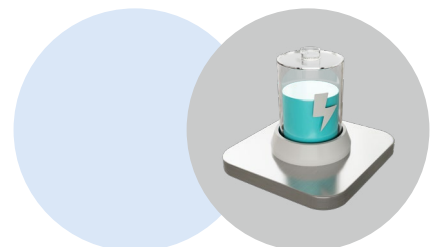
Energy Storages

- Smart -Pole
- Road Lamp
- UPS



Power

- Remote Control
- Wireless Device
- Automotive Jump Starter





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