



INDIAN DEFENCE INDUSTRY

A GLOBAL REACH





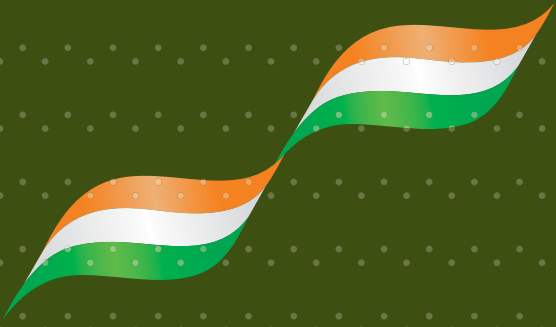
FOREWORD

Over the years, the Indian defence sector has witnessed substantial growth. Since 2002, the defence sector is fully open to the Indian private sector. Today, public and private sector, both with the extensive support given by the Government of India are able to design, develop and deliver state-of-the-art defence systems based on the latest indigenously developed technologies. These systems draw on the strength of proven software and hardware architectures and provide safety, security and threat management capabilities to armed forces.

Today, India's defence sector can deliver a wide variety of world class weapon systems that can play a critical role in a nation's security framework. Indian products aim to deliver defence solutions that are designed to meet the highest standards of quality, durability and affordability. This hand-book compilation aims to showcase the various tried and tested weapon systems that are currently operational. It also provides an insight into capability of Indian defence industries and the wide range of products developed by them for Indian defence forces which are available for exports with Government approval.







LAND SYSTEMS

AKASH



Description:

AKASH is a Short Range Surface to Air Missile System to protect vulnerable areas and points from air attacks. Akash Weapon System (AWS) can simultaneously engage Multiple Targets in Group Mode or Autonomous Mode. It has built-in Electronic Counter-Counter Measures (ECCM) features. The entire weapon system has been configured on mobile platforms.

Specifications:

- » Range of Operation : 4.5 km to 25 km
- » Altitude of Operation : 100 m up to 20 km
- » Length : 5870 mm
- » Diameter : 350 mm
- » Weight : 710 Kg
- » Guidance System : Command Guidance
- » Target types: Helicopters, Fighter aircraft, UAVs etc.
- » Fully automatic with quick response time from target detection to kill.
- » Open system architecture ensures adaptability to existing and futuristic Air Defence environments.
- » High immunity against active and passive jamming.
- » Secured mode of communication between combat elements.
- » Self-sufficient in electrical power with in-built power sources.
- » Road and rail transportable with quick mobilization and deployment capabilities.
- » In-built safety features with IFF.

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in
NSN 1420720471555



AKASH AIR DEFENCE WEAPON SYSTEM



Description:

The Akash air defence missile system is a medium range, surface-to-air missile system which provides area air defence against multifarious air threats to mobile, semi mobile and static vulnerable forces and areas. The system has cutting edge features with cross country mobility.

The real time multi sensor data processing and threat evaluation enables simultaneous engagement of multiple targets from any direction. The entire system is flexible, up scalable and can be operated in group and autonomous modes. It employs command guidance and relies on phased array guidance radar to guide the missile till intercept.

Specifications:

- » Range of Operation : 4.5 km to 25 km
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COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 1420720485432



BRAHMOS WEAPON SYSTEM



Description:

BRAHMOS supersonic cruise missile system is a precision strike weapon for Army, Navy & Air Force. This universal missile can be fitted in ships, Mobile Launchers, Submarines and Aircraft. BrahMos established accuracy, reliability, ease of operation, faster reaction time and practically no possible countermeasures. It has a range of 290 km and flies at supersonic speed all through the flight. This missile is capable of engaging any kind of land or naval targets beyond the horizon. It has a shorter flight time leading to lower target dispersion and quicker engagement. BRAHMOS missile has a

wider range of flight trajectories and operates on "Fire and Forget" principle.

Specifications:

» Range	:	Up to 290 kms
» Speed	:	2.8 Mach
» Flight Altitude	:	5 m to 15 km
» Warhead	:	200- 300 Kg conventional
» Length	:	9000 mm
» Diameter	:	700 mm
» Weight	:	3000 Kg

COMPANY : BrahMos Aerospace

CONTACT : praveenpathak@brahmos.com

NSN 1410720487334



NAG



Description:

NAG is a third generation Anti-Tank Guided Missile (ATGM) with Fire and Forget top attack capability.

Specifications:

» Length	:	1832 mm
» Diameter	:	150 mm
» Guidance	:	Passive Homing through IIR Seeker
» Control	:	Aerodynamic Tail Fin Control
» Warhead	:	Tandem
» Max Range	:	4000 metres
» Min Range	:	500 meters
» Missile Speed	:	220 - 230 m / sec
» All Up Weight	:	42 Kg
» Deployment	:	Namica & ALH
» Operation	:	Day & Night

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in



DHANUSH



Description:

Dhanush is the state-of-the-art gun system with an effective range of 38 km in plains and is equipped with high performance sub-system like INS based sighting system, auto-laying system and on-board ballistic computation and advanced day and night direct firing system. Dhanush is a multi-terrain weapon platform and is capable to negotiate and deploy itself in difficult hilly and mountainous terrain as well as in deserts. The barrel is 155 x 45 calibre with 23 litre Chamber volume and JBMOU compliant, compatible to both modular and bag charge system. Dhanush is in-service since 2018.

Specifications:

- » Calibre : 155 mm
- » Weight : < 13 Tons (approx.)
- » Range : Max. 38 kms (with ERFB BB) on plains
- » Elevation : Max. up to 70° (1245 mils),
Min. up to -3° (-53 mils)
- » Ammunition : HE M 107, ERFB-BT (HE), ERFB-BB (HE),
Illuminating, Smoke and is Compatible
with all NATO 155mm Ammunition System

COMPANY : Advanced Weapons and Equipment India Ltd.

CONTACT : marketing@aweil.in

NSN 1025 720 471 000



ADVANCED TOWED ARTILLERY GUN SYSTEM



Description:

The Advanced Towed Artillery Gun System is a 155 mm/52 calibre artillery system jointly designed and developed by ARDE (DRDO). Its futuristic and technically superior breech, with higher service pressure and can withstand pressure up to 560 Mpa. It can fire any type of ammunition.

COMPANY : Bharat Forge Limited
CONTACT : mohit.singh@bharatforge.com
NSN 1025720487409

Specifications:

- » 155 mm 52 Calibre Gun System
- » Firing range of 48.074 km (HE-ERFB BBI) & 38.569 km (HE-ERFB BT)
- » Zero backlash Electrical drives: Hydro-electric gun system
- » System has ability to fire Zone 7 charge
- » Elevation Angle : -3° to $+75^{\circ}$ with the speed of $5^{\circ}/s$
- » Ground clearance: 400 mm
- » Self-propelled capability with a speed of 20 kmph



155MM/ 52 CAL TRACKED SELF PROPELLED GUN K9 VAJRA-T



Description:

The K9 Vajra-T gun system has proven to withstand extreme weather conditions both in severely cold areas as well as in desert terrain. It is equipped with longer firing range with a higher rate of accuracy and effective state-of-the-art firing capabilities.

Specifications:

- » 155 mm/52 calibre tracked self-propelled gun system

COMPANY : Larsen & Toubro Limited
CONTACT : intl.defence@larsentoubro.com
NSN 2350720487383



BHARAT-52



Description:

It is a long-range 155 mm/52 calibre towed gun, providing a highly manoeuvrable field artillery solution. It has been designed for accuracy, stability and reliability during firing manoeuvres. It has a self-suspension arrangement which is achieved by using walking beam system which provides ease of maintenance. It has self-propelled capability with a speed of 21 kmph and is able to ride at Towing vehicle's speed during towed mode. It can fire any type of ammunition.

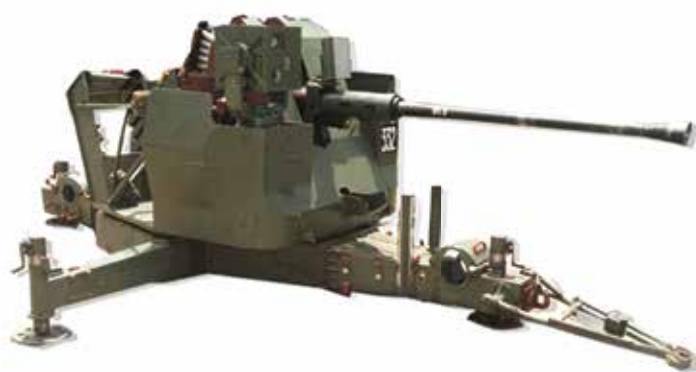
Specifications:

- » 155 mm 52 Calibre Gun System
- » Gun Dimensions : Length 10258 mm x Width 2880 mm x Height 2656 mm
- » Arc of fire (Traverse angle of fire) : $\pm 35^\circ$ to right and left, with the speed of $5^\circ/\text{s}$
- » Elevation Angle : -3° to $+72^\circ$ with the speed of $5^\circ/\text{s}$
- » Steering : Steer-by-wire method for maneuvering the artillery
- » Deployment time : 1 minute in day, and 1.5 minute in night
- » Weight : 15 ton
- » Equipped with fully automatic Load Assist System (LAS) with manual backup arrangement with rate of fire as follows :
 - Burst rate of fire : 3 rounds in 30 sec
 - Intense rate of fire : 12 rounds in 3 min
 - Sustained rate of fire : 42 rounds in 1 hr

COMPANY : Bharat Forge Limited
CONTACT : mohit.singh@bharatforge.com
NSN 1025720487410



UPGRADED L-70 GUN



Description:

L-70 Gun Upgrade is a fusion of the latest technologies in the areas of Electrical Servo Drives, Electro-Optical Fire Control System and Video Tracking. It has an Integrated Fire Control System with Optronic Sight Consisting of Eye SAFE LRF, DLTV AND TI.

Specifications:

- » Modes of Operation : Remote Power Control, Local Power Control & Back-up Mode
- » Power Source : MF Batteries with Charger and DG Set

Drive specifications:

- » Azimuth Travel : 360°
- » Elevation Travel : -5° to 85°
- » Laying Accuracy : 0.5 Mil (0.0286°)
- » Daylight TV Camera Magnification : 3 x (min); Field of view: 1.5° to 40°
- » Thermal Imager Wavelength : 3 – 5 µm; Field of View : 2.4° to 25° continuous zoom

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 1010 72 0463678

GARUDA-105



Description:

Garuda 105 is a light weight field gun based on the 105 Indian Field Gun and incorporates state-of-the-art soft recoil technology resulting in a lightweight, modular, high performance howitzer that can be designed to be integrated with many types of combat transportation. It has shoot and scoot capability.

Garuda 105 is ultra-light gun system which utilizes the high end Soft Recoil Technology. This allows the weapon (gun) to be placed on light vehicles and nonstandard platforms, including aircraft and coastal and river patrol watercraft. This high tech system is a force multiplier for the forward forces and will prove to be a complete game changer in the realm of weapon system.

Specifications:

- » 105 mm 37 Calibre Gun System
- » Extremely light weight : less than 1 ton
- » Ordnance used : Existing 105 LFG
- » Digital fire control, electrically controlled elevation and traverse
- » Elevation and Traverse -Elevation: -5° to 70°; Traverse: 360°
- » Rate of Fire -Normal Rate : 4 rds/min; Intense Rate: 6 rds/min

COMPANY : Bharat Forge Limited
CONTACT : mohit.singh@bharatforge.com
NSN 1015720487330



ZU 23 UPGRADE



Description:

The Zu-23 Upgrade converts the manually-laid gun into an all-electric system with autonomous functionality. It enables effective engagement of aerial and ground targets, Incorporates the automatic target tracker and complies with the operating and storage temperatures, humidity, dust and rain protection requirements for reliable and fault-free operation.

COMPANY : Larsen & Toubro Limited
CONTACT : intl.defence@larsentoubro.com
NSN 1005720487384

Specifications:

- » Modular construction for easy maintenance



UPGRADED SCHILKA WEAPON SYSTEM



Description:

The Upgraded Schilka system is a ZSU 23 mm, 4 barrel, advanced all weather self-propelled Air Defence Weapon System primarily designed to protect mobile formations against aircraft and helicopters. It consists of state of the art 3D planar Active phased-array solid state Radar and Electro Optical Fire Control system that ensures day and night capability for detection, acquisition and tracking of targets. The various phases of operation such as rapid acquisition of fast moving target, determination of the aiming point for the guns and ballistics of the projectiles, rapid laying of the guns on to the target and firing can be carried out when the vehicle is on the move or at halt. It has built-in simulator for operator training and has Nuclear Biological Chemical (NBC) protection system.

Specifications:

» Caliber	: 23 mm	» Max Range	: 2000 m
» No. of Barrels	: 4 x Automatic water-cooled barrels	» Operating Ranges	
		Radar Detection	: 15 km,
		Radar Tracking	: 9 km
» Rate of Fire	: 3400 rounds/minute for 4 guns	» Output Average Power:	49 w
		» Max speed on road	: 50 kmph
		» Max speed on cross country	: 30 kmph

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 2350 72 0464145

WEAPON LOCATING RADAR



Description:

Weapon Locating Radar (WLR) has been primarily designed to locate hostile guns, mortars and rockets. WLR, in its secondary role, can track and observe the fall of shot from own weapons to provide corrections to own fire. Detection, location and tracking of the requisite targets is handled by the advanced algorithms and State-of-the-art hardware. It has an Electronically scanned Phased Array Antenna.

The ability to locate enemy weapons from its first round and transmit the data of the required target to counter fire elements for retaliatory strike before the target is redeployed is the key feature of the radar with built in system BITE and a remote display.

Specifications:

» Weapon Locating Range	
• 81 mm or Larger Mortars	: 4 to 20 kms
• 105 mm or Larger Guns	: 6 to 30 kms
• Free Flight Rockets	: 6 to 40 kms
» Simultaneous targets tracked	: 7 (maximum)
» Time to bring Radar into action	: 30 minutes
» Time to bring Radar out of action for move	: 15 minutes
» Range	: 50 km
» Frequency band	: C band
» Elevation coverage	: 0° to 60°
» Shock, Vibration	: As per JSS 55555
» EMI/EMC	: MIL STD-461E

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 1285 72 0461381



TATA WHEELED ARMoured PLATFORM 8X8 (WHAP)



Description:

Tata Wheeled Armoured Vehicle is India's 1st indigenous 8x8 Wheeled Amphibious ICV jointly developed in collaboration with DRDO. It is a fully loaded vehicle with safety features such as Blast, Ballistic and NBC protection. Its Modularity and Scalability feature helps this vehicle to be easily modified to cater to various terrain condition and missions. A low maintenance vehicle, with a seating capacity of 10+2 people, the WhAP 8x8 comes in various variants such as Armoured Fighting vehicles, CBRN vehicle, Recce & Support vehicle, Medical Evacuation vehicle, Engineer Squad vehicle, Mortar Carrier, Commander's vehicle and Anti-Tank Guided Missile vehicle.

Tata WhAP is in-service with Indian Army.

COMPANY : Tata Advanced Systems Limited

CONTACT : pranav.singh@tataadvancedsystems.com

NSN 2355720487370

Specifications:

- » Mobility
 - Max Engine output : 600 HP @ 2000rpm
 - Max Torque : 2400 Nm @ 1500-1700 rpm
 - GVW : 22.5T (Amphibious) to 26T
- » Protection
 - Ballistic Protection : Modular from STANAG I to V
 - Blast Protection : upto STANAG III



BATTLE FIELD SURVEILLANCE RADAR - EXTENDED RANGE (BFSR-XR)



Description:

Battlefield Surveillance Radar - Extended Range (BFSR-XR) is a man portable, battery powered state-of-the-art Pulse Doppler Surveillance Radar capable of automatically detecting and displaying a diversity of moving targets such as pedestrians, group of men, vehicles, tanks, low flying Helicopters, etc. It is light weight and operates 24 hours a day under all weather conditions. It has a J-band Pulse Doppler Radar with built in test equipment (BITE) and built-in digital magnetic compass for North alignment. It is used for Border surveillance, Battlefield surveillance, Intelligence gathering, Protection of sensitive sites and Prevention of infiltration and illegal immigration.

Specifications:

» Range Accuracy : 20 m rms	» Power consumption : 100 watts
» Range Resolution : 50 m	» Weight of system (excluding accessories) : 30 Kg
» No of tracked targets: upto 99	» Operating temperature : -20°C to +55°C
» Target identification : using Doppler tones	» Relative humidity : upto 95% at 40°C
» Power supply : 24 Volts DC nominal	» Altitude : 4500 mtrs
	» Wind load (operation): 80 kmph

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5840720487324

3D LOW LEVEL LIGHT WEIGHT RADAR (ASLESHA)



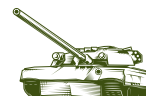
Description:

ASLESHA is a multifaceted ground based S-Band 3D Low Level Light Weight Surveillance Radar for deployment in diverse terrains like plains, deserts, mountain tops and high altitude regions. Aslesha detects and tracks heterogeneous air targets, including helicopters, fighters and UAVs at low and medium altitudes. It can be easily transported by men, light vehicles and under slung by helicopter and is fast and easy to install and decamp. It can track while scanning up to 100 targets and has full 3D capability using multi-beam technology and is enabled for networking with Integrated Asterix protocol.

Specifications:

» Environmental : JSS 55555 compliant	» Power consumption : < 1 kva
» Height coverage : 30 m to 4500 m (AGL)	» Accuracy
» Elevation coverage : 0° to 30°	• Range : < 50 m
» Power source : Generator with UPS and Battery	• Azimuth : < 0.5°
	• Height : ± 500 m
	• Resolution
	Range : < 200m,
	Azimuth : < 7°

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5840720472437



MILITARY VEHICLES



Description:

Ashok Leyland has vehicles for Defence in Light, Medium & Heavy Duty segments. Ashok Leyland provides different power packs for Armoured fighting vehicles and self-propelled guns, power pack for different uses including Gen sets and 16 to 80 seater buses. These vehicles are used for a variety of applications apart from normal load carrier to Ambulance, Recovery, Fire Fighting, Refrigerated Lorry, Fuel & Water Bowsers, Rocket Launcher, Radars, Missile.

Specifications:

- » Product range: 1T GVW (Gross Vehicle Weight) to 100T GTW (Gross Trailer Weight)
- » Vehicles for Defence in Light, Medium & Heavy Duty segments
- » Configuration of 4 x 4, 6 x 6, 8 x 8, 10 x 10 for high mobility
- » Medium Bullet Proof Vehicles (MBPV 4 x 4)
- » Mine Protected Vehicle (MPV 4 x 4)
- » Personnel Protected Vehicle (PPC 4 x 4)

COMPANY : Ashok Leyland
CONTACT : gayathri.r@ashokleyland.com
NSN 2320720200752



MINE PROTECTED VEHICLE (MPV)



Description:

The MPVs can carry upto a dozen fully armed personnel and have a provision for gun sights in bullet proof glass from where troops can take on targets outside. There is also a provision to install a rotating heavier gun on top of the vehicle. MPVs can move cross-country across most terrain even while taking fire and hitting back at terrorists. The vehicle consists of monocoque hull/body. The cabin assembly is built of high quality steel alloy. Maximum safety of the crew from ballistic and other forms of attack is provided by virtue of its "V" shaped envelope of the body. MPV is in-service since 2008.

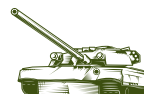
COMPANY : Armoured Vehicles Nigam Ltd.

CONTACT : export@avnl.co.in, marketing@avnl.co.in

NSN 2355720487367

Specifications:

- » Dimensions : 6600 x 2800 x 3120 (in mm)
- » Ground Clearance : 305 mm
- » Speed : 100 kmph max
- » Patrol Speed : 50 kmph
- » GVW /Pay Load : 13170 Kg/1500 Kg
- » 750 km (Cruising Range)
- » Protection Level : Mine Blast 14 Kgs TNT under wheels 10 Kgs TNT under Hull & 7.62 SLR Rifle firing from a distance of 10 meters on all sides of vehicle



PINAKA MULTI-BARREL ROCKET LAUNCHER



Description:

The Pinaka Multi-Barrel Rocket Launcher (MBRL) System is a high-tech, all weather, long-range, area fire artillery system built on an 8 x 8 chassis with high cross-country mobility. It is fitted with electro-mechanical outriggers with an auto levelling feature to stabilise the launcher during launch.

Specifications:

» Range	: Over 40 kms
» Ready-to-fire rockets	: 12 (2 pods)
» Control of Firing	: Auto/Manual
» Firing Modes	: Single/Salvo
» Time to fire salvo of 12 rockets	: 44 seconds
» Area coverage	: 1000 m x 800 m
» Shoot and scoot capability	: Fast coming in and out of action (<3 min)
» Crew	: 4

COMPANY : Larsen & Toubro Limited
CONTACT : intl.defence@larsentoubro.com
NSN 1055720251323



SARVATRA BRIDGE SYSTEM



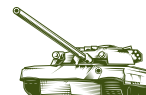
Description:

Sarvatra bridge system is an optimally designed scissor launch system with state of art hydraulic system which provides multi span capability. It is a high mobility launching platform suitable for heaviest military traffic with advanced hydraulics which ensures continuous and smooth operation. Its double "A" shaped trestle provides excellent stability and can be constructed with minimum crew.

Specifications:

- » The vehicle is BS II (EURO II) 8-cylinder, 'V' type, air cooled engine, 402 HP (300 kw) @ 1800 rpm
- » Swinging half axles for better cross country mobility
- » Rear Cabin with dual drive facilities
- » All wheel drive for maximum traction
- » Left hand drive with 2x10 forward speeds
- » High Mobility Launching platform
- » Suitable for Heaviest Military Traffic
- » Multi Span capability upto 75 meters

COMPANY : BEML Limited
CONTACT : mx@beml.co.in
NSN 5420720473569



PONTOON BRIDGE SYSTEM



Description:

The bridge has a maximum load carrying capacity of 60 tonnes and can transport military vehicles over water obstacles and marshy grounds. The midstream members are joined together to form the floating part and the bank. The shore members are connected to the midstream members and serve as the transition section between the floating part and the bank.

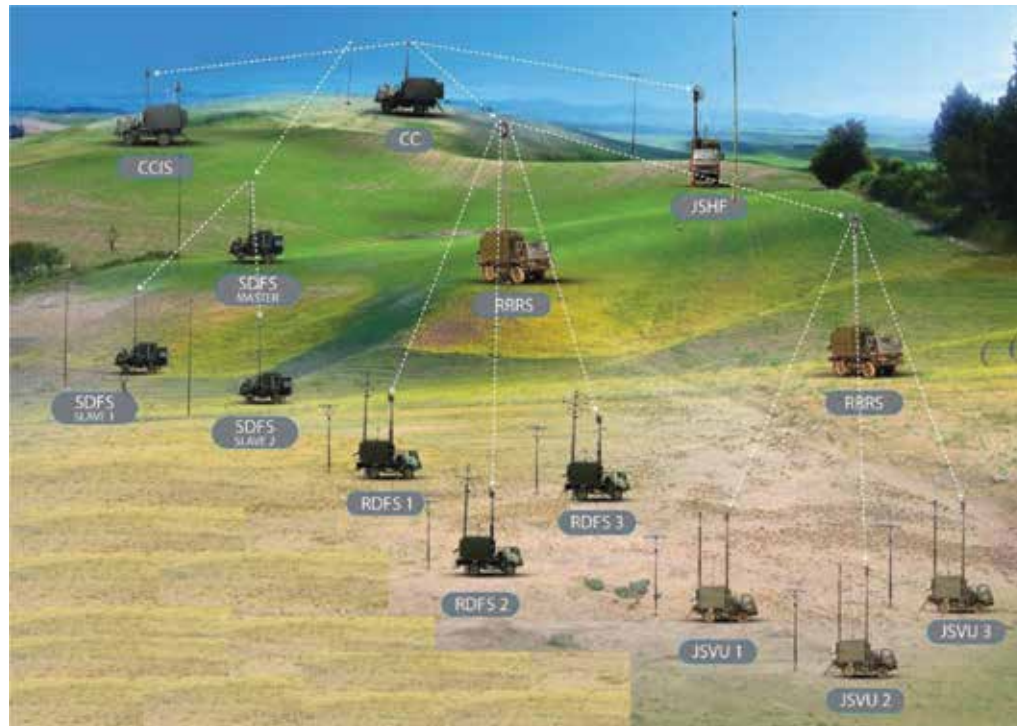
Specifications:

- » The vehicle is 8 Cylinder, "V" type, Air-cooled engine, 402 HP(300kw) @ 1800 rpm, Max Torque: 1830 Nm @1200 rpm.
- » Transmission: 10 forward and 2 reverse gears.
- » Suspension: Front: Leaf spring type and Telescopic shock absorbers. Rear: Leaf spring.
- » Brakes: Two circuit drum air brakes with cam type actuator.
- » Steering: Mechanical, Power assisted by hydraulic steering.
- » Bridge length : 227 meters

COMPANY : BEML Limited
CONTACT : mx@beml.co.in
NSN 1945720487038



COMMUNICATION INTEGRATED ELECTRONIC WARFARE SYSTEM



Description:

The Communication Integrated Electronic Warfare System is an Integrated Electronic Warfare system and operates in HF and VUHF band. It consists of three independent functional blocks also called as Control Centre (CC) blocks and comprises of total of 75 Entity and Generator Vehicles. Each entity is realized in slip-on ISO shelters installed on 2.5 ton vehicle.

The system is designed to function in an integrated mode where CC entity is connected with other functional entities with secure intra-system communications with state-of-the-art ECCM features with suitable backup radios.

