

# THERMAL

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B A T T E R I E S



# THERMAL

## The Company

HBL is the largest manufacturer of specialised batteries in India, for Industrial, Telecom, Railways and Defence applications. HBL offers its customers the most appropriate batteries from the various battery types—lead acid nickel cadmium, silver zinc, and lithium thermal batteries. The company has an annual turnover of around \$150 million and very substantial design and development capabilities in-house.

HBL has an extremely active defence business, and we do this while meeting the confidentiality and security needs of our partners and end-users. HBL batteries are used for defence applications such as Silver Oxide Zinc batteries for Torpedo Propulsion, Sealed Lead Acid Batteries for use on Battle Tanks and APC, Lithium Thermal batteries for use in Missiles and Torpedoes, Lithium Reserve batteries for Fuzes, and Nickel- Cadmium batteries for defence aircraft, helicopters, and UAVs. We are also specialist suppliers of propulsion batteries for diesel-electric submarines.

HBL can design, develop, manufacture, test, and supply batteries for these applications for the Indian ministry of defence and international OEMs or for replacement in the aftermarket.

We assist foreign defence contractors in meeting the offset obligations stipulated in many major defence contracts. HBL has a proven track record of maximising the offset credit available. We also provide products with approved export programs for military organizations outside India.

## COMPETITIVE ADVANTAGES

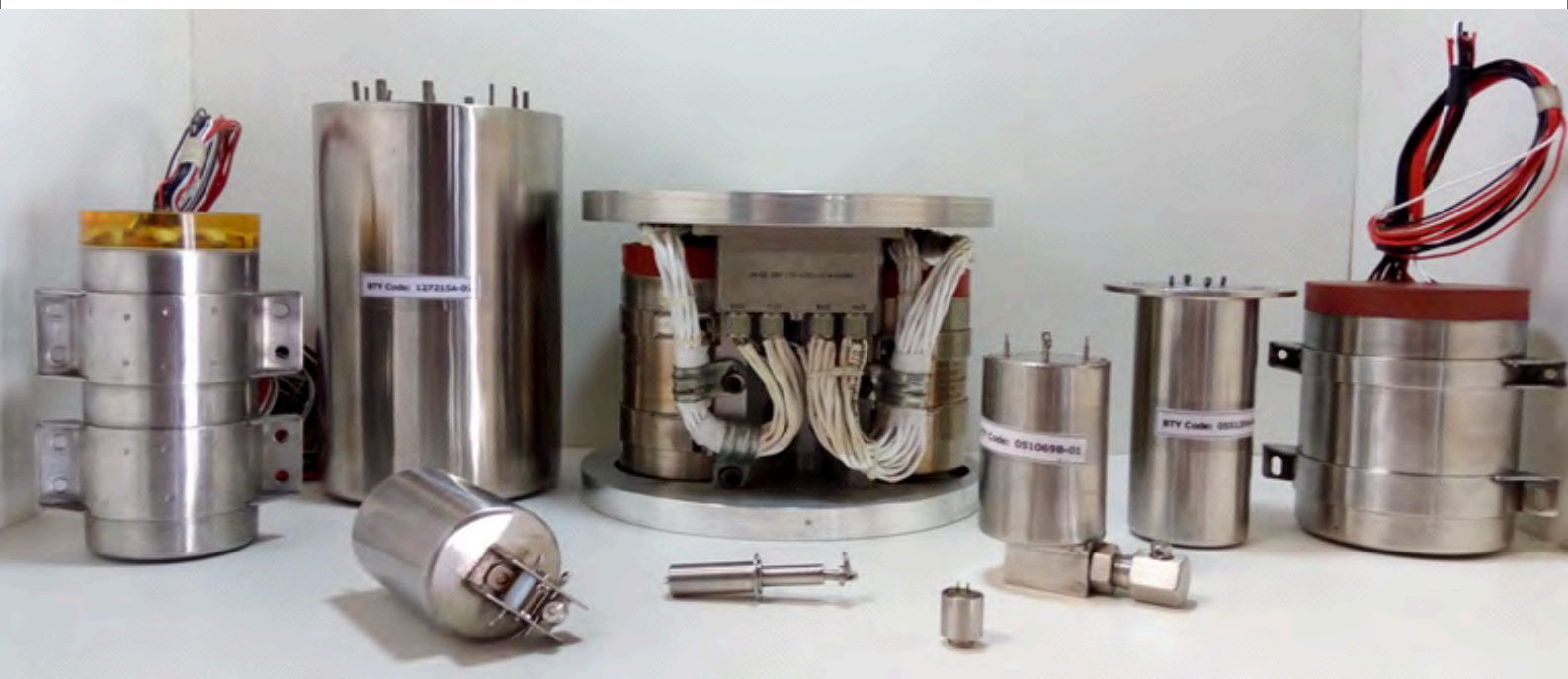
- ⊙ Globally recognized in the defence sector
- ⊙ Most product technologies are developed in-house
- ⊙ More than 20 years of experience
- ⊙ HBL products are not subject to ITAR restrictions
- ⊙ HBL's lean structure offers quick turnaround times
- ⊙ The Capability to develop and offer suitable solutions
- ⊙ A Single source for various Aviation, Army and Naval battery applications

