



January 13, 2023

To  
The General Manager  
Department of Corporate Relations  
**BSE Limited**  
Sir Phiroze Jeejeebhoy Towers,  
Dalal Street, Fort,  
Mumbai -400 001

**Scrip code: 532493**

Dear sir,

**Sub: – Intimation pursuant to Regulation 30 of the SEBI (LODR) Regulations, 2015 – Investor Presentation.**

Please find enclosed herewith updated Investor Presentation for your information and records.

It is clarified that the presentation and the information contained therein does not constitute or form part of an invitation or solicitation to offer to purchase or subscribe to any securities of the Company in any jurisdiction. This presentation has been prepared for information purposes only. The information contained in the presentation is not to be taken as any recommendation made by the Company or any other person to enter into any agreement with regard to any investment.

We request you to take the above on record and the same be treated as compliance under the applicable regulations of the SEBI (LODR) Regulations, 2015.

Thanking you,

Yours faithfully,  
**For Astra Microwave Products Ltd**

**T.Anjaneyulu**  
**G.M - Company Secretary**

**ASTRA MICROWAVE PRODUCTS LIMITED**

Regd. Office : ASTRA Towers, Survey No. 12(P), Kothaguda Post,  
Kondapur, Hitechcity, Hyderabad, Telangana, INDIA - 500084  
Tel : +91 40 46618000, 46618001, Fax : +91 40 46618048  
Email : mktg@astramp.com, website : www.astramp.com  
CIN : L29309TG1991PLC013203

To  
The Vice President,  
Listing Department  
**The National Stock Exchange of  
India Limited**  
Exchange Plaza  
Bandra Kurla Complex, Bandra (East)  
Mumbai 400 051

**Scrip code: ASTRAMICRO**



Works :

Unit 1 : Plot No. 12, ANRICH Industrial Estate, Bollaram, Medak Dist., Telangana State - 502 325

Unit 2 : Plot No. 56A, ANRICH Industrial Estate, Bollaram, Medak Dist., Telangana State - 502 325

Unit 3 : Sy. No. 1/1, Imarath Kancha, Raviryala (Vil), Maheshwaram (Mdl) R.R. Dist., Telangana State - 500 005

Unit 4 : Sy. No. 1/1, Plot No. 18 to 21, Imarath Kancha, Hardware Park, Raviryala (V), Maheshwaram (M) R.R. Dist., T.S. - 500 005

R&D Centre : Plot No. 51 P, Bengaluru Aerospace Park(KIADB), Survey Nos Parts of 36 to 40, Bengaluru North, K.S. - 562 149.

# ASTRA Microwave Products Ltd

ASTRAMICRO.BO  
ASTRAMICRO.NS  
ASTM.IN



Astra Microwave Products Ltd.



[www.astramwp.com](http://www.astramwp.com)

Radar | Electronic Warfare | Missiles | Telemetry | Space | Meteorology | Hydrology | Telecom

# AMPL: A Company With Deep Domain Expertise..

Astra Microwave Products Limited (AMPL) was incorporated as a Private Limited Company in 1991.

AMPL is into Design, Development and Manufacturing of RF & Microwave Components, Sub-systems and Systems.

With over 30 years of experience in in microwave radio-frequency (RF) applications, AMPL has moved up the value chain from sub-systems to high value-added systems.

AMPL's products find applications in high end markets of Defence, Aerospace, Space, Meteorology, Telecom and Civil communications.

Working with various Indian Govt. Labs, Indian Defence PSUs, ISRO, and many foreign OEM's.