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

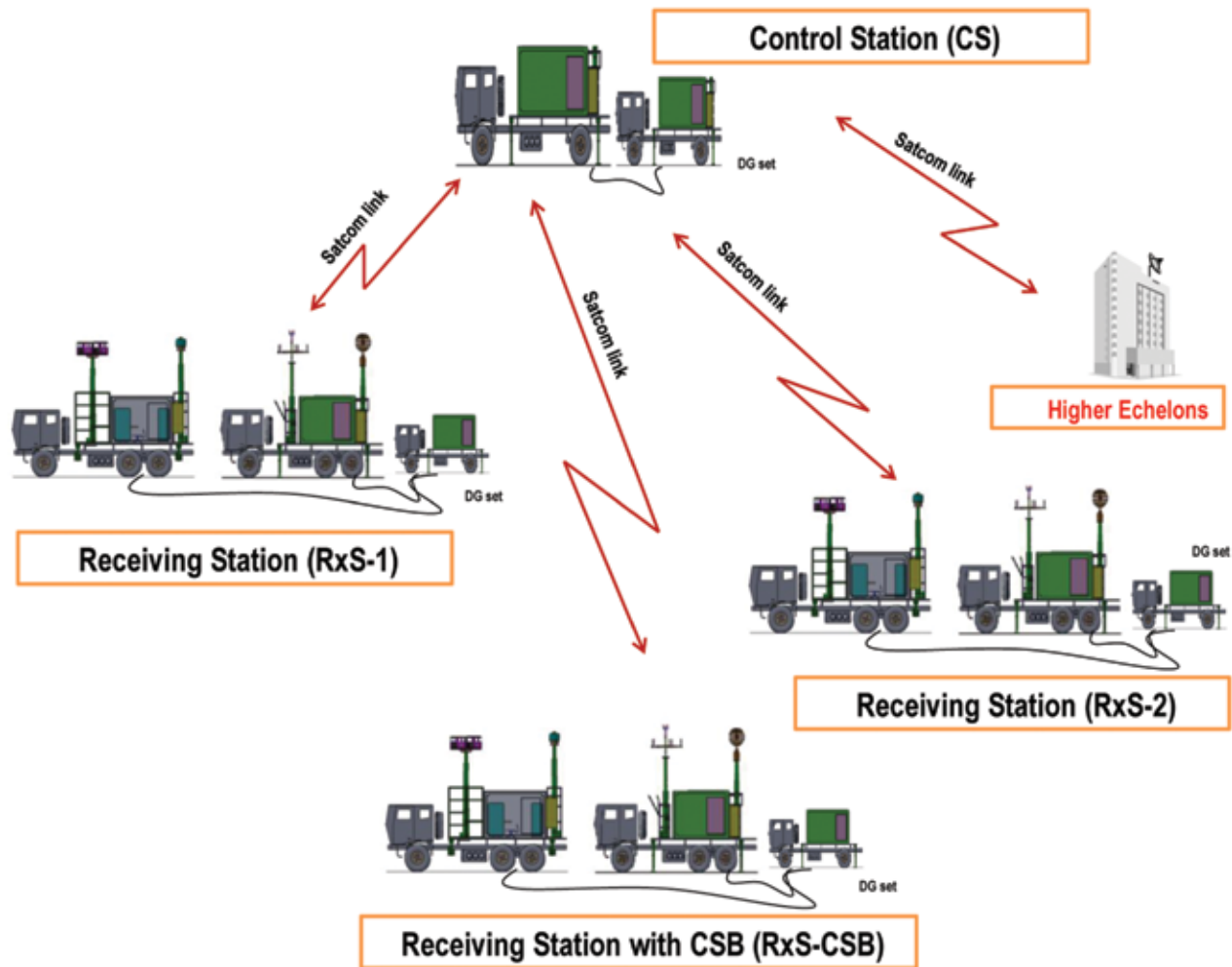
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Specifications:

- » Each CC block covers the functionality of Search, Detection, Monitor, Recording & Analysis of hostile threats of FF, FH and Burst signals and also covers the functionality of Direction Finding, Location Fixing and Jamming of the hostile threats.
- » Each CC block is configured with seven types of functional entities namely CC, CCIS, RDFS, SDFS, JSHF, JSVU and RRRS.
- » CCIS has capability to Intercept and Jam GSM and CDMA based cellular radio transmissions.



GROUND-BASED MOBILE ELINT SYSTEM (GBMES)



Description:

Ground Based Mobile ELINT System is capable of detection, monitoring, location fixing, complete analysis of RF signals in the frequency range of 70 MHz to 40 GHz. The System is configured on indigenously developed Antennae, DF & Receiver Technologies.

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 6350720487301

Specifications:

- » The system is fully automated, software intensive with a facility for manual override when required
- » Interception of Radar emitters in 70 MHz to 40 GHz band
- » Capability to monitor at least 200 emitters simultaneously.



155 MM AMMUNITION



Description:

Munitions India Ltd. offers a complete artillery solution for 155 mm ammunition.

Munitions India Ltd. has full range of 155 mm Artillery Shells – HE, Smoke and Illuminating along with various Charges, Primers and Fuzes. The ammunition is compatible with most of the 155mm Artillery Gun systems used globally and is being regularly exported.

COMPANY : Munitions India Ltd.

CONTACT : exports@munitionsindia.co.in

Products:

- » Shell 155 mm HE ERFB BT
- » Shell 155 mm HE ERFB BB
- » Shell 155 mm HE M107
- » Shell 155 mm HE M77B
- » Shell 155 mm Illuminating ERFB
- » Shell 155 mm Screening Smoke ERFB
- » Electronic PD Fuze
- » Primer M 191 A2
- » Bi Modular Charge System (BMCS) M91 & M92
- » Charge 8 & 9
- » Charge M4A2



INSTAVEST G6

Advanced Tactical Vest
with Quick Release



Description:

The 6th generation Instavest offers protection from handgun ammunition, RCC's and FSP's at vastly improved energy absorption and dissipation levels. The unique patented quick release (QR) system in Instavest G6 enables swift doffing and donning of the vest in emergency situations. It offers ballistic protection from handgun ammunition, RCC's and FSP's at vastly improved energy absorption and dissipation levels.

Specifications:

- » WEIGHT < 5 Kgs
- » Made from 6th generation ultra-light weight Ammoflex armour

COMPANY : MKU Limited
CONTACT : r.gupta@mku.com
NSN 8470720487368

ADVANCED COMBAT HELMETS



Description:

Boltless advanced combat helmets are manufactured using special trauma reduction technology that results in just 10 mm blunt trauma which is nearly 40% lower in comparison to a standard helmet. The No Holes – No Drill technology used in MUKUT helmets ensure zero compromised areas in the helmet shell providing uniform protection across the ballistic shell perimeter, thus eliminating the risk of lethal injuries due to secondary fragments as compared to traditional bolted helmets in situations where the high velocity threat hit the bolts.

Specifications:

- » Flame & UV resistant.
- » Manufactured using Non Toxic material as per 2002/61/EC.
- » Jointless rubber edge guard.
- » Compatible with NVD, Gas Masks, Communication systems etc.
- » Level IIIA protection with V50 up to 700 m/s

COMPANY : MKU Limited
CONTACT : r.gupta@mku.com
NSN 8415720487365

BALLISTIC SHIELDS



Description:

Handheld and trolley mounted ballistic shields with large view ports and transparent armour offer enhanced coverage during counterterrorism, insurgency and riot control operations.

Specifications:

- » Made from non-toxic materials
- » Fire, UV resistant
- » Ballistic glass on view port for clear vision and enhanced field view (FOV)
- » Abrasion resistant Neoprene rubber edges
- » Available in flat or curved (750 R or 540 R) geometry
- » Ambidextrous handle with nylon neck and shoulder strap

COMPANY : MKU Limited
CONTACT : r.gupta@mku.com
NSN 4240720487364



BALLISTIC PROTECTION



Description:

- » Advanced Ceramic B4C (CaraSTOP) Plates
- » Tiles for Light Weight Armor
- » Personal Ballistic Protection:
 - » Ballistic Vest & Jackets
 - » Armor Plates
 - » Ballistic Helmets
 - » Ballistic Shields
- » Light weight armor solutions for Aircraft /Helicopter /Vehicle/ Boat.
- » Tank, Artillery and Mortar Munitions.

Specifications:

- » Body Armor & Ballistic Shields: Protection of NIJ Level IIIA to IV
- » Armor Plates: Stand alone or ICW with protection of NIJ Level III, III SP and IV, all shapes and sizes
- » Ballistic Helmets: For protection of NIJ Level IIIA, III, III+ & fragments, all designs (PASGT, ACH, MICH, TCH)
- » Armor solutions: For protection of STANAG Level –1 to 5 and Blast Protections.
- » Tank ammunition: 120mm and 125mm (FSAPDS and HESH)
- » Artillery ammunition: 105mm and 155mm (LZ & HZ), 130mm (FVC and RVC)
- » Mortar Bomb ammunition: Augmented Cartridges and Transparent Celluloid Sheets

COMPANY : SM Carapace Armor
 CONTACT : contact@smgroupindia.com
 NSN 2590720500391



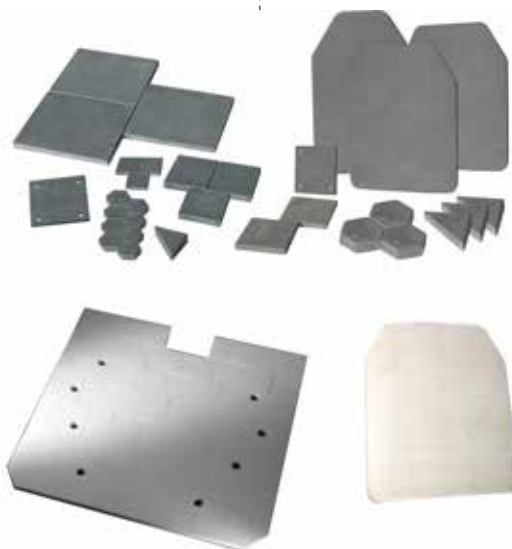
PROTECTIVE EQUIPMENT FOR LAND SYSTEM

Personal Protection



- » **Ballistic Vests & Shields** – Protection Level NIJ IIIA to IV with Weight Distribution System and Quick Release Mechanism.
- » **Armor Plates** – Standalone and ICW solutions with Protection Level III, III+ and IV in all Shapes & Sizes.
- » **Ballistic Helmets (Patented)** – For Protection Level IIIA, III, III+ & fragments, all shapes (PASGT, ACH, MICH, TCH) comes with Advanced Pad Systems, Quick Release Mechanism and Ratchet Harness System and Special Helmets for Airborne Applications.

Vehicle armor



- » **Armor Solutions** – For Protection of STNAG Level 1 to 6 and Blast Protection.

Materials for Armor

- » Advanced Boron Carbide (B4C) Ceramics for armor Applications and top - of - the - line" material like Ultra-light Weight Polyethylene.

Ammunition



- » **Tank Ammunition** – 120 mm and 125 mm (FSAPDS & HESH)
- » **Artillery Ammunition** – 105 mm and 155 mm (LZ and HZ), 130 mm (FVC & RVC)
- » **Mortar Ammunition** – Augmented Cartridges and Transparent Celluloid Sheets

- » Largest integrated armour facility in the world
- » Executing one of the largest order of 186,138 Nos. BP Jackets (worth USD 100Mn) with 1.2 Million armor plates for Indian Army
- » Leading supplier to Indian Army, Paramilitary and Special forces.

COMPANY : SMPP Private Limited
CONTACT : contact@smgroupindia.com



PERSONNEL PROTECTIVE EQUIPMENTS



Description & Specifications::

- » **Personal Protective Equipment:** It includes Vest- Level III-A
- » **Ballistic Helmets:** For protection of NIJ Level IIIA & fragments, all designs (PASGT, MICH, SF helmet)
- » **Armour Plates:** Stand alone or ICW with protection of NIJ Level III, III SP and IV, all shapes and sizes.
- » **Ballistic Protection Products:** Demining Suit, Deming Vest, Demining Apron, Bomb Blanket @ V50- 250 m/s - 650m/s, Ballistic Shield- Level III-A, III and IV, Ballistic Panels and Bomb Suit
- » **Vehicle Armouring:** It provides protection from B4- B7 Threat Level

- » **Armour Solutions:** For protection of STANAG Level- 1 to 5 and Blast Protections
- » **Technical fabric /Technical Aramid Fabric:** We are one of the world's most vertically integrated company by having its own ability to weave High Performance Fabric Kevlar in its state of the art manufacturing facilities.
- » **Tactical Assault Vest Combat Gear:** It includes products like Military Boots, Military Uniform, Backpack and other Tactical Gears like Ballistic Goggles, Visor etc.).

COMPANY : Indian Armour Systems Pvt. Ltd.
CONTACT : info@indianarmour.com



SMALL CALIBER AMMUNITIONS



Description & Specifications:

Manufacturing high quality military grade small caliber ammunition of NATO and Russian Standards for both air and ground operations. Aim is to provide continuous supply of high-quality ammunition to military and civilian markets. Presently manufacturing small caliber ammunition with following calibers:

- » 9 x 19 mm
- » 5.56 x 45 mm
- » 7.62 x 39 mm
- » 7.62 x 54R
- » 7.62 x 51 mm
- » .338 Lapua
- » 12.7 x 99 mm
- » 12.7 x 108 mm

COMPANY : Hughes Precision Manufacturing Pvt. Ltd.
CONTACT : avinash.rahi@hughesprecisionm.com



HIGH ENERGY MATERIALS & MULTI MODE HAND GRENADE



Description:

HMX, RDX, TNT and their Compositions have multiple uses in variety of Military applications and are used in manufacture of warhead composition for ammunition. TNT is used in filling of Artillery Shells, Mines, and Boosters etc.

Multi Mode Hand Grenade offers numerous advantages over conventional Grenade in terms of Safety, Dual Mode Capability and Lethality.

Specifications:

HMX : MIL-DTL-4544C, Grade B, Class 1 to 6

RDX : MIL-DTL-398D, Class 1 to 5

TNT : MIL-DTL-248D

Hand Grenade:

- » Operating Temperatures - 20 °C to + 55° C
- » Additional Safety to the soldier through Arming Delay
- » Easy to prime and un-prime

COMPANY : Solar Industries India Limited

CONTACT : solar@solargroup.com

NSN 1330720487346

HAND HELD / HELMET MOUNTED NIGHT VISION DEVICES (MODEL: NETHRA)



Description:

NETHRA is an uncooled thermal sight which can view through dust, smoke, fog, haze and other battlefield obscurants. NETHRA senses only heat and not light, it will not shut down or "bloom" when hit by direct light.

Specifications:

- » Spectral Range : 8-14 μ m
- » FPA Resolution : 640X480 or better
- » Lightweight (under 1.3 Kg)
- » Can be used as a Weapon Mounted Sight / Handheld Thermal Sight / Helmet Mounted Sight

COMPANY : Alpha Design Technologies Pvt. Ltd.

CONTACT : alphacorp@adtl.co.in

NSN 5855720487349



RAJAK - THERMAL IMAGING AND NIGHT VISION DEVICES



DESCRIPTION:

A wide range of EO systems viz. Night Vision Devices, Uncooled & Cooled Thermal Imaging Systems, 3rd Generation Image Intensifier Tubes of FoM $\geq 1800+$ and complex Electro-Optic (EO) payloads to meet every requirement at the best price / performance ratio.

SPECIFICATIONS:

- » Long / Ultra Long Range Surveillance System
- » Multipurpose Night Vision Monoculars and Binoculars
- » Aviation Goggles
- » Thermal / Night Vision Weapon Sights
- » Cooled / Uncooled Thermal Handheld Monoculars, Binoculars Multifunction Imagers
- » Driver's Night Sights

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com



MULTI SPECTRAL CAMOUFLAGE NET (MSCN)



Description:

Multi Spectral Camouflage Net (MSCN) is used for protection of Defence Equipment's against Arial & Ground based Electro-Magnetic Sensors, Surveillance devices.

Specification:

- » Provide adequate protection from visual aids
- » Provide similar IR properties to surroundings.
- » Less than 30% thermal Transmission in the wavelength band 3-5 μm and 8-12 μm
- » Thermal Signature: ± 8 Deg C in the wavelength band 3-5 μm and 8-12 μm
- » Radar Transmission loss 6dB for both way
- » Flame resistant: Self – Extinguishing
- » Resistant to wind, low temperature, fungus growth, hydrocarbons etc.

COMPANY : Entremonde Polycoaters Limited
CONTACT : epl@entremonde.com,
eplnsk@entremonde.com

ANTI-IRR SYNTHETIC CAMOUFLAGE NET (SCN)



Description:

Anti-IRR Synthetic Camouflage Net (SCN) is used particularly by forces for protection of Defence Equipment's against Arial & Ground based Visual & Infra-red Surveillance devices.

Specification:

- » Provide adequate protection from visual aids
- » Provide similar IR properties to surroundings.
- » Flame resistant: Self – Extinguishing
- » Resistant to wind, low temperature, fungus growth, hydrocarbons etc.

COMPANY : Entremonde Polycoaters Limited
CONTACT : epl@entremonde.com,
eplnsk@entremonde.com

MULTI SPECTRAL PERSONAL CAMOUFLAGE EQUIPMENT (MSPCE) GHILLIE SUIT



Description:

Ghillie Suit is used by defence Personal particularly by the military to conceal personal and to enable them to blend in with their surroundings & protect them against Arial & ground based surveillance devices such as NIR camera, Thermal Camera.

Specification:

- » Durable and very good colour retention, Matt finish
- » Resistant to fire
- » Two piece suit easy to wear and down
- » Light Weight (Less than 2.5 Kg)

COMPANY : Entremonde Polycoaters Limited
CONTACT : epl@entremonde.com,
eplnsk@entremonde.com



EW, COMINT & ELINT SOLUTIONS



Description:

Custom solutions for Electronic Warfare (EW), Communications Intelligence (COMINT) and Electronic Intelligence (ELINT). These solutions can be either vehicle based (Tactical) or static ground based (Strategic) depending on specific requirements. The solutions include ESM, Direction Finding (DF), Location Fixing (LF) and ECM capabilities in the frequency range of 1 MHz to 40 GHz. The solutions are capable of addressing all types of narrow and broadband communication systems, including cellular and satellite communication systems, as well as radar systems.

All sensors in each system are integrated via command & control software and unified sensor data is presented to users through Graphical User Interfaces (GUIs) to allow user-friendly, granular control of the system. Sensor data is presented to the users in easy to understand and intuitive graphical displays which are also customised as per the customer's specific requirements.

To assist the customer extract useful intelligence from the multiple sensors in a solution a Data Analysis Suite has been developed in-house. This suite consists of GIS tools, Speech processing tools and Data fusion tools which are provided as part of the custom solution.

Specifications:

- » Covers all types of Communication and Radar systems from 1 MHz to 40 GHz.
- » Capable of ESM including Direction Finding (DF)/ Location Fixing (LF) and ECM.
- » Fitted in ISO shelters for easy mounting on vehicles.
- » Command and control software for easy tasking and operations of all EW sensors.
- » Intuitive and easy to use Graphical User Interface (GUI) for tasking and operating the system.
- » Optimally system engineered so as to meet all SWaP (Size, Weight and Power) constraints required by the customer for a tactical EW system.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com



MEDIUM RANGE SURFACE TO AIR MISSILE (MRSAM) MOBILE LAUNCHER SYSTEM (MLS)



Description:

The Mobile Launcher System (MLS) for MRSAM Weapon System, jointly developed with DRDO, is a trailer / HMV mounted platform for Launching MRSAM missiles, housing the Launch Control System (LCS), up to eight (8) Canisterised Missiles (CMs), Intra Fire Unit communication system for communication with the Combat Management System (CMS), and other necessary equipment. A single Trailer carries the entire Launch system including its power generation system.

The MLS is placed into and out of action by a Crew / Operator team preparing it for operations including Missile Launch. Launching is done only by the CMS, which communicates with the MLS either by

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

Other manufacturer:

COMPANY : Larsen & Toubro Limited
CONTACT : intl.defence@larsentoubro.com

cable or by wireless communication. The MLS system is composed of two main sub-systems, namely Towing Vehicle (MLS Vehicle) and a Trailer Platform. The Towing Vehicle / Prime Mover tows the semitrailer which carries all MLS operative units as well as some support equipment.

Army version of MRSAM Launcher is a Containerised System mounted on an 8x8 High Mobility Vehicle.

Specifications:

- » All Electric Drives
- » All Weather Operations
- » Dual redundant Synchronised onboard Power Source
- » Back-up Power for Missile interface of 10 minutes at NTP
- » Brushless Motor & Drive for Erection System
- » Mast of 13.5m height for Intra Firing Unit Communication
- » Deployment without Prime Mover for Long duration in trailer mounted configuration



MINE PROTECTED ARMoured PERSONNEL AMBULANCE



Description:

- » A 6 x 6 Mine Resistant Ambulance equipped with advance lifesaving systems.
- » All equipment as per international medical standards.
- » Additional inverter to ensure uninterrupted functioning of equipments in case of disruption in primary supply.

Specifications:

Defibrillator, ECG, Oxygen delivery system, Ventilator, Resuscitation kit, Examination bed, Critical patient stretcher etc.

Gross Vehicle Weight	: 19000 Kgs
Payload	: 2000 Kgs
Ballistic protection	: STANAG 2
Blast protection	: STANAG 4
Ground Clearance	: 400 mm
Max Speed	: 90 Kmph
Brakes	: Fully Pneumatic, ABS
Run Flat Insert	: 50 / 100 kms FINABE

COMPANY : Mahindra Defence Systems Limited
CONTACT : defencesystems@mahindra.com
NSN 2350720305488



MINE PROTECTED ARMoured PERSONNEL CARRIER 4X4 (APC 4X)



Description:

- » A 4 x 4 Mine Resistant Ambush Protected vehicle, designed & developed indigenously by Mahindra Defence Systems Ltd.
- » Built for Armed forces to give superior protection with high mobility during Anti Naxal / Anti-terrorist operations.
- » Selectable drive modes 4x4 & 4x2 to cater On & Off road terrain need.
- » Up to 12 personnel seating capacity.
- » Weapon systems 7.62 mm & 12.7 mm in both manual turret and remote-control station option.

COMPANY : Mahindra Defence Systems Limited

CONTACT : defencesystems@mahindra.com

NSN 2310720482678

Specifications:

Gross Vehicle Weight	:	17000 Kgs
Payload	:	1500 Kgs
Ballistic Protection	:	STANAG 2
Blast Protection	:	STANAG 4
Ground Clearance	:	400 mm
Max Speed	:	90 Kmph
Brakes	:	Fully Pneumatic, ABS
Run Flat Insert	:	50 / 100 kms FINABEL



LIGHT BULLET PROOF VEHICLE (LBPV)



Description:

Light Bullet Proof Vehicle (LBPV) meant for providing protected mobility to troops in counter insurgency areas and for carrying detachment loads. LBPV is having spacious driver and Co-driver area with excellent ergonomics and good visibility. LBPV is having ample storage for Ammunitions and detachment loads and option of roof suspended outward facing seats for crew.

COMPANY : Mahindra Defence Systems Limited
CONTACT : defencesystems@mahindra.com

Specifications:

Seating Capacity	: 2+4 / 2+6 (Based on seating configuration)
Size (L X W X H)	: 5.25 X 2.2 X 2.3 Meter
Gross Vehicle Weight	: 5500 Kgs
Payload	: 1000 Kgs
Ballistic Protection	: STANAG 1 / STANAG 2
Blast Protection	: STANAG 1
Max Speed	: 105 Kmph
Drive Configuration	: 4 Wheel Drive RHD / LHD
Suspension	: All Wheel Independent Suspension
Optional Features	: CTIS, Self-Recovery Winch, Smoke Grenade Discharger, Drive Assist Camera
Run Flat Insert	: 50 / 100 kms FINABEL



LIGHT SPECIALIST VEHICLE (LSV)



Description:

Light Specialist Vehicle (LSV) specifically designed & development for role of Weapon Carrier (MMG, ATGM & AGL), Recce and Quick Reaction Team by providing armoured protected mobility for 4 nos. of crew with battle load having ample stowage space for Arms & ammunitions inside crew compartment and additional 400 Kgs cargo load carrying capacity.

Tested in harshest terrain and weather conditions ranging from high Altitude Himalayan region (-20°C & 16000 feet) to Extreme desert (+45°C) and severe off-road conditions.

COMPANY : Mahindra Defence Systems Limited

CONTACT : defencesystems@mahindra.com

Specifications:

Seating Capacity	: 2+2/2+3 (Based on seating configuration)
Size (L X W X H)	: 5 X 2.2 X 2.2 Meter
Gross Vehicle Weight	: 5000 Kgs
Payload	: 1000 Kgs
Ballistic Protection	: STANAG 1 / STANAG 2
Blast Protection	: STANAG 1
Max Speed	: 120 Kmph
Drive Configuration	: 4 Wheel Drive RHD / LHD
Suspension	: All Wheel Independent Suspension
Optional Features	: CTIS, Self-Recovery Winch, Smoke Grenade Discharger, Drive Assist Camera



MARKSMAN



Description:

Marksman is Armoured Capsule based Light Bulletproof Vehicle to provide protection to personnel of Defence, Para Military and Police Force against small arms and under belly grenade attacks.

It has capability to be used in counter terrorist as well as conventional roles including urban policing requirements.

Specifications:

Seating Capacity	: 2 + 4
Size (L X W X H)	: 4.6 X 1.83 X 2.2 Meter
Payload	: 600 Kgs
Ballistic Protection	: STANAG 1
Blast Protection	: STANAG 1
Max Speed	: 120 Kmph
Drive Configuration	: 4 Wheel Drive RHD / LHD
Optional Features	: Run Flat System, Self-Recovery Winch, : Drive Assist Camera

COMPANY : Mahindra Defence Systems Limited

CONTACT : defencesystems@mahindra.com



RAKSHAK PLUS



Description:

An effective solution for security forces deployed in counter insurgency and anti-militancy operations.

Rakshak Plus is a Light Bulletproof Vehicle to provide protection to personnel of Defence, Para Military and Police Force against small arms and under belly grenade attacks.

It has capability to be used in counter terrorist as well as conventional roles including urban policing requirements.

Specifications:

Seating Capacity	: 2 + 4
Size (L X W X H)	: 4.5 X 1.83 X 2 Meter
Payload	: 600 Kgs
Ballistic Protection	: STANAG 1
Blast Protection	: STANAG 1
Ground Clearance	: 200 mm
Max Speed	: 120 Kmph
Drive Configuration	: 4 Wheel Drive RHD / LHD
Optional Features	: Run Flat System, Drive Assist and PTZ Camera, Wire mesh on all BP Glasses.