## HBL Capability

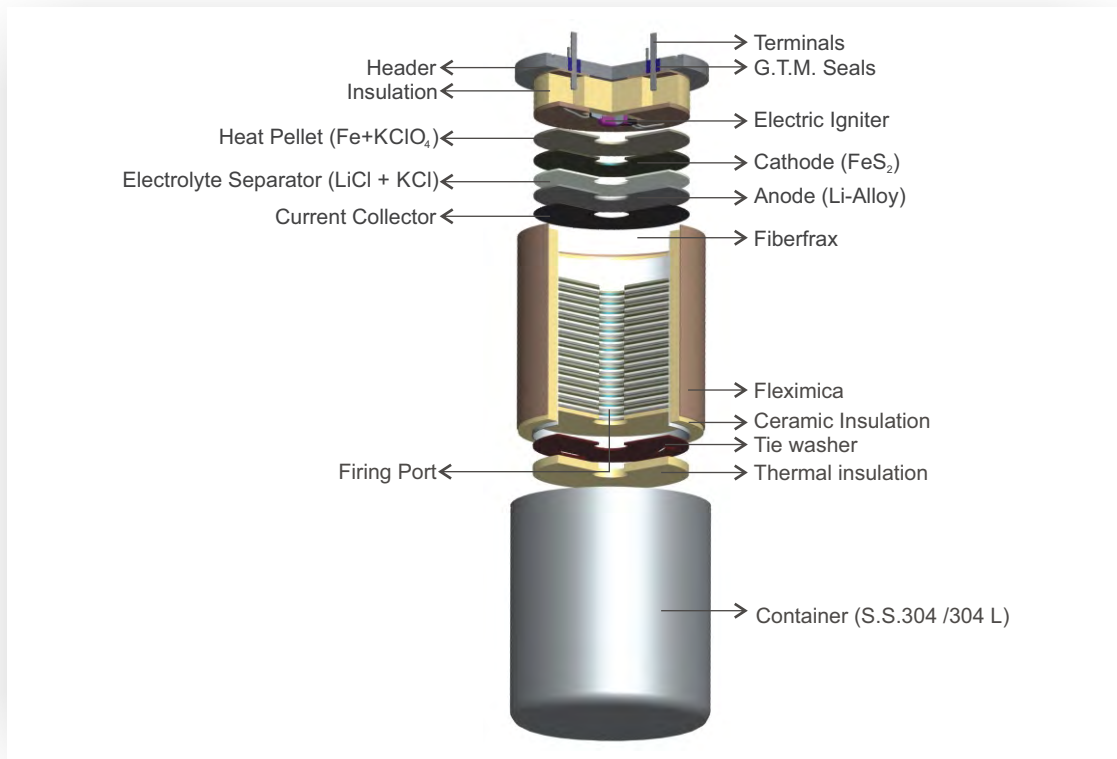
- ⊙ Non-Recurring Engineering development capabilities for customized batteries
- ⊙ HBL has state-of-art manufacturing facility for serial production for specific programs

## Testing facility at HBL

- ⊙ NABL Accredited Central Test Facility (CTF)
- ⊙ Vibration (Three Axis)
- ⊙ Acceleration
- ⊙ Tropical Exposure
- ⊙ Functional Shock
- ⊙ Salt Fog



## Typical battery Construction



HBL Thermal Battery ranges from [5-150V]. We supply custom – built batteries. The technology is based on Lithium alloy and Iron Di-sulphide. The technical specifications of batteries are :

Diameter	:	13 to 127mm
Height	:	15 to 250mm
Voltage	:	5 to 150V
Capacity	:	milli Watt to 16KWatt
Operating Life	:	1second to 60 minutes
Operating temperature	:	-54° C to +71° C
Activation System	:	Electric /Mechanical primer (percussion)
Shock	:	20 - 250g for 8 ms
Random Vibration	:	Upto 14 grms (higher levels can be supplied)
Acceleration	:	Upto 90 g

## Thermal battery Application:

- ⊙ Short range and long-range missiles - Air to Air, Surface to Air
- ⊙ Anti- tank missiles, Rockets, Guided bombs
- ⊙ Guided artillery
- ⊙ Torpedoes Swim out
- ⊙ Counter-measure devices
- ⊙ Guided bombs
- ⊙ Pilot seat ejection system
- ⊙ Space applications
- ⊙ Telemetry and range safety