Rs. 735 Cr.  
Revenue

28.5%  
Gross Margins

Rs. 86.9 Cr.  
EBITDA

**FY22 Financial Snapshot**



## WEALTH OF EXPERIENCE

- More than 30 years of domain expertise in microwave radio-frequency (RF) applications domain
- Promoted by a team of distinguished scientists from DRDO



## STRONG R&D CAPABILITIES

- Track record of new product development; now graduated to a SYSTEM integrator in Radars
- Dedicated R&D facility at Bengaluru to manufacture radars



## STATE-OF-THE-ART FACILITIES

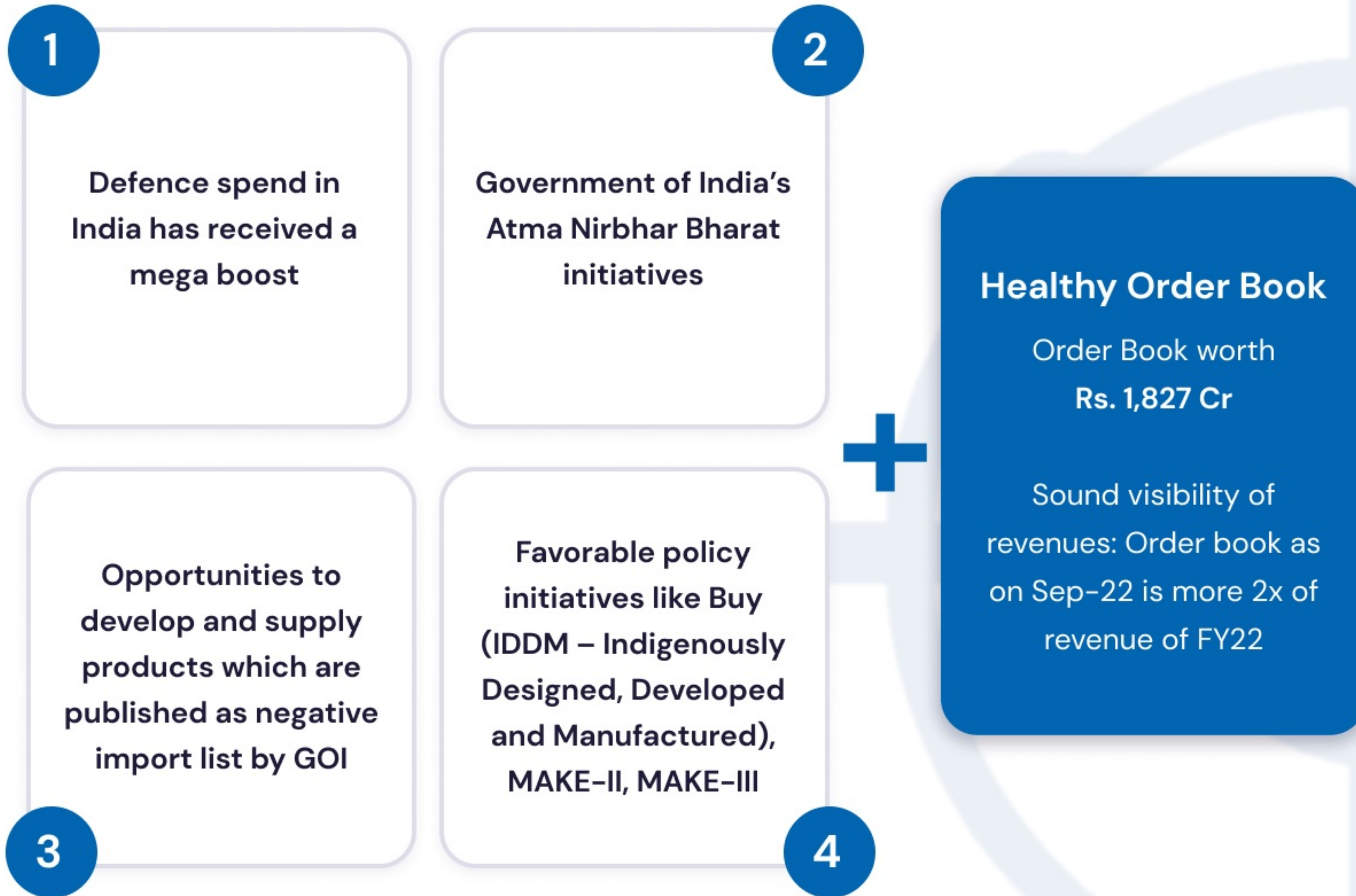
- 5 facilities in Hyderabad
- Continuous investment in World Class Infrastructure for Assembly, Functional and Environment testing. AMPL's facilities are approved by several foreign companies for production