COMPANY : Mahindra Defence Systems Limited

CONTACT : defencesystems@mahindra.com



REMOTELY CONTROLLED WEAPON STATION (RCWS)



Description:

A remote controlled weapon station (RCWS) is a remotely operated weaponized system for light and medium-calibre weapons which can be installed on ground combat vehicle or sea- and air-based combat platforms. Such equipment is used on modern military vehicles, as it allows a gunner to remain in the relative protection of the vehicle.

RCWS is bore sighted with an optics module with a Laser Range finder to get distance of the target to be engaged. The gunner station is equipped with Fire Control System (FCS) that enables the gunner to move the weapon system by joystick and control in display screen, remote operation for cocking, safety latch and trigger.

Specifications:

System compatible for in-service weapon	: -7.62 MMG
Azimuth	: 360° @60°/sec (max)
Elevation	: +60° to -20° @60°/sec (max)
Optics Module	: 32X Day cam, TI @ DRI 3.8-1.8-0.8km (NATO vehicle), LRF @5km 2-axis stabilization
Weight	: <125Kg without Weapon and Ammunition
Ballistic calculator for projectile	
Configurable No fire zone	
Multi-target engagement feature	
Designed to comply MIL 461, 810/ JSS55555	

COMPANY : Mahindra Defence Systems Limited
CONTACT : defencesystems@mahindra.com



MEDIUM BULLET PROOF VEHICLE (MBPV) -MK-II



Description:

BEML Medium Bulletproof Vehicle (MBPV) is an all-weather, off-road vehicle designed for easy, maneuverability, operability and maintainability, which conceals crew and troops from Ballistic Arm Fire, Hand Grenades, and Fragment Simulated Projectiles etc. With survivability as major objective carries troops to operate in counter-Insurgency environment. The 4x4 chassis for the MBPV was designed and developed in-house by BEML Limited. The seating capacity is 10 including one driver and a co driver & 8 Crews.

Specifications:

- » Ballistic & Blast Protection NATO STANAG LEVEL 1
- » 4x4 with high mobility on back bone chassis frame with half swing axles
- » Power Steering, CTIS and Run Flat Tyres

- » High power to weight ratio (16.5 kW/T) with Automatic transmission.
- » Max. Speed on Road: 80 km / h

Other accessories

- » 360° rotatable collapsible turret and roof hatches, Auto close gun ports
- » 360° Night Vision camera / rear view camera, Air Conditioned Cabin
- » Two plus eight blast resistant seats, Antenna mount to Street side
- » Radio & Intercom System & GPS Navigation
- » NBC Filtration System, Medical Stretcher, First Aid Box & ABC Type Fire Extinguishers & also vehicle can be further customized with the optional equipments
- » Electro Magnetic Vehicle Shield Systems
- » Intelligence, Reconnaissance and Surveillance (ISR)
- » Ground Penetration Radar (GPR)

COMPANY : BEML Limited
CONTACT : mx@beml.co.in



AI POWERED MEDICAL HEALTH DIAGNOSTIC SYSTEM (MHDS)



Description:

Mobile health and diagnostic station housed in a 20 feet container on a high mobility platform (BEML TATRA 8x8 / 6x6) with artificial intelligence (AI) powered diagnostic system for troops in field. This diagnostic station has the following major features to cover medical diagnostic needs of troops in forward posts, especially in high altitude areas. It provides Computer Aided Diagnosis using AI and also obtain expert consultation from higher echelon hospitals or from a cloud based tele consultation system. It can be remotely connected to a medical data base too. The unit is provided with a dust free clinical environment, Air conditioning and generate back up.

Specifications:

- » Artificial Intelligence based Chest X-Ray Diagnosis
- » Artificial Intelligence based diagnosis of Eye Analysis and Diabetic Retinopathy
- » Computer based diagnosis (CAD)
- » Digital Radiology
- » Cardiograph
- » Pathology Laboratory
- » Point of Care Devices
- » Digital Fundus Camera
- » Digital Microscope
- » Cloud based Tele-Consultation System

COMPANY : BEML Limited
CONTACT : mx@beml.co.in



MOBILE STANDBY COMMAND POST VEHICLE (MSCP)



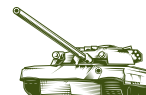
Description:

Mobile Standby Command Post bullet proof vehicle which is capable of rapid deployment and is integrated with all the security systems connected through wireless technology, as the Command and Control Centre. This Mobile Command Post is capable of functioning as a parallel or independent Command and Control Centre. It has two-way wireless connectivity through the central server, with all the security systems of the base and has ability to communicate with all deployed devices and personnel. It is envisaged to be utilized as a Command post closer to the scene of action or in case of compromise of the primary Central Command Centre.

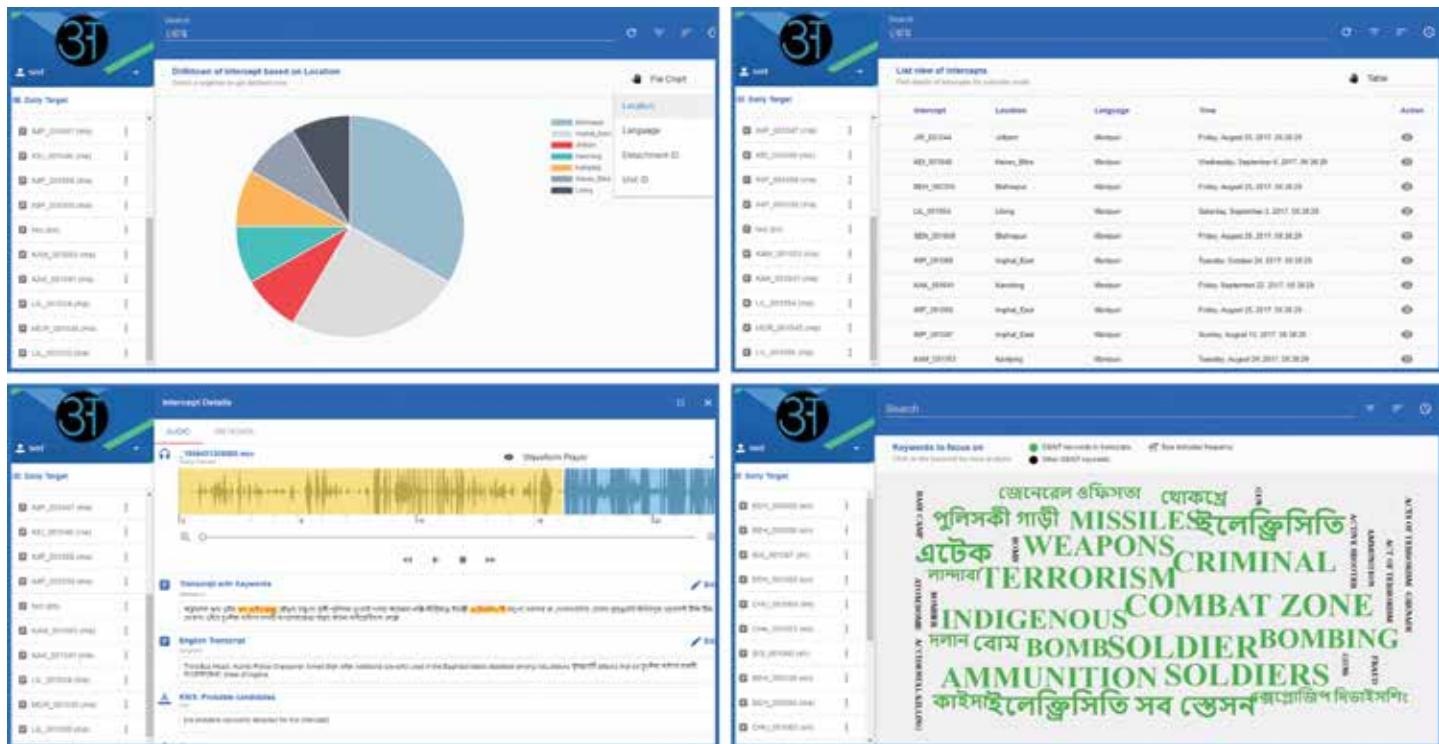
COMPANY : BEML Limited
CONTACT : mx@beml.co.in

Specifications:

- » 4x2 split Air conditioned bullet proof Vehicle having protection to NIJ Level IV
- » Dedicated compartments for Driver, Control room and Equipments
- » Two PTZ cameras on either end of the vehicle with 360 degree rotation capability to provide all round coverage
- » Terminal powered by using the single phase 25 KVA DG set with 10 KVA online UPS as emergency backup for electronic subsystems.



ANUVADAK - BIG DATA ANALYTICS WITH DEEP LEARNING-CONVERTED



Description:

ANUVADAK is an indigenous Big Data Analytics Platform with Deep Learning designed specifically to meet the needs of Military and Homeland Security agencies. It is capable of handling large volumes of structured and unstructured data (audio, video, images and text) captured by different systems. ANUVADAK contains variety of speech analytics algorithms for Automatic Speech Recognition, Machine Translation, Keyword Spotting, Speaker Identification etc.

The ability of automatically processing large amounts of data, reduces the burden on human operators and increases their efficiency and effectiveness. ANUVADAK platform also interfaces with other analytics solutions for video and image analysis and provides an integrated platform for intelligence agencies.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

Specifications:

- » Language Identification
- » Automatic Speech Recognition
- » Machine Translation
- » Speaker Identification
- » Keyword Spotting
- » Object Detection
- » Face Recognition
- » Modular and Scalable Architecture



155MM/52 CALIBRE MOUNTED GUN SYSTEM



Description:

155mm/52 calibre Mounted Gun System comprises of an 8x8 truck on which the gun is mounted thereby provides excellent tactical and strategic mobility. The gun can fire upto 55km with a maximum of 6 rounds per minute or a burst of 3 rounds in 16 seconds or sustained firing of 2 rounds per minute. With 360° traverse angle and elevation arc of -3° to +72° the gun provides maximum coverage once deployed for firing.

An on-board crane helps in automatic loading / unloading of ammunition on the magazine and ammunition rack. State-of-the-art Rugged Tactical Field Computers control the Ballistics and Gun Fire Modules. The Out-triggers, Gun and Crane run on Hydraulics system that are centrally controlled and monitored for safety interlocks. On-board systems like Inertial Navigation System, Electro-Optic Sight for Direct Firing and Muzzle Velocity Radar help in accurate positioning, detection, ranging and Firing of the gun.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

Specifications:

- » Main Weapon
 - Barrel Length : 52 calibres
 - Calibre : 155mm auto-frettaged monobloc
 - Elevation : -3° to +72°
 - Traverse : 40° Rt and Lt
 - Range
 - 31km with Boat Tail projectile
 - 42km with Base Bleed projectile
 - 55km with V-LAP projectile
- » Ammunition Handling
 - Electronically controlled Automated Ammunition Handling System
 - Magazine with 3 projectiles
 - Crane for Ammunition Handling
- » Laying and Navigation
 - Ring Laser Gyro based Inertial Sensor
- » Vehicle Platform
 - Tata 8x8 High Mobility Vehicle



105MM MOUNTED GUN SYSTEM



Description:

105mm Mounted Gun System comprises of a 105mm Field Gun on a 6x6 High Mobility Vehicle with automated operations through electric drives for Elevation and Traverse, interfaced with a Gun Laying Computer.

Specifications:

- » 4 Hydraulically Operated Jacks for Vehicle Stabilisation during firing
- » Control and Operating Panel for Hydraulic System
- » Auto-levelling of the platform
- » Electronic Control and Positioning System
- » Elevation: -3° to $+72^{\circ}$ (other than over the cabin)
- » Zone of Fire: 360°
- » Max Range: 17.96km
- » INS-based Barrel Pointing System
- » INS-based Navigation System
- » On-board Ballistic Computer for Autonomous Operation with "shoot & scoot" capabilities
- » Reduced Crew Size

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com



ADVANCED AIR DEFENCE (AAD) MOBILE LAUNCHER SYSTEM (MLS)



Description:

The AAD MLS is a Multi-technology Weapon Platform jointly developed along with DRDO. It is an all-electric Launcher designed for all-weather and all-terrain day / night operation. The Launcher is mounted on a 12X12 HMV chassis and is designed to carry, orient and fire Six Canisterised Missiles in Single or Salvo Mode, from a stationary inclined launch position.

A single truck carries the entire Launch Control System along with its power generation system. The AAD MLS provides a dual redundant communication link to the Launch Control Complex (LCC) comprising an RF Wireless Link and a Physical Link.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

STATE-OF-THE-ART TECHNOLOGY:

- » PMA (Permanent Magnet Alternator) for DG set coupling
- » Electronic Synchronisation between both Elevation Actuators
- » Brushless DC Servo Motors
- » Electro-Mechanical Outrigger Jacks for Stabilisation and Auto-Leveling
- » VPX-based Controller

Specifications:

- » High positional accuracy and Fast Coming-into and -out of Action
- » Launcher protection from Missile exhaust plumes & debris using a Jet Deflector
- » Auto and Semi-Auto Modes of Operation
- » Electronic Controls ensure Automatic Operation including Safety Interlocks, Status Monitoring, Health Checks, BITE and Diagnostics to enable quick troubleshooting



ABHEDYA – BORDER PROTECTION, COASTAL SECURITY & CRITICAL INFRASTRUCTURE SECURITY SOLUTIONS



Description:

ABHEDYA offers state-of-the-art Border Protection, and Coastal / Critical Infrastructure Security. It delivers maximum Security by providing Security Forces with the capability to obtain, collate, correlate and evaluate inputs from various Sensors and Surveillance Systems in near real time. The Command and Control System provides a fast-response Decision Support System that provides a consolidated view of the Processed data to the higher echelons. This advanced Security Solution helps in safeguarding Assets, which are vital to the Nation's economy and Strategic interests, by accurately detecting Threats and providing Actionable Intelligence to Security Agencies. The state-of-the-art Security apparatus includes the facility of Data Storage through the main Data Centre and redundant Data Centres for Disaster Recovery.

Specifications:

- » Integration with a variety of advanced Sensors
- » Real time Common Operating Picture
- » Ruggedised Display Panel (Tablet) for Mobile Operations
- » Simultaneous Real-Time Live Monitoring of Cameras & 24 x 7 Recording
- » Intelligent Video Analytics
- » Intelligent Motion / Intrusion Detection
- » State-of-the-art Hardware Infrastructure
- » Extensive Reporting and Analysis capability
- » Display of Status and Health indication of all integrated Sensors
- » Multiple Regions of Interest (ROI) for each Fixed Camera
- » Slew to Cue Capability
- » Audio Visual Alarms based on inputs from multiple integrated system peripherals
- » Multi-sensor Data Fusion
- » Map display of the Perimeter with all integrated Sensors
- » Integration of existing Border / Perimeter Flood-lights for Switching Off / On from C2 Centre
- » Easy and Intuitive User Interface for Security Personnel

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com



AKASH AIR FORCE LAUNCHER (AAFL)



Description:

Akash Air Force Launcher (AAFL) is a multi-technology Weapon Launch Platform for Air Defence Missiles, jointly developed along with DRDO. AAFL is a Mobile Launcher System capable of transporting and launching upto three Akash Surface to Air Missiles which can be fired in Single or Salvo Mode.

AAFL comprises a self-powered and fully-automated Electro-Mechanical launching system mounted on a trailer and towed by a prime-mover. It is a fully ruggedised all-weather day / night system capable of operating in harsh environmental and terrain conditions.

Four AAFLs form part of an Akash Firing Unit, which also comprises a Flight Control Centre (FCC), Flight Level Radar (FLR) and support vehicles such as Transporter-cum-Loader Vehicle (TLV) and Flight Equipment Maintenance vehicle (FEM). AAFL provides a dual-redundant Communication Link to the FCC comprising an RF wireless link and a physical link.

COMPANY : Tata Advanced Systems Limited

CONTACT : tata-and@tataadvancedsystems.com

Other manufacturer:

COMPANY : Larsen & Toubro Limited

CONTACT : intl.defence@larsentoubro.com

Specifications:

- » All-Electric Drive System for Azimuth, Elevation and Platform Stabilisation
- » High positional & tracking accuracy
- » Fast Coming-into and - out of Action
- » Transportable by rail, road, air & sea
- » Fully automatic checkout & auto launch of missiles
- » Remote controlled tracking of target & launching of missile
- » Continuous 360° operation in azimuth
- » Powered by on-board DG or external Power Supply
- » Ease of maintenance & LRU level repair by replacement
- » Interchangeable (Azimuth, Elevation, Outrigger) Brushless Servo Motors and Amplifiers
- » Electro-Mechanical Outrigger Jacks for stabilisation of launcher
- » Auto-leveling of launcher
- » Battery Assisted Hand-cranking & Manual operation



ADVANCED TOWED ARTILLERY GUN SYSTEM (ATAGS)



Description:

The Advanced Towed Artillery Gun System is a 155mm/52 calibre artillery weapon system jointly developed with ARDE, DRDO. It incorporates futuristic technologies in Electrical, Electronics, Mechanical Design and Analysis, that provide the systems with capabilities such as Self Propelled Mode, Rate of Fire (Burst, Intense and Sustained), Automatic Ammunition Handling System including Crane and All Electric Drives for Azimuth and Elevation to ensure reliability in field over prolonged use.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

Specifications:

- » 155mm 52 Calibre Gun System
- » 25 litres chamber. Enables firing upto Zone-7 BMCS
- » Firing range of 48.074km (HE-ERFB BB) & 38.569km (HE-ERFB BT)
- » Zero backlash All-Electrical Drives System
- » Elevation Angle: -3° to +75° with the speed of 5°/s
- » Ground clearance: 400mm
- » Self-propelled capability with a speed of 20kmph
- » Electronically controlled Automated Ammunition Handling System
- » Rate of Fire
 - Burst – 5 rounds in 60 secs
 - Intense – 10 rounds in 150 secs
 - Sustained – 60 rounds in 60 mins



AKASH ARMY LAUNCHER (AAL)



Description:

Akash Army Launcher (AAL) is a multi-technology Weapon Platform for Akash missiles, jointly developed along with DRDO. AAL is a Mobile Launcher System capable of transporting and launching upto three Akash Surface to Air Missiles which can be fired in Single or Salvo Mode.

AAL is an all-weather and day / night system which comprises of a self-powered and fully automated electro-mechanical launching system mounted on a 8x8 HMV. AAL is a fully ruggedised system, which can operate in harsh environmental and terrain conditions. It's rapid coming-into and -out of action time makes AAL as one of the most preferred Missile Launch Platforms.

Four AALs form a part of a Firing Unit which also comprises a Troop Control Centre (TCC), Troop Level Radar (TLR) and support vehicles such as Transporter-cum-Loader Vehicle (TLV) and Troop Equipment Maintenance Vehicle (TEMV). AAL provides a dual-redundant Communication Link to the TCC comprising an RF wireless link and a physical link.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

Other manufacturer:

COMPANY : Larsen & Toubro Limited
CONTACT : intl.defence@larsentoubro.com

Specifications:

- » All-Electric Drive System for Azimuth, Elevation and Platform Stabilisation
- » High positional & tracking accuracy
- » Transportable by rail, road, air & sea
- » Fully Automatic checkout & auto launch of missiles
- » Remote-Controlled tracking of targets & launching of missiles
- » Continuous 360° operation in azimuth
- » Powered by an on-board DG set or a PTO coupled alternator or an external power supply
- » Ease of maintenance & LRU level repair by replacement
- » Ruggedised & reliable VME based controller
- » Interchangeable (Azimuth, Elevation, Outrigger) Brushless Servo Motors and Amplifiers
- » Electro-Mechanical Outrigger jacks for stabilisation of launcher
- » Auto-Leveling of launcher



TATA GENERAL SERVICE TRUCK



Tata LPTA 715 4x4 (2.5Ton)



Tata LPTA 1628 4x4 (5/7.5Ton)

Description:

The All-wheeled drive Tata LPTA 715 has a high power to weight ratio of 20 HP/T and can be used in multiple logistical roles like troop carrier, water bowser, Mortar Carrier, Lt Armoured Troop Carrier, Ultra-light gun, Command & Communication Post, Ambulance and for Reconnaissance. Tata Defence has supplied over 50,000+ driveline kits of LPTA 715 to Vehicle Factory Jabalpur (Indian Army) and exported over 2000+ GS role Trucks to countries like South Africa, Thailand, Indonesia, Myanmar, Nepal & various UN Peace keeping missions.

The All-wheeled drive Tata LPTA 1628 has a high power to weight ratio and can be used in multiple logistical roles like Troop carrier, Water bowser, Mortar Carrier, Ultra-light gun, Command & Communication Post, Ambulance and for Reconnaissance. Tata Defence has exported this truck to multiple countries in Africa, ASEAN & SAARC.

Specifications:

Brief Specifications	Tata LPTA 715 4X4 (LHD & RHD)	Tata LPTA 1628 4X4 (LHD & RHD)
Power	155 HP @ 2500 RPM	265 HP @ 2500 RPM
Torque	590 Nm @ 1500 RPM	970 Nm @ 1200-1700 RPM
Transmission	Manual (6 F + 1 R)	Manual (9 speed with 1 crawler gear)
Brakes	Full Air S-Cam	Full Air S-Cam, with ABS
Gross Vehicle Weight	7.7T	16T
Payload	1.5 – 2.5T	5 – 7.5T
Ground Clearance	300 mm	350 mm

COMPANY : Tata Advanced Systems Limited
CONTACT : pranav.singh@tataadvancedsystems.com



TATA MULTI-AXLE RANGE (6X6, 8X8, 10X10 & 12X12)



Description:

Tata Defence has supplied 2000+ units of LPTA 6x6 with Material Handling Crane to the Indian Army, making it the single largest order of multi-axle trucks bagged by any private OEM in land systems in India. This High Mobility 6x6 Truck from Tata Defence is designed to excel in extreme on and off-road conditions and has completed a total trial duration of 25 months with the Indian Army. Tata LPTA 6x6 & 8x8 can be customized for a wide range of applications like Missile Carrier, Multi Barrel Rocket Launcher (MBRL), Missile Firing Unit (MFU), Medium Recovery Vehicle, Medium Range Surface to Air Missile (MRSAM), Short Range Surface to Air Missile (SRSAM), Low Level Quick Reaction Missile vehicle (LLQRM), Command Post & Communication system as well as for Strategic Missile Programs & Bridging Programs.

Tata LPTA 12x12 is a highly specialized and fully indigenous vehicle platform developed for catering to strategic missile programs requiring specially designed attributes to make it suitable as a launch pad for LRSAM, Cruise Missiles and subsonic missiles. The higher payload and larger loading area provides much needed flexibility to the integration team of end user. This platform is a true testimony to realizing the 'Make in India' initiative of Government of India.

All the above mentioned platforms can be customized to meet several program-specific needs and is equipped with features like CTIS, NBC kit and

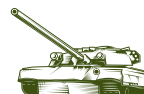
Self-recovery winch for off-road terrains and extreme climatic conditions characterizing mission-critical applications like Launchers, Command post, Communication system, Special Purpose Transporter.

Specifications:

Brief Specifications	Tata LPTA 6X6 (LHD & RHD)	Tata LPTA 8X8 (LHD & RHD)	Tata LPTA 12x12
Power	375 HP @ 2100 RPM/ 450 HP @ 2100 RPM	375 HP @ 2100 RPM / 450 HP @ 2100 RPM	500 HP @ 2200 rpm (+/- 50 rpm)
Torque	1550Nm @ 1300RPM/ 1627Nm @ 1300 RPM	1550Nm @ 1300RPM/ 1627Nm @ 1300 RPM	Min 1900 Nm at 1400 rpm (+/- 100 rpm)
Transmission	Manual (Automatic Optional)	Manual (9 speed with 1 crawler gear)	Automatic transmission system
Brakes	Full Air S-Cam	Full Air S-Cam	Full air S cam Brakes with ABS
Gross Vehicle Weight	23T	33.5/ 39T	62T Kg with 16R20 tyre
Payload	12T	19.5/ 24T	41T with 16R20 Tyre
Ground Clearance	360 mm	390 mm	390mm

COMPANY : Tata Advanced Systems Limited

CONTACT : pranav.singh@tataadvancedsystems.com



TATA ARMoured PERSONNEL CARRIER 4X4 (MINE PROTECTED VEHICLE)



Description:

Tata Armoured Personnel Carrier (with mine protection) with a 4x4 configuration, is developed to serve as a mine-proof troop transport vehicle, a law enforcement special response vehicle used to counter insurgency, or an escort protection vehicle. With a ballistic protection of NIJ Level III & blast protection higher than STANAG IV, the Tata APC is designed to protect its occupants from threats like ambushes and sudden violent attacks using powerful explosive mines.

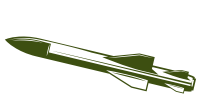
Tata APC is in-service with Indian Army.

COMPANY : Tata Advanced Systems Limited

CONTACT : pranav.singh@tataadvancedsystems.com

Specifications:

- » Power: 242 HP @ 2500 RPM
- » Torque: 925 Nm @ 1200-1700 RPM
- » Features:
 - Run Flat inserts
 - Gradeability 30°
 - Four-point harness seat belt for safely holding troops in place
 - Single piece "V" shape hull for deflecting blast intensity away from vehicle
 - Side mounted seats with AC and seating capacity 12+2



PINAKA MULTI BARREL ROCKET LAUNCHER



Description:

Pinaka Multi Barrel Rocket Launcher (MBRL) is an all-weather, indirect area fire Artillery Weapon System designed and developed along with ARDE, DRDO. Its mission is to deliver a large volume of fire within a very short time against critical and sensitive area targets. The quick response and high pointing accuracy of the Launcher enables it to deliver a large volume of fire against critical and time-sensitive enemy targets, within a very short time.

The Launcher System is supported on four electro-mechanical outriggers at the time of firing. The cradle, a platform for clamping the pods, is pivoted to the revolving base and has two pods mounted side by side. Each pod contains six launcher tubes, for loading the rockets, stacked in a 2X3 matrix.

The Man Machine Interface is housed inside the vehicle cabin. It is possible to operate the Launcher by linking it with a Fire Control Computer (FCC) or by Launcher Computer (LC) or Manually.

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com
NSN 1055720251322

The initialisation of the Launcher is done by an Automatic Gun Alignment and Pointing System (AGAPS) or by a Dial Sight.