## Certification





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## Technical Specifications

Battery Code	Current Amp	No of Section	Operating Voltage Volts	Life Sec	Rise Time sec	Operating Temp.		Weight (max) Kg	Primer Type
						Max °C	Min °C		
127192A-01	100A	One	87 to 135	65	1.2	35	-4	5.7	Electric Igniter
112228A-01	41A	One	36 to 50	300	2	63	-35	6.5	Electric Igniter
034052B-01	1A	Two	+9/-9	27	0.5	60	-20	0.14	Electric Igniter
042075A-01	4A	One	42±4	27	0.5	60	-20	0.3	Electric Igniter
044060A-01	6.5A	One	28±4	27	0.5	60	-20	0.5	Electric Igniter
047145A-01	20A	One	28±4	60	1.4	55	-20	0.57	Electric Igniter
055135A-01	12A	One	48 to 66	30	1.4	71	-40	0.8	Electric Igniter
047135A-01	7A	One	24 to 33	100	1.4	71	-40	0.53	Electric Igniter
050135A-01	7A	One	24 to 33	165	1.4	71	-40	0.58	Electric Igniter
063120B-01	2A	Two	35 to 47	450	1.5	Ambient		1.0	Electric Igniter
044135A-01	5.25A	One	56±8	50	1.4	55	-40	0.53	Electric Igniter
044135B-01	5.8A	Two	19.5 to 25	120	1.4	55	-40	0.53	Electric Igniter
055135A-02	12A	One	28±4	100	1.4	71	-40	0.8	Electric Igniter
047135A-02	10A	One	28±4	100	1.4	71	-40	0.53	Electric Igniter
047070B-01	10A	Two	15±2	40	0.6	55	-30	0.3	Electric Igniter
047070A-01	5.5A	One	28±4	40	0.6	55	-30	0.3	Electric Igniter
013035A-01	1A	One	5 to 10	0.5	0.2	55	-30	0.03	Percussion
063135A-01	12A	One	24 to 33	165	1.4	71	-40	1.05	Electric Igniter
055135A-03	10A	One	24 to 33	165	1.4	71	-40	0.8	Electric Igniter
055135A-04	2A Constant, 24A 100ms Pulse	One	28±4	150	1.0	55	-30	0.67	Electric Igniter
080190A-01	65A	One	38.75± 11.25	55	2.0	55	-20	2.5	Electric Igniter
055170A-01	2A for 110 sec, 15A for 30 sec	One	32±51	40	1.0	55	-20	1.0	Electric Igniter
080135A-01	25A	One	28±4	180	1.0	55	-20	3.0	Electric Igniter
055055B-01	6.67A	Two	19.5±3	40	0.5	55	-30	0.33	Electric Igniter
034064A-01	2.8A	One	6.25 to 11	13	0.5	55	-54	0.18	Electric Igniter
034082B-01	Sec I: 1.3A Sec II: 7A	Two	Sec-I: 20 to 27V, Sec II: 4.5 to 11V	13.3	0.65	71	-54	0.19	Electric Igniter
043068B-01	6A	Two	+15/-15±2	40	0.6	55	-30	0.3	Electric Igniter
095115A-01	11.5A	One	38 to 50	450	0.5	Ambient		2.2	Electric Igniter
063120A-01	4.75A	One	35 to 47	450	1.0	Ambient		0.82	Electric Igniter
100220A-01	8A	One	26 to 36	1500	1.0	55	-20	4.6	Electric Igniter
047160A-01	2.5A	One	24 to 32	500	1.0	71	-40	0.8	Electric Igniter
102155A-01	15A	One	24 to 32	500	1.0	71	-40	2.6	Electric Igniter
043068A-01	4.4A	One	24 to 32	60	1.0	Ambient		0.3	Electric Igniter
080140A-01	15.6A	One	24 to 32	250	1.0	55	-20	1.9	Percussion
080160A-01	15A	One	28 ± 4	500	1.0	55	-20	2.1	Electric Igniter
112230A-01	35A	One	45 to 75	500	1.0	55	-20	6.2	Electric Igniter
045130A-01	5A	One	75±15	60	1.0	35	0	0.5	Electric Igniter
090135A-01	5A	One	29 – 36	450	1.0	55	-10	3.0	Electric Igniter
114145A-01	4A	One	29 – 36	1300	1.0	55	-10	4.0	Electric Igniter
025060A-01	0.35A	One	20 – 32	40	0.5	55	-40	0.15	Electric Igniter
055135A-05	12A - 90s, 16A - 90s to 120s	One	24 – 32	120	1.0	55	-20	0.8	Electric Igniter
043047A-01	1.5A	One	15 – 18	20	1.0	50	-50	0.18	Electric Igniter
051100C-01	Sec-I 0.5A, Sec-II 0.5A, Sec-III- 3A for 30s	Three	34 – 46	60	1.0	55	-72	0.8	Electric Igniter
063090A-01	0-195s: 6A 195-220s: 8A	One	22 - 34	220	0.8	40	-71	0.7	Electric Igniter
032050A-01	0.8 Constant, 3A	One	10.8 - 16.8	35	0.45	60	-35	0.11	Electric Igniter
080190A-01	6A	One	26 – 36	210	1.0	55	-10	3.0	Electric Igniter
063135A-01	0.5A	One	24 – 36	450	1.0	55	-10	2.0	Electric Igniter
130230A-01	8A	One	28 – 36	1300	1.0	55	-10	10.0	Electric Igniter
130230A-01	6A	One	26 – 36	2700	1.0	55	-20	9.0	Electric Igniter

CODE: Alpha Numeric

Digits: First three: Diameter (mm)

Alpha: A=Single section

Second three: Height(mm)

B=Two sections

Last two: Type

C=Two sections etc

# HBL®

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