## LONGSTANDING RELATIONSHIP WITH CUSTOMERS

- Recognized as a qualified vendor by defence research establishments
- Clientele includes Indian Government Laboratories, Indian Defence Public Sector Undertakings, Indian Space Research Organization and many foreign OEM's

# ... Poised for Strong Growth Amidst Sectoral Tailwinds



AMPL has a proven track record of making high value-added SYSTEMS, RF and microwave super components and sub-systems which are becoming more relevant due to various government initiatives like IDDM, MAKE-II.

AMPL has been able to create a diversified and healthy order book on the back of its strong capabilities.

AMPL is very well placed to capture a bigger pie of the growing Indian defence sector with deep domain expertise, seasoned promoters, high focus on R&D and robust strategy in place.

# Leadership

## Significant Equity Holders & Directors



**PA Chitrakar**

Non-Executive Director  
Head of R&D



**Atim Kabra**

Executive Director  
Strategy & Business Development



**Dr. Avinash Chander**

Chairman & Independent Director



**Kiran Dhingra**

Independent Director

## Business & Technology Team



**S. Gurunatha Reddy**

Managing Director



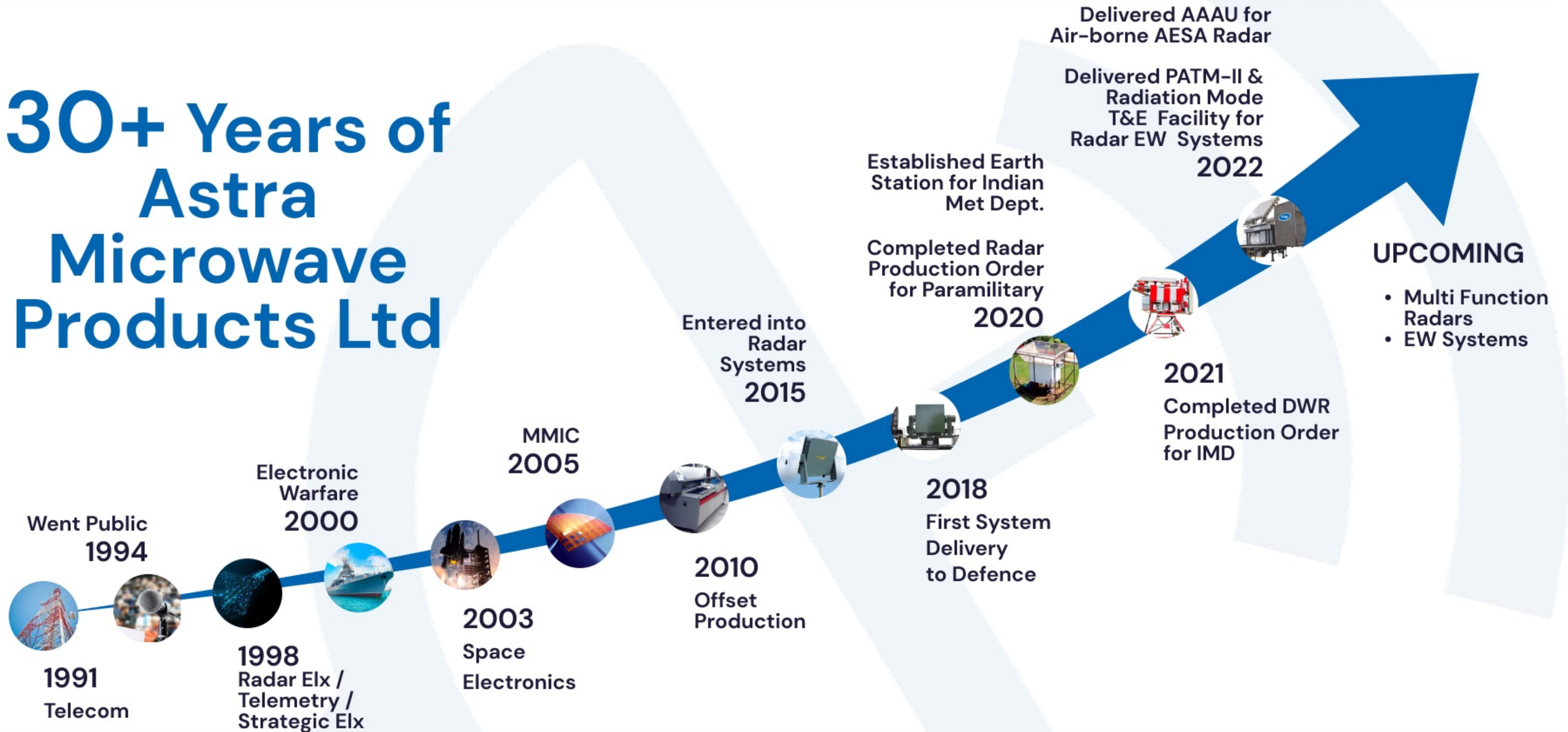
**Maram Venkateshwar Reddy**

Joint Managing Director

Key Team Members	C Nageswara Rao VP - Production		LGM Prakasam VP - Radar Systems	