Specifications:

- » All-Electric Drive System for Azimuth and Elevation
- » Shoot and Scoot capability: Fast coming in and out of action (<3min)
- » Auto Levelling / Stabilisation
- » Electronic control and positioning system
- » Position accuracy of one milliradian for AZ and EL
- » Onboard Inertial Navigation System for Accurate and Speedy Laying
- » Salvo of 12 Rockets in 44 Seconds
- » Programming all 12 Rockets in max. 20 seconds
- » Range: Over 40km
- » Ready-to-fire rockets: 12 (2 pods) on transporter-cum-loader vehicle
- » Control of Firing: Auto / Manual
- » Firing Modes: Single / Servo
- » Time to fire salvo of 12 rockets: 44 seconds
- » Area coverage: 1000m x 800m
- » Crew: 4



MILAN - 2T ATGM



Description:

MILAN - 2T is a man portable (Infantry) second generation ATGM, to destroy Tanks fitted with Explosive Reactive Armour, moving and stationary targets.

Specifications:

- » Highly Reliable
- » Require No maintenance / No Pre-fire checks
- » Light weight
- » Fibre Glass logistic container for transportation of 4 missiles
- » Man portable
- » Ground Launcher
- » Calibre : 115 mm
- » Length : 1123 mm
- » Weight : 7.1 Kg
- » Range : 25 - 1850 m
- » Penetration : >850mm behind ERA
- » Flight Time : 12.5 s
- » Reliability : 95%

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in
NSN 1425720487376

KONKURS – M ATGM



Description:

KONKURS-M is a Second Generation, mechanized infantry ATGM, to destroy Armoured vehicle equipped with Explosive Reactive Armour, moving and stationary targets.

Specifications:

- » Can defeat armoured targets fitted with ERA
- » Can be launched either from BMP-II or from ground launcher
- » Equipped with tandem warhead
- » High hit and kill probability.
- » Length : 1260 mm
- » Calibre : 135 mm
- » Range : 75 - 4000 m
- » Flight time : 19 s
- » Armour Penetration : 800 mm behind ERA
- » Weight : 16.5 Kg

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in
NSN 4935720356856



LIGHT TACTICAL VEHICLE / LIGHT ARMOUR TROOP CARRIER



Description:

Light Tactical Vehicle is among the most rugged vehicle platforms built for various military applications. LTV drive line is fitted with an independent suspension with automatic transmission with Dual engine power mapping for off road and plain field application. The platform can be used as an Ambulance, Reconnaissance vehicle, Command Control Vehicle, Radar Control Unit and many other similar purposes. LTV is designed to carry a crew of 4/6 crew members with operational load. LTV has a payload for 3.5 Tons and with an option for UP – ARMORING to provide protection in the operational area. LTV is fitted with optional rotating turret for mounting of various application including radar or weapons.

Specification:

- » Go Anywhere Vehicle with Supreme Cross Country Performance.
- » 360 degree Rotating turret with Weapon mounting station.
- » 4x2 & 4X4 all-wheel drive.
- » Successfully tested by Indian Military Agencies.
- » Speed : >100 kmph
- » Protection : Stanag 1 & 2
- » Range : Min 400 km

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com



CYBER SECURITY SOLUTIONS



IP Encryptor:

It provides security at Ethernet and Network Layer by securing the IP data in tunnel and transport mode as IPSec device. In addition to this, it secures the data for point to point network as EtherSec device. Provides LAN, MAN and WAN data security in public network. Provide security for backbone networks and future network centric warfare applications.

Link Encryptor:

Link Encryptor is a full duplex encryption/decryption System, designed to work for various data rates of PDH, SDH, OTU and Ethernet. Provides End to End Encryption for Bulk data and Backbone connectivity for metro, regional, or long-haul Dense-Wavelength Division Multiplexing (DWDM) networks.

Data Diode:

Data Diode creates a physically secure one-way communication channel from the one network to another network by means of unidirectional data transfer with higher performance, reliability and end-to-end security.

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in

Secure Storage (Linux/Windows):

Secure Storage solution provides "data at rest" security & keeps the data encrypted on the storage device at all times and decrypts the data only when it is accessed from the storage, via the solution for the storage Media (Disk Attached storage/ Network attached storage or Storage area Network)

PKI / Token:

PKI solution provides complete Certificate life cycle management functionalities. PKI solution issues, renews, revokes and suspends digital certificates for its users and also maintains record of all transactions. The PKI solution provides security features like Authentication, Confidentiality, Integrity and Non-repudiation.

Trusted Computing Platforms (Server/Workstation/ Laptop/ Tablet):

A High-end computing platform to meet the requirements of secure computing environment by with trusted features like Secure Boot, Platform integrity, encrypted drives, integrated storage, Role based access and tamper proof.



BAILEY TYPE BRIDGES



**VIEW OF A MULTI-SPAN BRIDGE (120 ft & 130 ft)
ON RIVER TEESTA IN WEST BENGAL, INDIA**



**VIEW OF A 360 ft PRE-FAB SUSPENSION TYPE BRIDGE
ON SIYOM RIVER, ARUNACHAL PRADESH, INDIA**

Description

GRSE Bailey type Bridges are fully tested, pre-engineered & pre-fabricated having high strength & versatility. As the modular design facilitates easy assembly, these bridges can be erected very fast even in the most challenging terrain and conditions. These bridges are re-usable, portable and upgradable. The individual components for GRSE Bailey types Bridge can be moved manually to the site. As the transporting and machinery is not a pre-requisite for movement and installation, the GRSE Bailey type bridges are ideal for facilitating connectivity in remote areas and thereby enabling people.

Specifications

SI No.	Type of Bridge	Road Width (m)	Max Span (Feet)	IRC:6* Load Class	Weight of Equivalent Wheeled Vehicle
01	Single Lane Bridge (Steel Deck)	3.32/ 4.25	200/200	30R	38MT
			190/180	40R	55MT
			140/140	70R	100MT
02	Improved Single Lane Bridge (Steel Deck)	4.25	230	30R	38MT
			230	40R	55MT
			200	70R	100MT

* Indian Roads Congress: 6

SI No.	Type of Bridge	Road Width (m)	Max Span (Feet)	Bmhc** Load Class
01	Suspension Bridge (Wooden/ Steel Deck)	3.277	400	Class 18
			360ft & Below	Class 24

** British Military Load Classification

SI No.	Type of Bridge	Road Width (m)	Max Span (Ft)	Aashto# Load Class
01	Single Lane Bridge (Steel Deck)	3.32	180	HS20
		4.25	90	HL93 LRFD
			80 (with walkway)	
02	Improved Single Lane Bridge (Steel Deck)	4.25	230	HS20
			230	HS25
			180	HL93 LRFD
			150 (with walkway)	

The American Association of State Highway Transportation Officials

COMPANY : Garden Reach Shipbuilders & Engineers Limited
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com



METAL INJECTION MOLDED (MIM) COMPONENTS FOR SMALL ARMS



Description

Precision steel and stainless-steel components manufactured through Metal Injection Molding (MIM) technology for a wide variety of small arms and its assemblies. Examples: Sear, Magazine Catch, Thumb Safety, Grip Safety, Ejector, Firing Pin Stop, Sights etc.

COMPANY : NNF Tech Private Limited
CONTACT : d@n-mim.com, nnftech@gmail.com

Specifications

- » Wide varieties of steel and stainless steel such as MIM 4605, MIM 42CrMo4, MIM 4340, MIM 17-4PH, MIM 8620.
- » Components can be hardened by specific heat treatment processes like Hardening & Tempering, Case Hardening, Solutionizing & Age Hardening, Induction Hardening etc. to attain the required hardness specification.
- » Surface finish in blackened condition.
- » The parts are assembled in small arms (like Pistols, Revolvers, Rifles, Air Guns) with calibers .45", 9 mm, .380", 5.56 mm, 7.62 mm, .40" and .22 TCM to name a few.



BHARAT ULH (HIGH STRENGTH STEEL)



Description

Bharat Ultra-Light Howitzer is a 155 mm / 39 calibre, long-range field artillery weapon system in towed version. It weighs about 6.8 ton, achieved through innovative design and use of lightweight materials for many sub-assemblies. The gun system is designed for all terrain conditions and to meet the growing requirements for flexible and accurate artillery fire support through re-deployment.

Specification

- » 155mm 39 Caliber Gun System
- » Ultra-light Weight Gun System: Indigenously Designed and Developed solution
- » Extremely Light Weight : 6.8 Ton
- » Quicker emplacement and digital fire control
- » High reliability and low maintenance cost
- » Range achieved from 24.7 km (ERFB BT) to 30 km (ERFB BB)
- » Elevation & Traverse Angle
 - Elevation : -3° to 70°
 - Traverse : 23° Right and Left
- » Rate of fire
 - Normal Rate : 2 Rounds per min
 - Sustained Rate : 42 Rounds in 60 min

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com



MINE PROTECTIVE VEHICLE / ARMoured PERSONNEL CARRIER



Description

MPV / APC are specially designed and built to meet specific & variable requirements of forces that are affected by severe side & under belly blasts while operating in rough terrain. These are Powered by ruggedized, military grade diesel engine, with 4x2/4x4 Manual/ Automatic transmission options, it can provide blast protection up to 14 Kgs TNT blast under belly & 21 Kgs TNT blast under any wheels and side blast up to 50 Kg TNT. The best in its class of 4 x 4, it has a Kerb weight ranging from 10 - 14 tons & payload capacity of 2 to 4 tons. The vehicle is equipped with a 360 degree rotating armoured turret with modular weapon mounts to meet lethality requirements.

Specifications

- » Military Grade 230 - 280 HP Turbo Diesel Engine
- » Protection
 - 14 Kgs TNT Blast Protection under hull
 - 21 Kgs TNT blast under any wheels
- » 360 degree rotating armoured turret with Modular Weapon Mounts
- » Successfully tested by Indian Military Agencies
- » Ground Clearance : 430 mm
- » Speed : >100 kmph
- » GVW /Pay Load : 10-14 tons/ 2-4 tons
- » Range : Min 800 km

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com



JV PROTECTIVE CARBINE (5.56 X 30MM)



Description

JVPC a unique calibre weapon for short range operations. Its low recoil provides stabilized firing during rapid firing and can be fired by single hand which is most suitable for concealed area operations.

Specification

- » Calibre, mm 5.56
- » Cartridge, mm 5.56 x 30
- » Overall length close stock, mm 550
- » Overall length open stock, mm 750
- » Firing Mode Single and automatic
- » Effective Firing Range, m 200-300
- » Rate of fire, round/min 700-900
- » Magazine capacity, rounds 30
- » Weight (carbine only), Kg < 3
- » Weight (carbine with full magazine), Kg 3.65

COMPANY : Bharat Forge Limited

CONTACT : marketing@aweil.in

120 MM MORTAR EQUIPMENT & BOMBS



Description

The equipment 120 mm Mortar is a mobile smooth bore, muzzle loaded equipment, firing at a high angle and is specially designed to:

- a. Increase the fighting efficiency of the Mortar regiment and support the infantry with a light and powerful weapon, which can be used over all types of terrain, whatever the condition: that is to say, battle-grounds, mountain warfare and air borne operations.
- b. Give amphibious forces a powerful supporting fire immediately upon loading.

The Mortar can be fired off the bipod as well as off the wheels. The mortar is provided with a firing mechanism, which allows its firing both by lanyard action and by gravity.

The equipment can be towed over any type of ground traversable by the towing vehicles, can be transported by aircraft and parachuted, can be loaded into riverboats or can be broken down into loads and carried either by mules or men. 120 mm Mortar equipment is in-service since 1962.

COMPANY : Advanced Weapons and Equipment India Ltd.
Munitions India Ltd.

CONTACT : exports@munitionsindia.co.in

NSN 1015720301134



155 MM SHARANG ARTILLERY GUN



Description

SHARANG is an up-gunned 155 mm x 45 Caliber Gun developed through in-house R&D by up-gunning the existing 130 mm M46 Gun System. SHARANG is capable of achieving a range of more than 36 km. The up-gunned system is a proven accurate and reliable gun system and has also been accepted by Indian Army. The weapon system is simple to operate and maintain. The Sharang Towed 155/45 Cal Gun is designed for worldwide service under all climatic conditions and can fire all existing standard 155 mm ammunition. 155 mm Sharang Artillery Gun is in-service since 2020.

Specification

GENERAL

» Weight in traveling position	: 8450 Kg
» Length in traveling position	: 11840 mm
» width in traveling position	: 2450 mm
» Height in traveling position	: 2240 mm

COMPANY : Advanced Weapons and Equipment India Ltd.
CONTACT : marketing@aweil.in

» Ground Clearance	: 275 mm
ORDNANCE	
» Caliber	: 155 mm
» Barrel Length	: 7700 mm (Including Breech ring)

» Tube Length	: 7035 mm
» Chamber Volume	: 25.7 L
» Number of grooves in bore	: 48
» Rifling length	: 5851 mm
» Groove Width	: 6.6 mm
» Groove Depth	: 1.2 mm
» Width of land	: 3.5 mm
» Type of rifled bore	: Right handed, twisted
» Inclination of rifling	: constant 1:20

BREECH BLOCK

» Type	: Wedge- horizontal
» Obturation	: Metal rings - Self sealing
» Firing mechanism	: Trip Action



105 MM LIGHT FIELD GUN



Description

The 105 mm Light Field Gun is an advanced field artillery weapon system manufactured to stringent specifications. It combines lightness with strength and provides effective fire power at high and low elevations. It has high mobility in all types of terrains and is quick and simple to operate. 105 mm Light Field Gun is in-service since 1982.

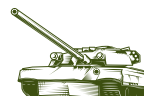
Specification

» Calibre	: 105 mm	» Rate of Fire	
» Barrel Length	: 3890.5 mm	• i) Normal	: 4 Rds/min
» Mass of ordnance	: 716 Kg	• ii) Intense	: 6 Rds/min (upto 10 mins)
» Mass of Equipment	: 2380 Kg	» Sustained Fire	
» Range	: 17.2 Km	• i) Upto Charge 5	: 1 Rd/min (For 2 hrs.)
» Elevation	: -5 deg to +73 deg	• ii) For Super Charge	: 1 Rd/2 min (For 2 hrs.)
» Traverse	: i) 5 deg. Left, 5 deg Right	» Time into and out of action	: 2 to 3 min
	ii) 360 deg Traverse on firing platform	» Recoil system Buffer	: Rotating Valve Type
		» Muzzle brake type	: Double baffle
		» Overall Length	: 7216 mm (Firing Position)
			5054 mm (Folded Back Position)
		» Maximum Width	: 1820 mm
		» Chamber Capacity	: 5.178 litres
		» Loading Angle	: All angles

COMPANY : Advanced Weapons and Equipment India Ltd.

CONTACT : marketing@aweil.in

NSN 1015720301146



SMALL ARMS AMMUNITION



Cartg. SA 5.56 mm Ball



Cartg. SA 7.62 mm Tracer



Cartg. SA 5.56 mm Tracer



Cartg. SA .303" Ball



Cartg. SA 7.62 mm Ball



Cartg. SA 7.62 mm Blank



Cartg. SA 9 mm Ball



Cartg. 14.5 mm Training



Cartg. SA 9 mm Ball

Description

Munitions India Ltd. offers a complete range of Small Arms Ammunition to be used in anti-personnel operations and are suitable to be fired from Standard small arms weapons used worldwide.

Products:

- » CARTG. SA 9 x 19 mm BALL
- » CARTG. SA 5.56 x 45 mm BALL/ TRACER INSAS
- » CARTG. SA 5.56 x 45 mm NATO BALL M855 (SS-109)/M 193

COMPANY : Munitions India Ltd.

CONTACT : exports@munitionsindia.co.in

- » CARTG. SA 7.62 x 51 mm NATO BALL M80/TCR M 62
- » CARTG. SA 7.62 x 51 mm BALL & TCR LINK
- » CARTG. SA 7.62 x 51 mm MARKSMAN
- » CARTG. SA 7.62 x 39 mm BALL
- » CARTG. SA 12.7 x 108 mm API / APIT
- » CARTG. SA 14.5 mm ARTILLERY TRAINING
- » CARTG. 20 mm AMR TP/ TPT
- » CARTG. 20 mm AMR HEI / SAPHEI
- » NON LETHAL PLASTIC Ammunition
- » VARIOUS BLANK Ammunition



EXPLOSIVES



Description

Munitions India Ltd. manufactures a wide range of chemicals, High Explosives and Propellants (Single Base, Double Base, Triple Base) for Military and Industrial applications.

Products:

CHARGES & PROPELLANT	CHEMICAL & EXPLOSIVES
Bi Modular Charge System for 155 mm M91 & M92	TNT, DNT, HNS
Base Bleed Charges for 155 mm BB	Ammonium Perchlorate
Charge M4A2 for 155 mm	RDX/ TNT 60:40 A & B; 55:45,

COMPANY : Munitions India Ltd.
CONTACT : exports@munitionsindia.co.in

Charge 8 & 9 for 155 mm	80:20 Hexolite-B
Propellants / Ball Powder for SAA	RDX/ Wax 88:12 & 95:5
Propellants for Large and Medium Caliber Ammn.	HMX,PETN
Charge Demolition	Low Temperature Plastic Explosives
Depth Charge	Picrite (Nitroguanidine)
Augmentation Charges	Cord Detonating
NC NG Based Rocket Propellant	Nitro Cellulose
Various SB HEPTA Tubular Propellants	Composition Exploding
Primers for Various Ammunition	Slab Demolition, CE Primer



7.62 MM MAG 2A1



Description

- » Gas operated, Air-cooled, Belt fed Machine Gun.
- » Weapon system for infantry role.
- » Suitable for Co-axial & Turret role.
- » Can be mounted and fired on Tripod, Tank and Aircraft.
- » Weapon is provided with a quick change Spare Barrel, to avoid over heating which causes cook off and reduction in barrel life. 7.62 mm MAG 2A1 is in-service since 1976.

Specification

- | | | |
|---------------------|---|----------------------------|
| » Calibre | : | 7.62 mm |
| » Ammunition | : | 7.62 x 51 mm ammunition |
| » Working Principle | : | Gas operated |
| » Muzzle Velocity | : | 840 m/s |
| » Weight | : | 11.0 Kg |
| » Length | : | 1255 mm |
| » Effective Range | : | 1800 m |
| » Rate of Fire | : | 650-1000 Rounds per Minute |
| » Type of Fire | : | Burst Mode |

COMPANY : Advanced Weapons and Equipment India Ltd.

CONTACT : marketing@aweil.in

NSN 1005720495679

7.62 X 39 MM TAR



Description

A modular, low weight, gas operated 7.62 mm Assault Rifle designed to give defence security personnel all the essential features to effectively fight the counter insurgency operations. 7.62 X 39 mm TAR is in-service since 2017.

Specification

- | | | |
|---|---|---|
| » Calibre | : | 7.62 mm |
| » Ammunition | : | 7.62 x 39 mm Ammunition |
| » Overall Length of Rifle | : | 900 mm |
| » Overall Length of Rifle (in folded condition) | : | 650 mm |
| » Length of Barrel | : | 415 mm |
| » No. of Grooves in Barrel | : | 4 |
| » Type of Feed | : | Curved Magazine with 30 RDS capacity |
| » Type of Fire | : | Single shot & Automatic Fire |
| » System of Operation | : | Gas |
| » Muzzle Velocity | : | 710-715 m/s |
| » Weight of Rifle | : | 3.5 Kg |
| » Range | : | 350 meters |
| » Body Type | : | Milled Receiver Body |
| » Breech Bolt | : | Rotating Type |
| » Variants | : | i) Fixed Butt.
ii) Side Foldable Butt. |

COMPANY : Advanced Weapons and Equipment India Ltd.

CONTACT : marketing@aweil.in



5.56 X 30 MM JOINT VENTURE PROTECTIVE CARBINE



Description

AWEIL has successfully developed a 5.56 mm Joint Venture Protective Carbine in association with ARDE, Pune. This weapon uses 5.56x30 mm Ammunition.

JVPC has modular design and is a highly reliable and accurate weapon system which makes it suitable as personal defence weapon for second line troops.

The JVPC carbine is very effective in counter insurgency operations and VIP security applications. 5.56 X 30 mm Joint Venture Protective Carbine is in service since 2018.

Specification

- » Calibre : 5.56 mm
- » Ammunition : 5.56 x 30 mm round
- » Working Principle : Gas operated Rotating Bolt
- » Muzzle Velocity : 650 m/s
- » Magazine Capacity : 30 Rounds
- » Weight : < 3.0 Kg
- » Length : i) 750 mm (Butt extended)
ii) 560 mm (Butt retracted)
- » Length of Barrel : 300 mm
- » Effective Range : 100 Meter
- » Rate of Fire : 800 Rounds per Minute
- » Type of Fire : Single shot & Automatic Fire

COMPANY : Advanced Weapons and Equipment India Ltd.

CONTACT : marketing@aweil.in

40 MM L-70 AMMUNITION



Description

This is anti-aircraft ammunition used in 40 mm L-70 Gun, which is a close-range anti-aircraft weapon system. It is intended for engaging high speed aircraft flying at low altitudes, its chief characteristics being high-speed of elevation and traverse combined with a high rate of fire.

Specification

	HE/T	TPT	PFFC
Total Length of Ammunition	534.4mm (max)	534.5 mm	535 mm
Rate of Fire	4 rounds/sec	4 rounds/sec	4 rounds/sec
Muzzle Velocity	1000 m/s ± 10 m/s	1000 m/s ± 10 m/s	1000 m/s ± 10 m/s
Self-Destruction			7 to 10 Sec
Maximum Horizontal Range	12600 m	12600 m	12600 m
Shelf Life	10 years	10 years	10 years

COMPANY : Munitions India Ltd.

CONTACT : exports@munitionsindia.co.in



120MM FSAPDS – KINETIC MUNITIONS



Description

BFL has been successfully developed and manufactured 120mm FSAPDS Mark II for MBT.

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com

AMMUNITION (ONLY EMPTY)



Figure 1 : Artillery Shells of Various type (70 - 155 mm)



Figure 2 : 70mm Rocket Warhead, 120mm Mortar and 155mm Artillery Shell



Figure 3 : 500 Kg Bomb bodies

Description

Capability to produce Ammunition shells (only empties) of various types like Rocket warheads (70mm), Mortar (120mm), Artillery Shells (70 – 150mm) covering all variants including HE, smoke, illuminating and incendiary and 500Kg, 1000Kg Bomb bodies.

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com



ARMoured VEHICLE – RUNNING GEAR

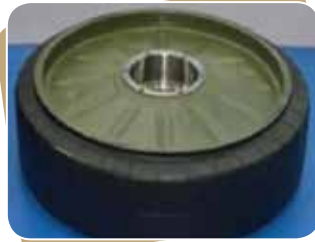


Figure 4 : Road Wheels



Figure 5 : Tracks

Description

Capability to produce Aluminium Road Wheels and Road wheels. Group has developed & manufactured ready to fit track wraps for main battle tanks and is capable of designing & manufacturing running gear systems for any ICVs.

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com

ARMoured VEHICLE – POWERTRAIN COMPONENTS



Figure 9 : Turbocharger & Supercharger



Figure 10 : Crankshaft

Description

High end proven capability for Heavy Forging, Heat Treatment and Machining make it feasible to supply engine aggregates like Crankshafts, Turbocharger, Super charger and Cylinder Liner for ICVs.

COMPANY : Bharat Forge Limited
CONTACT : contact.defence@bharatforge.com



TURNKEY SOLUTIONS FOR AEROSPACE & DEFENCE ELECTRONICS



Frequency Synthesizer Unit



Fuel Content System Test Set



Fuel Flow Meter-KPAR1



Intercom Test Jig



PC Board Assembly Cord No.4



RMI Test Rig



Synthesizer Electronic Frequency Unit



Universal Inverter Test Rig



TAWS Warning Panel



TAWS Relay Box



Vertical Gyro Test Bench

Description

Radel is a CEMILAC certified wholly Indian aerospace & defense MSME providing electronics and avionics based complete LRUs for a variety of platforms of Air Force, Navy and Army. All airborne LRUs are certified airworthy by CEMILAC.

COMPANY : Radel Advanced Technology Pvt. Ltd.
CONTACT : atg@radel.co.in

Specifications

- » Distributor of Matra Pod – Fires 18 rockets
- » Auto Selector – Fires 4 ERUs for Bomb release
- » LED ACL suitable for all aircraft & helicopters
- » Power Supply modules up to 200W
- » Digital and Analog circuits for RF applications
- » Light weight, high efficiency and reliable
- » Can provide obsolescence mitigation solutions



MECHANICAL AND TIME MECHANICAL FUZES (EMPTY) & SAFE AND ARMING DEVICES (EMPTY)



Various types of Mechanical and Time Mechanical Fuzes:

- » Fuze MG-25 (23mm)
- » Fuze A670 (30mm)
- » Fuze MGL (40mm)
- » Fuze DA5A (51mm)
- » Fuze 162 M8 (81mm)
- » Fuze 162 M9 (120mm)
- » Fuze 213 M3 (81mm)
- » Fuze 213 M4 (120mm)
- » Fuze 447 (84mm)
- » Fuze 117 (105mm)
- » Naval Fuze B25
- » Naval Fuze YDB60 for Rocket RGB60

Various types of Safe and Arming Devices (Empty):

- » Used in Fuze FB40 (40mm PFFC Ammunition)
- » Electronic Fuzes for 105mm, 130mm and 155mm calibre

COMPANY : Sandeep Metalcraft Pvt. Ltd.
CONTACT : info@sandeepmetalcraft.com



ARMOUR PRODUCTS

BULLET PROOF PATKA



Description:

BP Patkas developed are as per BP(R&D) Specifications using special armour steel. Ergonomic features and trauma pad provided to absorb shocks.

Specifications:

- » BP Patka (Steel) without skull protection – 1.4 Kg+10%
- » BP Patka (Steel) with skull protection – 1.5 Kg+10%
- » Capability
 - Front Armour Protection: 7.62x39 mm HSC
 - Rear Protection: 9 x 19 mm Ball

COMPANY : Mishra Dhatu Nigam Limited
CONTACT : mktg@midhani-india.in

BULLET PROOF JACKET



Description:

Lightweight bullet resistant jacket. Latest technology of dispersing CNT on the Polyethylene sheets and using ceramics on strike face is used.

