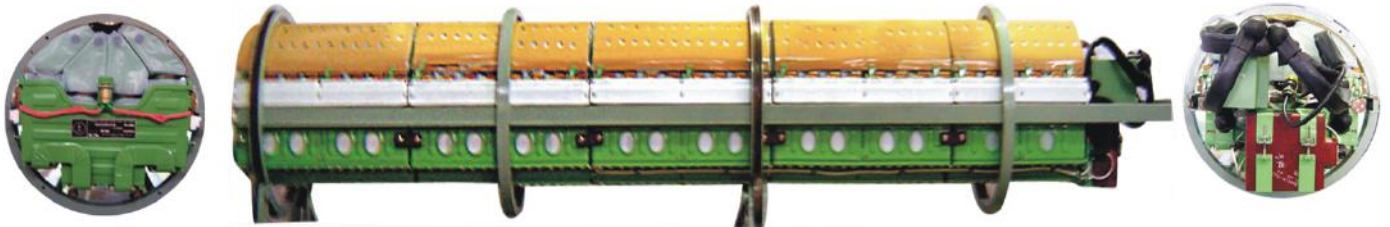


SZ

Silver Zinc Batteries for Torpedo, Missile and Aircraft Applications



Introduction:

HBL Power Systems Limited was incorporated in 1977, as Hyderabad Batteries Limited. The company started as a small-scale industry to focus on the niche markets serving defence and other specialized applications. The company was promoted based on the confidence in indigenous talent to develop technologies for strategic products. At that time such products were desperately needed due to foreign resources crunch.

Military products considered to be of strategic importance were available only at exorbitant prices. Technology transfer or License manufacture was virtually impossible. Even where technology was available financial viability was very poor. It was imperative that technology was developed indigenously.

The volume of demand for such products necessitated development of appropriate technologies and manufacturing systems to ensure compliance to the most stringent military standards. In this effort, the support received from various agencies of the MOD such as the Directorate of Naval Armament Inspection, helped HBL a long way in progressing the development activity rapidly and providing battery products of strategic importance to the nation. It is this support and encouragement that gave HBL the confidence and the impetus to take on challenges, relying totally on indigenous talent.

Advanced Products Group

- (a) HBL started the Silver Zinc Battery Division as an R&D unit in the year 1980
- (b) Over the last 35 years we have been working extensively on AgO/Zn, AgCl/Mg & AgO/Al chemistries
- (c) We developed several indigenous Silver Batteries – both Primary and Secondary for Defence Sector Applications
- (d) All our Batteries utilize proven In-house technologies
- (e) Our Silver Batteries are designed and manufactured to conform with relevant International Naval, Air-force and Military standards.
- (f) HBL has expertise in designing, developing and manufacturing Batteries to suit customized applications also

About Silver Oxide Zinc Batteries

Silver Zinc Batteries : These Batteries are generally employ Silver oxide zinc chemistry to provide very high current requirement of Torpedoes (LWT and HWT), Aircrafts and Missiles. Potassium Hydroxide Solution is the electrolyte used in the battery.

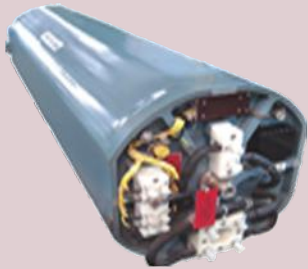
Silver Chloride Magnesium Batteries : These batteries are generally empty Silver chloride Magnesium chemistry to provide very high current requirements of Torpedoes Sea Water is the electrolyte (upon entry) used in these batteries.

Activation of primary batteries : The electrolyte is stored in a Suitable Container located inside the batteries but away from the Cells that house the electrodes Different activation mechanisms are used in different batteries to fill the cells with the electrolyte. Once activated, the batteries take around 2-5 Seconds to Supply the required Power.

HBL Power Systems Limited, Hyderabad manufactures a wide range of these batteries to suit different requirements. Batteries are made for combat as well as practice requirements and both types of batteries conform to the stringent specifications of the Customer. HBL's batteries have also been type tested as per customer requirement.