	G R Shinde Sr. GM - Design	Chandrakanth Sr. GM - Marketing & Sales	V Sudhakar Sr. GM - Design	M Pravin Sr. GM - Design (EW)
	Dr. P Srinivasulu GM - Design	Balachary GM - Antenna Design	CV Rao GM - Mech. Systems	S Praveen Kumar GM - Digital & Software
	L Sudhakar GM - EMI/EMC	Jai Ram Reddy GM - Production (Antenna & Weather)	SDM Rao GM - Special Projects	V Venkatesh GM - Quality
	C Vinod Kumar GM - Marketing & Sales (Weather & Telemetry)	R Narasimhan GM - Production (Special Products)	Vikram DGM - Production	

# Journey so far

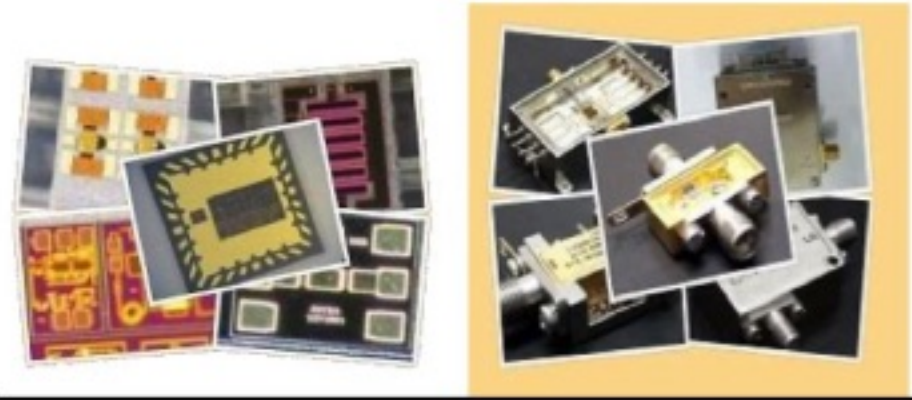
## 30+ Years of Astra Microwave Products Ltd



# Offerings

## Components & MMICs

- Design
- Prototyping
- Testing & Qualification
- Production



## Subsystems

### BTS:

- Design
- Prototyping
- Testing & Qualification
- Production



### BTP:

- Bulk Production
- Testing & Qualification



## Systems

- Design
- Manufacturing
- Integration
- Testing & Qualification
- Installation & Commissioning



# Product Range

**AMPL has designed, developed and produced critical sub-systems and systems for its customers for building various airborne, naval and ground based platforms.**

**Radar, Missile Electronics, Electronic Warfare, Satellites, MMIC and Communication**

## Defence

- Radars
- Electronic Warfare
- Missile Electronics
- Telemetry
- Counter-Drones Systems

## Space

- Flight Model Application
- Ground based Application
- INSAT MSS Terminals for Disaster Management

