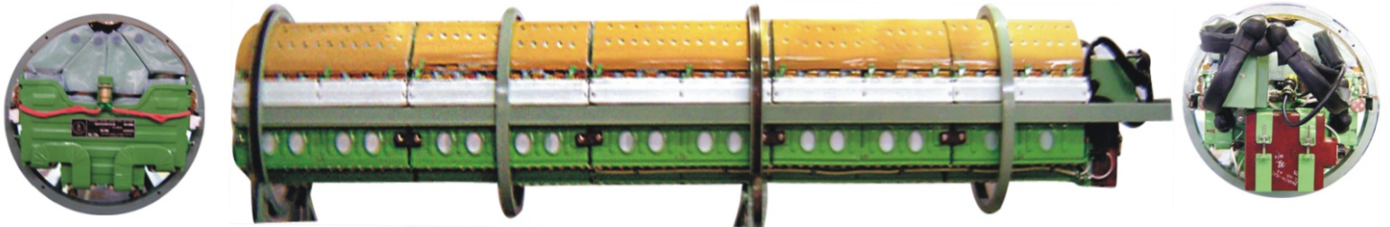


## SZ

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 employ 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)ø475mm  
**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 kg

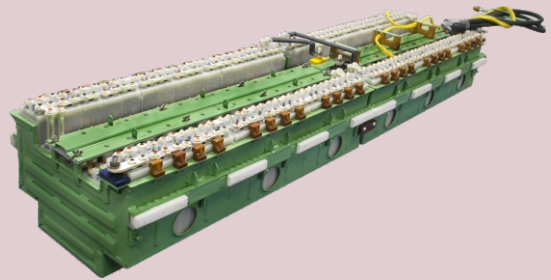
**HBL - SZ - 238**



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

**Dimensions :** 3202 (L) X ø475 mm  
**Weight :** 665.7 kg (max)

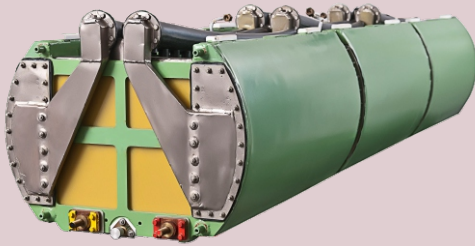
**HBL - SZ - 180**



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

**Dimensions :** 3202 (L) X ø475 mm  
**Weight :** 665.7 kg (max)

### HBL - SZ - 216



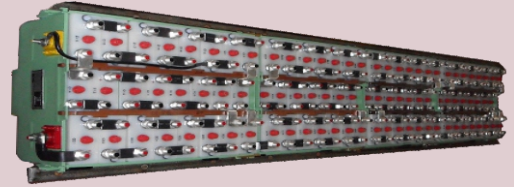
**Application :**

Combat Torpedo CET 53 M Russian Origin

**Dimensions :** 2126mm (L) X  $\phi$ 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  $\phi$ 480 mm

**Weight :** 650 kg (max)

### HBL - SZ - 200



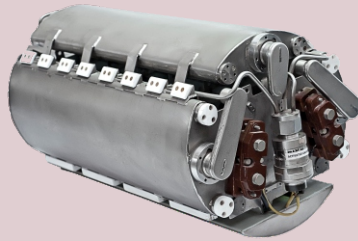
**Application:**

Practice Torpedo Varunastra - Indian origin

**Dimensions :** 2418 (L) X  $\phi$ 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 Standby Power Source

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

**Weight** : 17.9 kg (max)

# HBL

**HBL Power Systems Limited**

8-2-601, Road No.10, Banjara Hills, Hyderabad - 500034, TG, INDIA

E-mail : [contact@hbl.in](mailto:contact@hbl.in), website : [www.hbl.in](http://www.hbl.in)