Specifications:

- » BIS Level 5: 7.1 Kgs (large size) – without 360o protection, BFS:25 mm
- » BIS Level 5: 9.0 Kgs (large size) – with 360o protection, BFS:25 MM
- » Capability – Protection against BIS Level 5 and can be increased to BIS Level 6, depending upon user requirements

COMPANY : Mishra Dhatu Nigam Limited
CONTACT : mktg@midhani-india.in

BULLET PROOF HELMET



Description:

MIDHANI's Bulletproof Helmet are being used by Military Police and Special force to provide protection against ballistic threats to reduce head injuries and fatalities.

Specifications:

- » Made of Aramid (Kevlar) Composite material
- » Light Weight, High Strength
- » High-energy absorption-to-weight ratio
- » Outstanding long-term stability
- » Multi-Layer Construction
- » Durable & Comfortable Suspension Straps
- » Compatible with Chem/Bio hazard masks
- » Offers the ideal Ballistic Helmets for Law Enforcement. Military and Private Security Contractors
- » Sizes: M, L
- » Weight: 1.2 Kgs & 3Kgs
- » Protection Level
- » Level IIIA NIJ, BFS: 13 mm max

COMPANY : Mishra Dhatu Nigam Limited
CONTACT : mktg@midhani-india.in



VEHICLE PROTECTION



Armouring Solution Provided

- » Composite Solution: Light weight laminate to ensure high power to weight ratio
- » BP Glass: No degradation of visibility up to five years
- » Bullet Proof Tyres: up to 100 km safe running after a hit
- » Firing Platform: Customised solution for each Weapon System
- » Protection against secondary projectiles: By Spall Laminates
- » Road Testing: VRDE or ARAI or ICAT
- » Reconnaissance & Surveillance: Upgradation as per increased weight post armouring



COMPANY : Mishra Dhatu Nigam Limited
CONTACT : mktg@midhani-india.in



COMBAT VEHICLE



Ballistic Protection:

- Roof and Body protected against 7.62x39 mm MSC and 7.62x39 mm HSC ammunition
 - Floor protected against 2 x HE 36 Grenades.
 - All ports are covered with different sizes of BP glass and protected against 7.62x39mm MSC & 7.62x39 mm HSC.
- » Crew Carrying Capacity with Weapons: 07
- » Run flat Tyres System: 100 kms
- » Bullet Resistant Glass:
- Protection against 7.62x39 mm HSC ammunition
 - 5 Years of warranty against any visibility defect
- » Quick Mounting and Dismounting: Quick mounting and dismounting due to dedicated door for front, and rear positioned crew.
- » Revolving Turret: Mounting of Large Calibre Support Weapon in 360o revolving Turret.

Enhancement Features:

- » Composite Up-Armouring: Composite Armouring variant will provide power to weight ratio equal to 60 BHP/MT.
- » Surveillance and Reconnaissance: Can be Equipped with 360-degree high resolution camera with FOY varies from 35 degree to 75 degree or customised.

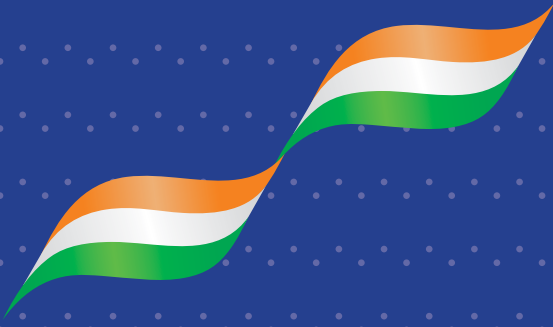
COMPANY : Mishra Dhatu Nigam Limited

CONTACT : mktg@midhani-india.in

NSN 1450720253088







NAVAL SYSTEMS

105 M ADVANCED OFFSHORE PATROL VESSEL



Description:

The New Version 105M. Advanced Offshore Patrol Vessel (AOPV) is the latest from GSL's stable of Offshore Patrol Vessel designs in the service of Indian Navy and Indian Coast Guard. Of the order of total eleven New Version AOPVs received from Indian Coast Guard, ten have already been delivered and the last one is scheduled for delivery by Feb 2022. This Vessel is designed for patrolling and policing maritime zones, search and rescue, pollution control, external fire fighting and embarkation & operation of ALH helicopter for long range all time search and surveillance. Powered by two diesel engines with CPP, the vessel delivers a maximum speed of 25 knots and has a range of 6500 NM. The vessel can be provided with other customer required propulsion options.

COMPANY : Goa Shipyard Limited
CONTACT : fpg_office@goashipyard.com

The Coast Guard version of the vessel is armed with one 30mm Gun and two 12.5mm SRCGs with fire control system. However the space and structure is suitable for fitment of 76mm SRGMs.

The Vessel has a rail-less Helo-traversing system for Helicopter handling. This provides a clear deck for Helo-operations without the attendant rail fittings. A state-of-the-art navigation & communication equipment with Integrated Bridge System is provided on board. Modular Mast options are available for higher weapon fit.

Specifications:

» Length Overall	:	105.34 M
» Breadth	:	12.90 M
» Displacement	:	2200 Tons
» Main Engine	:	2 x 9000 KW
» Speed	:	25 Knots
» Range	:	6000 NM at 16 Knots
» Endurance	:	Normal 20 days, Extended 50 days.



OFFSHORE PATROL VESSEL (OPV)



Description:

The Offshore Patrol Vessel is equipped with sophisticated state of the art weapons and sensors viz Bofors anti-aircraft gun, Racal Decca 2459 search radar and BEL 1245 navigation radar. The 1890 tonnes vessel is the biggest NOPV developed at HSL. It has state of the art communication and navigation system.

Specifications:

- » Length : 101.00 m
- » Breadth : 11.50 m
- » Speed : 21 Knots speed achieved @ 85% MCR
- » Range : 7000 Nm
- » Power : 680 kw at 900 rpm

COMPANY : Hindustan Shipyard Limited
CONTACT : mprojectsdo@hslvizag.in
NSN 1940720473210

NAVAL OFFSHORE PATROL VESSEL



Description:

Naval Offshore Patrol Vessel (AOPV) is designed for patrolling and policing maritime zones, search and rescue, pollution control, external fire fighting and embarkation & operation of Advanced Light Helicopter for long range all time search and surveillance. The Vessel has a rail-less Helo-traversing system for Helicopter handling. This provides a clear deck for Helo-operations without the attendant rail fittings. A state-of-the-art navigation & communication equipment with Integrated Bridge System is provided on board. Modular Mast options are available for higher weapon fit. It is a multiple role capable, cost effective product, comparable to any other similar internationally available product. The basic platform is fuel efficient and cost effective and can be easily adapted to any special sea evolution requirements of the Customer.

Specifications:

- » Main Engine : 2 x Diesel Engines (2 x 8100 KW)
- » Speed : Not less than 25 Knots
- » Endurance : Not less than 6000 miles
- » Armament : 1 no 30mm Gun with FCS + 2 nos 12.7 mm Gun with FCS
- » Aviation : Operation & embarkation of 1no twin engine helo of AUW 6800 Kgs

COMPANY : Goa Shipyard Limited
CONTACT : fpg_office@goashipyard.com
NSN 1940 720 472 511



FAST PATROL VESSELS



Description:

Primarily designed for patrolling, anti-smuggling and anti-terrorist operations, it can also support the Navy during wartime as a coastal convoy escort and as a communication link. The hull of the vessel is of steel and strong enough to withstand continued heavy sea conditions. Fully air conditioned accommodation is provided for 35 men on-board. These vessels have been proven during challenging situations and national disasters like tsunamis. Two Fast Patrol Vessel have been exported to Mauritius.

Specifications:

- » Length Overall : 50.44 m {Incl. WaterJet}
- » Breadth (mid.) : 7.50 m
- » Displacement : 270 tons
- » Main Engine : 3 x MTU-F 16V4000 M 90
- » Total Power : 3 x 2720 kw
- » Speed : 35 t 1 knots
- » Range : 1500 Nm at 12-14 knots
- » Endurance : 7 days

COMPANY : Goa Shipyard Limited
CONTACT : fpg_office@goashipyard.com
NSN 1940720472521

HIGH SPEED PATROL BOAT



Description:

The boat is a day/night surveillance and investigation vessel operating in shallow coastal waters in and around harbour and anchorage. The boat is highly seaworthy unsinkable type and is able to sustain operations up to sea state 3 in open sea and also in breaking sea waves near the coast while in shallow water. The boat has propulsion & power generation, lifesaving & ballistic protection and other engineering and electrical systems to carry out safe and reliable operations.

Specifications:

- » Length Overall : 15.56 m (including aft platform)
- » Speed : 30 knots
- » Range : 8 hours in the area of operation
- » Main Engine : 2 x Caterpillar C9 ACERT 503 BHP @ 2500 rpm inboard diesel engines

COMPANY : Goa Shipyard Limited
CONTACT : fpg_office@goashipyard.com
NSN 1940720472529



FAST INTERCEPTOR BOATS



Description:

The Fast Interceptor Boat (FIB) is capable of performing high speed pursuits and interception in various border protection roles including anti-smuggling, anti-infiltration, fisheries, patrol and immigration and anti-terrorism activities. The vessel can also be used for search and rescue operations.

The boat hull is constructed making use of most advanced FRP construction technology. The FIB is capable of surviving at sea state 6 and capable of withstanding 4G acceleration and can withstand rough waters and choppy seas. Even at its top speed, it can be brought to a grinding halt within seconds. The boats are fully air-conditioned for crew comfort during prolonged patrolling duties.

Specifications:

- » Speed : 35 ± 1 Knots
- » Range : 150 Nm with 25% reserve
- » Main Engine : 2 x Cummins QSC8.3 500 BHP @2600 RPM Diesel Engine
- » Propulsion : 2 x Waterjet Kamewa FF310

COMPANY : Goa Shipyard Limited

CONTACT : fpg_office@goashipyard.com

NSN 1940 720 472 465



INSHORE PATROL VESSEL (IPV)



Description:

IPV is designed and developed for coastal patrolling, anti-smuggling, search and rescue operations, fisheries protection, monitoring, and providing communication links. It has provision for dynamic reorientation of the ship in the planning mode with the use of interceptors.

Specifications:

- » LBP : 44 m
- » Displacement : 330 tonnes
- » Speed : 33.5 knots
- » Endurance : 1500 Nm

COMPANY : Hindustan Shipyard Limited

CONTACT : mprojectsdo@hslvizag.in

NSN 1940720473227



LANDING CRAFT UTILITY



Description:

Landing Craft Utility (LCU) are deployed to transport troops and equipment from ship to shore and vice versa. Following are the salient features of the LCU platform: -

- » Equipped with Bow Ramp for handling combat equipment and vehicles.
- » Arrangements for transporting and stowing equipment / vehicles on main deck.
- » Ballast tanks to achieve desired trim and for smooth beaching / un-beaching operation.
- » Arrangement to pull in / pull out stranded vehicles on beach using Tank hauling capstan installed on main deck.
- » Integrated Platform Management System (IPMS).

Specifications:

- » Length Overall : (m) 62.8 (approx.)
- » Breadth, moulded : (m) 11

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)

CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

- » Depth up to Dk. No.1 : (m) 4
- » Draught (design) : (m) 1.70
- » Displacement : (t) 830 (approx.)
- » Speed : (knot) 15
- » Endurance : (Nm) 1500 at 12 Knots
- » Main Engines : (kw) 2 x 1850
- » Diesel Generators : (kw) 2 X 250, 1 X 350
- » Payload :
 - 01 No Main Battle Tank / 04 Nos. Armoured Personnel Carrier (Light Tanks) / 04 Nos. 4 Ton Trucks
- » Weapons :
 - 02 Nos. CRN-91 Guns
 - 04 Nos. Medium Machine Guns (MMGs)
 - 02 Nos. Heavy Machine Guns (HMGs)
- » Accommodation (Total : 216)
 - Officers 10
 - Sailors 46
 - Troops 160



VOITH TUG



Description:

Tug is designed and developed for towing and assisting naval ships, submarines and crafts in harbour and restricted water, conducting fire fighting operations, carrying out search and rescue operations and tow ships up to 45000 displacement in harbour, towing of two or more small ships (450 tonnes displacement).

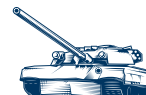
COMPANY : Hindustan Shipyard Limited

CONTACT : mpjectsdo@hslvizag.in

NSN 1925720487327

Specifications:

- » LOA : 34.55 m
- » Bollard Pull : 50 ton bollard pull achieved @ 85% MCR
- » Speed : 12 knots
- » Endurance : 72 hrs with reserve capacity



LIGHT WEIGHT TORPEDO (TAL-XP)



Description:

LIGHT WEIGHT TORPEDO (TAL-XP) is a state of art underwater weapon which can be launched from a ship and/or a Helicopter.

Specifications:

- » Length : 2752 mm
- » Weight : 197.5 Kg (exercise version) 220 Kg (war shot version)
- » Diameter : 324 mm
- » Displacement : 190.7 Kg
- » Explosive weight : 40 Kg

Tactical characteristics:

- » Role : Anti-submarine
- » Launch platform : Ship / helicopter / fixed wing aircraft
- » Speed : 33 knots(max)
- » Endurance : 6 min
- » Depth of operation : 10 mtrs(min) 450 mtrs(max)
- » Propulsion : Electrical

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in
NSN 1356720474117



HEAVY WEIGHT TORPEDO (VARUNASTRA)



Description:

VARUNASTRA is an advanced state of the art, ship launched heavy weight, anti-submarine Torpedo capable of targeting submarines operating in shallow / deep waters.

Specifications:

- » Length : 7.780 m
- » Diameter : 533.4 mm
- » Speed : 27 & 40 knots
- » Operating depth : 8 to 600 m
- » Propulsion : contrarotating propellers
- » Weight of the torpedo: 1605 \pm 10 Kgs (exercise version)
1850 \pm 10 Kgs (combat version)
- » Long range with multi manoeuvring capabilities.
- » Acoustic homing with wide look angle capable of tracking silent targets.
- » ACCM features and multiple signal tracking system.
- » Autonomous advanced guidance algorithms.
- » Low drift navigational systems over long endurance.

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in
NSN 1356720473826



CRN 91 NAVAL GUN



Description:

CRN 91 Gun is a modular, flexible and effective weapon intended for use against armoured targets and air targets flying at low altitudes. The range is 2 km for AP and 4 km for HE projectiles. The cannon can hit slow moving objects in air at a height of 2000 m and has a total range of 2500 m. CRN 91 Naval Gun is in-service since 1995.

COMPANY : Armoured Vehicles Nigam Ltd.

CONTACT : export@avnl.co.in, marketing@avnl.co.in

NSN 1005720487371

Specifications:

- » Diameter : 2700 mm
- » Height : 2100 mm
- » Designation : 2A42
- » Caliber : 30 mm
- » Rate of Fire : Slow : 200 to 300 rounds per min,
Rapid : 550 rounds per min
- » Binocular Type : BPK 2-42



TORPEDO LAUNCHERS



Description:

L&T has designed both lightweight and heavyweight torpedo launchers for Anti-Submarine warfare operations. The Light Weight Torpedo launchers (LWT) have triple tube configuration and are installed on P16A class ships of the Indian Navy. The Heavy Weight Torpedo launchers (HWT) have twin-tube configuration and are installed on P15A and P28 class ships. The system is designed with a Power PC-based controller.

Specifications:

- » TTL system : Firing is achieved by injecting high pressure air at high mass flow rate into the tube
- » ITTL : The system is designed for single shot and salvo firing of torpedoes from a remote station through the IAC Mod C Fire Control System

COMPANY : Larsen & Toubro Limited
CONTACT : intl.defence@larsentoubro.com
NSN 1045720487328

KAVACH MOD-II CHAFF ROCKET LAUNCHER



Description:

The KAVACH MOD-II system is designed to counter the threat of various anti-ship missiles by using chaff decoys. The system provides soft kill defence in a three-layered defence scheme. Multi barrel chaff rocket launcher is available both in Long Range and Short Range. Kavach MOD-II Chaff Rocket Launcher is in-service since 2010.

Specifications of LRMR launcher:

- » Overall weight : 1680 Kgs
- » Overall Height : 2690 mm
- » Overall Width : 1300 mm(dia)
- » Overall Length : 1300 mm(dia)
- » Mode of operation : Power and Manual
- » Bore of barrel : 105.6 + 0.4 mm

COMPANY : Armoured Vehicles Nigam Ltd.
CONTACT : export@avn1.co.in, marketing@avn1.co.in
NSN 1055720487366



ASW ROCKET LAUNCHER



Description:

This ship-based anti-submarine weapon system is capable of firing 212 mm depth charge rockets at submerged targets, in single and salvo mode, from remote as well as local control stations. The launcher has a stabilised naval launch platform with two 2-axis all-electric servo drives. It has been developed for 15A and P28 class ships.

COMPANY : Larsen & Toubro Limited

CONTACT : intl.defence@larsentoubro.com

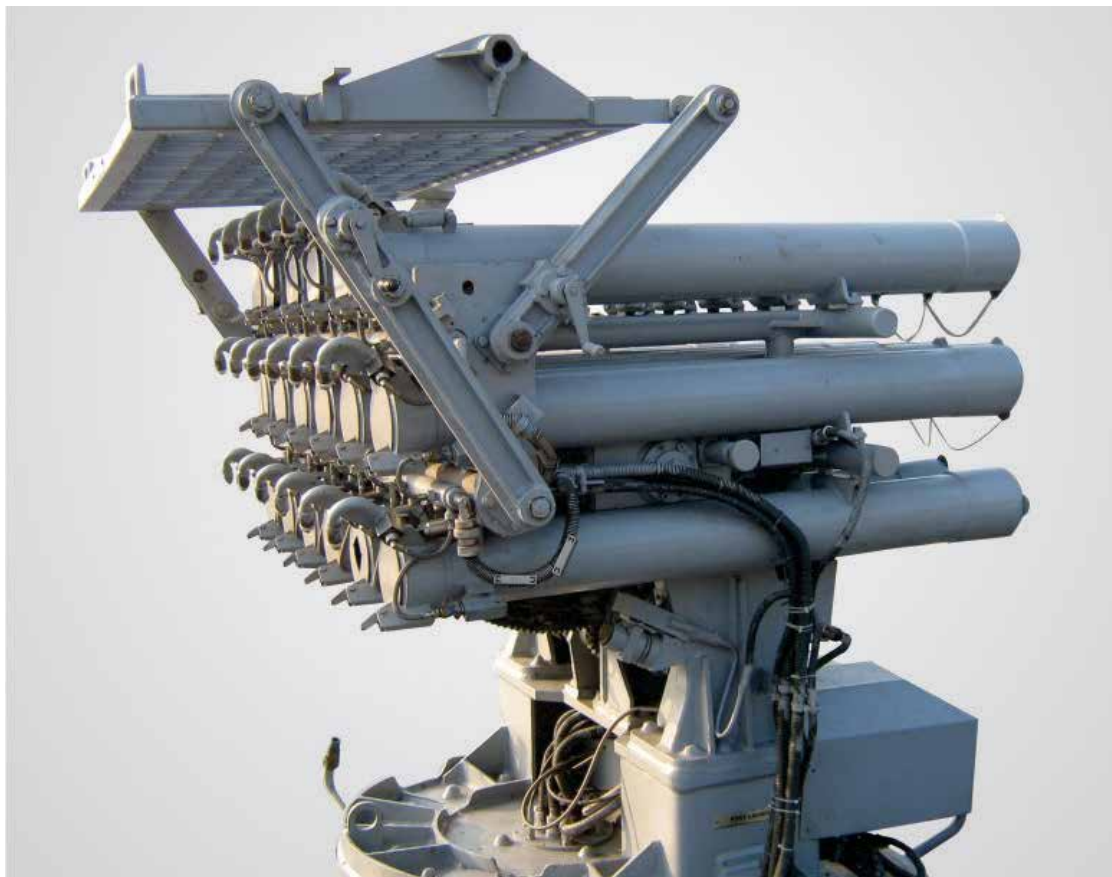
NSN 1055720487387

Specifications:

- » Capable of firing 12 radially arranged depth charge rockets
- » Supported by Rocket Feed Complex



WM-18 ROCKET LAUNCHER (BEACH CLEARING SYSTEM)



Description:

This weapon system designed for beach-clearing by LST class of ships before executing amphibious operations. The weapon system comprises of two launcher mounts, one for each port and starboard. The Rocket Launcher WM-18 can be slaved to a Director Sight and is equipped with a weapon reloading system.

Specifications:

- » Comprises two mounts of launchers
- » Each launcher mount is controlled by a closed-loop electro-hydraulic control system and is designed for automatic compensation of roll and pitch motions of the ship, which holds the weapon axis fixed with respect to the target

COMPANY : Larsen & Toubro Limited

CONTACT : intl.defence@larsentoubro.com

NSN 1055720487385



53,000 DWT BULKER



Description:

Designed and developed for Carriage of 53,000 Dwt bulk cargo materials, vessel is accommodated with 5 cargo holds and equipped with heavy cranes for loading and unloading cargo. Constructed and equipped to carry dry bulk, break bulk, grain, metal concentrates, iron ore, scrap metal, coal, bauxite, salt and sugar, general cargo such as steel products, forest products, package freight and palletized cargo, besides long cargo like pipes and bagged cement and bagged cargos etc.

Specifications:

» LOA	:	190.00 m
» Displacement	:	65084 tonnes
» Speed	:	14 Knots speed achieved @ 85% mcr
» Power	:	9480 kw

COMPANY : Hindustan Shipyard Limited

CONTACT : mprojectsdo@hslvizag.in

NSN 1915720473237



FLOATING DOCK



Description:

The L&T Floating Dock is ideal for docking of Naval Assets. Designed for operation alongside a jetty or with a mooring system, it meets stringent Military Specifications and Classification Society rules. The Floating Dock is capable of meeting end-to-end requirements for repairs of high end warships and submarines. It also provides accommodation to its crew and the crew of the docked ship, thereby becoming a critical enabler for the Naval Forces. Other features of Floating Dock are as follows:

- » Fully-automated Ballast Control System
- » Constructed of military grade steel

- » Multiple docking capability – warships and submarines
- » Retractable cover for all-weather operations
- » Fully-automated hauling-in system
- » Services the needs of docked ships and ships berthed alongside
- » Redundancy of critical systems

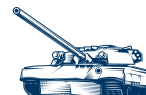
Specifications:

- » Length (overall) : 185 m
- » Breadth between inner walls : 28 m
- » Lifting capacity : Up to 8000 T
- » Draught of docked ship : 7 m
- » Accommodation capacity : 113 persons

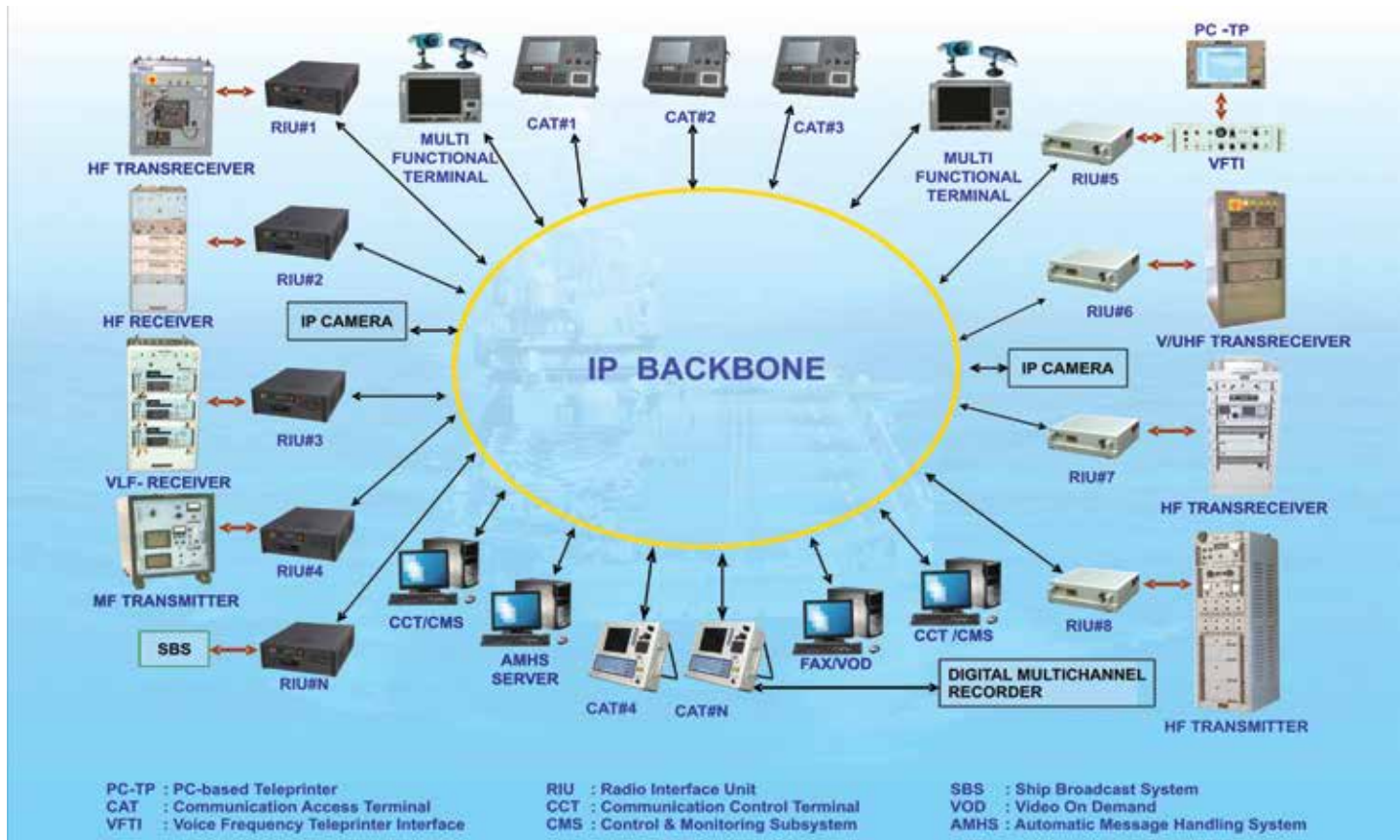
COMPANY : Larsen & Toubro Limited

CONTACT : intl.defence@larsentoubro.com

NSN 1925720487345



ADVANCED COMPOSITE COMMUNICATION SYSTEM (CCS MK IV)



Description:

The Advanced Composite Communication System (ACCS) is an IP based, highly flexible Integrated Communication System designed to provide quick and reliable communication over VLF/MF/HF and V/UHF bands on board Naval Ships and Submarines for facilitating ship-to-ship, ship-to-shore and Ship-to-Air communication.