## Hydro/Meteorology

- Water Level Measurement (Bubbler/Radar Sensor)
- Automatic Weather Stations (AWS)
- Agromet Met Stations (AMS)
- Automatic Rain Gauge (ARG) X-Band Doppler Weather Radar

## Other areas of work

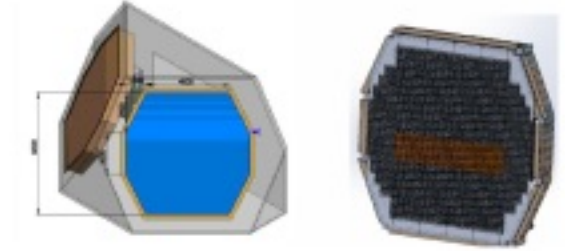
- Antennas
- MMIC
- Contract Manufacturing
- Homeland Security



# Expertise & Capabilities of AMPL (1/2)

## Radar

- Design & development of Gallium Arsenide (GaAs) and Gallium Nitride (GaN) TRMs across all frequency bands- VHF, UHF, L, S, C, X, Ku and Ka band with various power levels.
- Design and development of all kind of radar sub-systems including power amplifiers, receivers, exciters, filters, synthesizers, converters etc.
- In-house development of Signal Processing & Radar Data Processor.
- Only Indian Company with proven capability of developing Active Array Antenna Unit (AAAU) for airborne radars of fighter aircraft - Uttam Radar for LCA Mk 1A. Variant of Uttam with GaN TRMs is proposed for modernising existing radars of Su-30 Mk I and for future LCA Mk 2 and AMCA fighter aircrafts.
- AMPL is developing Pulse Phased Array Tracking Radar, AAAU for Ship Borne Radars, DBF based Counter Drone Radar, Bird Detection & Monitoring Radars, Telemetry Tracking System and manufacturing Coastal Surveillance Radars, Counter Drone Radar and Ground Penetration Radars
- AMPL has been supplying Wind Profile Radars, Doppler Weather Radars, Automatic Weather Stations to IMD.



## Electronic Warfare (EW)

- AMPL has been supplying various kind of EW sub-systems and components to DPSUs, such as Direction-finding Receivers, Passive Homing Head for RF Seekers used in NGARM, Jammers, Filters, Amplifiers, Receivers etc.
- AMPL has been EW sub-systems and components to programs of Indian Airforce, Indian Navy and Indian Army. AMPL has been associated with Jammer's program of LCA and other fighter platforms in India.



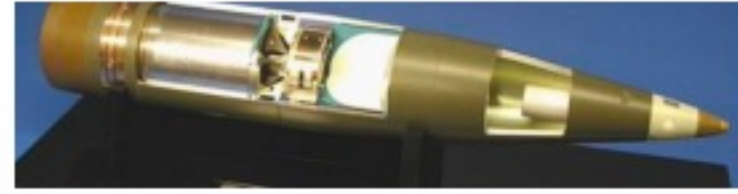
## Telemetry

- AMPL has been supplying various sub-systems for Telemetry applications such as S- Band FM Transmitter, Airborne RF Trans receiver, Ground Up Down Converters, C & S band switch antenna systems, Telemetry Tracking Systems etc.
- AMPL has been supplying telemetry sub-systems to LCA and Intermediate Jet Trainer (IJT) aircraft.



# Expertise & Capabilities of AMPL (2/2)

## Missiles



- Leading company in India to design, develop and supply Radio Proximity Fuze, Airborne Diplexer, Transponder, transmitter, Command Guidance Unit, HAPS etc.
- AMPL has developed Solid-State High-Power Amplifiers in Ku-band to replace Multi Beam Klystrons used in AMPL & Akash NG missiles.
- It has been associated with the program to develop AESA Seekers for SLCM & AMPL missiles.
- New generation Course Correction Electronic Fuze has been added for smart ammunition.
- AMPL has taken up the development of TeraHertz Proximity Sensor with DRDO which is an advanced version of proximity sensor for guided weapons.