BATTERIES DEVELOPED FOR TORPEDO APPLICATION

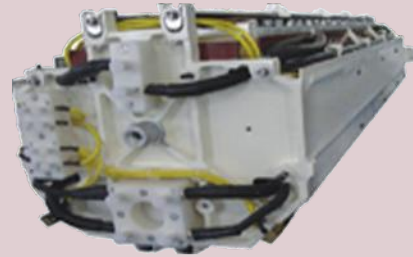
HBL-SZ-110



Application :
Combat Torpedo SUT German Origin

Dimensions : 1733 (L)∅475mm
Weight : 402 ± 6 kg

HBL - SZ - 120



Application :
Practice Torpedo SUT - German Origin

Dimensions : 1729 (L)428 (w) x 458 (H)mm
Weight : 395+3/-0 Volts

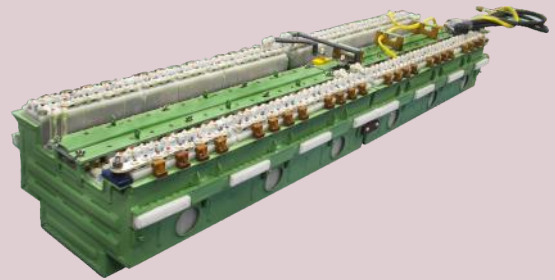
HBL - SZ - 238



Application:
Combat Torpedo CET 65E / TEST 71M ☺
Russian Origin

Dimensions : 3202 (L) X ∅475 mm
Weight : 665.7 kg (max)

HBL - SZ - 180



Application:
Practice Torpedo CET 65E / TEST 71M ☺
Russian Origin

Dimensions : 3202 (L) X ∅475 mm
Weight : 665.7 kg (max)

HBL - SZ - 216



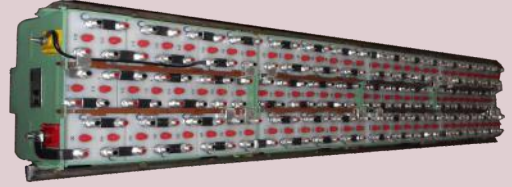
Application :

Combat Torpedo CET 53 M Russian Origin

Dimensions : 2126mm (L) X ϕ 475mm X 345 (H) mm

Weight : 430 Kg (max)

HBL - SZ - 300



Application :

Practice Torpedo CET 53 M - Russian Origin

Dimensions : 1940 (L) X 470 (w) x 350 (H)mm

Weight : 405 Kg (max)

HBL - SZ - 270



Application:

Combat Torpedo Varunastra - Indian origin

Dimensions : 2530 (L) X ϕ 480 mm

Weight : 650 kg (max)

HBL - SZ - 200



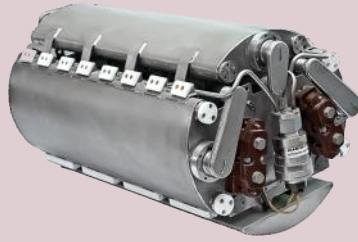
Application:

Practice Torpedo Varunastra - Indian origin

Dimensions : 2418 (L) X ϕ 480 mm

Weight : 605 kg (max)

HBL - SZ -71



Application:

Combat Torpedo AT1ME Russian Origin

Dimensions : 788.5 X \varnothing 405 mm

Weight : 116 \pm 1 kg (max)

HBL - SMSWA - 18



Application:

Combat Torpedo A244S - Italy / France origin
Silver Chloride magnesium sea water activated latter

Dimensions : 289 (H) X \varnothing 310 mm

Weight : 34 \pm 1 kg (max)

HBL - SZ-2



Application:

Combat Torpedo APR2E - Russian Origin

Dimensions : 187 (H) X \varnothing 170 mm

Weight : 5.0 kg (max)

BATTERIES DEVELOPED FOR MISSILE APPLICATION

HBL - SZ - 18



Application:

Surface to Air Missile P-15, P-20E, P-22 Russian Origin

Dimensions : 280 (L) X 230 (W) X 280 (H)mm

Weight : 22±1 kg

BATTERIES DEVELOPED FOR AIRCRAFT APPLICATION

HBL - SZ - 45



Application:

Aircraft Engine Cranking and Standard by Power Source

Dimensions : 427 (L) X 130 (W) X 225 (H) mm

Weight : 17.9 kg (max)

HBL

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