It provides the end user, central control for allocation & control of Radios, monitoring of status and power, other supervisory features. It facilitates remote operations of radio, intercom and radio group working.

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 5895720487321

Specifications:

- » LOA : 190.00 m
- » Displacement : 65084 tonnes
- » Speed : 14 Knots speed achieved @ 85% mcr
- » Power : 9480 kw



The protection of Exclusive Economic Zone (EEZ) particularly of coastal line has become important in view of spreading of illegal fishing, poaching, smuggling and also to protect the sea environment. This necessitates a need for surveillance system for detection, classification and identification of Vessels using the territorial waters and also actively help in search and rescue operation.

The classification of targets is made based on the speed data. In order to facilitate identification of targets, Automatic Identification System (AIS) is integrated into Radar network. The communication system enables transfer of Radar track data and AIS Track of the surface targets to the Control Centre. An integrated Radar picture of surface and air targets will be available on the display at the Control Centre. The surveillance system also provides communication facility of Data / Voice connectivity between individual Radar stations and Control Centre. For observation and monitoring of close range targets, Low Light TV Camera (LLTV) with zoom facility with suitable pan & tilt mechanism can be proposed at each radar station as option. This provides a visual image of surface targets upto a range of 10 kms.

- » Surveillance Radar is a 9 ft slotted waveguide array
- » Automatic identification system works by integrating standard VHF Trans receiver with GPS receiver

NSN 5840720487276



COMBAT MANAGEMENT SYSTEM (CMS)



Description:

CMS automates tactical data handling from the ship's sensors and provides a Decision support system to the command. It gathers data from ships / helicopters / aircraft in the fleet through data link to collate, process, integrate and present a comprehensive tactical picture of the area of operation and also acquires, stores, processes, integrates, correlates & displays tactical data (both raw & processed) from various sensors in real time. It does continuous identification and classification of air, surface & sub-surface targets, carries out threat assessment and automatically advises the command on course of action when activated by events occurring in the equipments that are integrated.

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 1230720487277

Other manufacturer:

COMPANY : Tata Advanced Systems Limited

CONTACT : tata-and@tataadvancedsystems.com

Specifications:

- » Designates sub-surface, surface and air targets to the fire control system
- » Monitors the execution of weapon firing and display the status of weapons communication etc. after firing
- » Efficient recording of events, operator commands & data to enable reconstruction of scenario at later time
- » Facility for off-line map preparation and loading of charts
- » Adequate redundancy provided by fault tolerant software
- » Capable of simulating environment comprising of all sensors to present real situation scenario for training of the operator
- » Easy to use diagnostics for off-line health monitoring, maintenance of system and verification of hardware health
- » Flexible architecture to facilitate addition / detection of system components on different types of platforms



ELECTRO OPTICAL FIRE CONTROL SYSTEM -UPGRADE 2 (EOFCS-U2)



Description:

The EOFCS is a compact, 2 axes stabilized, high performance system for control of short and medium range naval gun mounts. It has capability of panoramic detection, identification and gun engagement of all types of surface and air targets, such as anti-ship sea-skimming missiles, high speed missile boats and Fast Incoming Attack Craft (FIAC) and provides efficient and comprehensive control of short and medium range guns in anti-air, surface and Naval Gunfire Support (NGS) engagements.

Specifications:

- | | |
|--------------------------|---|
| » Azimuth Limits | : Panoramic |
| » Elevation Limits | : -30° to +85° |
| » TV Camera | : Continuous Zoom from 16(H) x 12(V) to 1.7(H) x 1.3(V) |
| » Thermal Imager | : Continuous 36 x Optical Zoom |
| » Laser Range Finder | : Eye safe type with beam wavelength of 1.54 μ m, Beam width - 0.7°, SRBIUM glass |
| » Operating Temperature | : -10°C to +50°C |
| » EMI/EMC | : As per MIL STD 461E |
| » 2 axes Gyro Stabilized | |

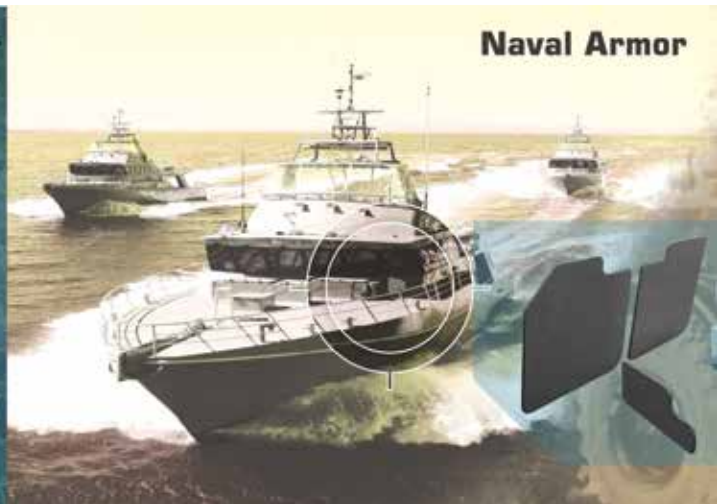
COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 1260720487322



FLOATATION BALLISTIC JACKETS



Description:

SMPP produces tactical flotation body armor which is specially designed for maritime security personnel.

- » Inflates automatically when in contact with water in auto mode.
- » Provides perfect balance of positive flotation.
- » It has been tested to provide flotation, even in unconscious state, for more than 96 hours.
- » Ballistic protection in any maritime environment.
- » In-use in Indian Navy and Coast Guard in addition to forces worldwide.
- » Tested and certified by world's renowned testing laboratories.

Specifications:

Platform protection for Naval Vessels

- » SMPP produces a wide range of customized light weight armor solutions for various naval forces.
- » Provides protection to the vulnerable areas of the vessel.
- » Protection from extensive range of threats including fragments, rifle fire, armor piercing rounds etc.
- » Light weight systems allow uncompromised speed and operation.
- » In-use in various patrol boats, frigates, etc.

COMPANY : SMPP Private Limited
CONTACT : contact@smgroupindia.com
NSN 8470720487473



90 M OFFSHORE PATROL VESSEL



Description:

This Offshore Patrol Vessel is designed for patrolling and policing maritime zones, search and rescue, pollution control, external fire fighting and embarkation & operation of Advanced Light Helicopter for long range all time search and surveillance. The Vessel has a rail-less Helo-traversing system for Helicopter handling. This provides a clear deck for Helo-operations without the attendant rail fitting. A state-of-the-art navigation & communication equipment, with Integrated Bridge System is provided on board. Modular Mast options are available for higher weapon fit. It is a multiple role capable, cost effective product, comparable to any other similar internationally available product. The basic platform is fuel efficient and cost effective and can be easily adapted to any special sea evolution requirements of the customer.

Specifications:

» Length Overall	:	93.89 M
» Breadth	:	12.90 M
» Displacement	:	1840 Tons
» Main Engine	:	2 x 9000 KW
» Speed	:	26 Knots
» Range	:	4500 NM at 12-14 Knots
» Endurance	:	Normal 30 days.

COMPANY : Goa Shipyard Limited

CONTACT : fpg_office@goashipyard.com

NSN 1940720512205



ANTI-SUBMARINE WARFARE CORVETTE



Description:

Anti-Submarine Warfare Corvette (ASWC) is a frontline warship with Stealth features. The Composite Material Superstructure reduces Weight, Magnetic signature and RCS (Radar Cross section).

Hull, equipment & equipment foundation is designed for low Acoustic signature. Advanced heat signature management techniques such as IRSS device has been installed for Infrared signature suppression thus enhancing stealth capability of the platform. Ship is also capable to operate in NBC Environment (Nuclear, Biological & Chemical).

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in
NSN 5865720487372

Specifications:

- » Length Overall : (m) 109.10
- » Breadth : (m) 14.17
- » Depth : (m) 8.5
- » Displacement : (t) 3200 approx.
- » Max Speed : (knots) 25.00
- » Draught (Design): (M) 3.72
- » Endurance: (Nm) 3450 approx. at 18 knots
- » Main Engines : (kw) 4 X 3888 at 1050 rpm
- » Diesel Generators : (kw) 2 X 1000, 2 X 500
- » Aircraft : Seaking Mk-42B/ Advanced Light Helicopter

» Armament

- Electronic Warfare System : Hull Mounted Sonar
- SRGM : CIWS
- Torpedo Launcher : Integrated Rocket Launcher
- Chaff Launcher : Early Warning Radar
- Fire Control Radars : Under Water Sensors

» Accommodation

- Officers : 17
- Sailors : 106



40 KNOTS HIGH SPEED FRP INTERCEPTOR CRAFT



Description:

The boats shall be day/night surveillance and investigation vessels for operating in shallow waters in and around harbour and anchorage. The boats shall be highly seaworthy, unsinkable type (having 10% reserve buoyancy even when filled with water) and shall be able to sustain operation upto sea state 2 in open sea and also in breaking sea waves near the coast while in shallow water. The boats have propulsion, power generation, life saving & ballistic protection and other engineering and electrical systems to carry out safe and reliable operations.

Specifications:

» Length Overall	:	9.85 M
» Breadth	:	3.38 M
» Displacement	:	5.40 Tons
» Main Engine	:	2 x 275 BHP
» Speed	:	40 Knots
» Range	:	75 NM at 25 Knots

COMPANY : Goa Shipyard Limited
CONTACT : fpg_office@goashipyard.com
NSN 1940720512206



MISSILE CORVETTE



Description:

Missile Corvette is a frontline warship armed with SRGM Gun, Surface-to-Surface and Surface-to-Air Missiles and Anti-aircraft Guns. It is also equipped with Electronic Warfare System and CIWS. It has a Helo Landing Deck.

Specifications:

» Length Overall	(M)	91.10
» Breadth	(M)	10.50
» Displacement	(T)	1370
» Max Speed	(Knots)	25.00

» Draught	(M)	3.00
» Endurance	(NM)	4000 at 16 knots
» Main Engines	(BHP)	2 X 7100
» Diesel Generators	(KW)	4 X 350

Armament

» Electronic Warfare System	SRGM Gun
» SSM (Surface to Surface Missile)	SAM (Surface to Air Missile)
» CIWS	

Accommodation

» Officers	09
» Sailors	70
» Total	79

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)

CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

NSN 1905720487372



LANDING SHIP TANK



Description:

The Landing Ship Tank (Large) are large amphibious warfare vessels capable of transportation of troops, vehicles and armaments for military operations. The ship is equipped with bow door for handling the combat equipment and vehicles. The vessel is capable of beaching in gradient of 1:40 and steeper. Further the vessel has a helo hangar and landing platform which can be used for storage and operation of a Seaking 42C/ ALH helicopter.

Specifications:

» Length Overall	(M)	124.80
» Breadth	(M)	17.50
» Depth (Main Deck)	(M)	8.60
» Design Draught	(M)	3.50
» Max. Displacement	(T)	5600 (approx.)

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

» Dead Weight	(T)	2580
» Speed	(Knot)	15.80
» Endurance	(NM)	3000 at 14 knots
» Main Engines	(KW)	2 x 3849
» Generators	(KW)	2 x 500, 2 x 350, 1 x 100
» Military Lift	(T)	750
» Carrying capacity		11 Nos. Main Battle Tanks 10 Nos. 3 Toners/ jeeps as Deck Cargo 04 Nos. LCAs (Landing Craft Assaults) 02 Nos. 30mm Guns 02 Nos. Multi-barrel Rocket Launchers Chaff Launchers 02 Nos IGLA SAM Launching Post Electronic Warfare System
Weapons		
Accommodation (Total: 286)		
» Officers		16
» Sailors		120
» Troops		150



OFFSHORE PATROL VESSEL



Description:

The ship is capable of carrying out multi mission roles, including Anti-Piracy Operations, Search & Rescue Operation, Anti-Smuggling Surveillance, Protection of EEZ etc. The Offshore Patrol Vessel is also deployed for Fisheries Protection, Logistic Support Operation including Transportation of Dry Cargo, Fuel Oil & Fresh Water and refrigerated fresh food, Transportation of Small Detachment of Troops/Personnel, Helicopter Operations, Pollution Control Operation, External firefighting.

Specifications:

» Length Overall	(M)	74.10 (approx.)
» Length B.P.	(M)	69
» Breadth, moulded	(M)	11.40

» Depth	(M)	7.90
» Draught (Full load)	(M)	3.50 (approx.)
» Displacement	(T)	1350 (approx.)
» Speed	(Knot)	20
» Endurance	(NM)	> 5000 at 12 – 13 Knots
» Main Engines	(KW)	2 x 4300 at 1050 rpm
» Diesel Generators	(KW)	4 x 250, 1 x 80
» Weapons		CRN-91 Gun Medium Machine Guns (MMGs) Heavy Machine Guns (HMGs)
» Accommodation		Officers 14 Sailors 48 Passengers 31 Total 93

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)

CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

NSN 1940720512242



INSHORE PATROL VESSEL



Description:

Cost effective platform suited for Marine Surveillance and rescue operation as well as combat capability by addition of suitable firepower. This ship is with mono-hull construction with diesel driven triple water jet propulsion. Other important features of this ships are:

- » Good stability & durability
- » Improved habitability with fully air conditioned modular accommodation
- » Integrated Bridge Management System

Specifications:

- » Length Overall (M) 48
- » Breadth (M) 7.5

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

- » Depth (M) 4.0
- » Draught (M) 2.0
- » Speed (Knots) 34
- » Endurance (NM) 1500 at 16 Knots
- » Fuel Tank Capacity (T) 42.4
- » Freshwater Tank (T) 10
- » Lub Oil Tank (T) 1.0
- » Displacement (T) 304.5 (Full load)
- » Main Engines (KW) 3 x 2720 at 2100 rpm
- » Diesel Generators (KW) 2 x 120
- » (KW) 1 x 80
- » Weapons CRN-91 Gun
- » Accommodation

Officers 7
Sr. Sailors 8
Jr. Sailors 20
Total 35



WATER JET FAST ATTACK CRAFT



Description:

Water Jet Fast Attack Craft (WJFAC) is small yet versatile naval platform with agility and speed for meeting multi mission objectives. These WJFACs are ideally suited for intercepting fast moving surface crafts and performs anti-smuggling, fishery protection, and search & rescue operations. The ship is fitted with Hamilton Water Jets which is the most advanced and innovative marine Propulsion System in use today.

Specifications:

» Length Overall	(M)	48.9
» Breadth	(M)	7.5
» Depth	(M)	4
» Draught	(M)	2.2

» Displacement	(T)	315
» Max Speed	(Knots)	35
» Endurance	(NM)	2000 (Approx.) at 12-14 Knots
» Main Engines	(KW)	3 x 2720
» Diesel Generators	(KW)	3 x 80
» Weapons		CRN-91 Gun Medium Machine Guns (MMGs) Heavy Machine Guns (HMGs) Portable Surface to Air Missile Launcher
» Accommodation		Officers 4 Sailors 25 Total 29

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com



FAST INTERCEPTOR BOAT



Description:

GRSE built Fast Interceptor Boats are well utilised as Day/Night Surveillance-cum-Investigation Vessels operating in shallow water for Coastal Policing, Anti-Smuggling, Fishery Protection and Search & Rescue Operation. These boats provide very high maximum and cruising speeds whilst maintaining very good sea-keeping qualities.

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

Specifications:

Categories		5T	12T
» Length Overall	(M)	9.85	13
» Breadth	(M)	3.38	3.7
» Displacement (Deep)	(T)	5	12
» Max. Speed	(Knot)	35	35
» Endurance @ 25 Knot	(nm)	75	75
Propulsion Machinery		OBM	Waterjet
» Main Engines	(HP)	275	480
Accommodation			
» Officers	4	4	
» Sailors	6	16	
» Total	10	20	



STEALTH GUIDED MISSILE DESTROYER



Description:

State of the art frontline warship equipped with potent blue water capabilities, surface warfare, anti-submarine warfare and anti-air warfare. It incorporates modern weapons and sensors having advanced information warfare suite, an integrated platform management system, an auxiliary control system with sophisticated power distribution architecture and modular crew quarters. A large flight deck and an enclosed hangar for two helicopters further extend its reach.

Specifications:

- | | | |
|--|---|---|
| <ul style="list-style-type: none">» Length Overall : 163.95m» Breadth : 17.7m | <ul style="list-style-type: none">» Displacement : 7500t» Speed : 30 knots» Propulsion : COGAG» Armament<ul style="list-style-type: none">• Surface to Surface missiles• Surface to Air missiles• Torpedo tube launchers• Rocket Launcher• CIWS• Chaff Launcher• MR Gun• LIMO Weapons | <ul style="list-style-type: none">» Sensors<ul style="list-style-type: none">• Bow Mounted Sonar• Surveillance Radar• Early Warning Radar• Surface Surveillance Radar• Navigational Radar• EW Suite» COMBAT MANAGEMENT SYSTEM |
|--|---|---|

COMPANY : Mazagon Dock Shipbuilders Limited (MDL)

CONTACT : mdlmktg@mazdock.com



STEALTH FRIGATE



Description:

Stealth frigate is a multi-role high tech platform equipped with modern weapons and sensors, advanced platform and combat management system and possesses a sophisticated power distribution architecture. They are capable of carrying out surface to surface warfare, Anti-air warfare and Anti-submarine warfare. They are designed with reduced radar reflections, very few projections on the upper, muffled noise and vibration as well as lower magnetic and heat signatures.

COMPANY : Mazagon Dock Shipbuilders Limited (MDL)
CONTACT : mdlmktg@mazdock.com

Other manufacturer:

COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

Specifications:

- » Length Overall : 142.5 m
- » Breadth : 16.9 m
- » Displacement : 6340 t
- » Speed : 30 knots
- » Propulsion : CODOG
- » Armament
 - Surface to Surface missiles
 - Surface to Air missiles
 - Torpedo tube launchers
 - Rocket Launcher
 - CIWS
 - Chaff Launcher
 - MR Gun
 - LIMO Weapons

» Sensors

- Hull Mounted Sonar
- Surveillance Radar
- Early Warning Radar
- Surface Surveillance Radar
- Navigational Radar
- EW Suite

» Combat Management System

Note: Variants available of lengths 125.6m and 149 m.



CORVETTES



Description:

State of the art warship designed for good manoeuvrability, speed and striking ability with the capacity of helicopter operations. The weapon suite comprises of SSM, SAM, ASW and CIWS. Equipped with CODAD propulsion system with maximum speed of 25 knots.

Specifications:

» Length Overall	:	91.16 m
» Breadth	:	10.45m
» Displacement	:	1500t
» Speed	:	27 knots
» Propulsion	:	CODAD

- » Armament
 - Surface to Surface missiles
 - Surface to Air missiles
 - Torpedo tube launchers
 - Rocket Launcher
 - CIWS
 - Chaff Launcher
 - MR Gun
 - LIMO Weapons
- » Sensors
 - Hull Mounted Sonar
 - Surveillance Radar

- Early Warning Radar
 - Surface Surveillance Radar
 - Navigational Radar
 - ESM Suite
 - » Combat Management System
- Note: Variants available of lengths 91m, 119m, 109m and 103m and speeds varying from 25-28 knots.

COMPANY : Mazagon Dock Shipbuilders Limited (MDL)
CONTACT : mdlmktg@mazdock.com



OFFSHORE PATROL VESSELS



Description:

- » These are long range surface ships which are capable of coastal and offshore patrolling. The ships are well equipped with fire fighting at sea
- » Fitted with pollution control equipment to combat oil slicks at sea.
- » To facilitate search and rescue, the ships were designed to carry a helicopter on-board.
- » Meant for patrolling, policing, and anti-Smuggling

COMPANY : Mazagon Dock Shipbuilders Limited (MDL)
CONTACT : mdlmktg@mazdock.com

Specifications:

- » Length Overall : 105m
- » Breadth : 12m
- » Displacement : 2050t
- » Speed : 28 knots
- » Propulsion : CODAD
- » Armament
 - MR Gun forward
 - One 30/40 mm Gun aft
 - 2 x 12.7 mm Gun at sides
 - VSHORAD Systems for higher length designs

Note: Variants available with lengths 57m, 65m, 75m, 85m and 95m and with speeds ranging from 25 knots to 28 knots



SUBMARINE



Description:

- » Capable of offensive operations across entire spectrum of naval warfare including anti-surface warfare, anti-submarine warfare, intelligence gathering, mine laying and area surveillance.
- » SSKs are the latest platform management systems for power and machinery and state-of-the-art weapon, communication and navigation.

Specifications:

- » Length Overall : (m) 61.7
- » Breadth : (m) 6.2
- » Displacement : (t) 1565
- » Speed : 20 knots
- » Steel : High tensile Strength Steel
- » Propulsion : Diesel Electric
- » Endurance : 6000 Nm at 8 knots
- » Armament
 - Weapon launching tube
 - Torpedo Launching tube
 - Surface Underwater Target
 - Anti-torpedo counter measure system
- » Sensors
 - Hull Mounted Sonar

COMPANY : Mazagon Dock Shipbuilders Limited (MDL)

CONTACT : mdlmktg@mazdock.com



MISSILE BOAT



Description:

- » State of the art warship designed for handling asymmetric threats
- » Anti-ship warfare
- » Surface warfare
- » Nuclear, biological and chemical defence (NBCD)

Specifications:

- » Length Overall : 57 m
- » Breadth : 12 m
- » Displacement : 509 t
- » Speed : 32 knots
- » Propulsion : COGAG
- » Armament
 - Surface to Surface Missiles
 - Surface to Air Missiles
 - Torpedo Tube launchers
 - Chaff Launcher

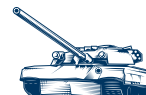
» Sensors

- Long range Surveillance Radar
- Tracking Radar
- SONAR
- Navigational Radar
- EW Suite

» Combat Management System

Note: Variant available with 62m length and 35 knots speed

COMPANY : Mazagon Dock Shipbuilders Limited (MDL)
CONTACT : mdlmktg@mazdock.com



HOVERCRAFT



Description:

Hovercraft also known as air-cushion vehicle (ACV), is an amphibious craft capable of travelling over land, water, mud other surfaces. Following are the salient features of Hovercraft

- » Designed by M/S Griffon hovercraft Ltd (UK) and jointly built by GRSE kolkata.
- » Hull is made of light weight marine grade aluminum alloy.
- » Powered by two 588 KW radiator cooled MTU Diesel Engines.
- » Provision for Armament fitment.
- » Craft can be used for Patrolling and search & rescue operations. Same can be modified to suit other requirements.

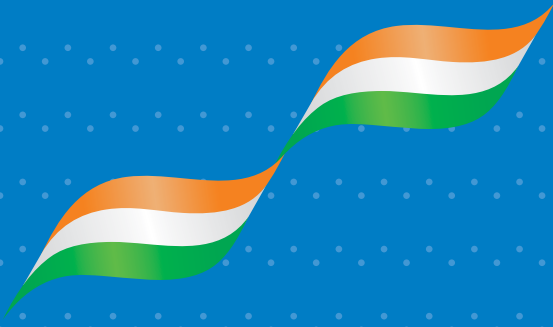
COMPANY : Garden Reach Shipbuilders & Engineers Limited (GRSE)
CONTACT : marketing@grse.co.in, grse.mktg@gmail.com

Specifications:

» Length Overall	(M)	21.15
» Beam Overall	(M)	11.00
» Air Draft	(M)	06.66
» Obstacle Height clearance Height	(M)	01.25 (draft 0.32 M when not hovering)
» Speed Max	(Knot)	45.00
» Payload of Craft	(Kg)	4000.00
» Engine (Propulsion & lift Integrated)		Two MTU 12V 183 TB 32
» Endurance		270 Nautical Miles (nm)
» Accommodation:		Officer's - 02 Other rank - 11







AIR SYSTEMS

LCA TEJAS



Description:

Tejas-Indian Light Combat Aircraft (LCA) is a Multi-Role Supersonic Fighter Aircraft of its class. This single engine, Compound-Delta-Wing, Tailless Aircraft is designed and developed by ADA with HAL as the principal partner along with DRDO, CSIR, BEL, DGAQA, IAF & IN to meet diverse needs of the Indian Air Force (IAF) and Indian Navy (IN). Tejas is an amalgamation of contemporary concepts and technologies such as relaxed static-stability, fly-by-wire Flight control, advanced glass cockpit, integrated digital avionics systems and advanced composite materials for the airframe.

Specifications:

- » Max Speed : Supersonic at all altitudes
- » Service Ceiling : 50,000 ft
- » 'g' Limits : +8/-3.5
- » WEIGHT
 - Take-off Clean : 9900 Kg
 - Empty : 6950 Kg
 - External Stores : 3500 Kg
- » DIMENSIONS
 - Span : 8.20 m
 - Length : 13.23 m
 - Height : 4.40 m
- » POWER PLANT
 - F404-GE-IN20

COMPANY : Hindustan Aeronautics Limited

CONTACT : marketing@hal-india.co.in

NSN 1510 720 472 325



LIGHT COMBAT HELICOPTER (LCH)



Description:

Light Combat Helicopter (LCH) is a twin-engine, dedicated combat helicopter of 5.8 tonne class. It has a narrow fuselage and a tandem configuration for Pilot and Co-pilot/ Weapon System Operator (WSO). It incorporates a number of stealth features such as reduced visual, aural, radar and infra-red signatures and crashworthy features for better survivability. LCH is powered by two Shakti (co-produced Ardiden 1H1) Engines.

Specifications:

» MTOW	:	5800 Kg
» Max. speed	:	268 kmph
» Range	:	550 km
» Service Ceiling	:	6.5 km
» Oblique climb rate	:	12 m/s

The major features of LCH are:

- » Glass Cockpit
- » Crashworthy bottom structure
- » Crashworthy fixed tricycle type with tail wheel landing gear
- » Canted flat panels for low Radar Cross Section
- » Integrated Dynamic System
- » Hinge less Main Rotor / Bearing less Tail Rotor
- » Anti-Resonance Isolation System
- » Integrated Architecture and Display System (IADS)
- » IR Suppressor
- » Counter Measuring Dispensing System (CMDS)
- » EO pod, Helmet Mounted Display System & EW suite
- » 20 mm Gun, 70 mm Rocket & Missiles- Air to Air Missiles (ATAM) & Air to Ground Missiles (ATGM)

COMPANY : Hindustan Aeronautics Limited

CONTACT : marketing@hal-india.co.in

NSN 1520720471805



ADVANCED LIGHT HELICOPTER (ALH) - DHRUV



Description:

ALH Dhruv is a 5.5 tonne class category helicopter with side by side cockpit configuration, built to FAR 29 specifications. This helicopter is fully designed, developed and manufactured to meet the requirements of both, military and civil operations. Dhruv has gone through various upgrades to the present Dhruv MK III/IV configuration, powered by two Shakti (co-produced Ardiden 1H1) Engines.

The Various roles of ALH are: Armed roles, Maritime SAR, Passenger/Commuter Role, VIP Travel, Casualty Evacuation, Under Slung Load, Rapid Deployment of Forces, Logistic Air Support, Search and Rescue, Training.

Specifications:

» MTOW	:	5500 Kg
» Max. speed	:	250 kmph
» Range	:	630 km
» Service Ceiling	:	6.5 km

Major Features

- » Hingeless Main Rotor and Bearingless Tail Rotor.
- » Integrated Dynamic System (IDS).
- » Anti-resonance Vibration Isolation System (ARIS).
- » 4-Axis Digital Automatic Flight Control System (AFCS).
- » Integrated Architectural Display System (IADS).

COMPANY : Hindustan Aeronautics Limited

CONTACT : marketing@hal-india.co.in

NSN 1520 720 351 481 / 1520 720 351 482



HAL Do-228



Description:

The 19 seater Do-228 aircraft is a highly versatile multi-purpose light transport aircraft. It has been developed specifically to meet the manifold requirements of utility and commuter transport, third level services and air-taxi operations, coast guard duties and maritime surveillance. Do-228 can be deployed for various roles like:

- » Maritime Surveillance
- » Pollution Prevention
- » Troop Transport
- » Aerial Survey
- » Search and Rescue
- » Commuter Transport
- » Calibration of airport NAV-COM Aids
- » Transport Flying Training

- » Remote Sensing Applications
- » Casualty Evacuation
- » Executive Transport
- » Cargo & Logistics Support

Specifications:

- | | |
|--|---------------------------|
| » Wing span | : 16.97 m |
| » Overall length | : 16.56 m |
| » Overall height | : 4.86 m |
| » Pax seats | : 19 |
| » Engine Model | : Garrett TPE 331- 5 / 10 |
| » Max. Take off Weight(Maritime role) | : 6400 Kg |
| » Max cruise speed | : 428 km/hr |
| » Max range speed | : 333 km/hr |
| » Rate of climb | : 9.7 m/s |
| » Max. Take off Weight(Commuter role) | : 6200 Kg |

COMPANY : Hindustan Aeronautics Limited

CONTACT : marketing@hal-india.co.in

NSN 1510 720 471 790



HINDUSTAN TURBO TRAINER (HTT)-40



Description:

The Hindustan Turbo Trainer (HTT) – 40 is a fully aerobatic tandem seat turbo trainer designed to meet primary training requirements. Fitted with modern avionics, zero-zero ejection seats and powered by Honeywell TPE331-12B Turboprop engine. Good low speed handling qualities for better training effectiveness. In addition to basic training, it may be used for Aerobatics, Navigation, Instrument flying, close formation.

COMPANY : Hindustan Aeronautics Limited
CONTACT : marketing@hal-india.co.in

Specifications:

- » Maximum speed 450km/h
- » Maximum load factor +6/-3g
- » Glide ratio of 11.5:1

Major Feature

- » Sturdy structure with a combination of light alloys and composites
- » Single piece canopy giving both pilots good all-round vision
- » Full glass cockpit
- » Fitted with indigenously developed Avionics viz Radio Communication, Standby Communication, VOR-ILS, TACAN, Radio Altimeter and Identification Friend or Foe (IFF) and ISIS



LIGHT UTILITY HELICOPTER (LUH)



Description:

Light Utility Helicopter (LUH) is a new generation utility helicopter in the three ton weight class designed to meet the requirements of both military and civil operators, powered by a single turbo shaft engine with adequate power margins to accomplish high altitude missions with ease and suitable for operations in diverse operating conditions.

Specifications:

- » MTOW : 3150 Kg
- » Max. speed : 235 kmph
- » Range : 350 km
- » Service Ceiling : 6.5 km
- » Oblique climb rate : 7.5 m/s

Major Features

- » Composite Airframe with crash worthy features
- » Main & Tail Rotor blades made out of composite materials for damage tolerance capability
- » The hinge less Rotor system ensures high agility and maneuverability of the helicopter
- » State of the art Avionics suite with smart MFDs
- » Capacity of transporting up to 6 troops or 2 stretchers with a medical attendant or large volume internal cargo

COMPANY : Hindustan Aeronautics Limited
CONTACT : marketing@hal-india.co.in



DRONE BASED PRODUCTS /SOLUTIONS



Description:

- » **HEXACOPTER-20:** The Hexacopter-20 (Multi-rotor UAV, 20Kg Class) is an indigenous system design, to provide a high value, low cost solution with applications in ISR, Aerial Data Relay, Heavy-Lift Cargo Delivery, Precision Payload Delivery etc.
- » **HEXACOPTER-10:** Quadcopter-10 is a less than 10 Kg-class multi-rotor VTOL (vertical take-off and landing) UAV developed to meet high altitude ISR requirements of the Defence Forces especially at high altitudes.
- » **QUADCOPTER-6:** Quadcopter-6 is a VTOL (Vertical Take-Off and Landing) UAV, used for real time Surveillance, Reconnaissance, Target Detection and Recognition during day and night in extreme weather and hostile conditions
- » **Tethered UAV Based Electro-Optic Surveillance System (PATANG):** Tethered Unmanned Aerial Vehicle (TUAV) is ideally suited for airborne applications that require long endurance built to withstand harsh environments. This system can be launched from shipboard, mobile ground vehicle and fixed system applications and can be used as a virtual telescopic mast.

- » **SWARM DRONE SYSTEM:** Swarm Drone System (SDS) is a group of UAVs operating in a networked collaborative environment to perform tasks for diverse applications. All drones will fly at the same time and be controlled from single ground station. This system is equipped with a special long-range communications kit.
- » **DRONE GUARD SYSTEM:**
- » The Anti-Drone System is a state of the art product to detect, track and neutralize the intruding rogue drones involved in unauthorized airborne surveillance and other potentially malicious activities. The system is configured to meet the following functionalities:
 - » **Threat detection** – Detect hostile drones using Radar and Radio Frequency Receiver.
 - » **Threat identification and confirmation** – using Radar and EO sensors.
 - » **Threat neutralization** – using Radio Frequency jammer and Drone Hunter hard kill solution.

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in



BRAKE PARACHUTES FOR MiG-29 & Su-30 AIRCRAFT



Description:

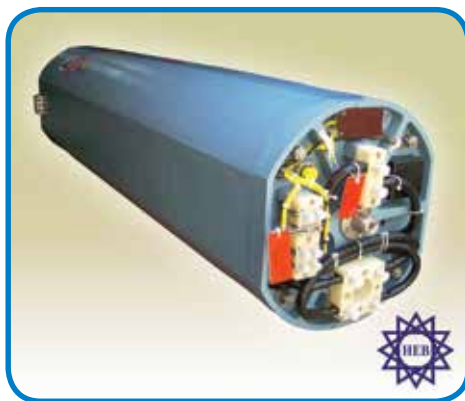
The brake parachute is intended to reduce the Aircraft landing run length or provides additional safety during emergencies. Brake parachutes for MiG-29 & Su-30 Aircraft is in-service since 2003 & 2007 respectively.

COMPANY : Gliders India Ltd.
CONTACT : corporate@glidersindia.in
NSN 1670720464895

Brief Specifications	For MiG-29 Aircraft	For Su-30 Aircraft
Basic material	Fabric nylon 93 gm undyed	Fabric nylon 93 gm undyed
Design of Canopy	Unicross, 14.4	Unicross
Mass	8.2 Kg	23 Kg
Normal landing Speed	180 kmph	260 kmph
Emergency landing Speed	310 kmph	300 kmph
No. of Rigging Lines	32	32
Life	55 Streaming	55 Streaming



BATTERIES FOR AEROSPACE AND UNDER WATER PROPULSION



Description:

High Energy Batteries (India) Ltd., manufactures Hi-Tech batteries for use in Army, Navy, Airforce and Launch Vehicles. The company has established facilities for the Design, Development, Manufacture and Testing of high power, high energy batteries – Silver Oxide Zinc, Nickel Cadmium and Silver Chloride Magnesium for stringent applications such as Underwater propulsion, Control guidance, Communication, Supersonic Missiles and Aerospace.

Specification – Product Range:

- » Silver Zinc – 0.5kW to 350kW
- » Silver Chloride Magnesium – 0.5kW to 70kW
- » Nickel Cadmium – 0.5kW to 60 kW

COMPANY : High Energy Batteries (India) Ltd.

CONTACT : arunachalam@highenergy.co.in



AIRCRAFT AND HELICOPTER ARMOUR



Description:

SMPP offers the lightest weight armour solutions made using CaraSTOP B4C Boron Carbide.

Specifications:

- » Best protection to weight ratio
- » Provides protection from advanced threats including 12.7mm Anti-aircraft ammunition.
- » Already in-use on advance aircraft platforms like Airbus A400M and helicopter platforms like Airbus Helicopters, Chinook, Light Combat Helicopter and Light Utility Helicopter of HAL etc.
- » Meets all environmental standards including MIL 810G.

COMPANY : SMPP Private Limited
CONTACT : contact@smgroupindia.com
NSN 1520720351478

CMDS (COUNTER MEASURE DISPENSING SYSTEM)



Description:

A state of the art Chaff and Flare Dispensing System, CMDS is a micro controller based airborne defensive system. It can be activated either by pilot or RWR. This protects the Aircraft against Radar guided and IR seeking missiles (Air and Ground Launched) by dispensing chaff and / or flare payloads.

Specifications:

- » Provides self-protection to the Aircraft against Radar Guided and heat seeking missile launched from Air or Ground.
- » Dispenses Decoy for all Heat/ IR seeking missile directed against Aircraft/ Helicopters

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in
NSN 5865720278067



REMOTELY PILOTED AIRCRAFT (RPAS) / UNMANNED AERIAL VEHICLES (UAVS)



ALTIOUS



Rakshak VTOL



SKY-I

Description:

Indigenously designed and developed range of fully autonomous man-portable, field deployable small UAVs, which can deliver an unprecedented situational awareness to combat soldiers. Day and night surveillance, target tracking and relay functionality are some of the features also available. With a strong focus on customised solutions, the indigenously designed auto pilot and mission control software allow customer-specific payload integration and customised user interfaces.

Specifications:

- » **Altius Tactical RPA System** (Endurance: 4-6 hours; Payload: upto 3Kg)

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com

- Altius is a light-weight, medium altitude, medium range, fully autonomous, engine-powered tactical UAV. The Altius System offers real-time ISTAR capabilities at brigade level through integration of a variety of payloads.
- » **Rakshak VTOL RPA System** (Endurance: 2+ hours; Payload: upto 3Kg)
 - Rakshak Vertical Take Off and Landing (VTOL) is capable of taking off and landing vertically from space constrained locations in hills and forests. The vertical take-off is followed by autonomous conversion to fixed wing mode and vice versa for landing.
- » **Sky-I RPA System** (Endurance: 2+ hours; Payload: upto 1Kg)
 - Sky-I is a fully automated UAV with a service ceiling of 6000m AMSL, carrying a high definition day or night sensor payload with a range of 15km.



ZEN ANTI-DRONE SYSTEM

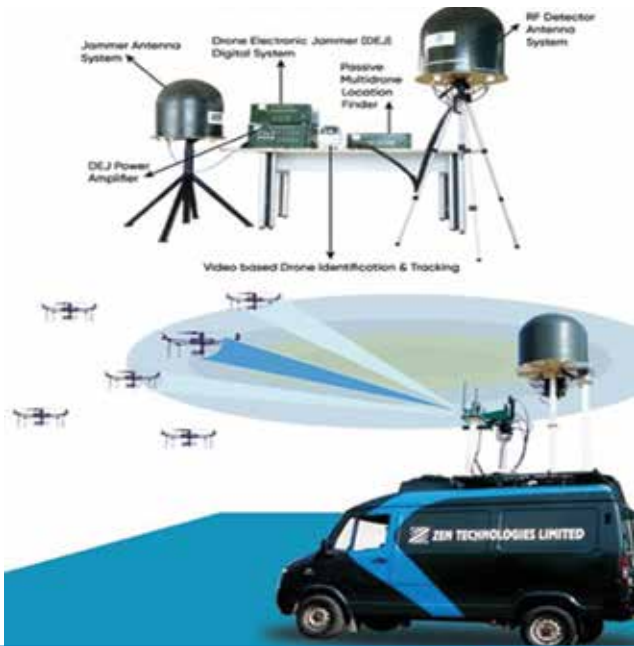
Description:

Zen Anti-Drone System (ADS) is a Multi-Layer Multi Sensor Architecture aimed at providing comprehensive security against drone attacks. Anti Drone System from Zen Technologies works on drone detection, Classification and tracking on passive surveillance, camera sensors and neutralization of the threat through jamming the Drone communication and GPS Signals.

Specifications:

Description	Value
Frequency Covered	All ISM, Navigation as well as Full coverage from 400MHz to 6GHz
Detection range	Up to 5 Km (Can be extended upto 10kms)
Angle coverage	Azimuth - 360 degrees, Elevation - 70 degrees
Types of signals	RF signal emissions of types used by remote controls and telemetry (video) signals. Even non-standard waveforms such as military SDRs falling in the frequency range are detectable.
Camera type	Day and Night camera
Camera Range	Up to 3 km (Can be Extended upto 5km)
Camera Resolution	2MP , 1080p
Continuous Zoom Optics	Up to 800mm
Pan	0 to 360°
Tilt	-15° to 70°
Jamming Architecture	Software based selection among <ol style="list-style-type: none">1. Directional antenna with servo control2. Omni antenna for 360 degree jamming
Jammer range	Up to 3 Km (Can be extended upto 10kms)
Jamming communication Frequency bands	All ISM, Navigation bands * wide band system can be provided covering all frequency bands.
Jamming supported Navigational frequency bands	GPS, GLONASS, GALILEO, BEDOIU
Temperature	Operational temperature: -10 to +45, Storage temperature: -20 to +55

COMPANY : Zen Technologies Limited
CONTACT : info@zentechnologies.com



ASTERIA A200-GEO



Description:

A micro-UAV for quick and easy deployment for land surveys and mapping. Appropriate for construction and infrastructure mapping, GIS survey and mapping.

- » 24.1 MP Still Image Camera
- » High Resolution RGB Camera
- » Tool-less assembly & Disassembly
- » Autonomous operation from takeoff to landing
- » Digital, encrypted communication link
- » Failsafe for low battery, communication loss
- » Survey Grade PPK

Specifications:

- | | | |
|-------------------|---|---------------------|
| » Endurance | : | 35mins |
| » Speed | : | 35km/hr |
| » Altitude | : | 60m AGL |
| » Wind Resistance | : | 25km/hr |
| » Range | : | 1km LOS |
| » All Up Weight | : | < 2Kg |
| » Temperature | : | -10 to +50 degree C |
| » Service Ceiling | : | 2500m AMSL |

COMPANY : Asteria Aerospace Private Limited
CONTACT : sales@asteria.co.in

ASTERIA A200-XT



Description:

A micro-UAV for quick and easy deployment for land surveys and mapping. Appropriate for construction and infrastructure mapping, GIS survey and mapping.

- » Tool-less assembly & disassembly
- » Fully automatic from takeoff to landing as well as manual control modes
- » Built-in failsafe for low battery, communication loss
- » Obstacle avoidance

Specifications:

- | | | |
|--------------------------------|---|--|
| » All up weight | : | less than 2 Kg |
| » Endurance: | | Minimum 35 minutes
(with day-time payload) |
| » Typical operational altitude | : | Restricted to 120m above ground level if operator has UAOP, and 60m above ground level if operator doesn't have UAOP (restricted by geofence). |
| » Max launch altitude | : | 3000m AMSL |
| » Wind Resistance | : | Up to 30 km/hr |
| » Service ceiling | : | up to 3500m |
| » Range | : | Up to 3 km line of sight |

COMPANY : Asteria Aerospace Private Limited
CONTACT : sales@asteria.co.in



ASTERIA A200- AGRI



Description:

A micro-UAV equipped with advanced automation and quick deployment, which is ideal for modernized farming and precision agriculture measurements for crop yield estimation, crop counting and crop damage assessment.

Specifications:

- » 24.1 MP Still Image Camera
- » Mechanically & electronically stabilized hot swappable payloads
- » 5 band Multispectral camera
- » GSD: 8 cm per pixel (per band) at 120 m
- » Tool-less assembly & Disassembly
- » Autonomous operation from takeoff to landing
- » Digital, encrypted communication link
- » Failsafe for low battery, communication loss
- » Automated Motion Detection & Target Tracking

COMPANY : Asteria Aerospace Private Limited
CONTACT : sales@asteria.co.in

ASTERIA A410-XT



Description:

A vertical takeoff and landing small UAS with high endurance for quick deployment from confined locations. Capable of operating in high altitude and extreme temperatures with an operational ceiling of 6500m. Appropriate for defence & homeland security, industrial inspection, police & paramilitary.

Specifications:

- » Mechanically & electronically stabilized hot swappable payloads
- » Tool-less assembly & disassembly
- » Failsafe for low battery, communication loss
- » Digital, encrypted communication link
- » Automated Motion Detection & Target Tracking
- » Autonomous operation from takeoff to landing

COMPANY : Asteria Aerospace Private Limited
CONTACT : sales@asteria.co.in



ASTERIA AT-O5



Description:

A Fixed Wing VTOL for aerial mapping and GIS solutions. Appropriate for construction and infrastructure mapping, GIS survey and agriculture mapping.

- » 24.1 MP Still Image Camera
- » High Resolution images
- » Tool-less assembly & disassembly
- » Failsafe for low battery, communication loss
- » Digital, encrypted communication link
- » Autonomous operation from takeoff to landing
- » Survey Grade PPK
- » Integrated single software for geo-tagging
- » 3cm GSD at 120m

Specifications:

- | | | |
|-------------------|---|---------------------|
| » Endurance | : | 60mins |
| » Speed | : | 60km/hr |
| » Altitude | : | 120m AGL |
| » Wind Resistance | : | 25km/hr |
| » Range | : | 5km LOS |
| » All Up Weight | : | < 7Kg |
| » Temperature | : | -10 to +50 degree C |
| » Service Ceiling | : | 3000m AMSL |

COMPANY : Asteria Aerospace Private Limited
CONTACT : sales@asteria.co.in

ASTERIA AT-15



Description:

A Vertical Take-Off and Landing fixed wing UAV for quick deployment from confined locations. Appropriate for security & surveillance and pipeline inspection.

- » 1920 x 1080 (HD) 30x zoom daytime video camera
- » Mechanically & electronically stabilized hot swappable payloads
- » 640 x 480 night time infrared video camera
- » Tool-less assembly & disassembly
- » Failsafe for low battery, communication loss
- » Digital, encrypted communication link
- » Automated motion detection & target tracking
- » Autonomous operation from takeoff to landing

Specification:

- | | | |
|-------------------|---|---------------------|
| » Endurance | : | 120mins |
| » Speed | : | 55km/hr |
| » Altitude | : | 400-1000m AGL |
| » Wind Resistance | : | 40km/hr |
| » Range | : | 20km LOS |
| » All Up Weight | : | <15Kg |
| » Temperature | : | -20 to +55 degree C |
| » Service Ceiling | : | 3000m AMSL |

COMPANY : Asteria Aerospace Private Limited
CONTACT : sales@asteria.co.in

ASTRA



Description:

ASTRA is an indigenously developed Beyond Visual Range Air - to - Air missile comprising of Astra Missile and Launcher.

Specifications:

- » Range : 80 -110 km
- » Altitude : up to 20 km
- » Length : 3840 mm
- » Diameter : 178 mm
- » Flight Duration : 100 – 120 Sec
- » Warhead : HE Pre Fragmented
- » Max Speed : Mach 4.5
- » Propulsion : Solid Rocket Motor
- » Detonation Mechanise : Radar proximity Fuse.
- » Guidance : Inertial, mid-course update and terminal active radar homing (13 km)
- » Launch platform : Su-30 MKI

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in

SMART ANTI - AIR FIELD WEAPON (SAAW)



Description:

Smart Anti - Air Field Weapon (SAAW) is long range, standoff, precision air-to-surface weapon.

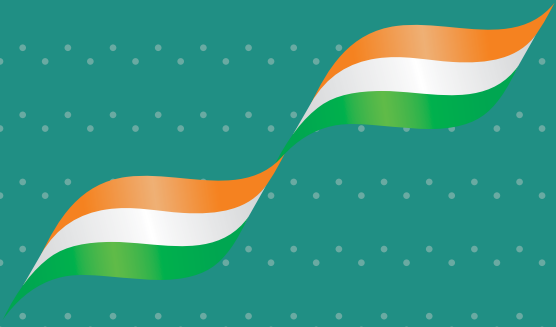
Specifications:

- » Capable of engaging ground targets when launched from fighter Aircraft
- » Mass : 125 Kg and
- » Length : 1.85 m
- » Accuracy : < 7m with (IN-GPS) & < 3m with Seeker
- » Range : upto 90 - 100 km based on release conditions.

COMPANY : Bharat Dynamics Limited
CONTACT : bdbdl@bdl-india.in







COMMUNICATION SYSTEMS

SECURE VHF HANDHELD RADIO LVP 341



Description:

LVP 341 is a VHF handheld radio with in-built high grade digital secrecy is compact, lightweight, user friendly with minimum number of controls and interface is provided for Headgear and Crypto key loading. The radio set is provided with three types of antennas for use in different types of terrains and ranges.

Specifications:

- » Frequency Range : 136 to 174 MHz
- » Channel spacing : 12.5 KHz /25 KHz
- » Type of operation : FM, Simplex
- » Battery
 - Secondary : 7.2 V Ni MH & Li-ion (1.5 Ah)
 - Primary : LiSO2 battery pack
- » Operating temperature range : - 30° C to + 55° C
- » EMI / EMC : Complies with MIL-461 C

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5820720487278

SECURE UHF HANDHELD RADIO LUP 291



Description:

LUP 291 is a UHF handheld radio with in-built high grade digital secrecy is compact, lightweight, user friendly with minimum number of controls and interface is provided for Headgear and Crypto key loading. The radio set is provided with helical and magnetic mount antennas.

Specifications:

- » Dimensions : 60 mm (W) x 40 mm (D) x 130 mm (H)
- » Weight : 400gms (with standard 1.5 Ah Li-Ion)
- » Frequency range : 403 to 470 MHz
- » Channel spacing : 12.5 kHz / 25 kHz
- » Type of operation : FM, Simplex
- » Battery : 7.2V Primary and Secondary batteries
- » Operating temperature range : - 30° C to + 55° C
- » EMI / EMC : Complies with MIL- 461 C
- » 32 Preset crypto keys +1 manual key

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5820720276701

SOFTWARE DEFINED HANDHELD RADIO



Description:

UHF Handheld Transceiver is developed to meet the required short range ground to ground, ground to ship and ship to ship communication needs with protection against Electronic Counter Measures (ECM). The radio is provided with high-grade crypto frequency hopping. It has in-built GPS with External Antenna.

Specifications:

- » Dimension : 171 mm x 80 mm x 39 mm (with battery)
- » Weight : <450 gm (with battery)
- » Frequency Band : UHF (325 to 470MHz), 2W
- » POWER SUPPLY : 7.4V DC (nominal) Rechargeable
- » battery : Li-Ion (2.9Ah)
- » EMI/EMC : JSS 55555 & MIL-STD-461F compliant
- » Operating temperature : - 20°C to + 55°C

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5820720487279



HF TRANSCEIVER LHP 265



Description:

The LHP 265 is an advanced DSP based lightweight 20W HF SSB manpack radio. It provides a complete solution to the short-range communication requirements in the crowded HF band. It provides Voice, Data, Telegraphy and Flash message communication. Communication reliability is improved by means of Automatic link establishment (BEST CALL), which enables real-time selection of optimum channel frequency. For reliable transmission of critical information under EW condition, the radio provides secure transmission and anti-jamming protection by means of frequency hopping. The radio can be used with wide range of antennas, including a lightweight foldable whip for portable operation, dipole, long wire and many other antennas for static operation.

Specifications:

- » Dimension : 85 (H) x 224 (W) x 250 (D) mm,
- » Weight : 3.9 Kg (without battery)
- » Frequency range : 1.50000 to 29.9999 MHz
at 10 Hz spacing
- » Power Consumption : $\leq 4W$ in Receive, $\leq 70W$ in Transmit
- » Operating Temp. Range : $-30^{\circ}C$ to $+55^{\circ}C$
- » EMI / EMC : MIL-STD-461/462C
- » Meets JSS 55555 L3/N3 specifications
- » 100 preset channels

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 5820720487300



VHF FF TRANSCEIVER LVP 346



50W Power Amplifier Module



25W Power Amplifier Module

Description:

VHF FF Transceiver is a new generation of Fixed Frequency radio in the frequency band of 30MHz to 87.975MHz. It is a lightweight, compact design, high performance VOICE and DATA communication equipment for Manpack, Mobile and Static role. The design is based on the Digital Signal Processor (DSP), Direct Digital Frequency Synthesiser (DDFS) and high-end Micro controller (ARM). The radio works in fixed frequency mode with built in high-grade digital secrecy. The radio has built-in GPS and is available in 5 watt and 25W/50W output. The radio is interoperable with the Handheld Radio in Fixed Frequency Clear and Secure modes for VOICE Communication.

Specifications:

- » Dimension : 319 mm X 222 mm X 150 mm
- » Weight : 9.95 Kg. (max)
- » Frequency Range : 30 MHz to 87.975 MHz with 25 KHz channel spacing
- » Operating temperature : -30° C to +55° C
- » I/P Voltage : 14.5 VDC typical (for 5W), 24.0V DC typical
- » 2320 channels with 100 preset channels

COMPANY : Bharat Electronics Limited

CONTACT : imd@bel.co.in

NSN 5820720487340



VEHICLE BASED SATCOM FOR DISASTER MANAGEMENT (MODEL)



Description:

The Portable HSPA Mobile BTS is required to establish mobile communications, in remote locations, where the overall WCDMA network does not provide local coverage.

Specifications:

- » All terrain four wheel drive vehicle.
- » Mobile 3G-WCDMA BTS, Providing local coverage.
- » Km coverage with 18 M Electro Mechanical Mast.
- » Supports upto 25 simultaneous HSPA Users.

COMPANY : Alpha Design Technologies Pvt. Ltd.
CONTACT : alphacorp@adtl.co.in
NSN 5895720487379

CB/LB FIELD TELEPHONE PTR1000+



Description:

PTR1000+ is a lightweight, ruggedized and portable 2-wire analogue field telephone for voice communication. It can be used on the table, hung on a tree or on a wall, carried in a bag or with the carrying strap.

Specifications:

- » DTMF or pulse signaling
- » Standard H-250, Push-To-Talk, Noise Cancelling Handset.
- » Adjustable levels for acoustical signal, including silent

COMPANY : Alpha Design Technologies Pvt. Ltd.
CONTACT : alphacorp@adtl.co.in
NSN 5805720487323



WEAPON SIGHTS FOR TARGET OBSERVATION & AIMING



Description:

CSTI-BMP is an innovative combined device for the Commander of an armoured vehicle or tank for day or night surveillance of targets, terrain and vehicles during battle situations.

Specifications:

- » The night channel is based on Thermal Imaging principle and has a 3rd Generation detector.
- » It is interchangeable with the previous TKN-3B form, fit and function without the need for any modifications to the vehicle.

COMPANY : Alpha Design Technologies Pvt. Ltd.
CONTACT : alphacorp@adtl.co.in
NSN 1240720487325

MULTIBAND CELLULAR & BWA JAMMER



Description:

It is a Multiband Cellular & a portable multi-band RCIED barrage sweep jammer, covering cell phone bands and BWA band. The shielding frequency range covers almost all cell phone bands, including GSM, CDMA, DCS, 3G and also the broadband wireless access (BWA) band, upto 2.5 GHz.

Specifications:

- » Configurable bandwidth, configurable sweep rate and configurable power level
- » Effective shielding distance is 50-150m, depending on the signal strength.

COMPANY : Alpha Design Technologies Pvt. Ltd.
CONTACT : alphacorp@adtl.co.in
NSN 5865720487369



VHF BASE STATION LVM 342



Description:

The Secure VHF Base station radio LVM 342 is lightweight and portable and is useful for ground communication at the platoon level. The radio provides for Clear and Secure voice communication. The radio is micro controller based and has a user friendly MMI (Man Machine Interface). It enables selective call operation between two radios or in a net of many radios.

Specifications:

- » Weight : 3.8 Kg
- » Dimension : 241 mm (W) X 220 (D) mm X 65 (H) mm
- » Frequency Range : 136 MHz to 174 MHz
- » Channel spacing : 25 KHz
- » No. of channels : 1520

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5820720487343

V/UHF AM/FM TRANSCEIVER LUP 329



Description:

V/UHF AM/FM Transceiver meets the required long range ground to ground, and ground to air communication needs with protection against Electronic Counter Measures (ECM). The radio is provided with high-grade crypto, frequency hopping, voice/data. The communication in ECCM mode is instantaneous as Time Of the Day (TOD) is maintained using highly stable clock.

Specifications:

- » Dimension : 250 W x 100 H x 247D (mm) (without battery)
- » Weight : <6 Kg (without battery pack)
- » Frequency range : 108-155.975 MHz and 225-399.975 MHz
- » Channels : Up to 8920 channels at 25 KHz spacing
- » Power Supply : 24 V DC (nominal)
- » Operating temperature : -20° C to + 55° C
- » EMC / EMI : MIL-STD-461C

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5820720487331

SOFTWARE DEFINED RADIO MANPACK (SDR)



Description:

SDR is a new generation compact V/UHF band radio designed to provide fast, reliable and secure LOS voice, data and video communication. It has high data rate of upto 1Mbps. It is power efficient, light weight and suitable for manpack application.

Specifications:

- » Dimension : 260 mm x 195 mm x 64 mm (with battery)
- » Weight : <3.5 Kg (with battery)
- » Frequency Band : V/UHF (30 to 512 MHz)
- » Data Rate : 64 Kbps/512 Kbps/ 1Mbps
- » Software : Re configurable and Upgradable
- » Security : Built-in high grade security and ECCM capability
- » Power Supply : Rechargeable battery: 14.8 V DC, Li-Ion (8.7Ah)
- » EMI/EMC : JSS 55555 & MIL-STD-461F compliant
- » Operating temperature : - 30°C to + 55°C

COMPANY : Bharat Electronics Limited
CONTACT : imd@bel.co.in
NSN 5895720487412



COMMUNICATION SYSTEMS



Description & Specifications:

MMCP : MMCP is a Portable Emergency Communication Box, consisting of an IP-based Command & Control Unit which controls integration of disparate communication systems, both wired & wireless. It seamlessly interfaces existing VHF/UHF/HF radio networks with an in-skin eNodeB, (captive LTE Network), along-with legacy protocols with real-time voice & data transmission onto communication backbones such as MPLS or VSAT, through a Single Box. Extremely useful product for Disaster Management/Special Operations.

AFT1001: AFT1001 is a lightweight, ruggedized, microcontroller based portable 2-wire analog field telephone for voice communication.

IPT1001: IPT1001 is a VoIP based voice communication terminal end point. IPT1001 is a cost optimized solution for deploying last-mile device over IP network. It provides Ethernet connectivity that can be utilized for accessing the tactical field networks through this unit.

iVIS System: The iVIS (Intelligent Vehicle Intercom System) represents a family of next generation intercom systems and components for use in Military Tactical Vehicles (both Wheeled and Tracked). The system provides intercom services between commander, crew members and vehicle radio systems.

COMPANY : ELCOM Innovations Private Limited

CONTACT : rjuneja@elcominnovations.com



MOBILE EMERGENCY COMMUNICATION SYSTEM (MECS)



Description:

Mobile Emergency Communication System (MECS) is a Robust / Rugged Unified Communication System on a Tata GS800 4x4 platform, which can be quickly deployed to provide connectivity to support Fire Fighters, Disaster Response Teams, Rescue & Relief Operations, Special Forces etc.

MECS is designed to enable cross-communication of messages between a variety of communication technologies, intended to optimise communications during emergencies and can be converted into a LTE base station by plugging in a Network in a Box (NiB)

Specifications:

- » Deployable within 15 minutes
- » Uses a Hybrid IPPBX having both VoIP and TDM Voice capabilities
- » Powerful Voice and Video DSPs to deliver high performance encoding decoding & conferencing features
- » Can be integrated with existing legacy interfaces through gateways
- » Supports Encrypted VPNs

COMPANY : Tata Advanced Systems Limited
CONTACT : tata-and@tataadvancedsystems.com



SATELLITE MONITORING



Description:

Acquire, demodulate and, decode multi- mobile satellite systems data to improve satellite radio situational awareness.

Specifications:

- » Support for tactical and strategic solution in-line with agency need
- » Modular framework with plug-and-play scalability and analytics to speed-up threat detection
- » In-built command-and-control for front-end and signal analysis

COMPANY : Vehere Interactive Pvt. Ltd.
CONTACT : info@vehere.com

CYBER INTELLIGENCE & CYBER SECURITY SOLUTIONS



Description:

Transform raw packets to seek intelligence, explores entity relationships, determine root cause, and improve threat detection & incident response capabilities. The AI-powered PacketWorker platform harnesses advanced machine learning algorithms to automatically detect, prioritize and respond to cyber-attacks.

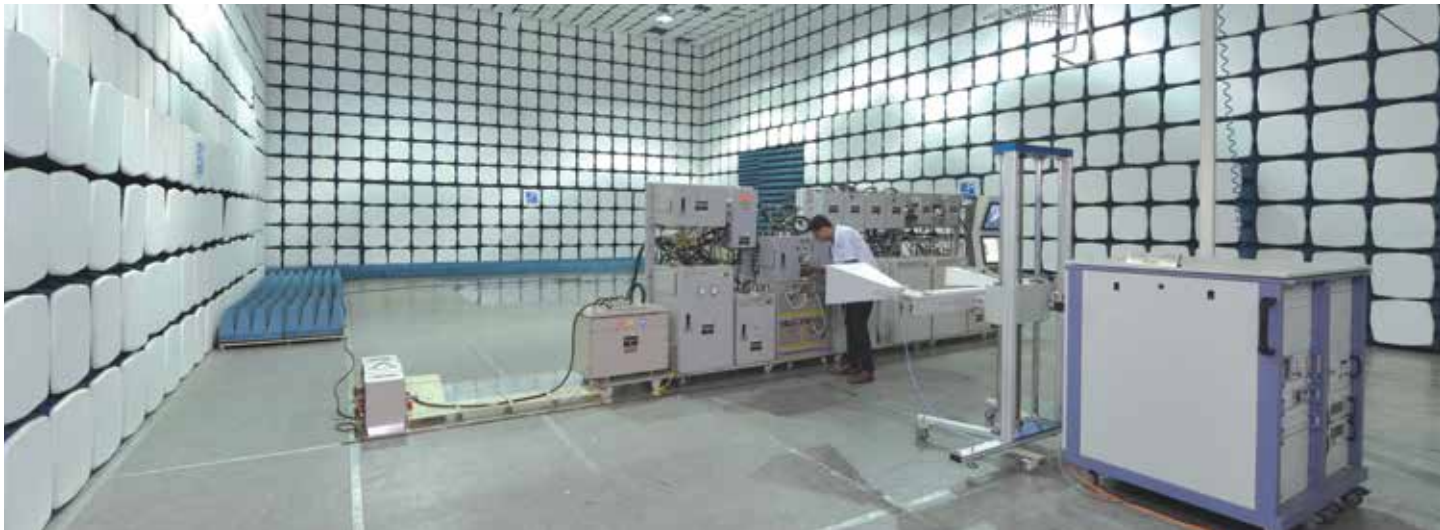
Specifications:

- » Eliminate cyber blind-spots with a feature rich deep packet inspection technology capable of detection applications and transactions even in encrypted communication
- » Identify unknown and anomalous communication patterns by leveraging a self-learning on-device AI/ML technology without risking data-sharing with third-party or OEM cloud
- » Support plug-and-play deployment and horizontal scalability to fit environment of any size
- » Agent-based data collection for cloud workloads and remote warriors

COMPANY : Vehere Interactive Pvt. Ltd.
CONTACT : info@vehere.com



ERDA EMI /EMC TESTING FACILITY AS PER MIL-STD-461



MIL-STD-461 specifies the requirements for the control of electromagnetic interference characteristics (emissions and susceptibility) of electronic, electrical, and electromechanical equipment/system/ subsystems (Rack mount/Wall mount/ Floor standing) designed for various agencies of the Department of Defence (DoD). MIL-STD-461 has been an active document since 1967 and has undergone several revisions over the years due to changes in Electromagnetic Environment (EME) caused by the rapidly increasing use of electronics and advancements in technology.

ERDA is approved by Integrated Headquarters, Ministry of Defence (Navy) for EMIEMC testing of naval equipment and take up various testing as per Department of Defence (DoD) test codes (as per MIL Standard 461 E/F)

ERDA has vast EMIEMC testing experience of different electrical and electronics products made for defence application like control panels for Missile launcher , Missile controller, Radar System, Flood detection for Navy application & Motors for Naval application.

ERDA is fully equipped, capable and accredited as per ISO/IEC 17025: 2017 to perform testing as per E & F revisions of MIL-STD-461. ERDA is equipped with 10 meter Semi Anechoic chamber having 3 ton weight bearing capacity to accommodate big & bulky equipment. In-house testing of equipment, in excess of 20 feet in length and weighing up to 3 tons is already performed.

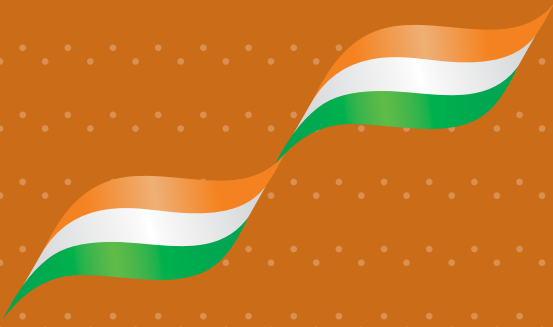
Tests undertaken at ERDA as per MIL-STD-461 Revision E & F

TEST NAME	TEST DESCRIPTION
CE 101	: Conducted Emissions, Power Leads,30 Hz to 10 kHz
CE102	: Conducted Emissions, Power Leads,10 kHz to 10 MHz
CS101	: Conducted Susceptibility, Power Leads,30 Hz to 150 kHz
CS114	: Conducted Susceptibility, Bulk Cable Injection, 10 kHz to 200 MHz
CS115	: Conducted Susceptibility, Bulk Cable Injection, Impulse Excitation
CS116	: Conducted Susceptibility, Damped Sinusoidal Transients, Cables and Power Leads,10 kHz to 100 MHz
RE101	: Radiated Emissions, Magnetic Field,30 Hz to 100 kHz
RE102	: Radiated Emissions, Electric Field,10 kHz to 18 GHz
RS101	: Radiated Susceptibility, Magnetic Field,30 Hz to 100 kHz
RS103	: Radiated Susceptibility, Electric Field,2 MHz to 18 GHz(up to 50V/M)

COMPANY : Electrical Research and Development Association (ERDA)
CONTACT : rajib.chatopadhyay@erda.org

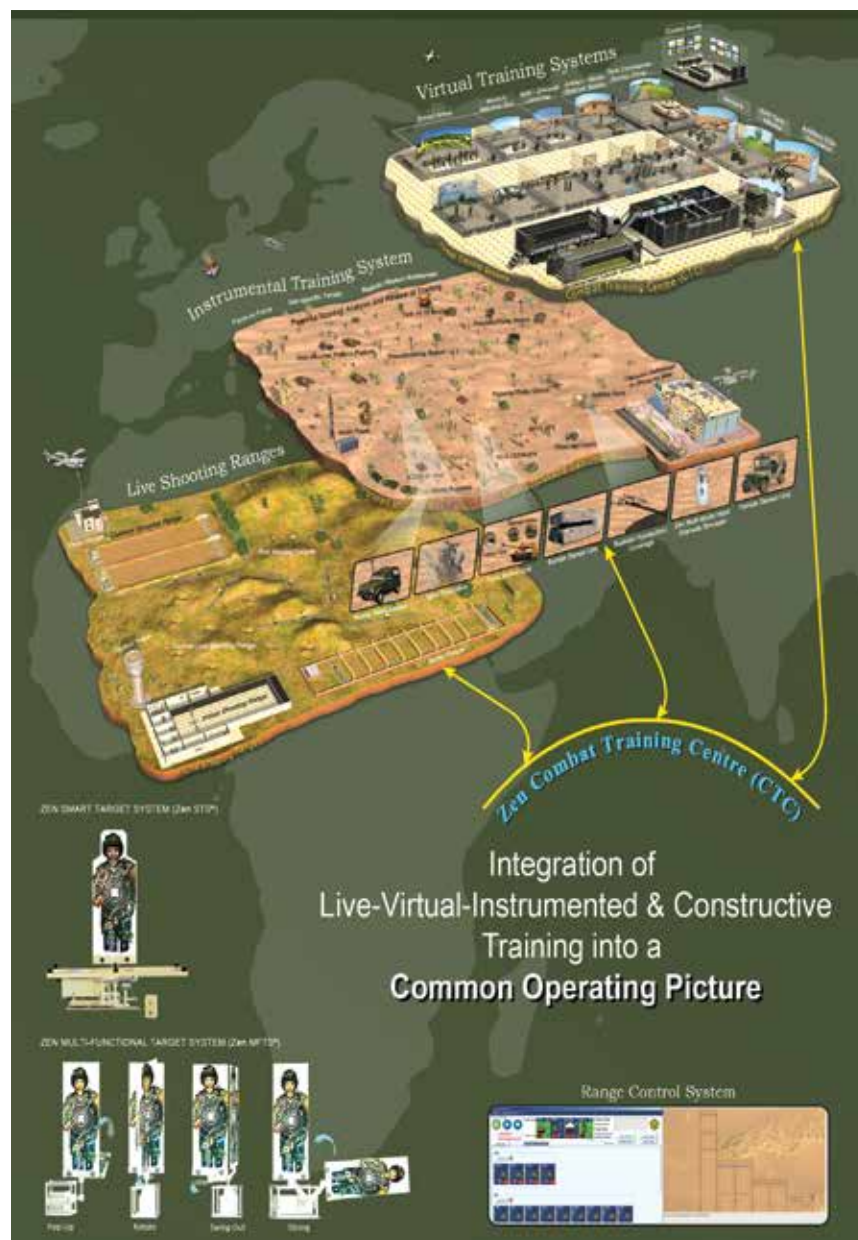






OTHER SYSTEMS

COMBAT TRAINING CENTRE (CTC)



Description:

Combat Training Centre (CTC) is a one-stop training infrastructure solution for Defence, Security, Paramilitary and the Police forces. The secure facility, equipped with modern training equipment /infrastructure, free from routine encumbrances and other disturbances, is designed to provide performance oriented training in realistic, tactical and operational environment. The CTC consists of simulators and live training solutions to enable coordinated team training under various realistic threat scenarios. This centre can train people who are in the business of protecting various infrastructure, crowd management etc especially where the threat can come from any direction without warning. Combat Readiness Training, essentially starts with planning the training.

Specifications:

- » **Planning & Monitoring Suite**
The Planning feature helps tailor make the annual training plans, monthly/ weekly schedule and the daily training programme for units and teams down to every single individual.
- » **Scoring & Measurement System**
Helps quantify all training at individual, team and unit level.
- » **Scenario Builder Tool**
Helps create most realistic and realistically opposed scenarios.
- » **Wargaming facility**
This not only helps train the decision makers and the leadership, but is also fully integrated with Live Ranges, Tactical on Ground Training and also the Simulators.

COMPANY : Zen Technologies Limited
CONTACT : info@zentechnologies.com
NSN 6920720487448



NICKEL ALLOYS, COBALT ALLOYS, TITANIUM ALLOYS AND SPECIAL STEEL PRODUCTS



INGOTS / CAST STICKS

Characteristics – Remelted Ingots / Cast Sticks of Super alloys, Titanium alloys and Special steels processed through different melting furnaces like Electric Arc furnace / LF / VOD / Vacuum Induction Melting / Vacuum Arc Remelting / Electro Slag refining.
Size (dia) – 50mm to 1050mm
Weight – 0.6T to 20T



BARS & WIRES

Characteristics – Bars, rods & wires of Super alloys, Titanium alloys and Special steels processed through Hot Rolling, Cold Drawing & Hot Swaging.
Size (dia) – 0.8mm and above
Shape – Round and Square
Supply form – Spools, Rods and Bars

NSN 9505720491180



FORGINGS

Characteristics – Forged bars / billets of Super alloys, Titanium alloys and Special steels processed through 6000T / 1500T Hydraulic Forge press.
Size (dia) – 100mm to 1000mm
Weight – Upto 4.5T

NSN 1450720491183



RINGS

Characteristics – Rings of Super alloys, Titanium alloys and Special steels processed through Radial Axial Ring Rolling Mill.
Size (OD) – 320mm to 3540mm
Height – 50mm to 635mm
Weight – Upto 3.5T

NSN 1450720492422



PLATES / SHEETS

Characteristics – Wide plates / sheets of different materials like Super alloys, Titanium alloys and Special steels processed through hot stackle mill & cold rolling mills.
Thickness – 5mm and above
Width – Upto 3000mm
Length – Upto 10000mm
Equipment – Cold Sheet mill
Thickness – 0.8mm and above
Width – Upto 1200mm

NSN 9535720399826



INVESTMENT CASTINGS

Characteristics – Investment castings of Super alloys, Titanium alloys and Special steels processed through Vacuum Melting Furnace / Skull melting furnace.

Weight – Upto 200Kgs

COMPANY : Mishra Dhatu Nigam Limited
CONTACT : mktg@midhani-india.in



NON-PRESSURE BEARING PARTS OF SMALL ARMS



Description:

Complex-shaped metal parts manufactured by Metal Injection Moulding, as per customer drawings. The examples include Non-Pressure Bearing Parts such as Safety, Sears, Triggers, Extractors, Hammers, Ejectors, Housing, etc.

Specifications:

- » Parts made by Metal Injection Molding (MIM) are assembled in the following small arms :
- » Rifles of Calibre 5.56 mm, 0.22", 7.62 mm, 0.315"; Pistols of Calibre 9 mm., 0.45", 0.357" Revolvers of Calibre 22 mag, 0.32". These are made using hardened steels such as MIM Fe-2% Ni, MIM S7, MIM 9310, MIM 4340, MIM 4140, etc.

COMPANY : Indo-MIM Pvt. Ltd.
CONTACT : infohq@indo-mim.com



AIRFRAME STRUCTURES & ENGINEERED PRODUCTS



Major Airframe Assemblies for the Bell 407 Helicopter



Power and Mission Cabinets for the Boeing's P8 Poseidon Maritime Reconnaissance Aircraft.

Description:

The company designs and builds highly engineered products, airframe structures for Aircraft.

COMPANY : Dynamatic Technologies Limited
CONTACT : ajay.g@dynamatics.net
NSN 1560720487329

Specifications:

- » Cabinets to house Critical Power and Mission Equipment for Boeing P8 – Navy Reconnaissance Aircraft.
- » Complex artisanal and flight critical assemblies Aft Pylon & Cargo Ramp for Boeing Chinook CH-47.
- » Flap-Track-Beam assemblies for Airbus A320 Family & A330 aircraft as Global Single Source.
- » Major Airframe Assemblies for the Bell 407 Cabin on the Bell Helicopter.



SUB SYSTEMS

PRODUCT	MANUFACTURING COMPANY	EMAIL -ID
Oily water separator	Vacman Sanitary Solutions	vacman.admin@vacman.co.in
Magnetic engine for dg sets	Kirloskar Diesel Engines	gurudeo.kotkunde@kirloskar.com
Remote controlled valves [imps]	Delval	sales@delvalflow.com
Ballastic Computer	L&T	intl.defence@larsentoubro.com
Remote controlled valves [hvac]	Chamunda Valves	sales@chamundavalve.com
Sonar dome	Kineco	rajat.katti@kinecokamanindia.com
Prs[pressure reducing systems]	Flash Forge	sunil@f-f.co.in
Steering gear	L&T	intl.defence@larsentoubro.com
Brigade window glass	Jeet&Jeet Glass	ask@jeetglass.in
Degaussing system[live&self standing product]	L&T	intl.defence@larsentoubro.com
Fin stabliser	L&T	intl.defence@larsentoubro.com
Integrated platform management system	L&T	intl.defence@larsentoubro.com
Main batteries	Exide Industries	exideindustrieslimited@exide.co.in
Ro plant	Rochem	rochem@rochemindia.com
Mct glands	Wallmax	sukant.chakravarty@wallmax.it
Pressure reducing panel	Flash Forge	sunil@f-f.co.in
Steel plates &profiles	Essar Industries, Jindal Steel, Sail	info@jindalsteel.com, editd@sail-steel.com
Digital narrow band receiver	Astra Microwave Products	info@astramp.com
Container lifter, forged body	Bharat Forge	Pratiksh.Rajan@bharatforge.com
Msu general assly	Dcx Cable Assemblies	marketing@dcxindia.com
Electronic kit	Defsys Solutions	info@defsys.co.in
Armoured shelter	Enertech Engineering	enertech@enertechgroup.in
6.5Inch lcd display,tote lcd display, did lcd display	Futura Automation	info@futuraautomation.com
Forceram plate	Grindwell Norton	viswesh.k@saint-gobain.com
Lithium batteries, monoblock pure lead tin battery	Hbl Power Systems	srinath@hbl.in
Ammunition case, cartridge case	Hyderabad Precisions Manufaturing	hpm@patodiagroup.net
Light mechanical comp.	Micron Instruments Private	microninst@gmail.com
Bolt carrier, receiver, other 68 components of small arms like bipod assembly, gas cylinder block, feeding lever base, feed drum adapter etc.	Punj Lloyd Raksha System	plr@punjlloyd.com
Mast system, motor housing, shaft antenna interface, actuator mounting plate, mast interface, gearbox housing	Punj Lloyd	bd_msid@punjlloyd.com
Compact heat exchanger, data link, satcom on the move terminal	Rangsons Electronics	info@rangsons-ds.com
Hard armor plate	Sm Carapace Armor	contact@smgroupindia.com
Mounting tripod	Srp Gears Private	badri@srpcorp.in
Assemblys, forward section fairing	Vem Technologies	skbanerjee@vemtechnologies.com
Chasis peint sable part, microphone carrier	Titan Engineering and Automation	sreelathad@titan.co.in
Helicopter Landing Grid	L&T	intl.defence@larsentoubro.com
Helicopter Traversing & Securing System	L&T	intl.defence@larsentoubro.com
Csi vertical spar box, csi spar box assy,aircraft skin structure parts	Tata Boeing Aerospace	vvrao@tasl.aero
Aircraft skinn structure parts	Tata Boeing Aerospace	vvrao@tasl.aero
Usg cu fuselage	Tata Boeing Aerospace	vvrao@tasl.aero
Integrated seeker flight	Alpha Design Technologies	alphacorp@adtl.co.in
Transceivers	Sasmos Het Technologies	sales@sasmos.com



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