## Satellites



- AMPL has been supplying various key microwave sub-systems for ground and space based or payload applications. It has supplied critical TR modules for Synthetic Aperture Radars (SAR) used in RISAT Satellites.
- AMPL can provide required microwave electronics for launch vehicle sub-systems for private sector players.
- AMPL has been a part of NAVIC module which has immense scope of application going ahead.

## AEW&CS



- AMPL has supplied complete gamut of Radar, EW & Datalink products for AEW&CS-I developed by DRDO

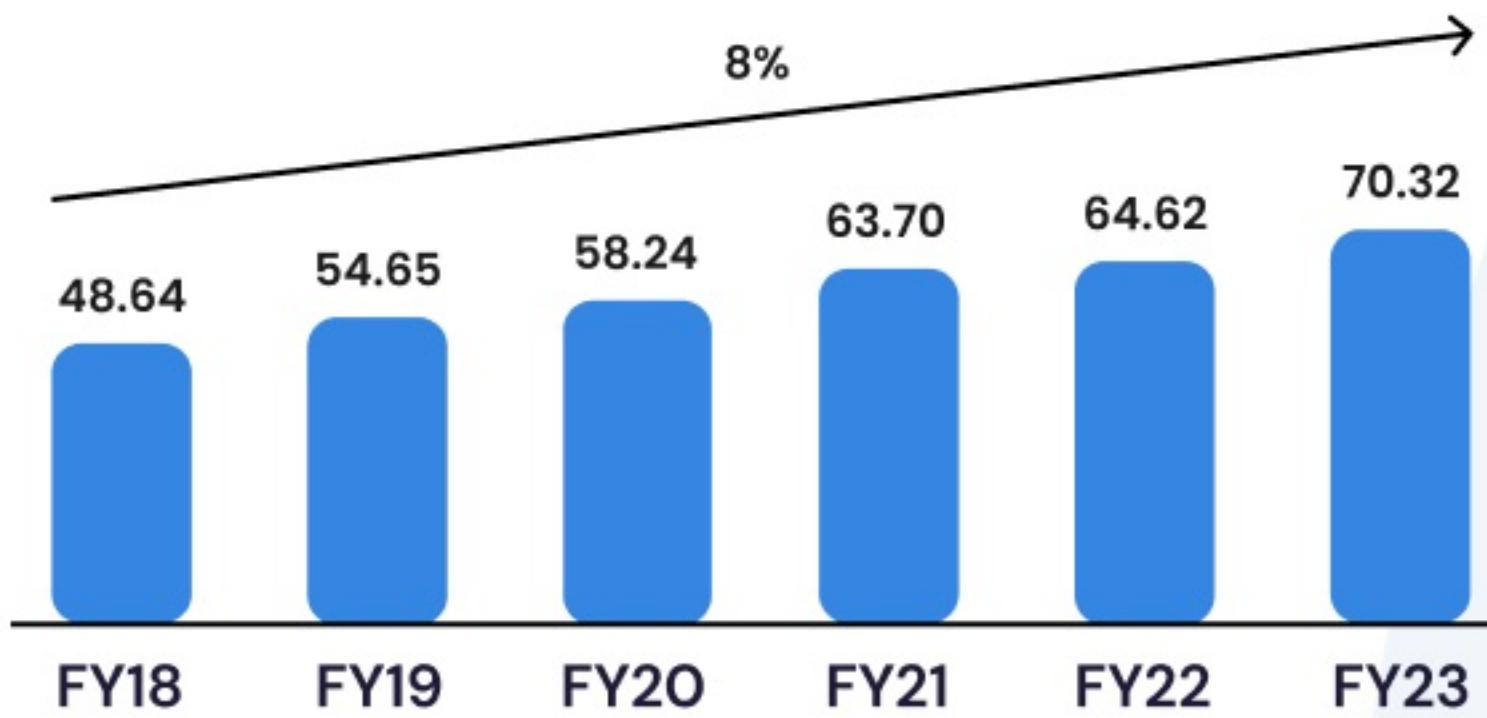
## SATCOM

- AMPL has been supplying MSS terminals for communication during disasters.

# Growing defence products opportunity

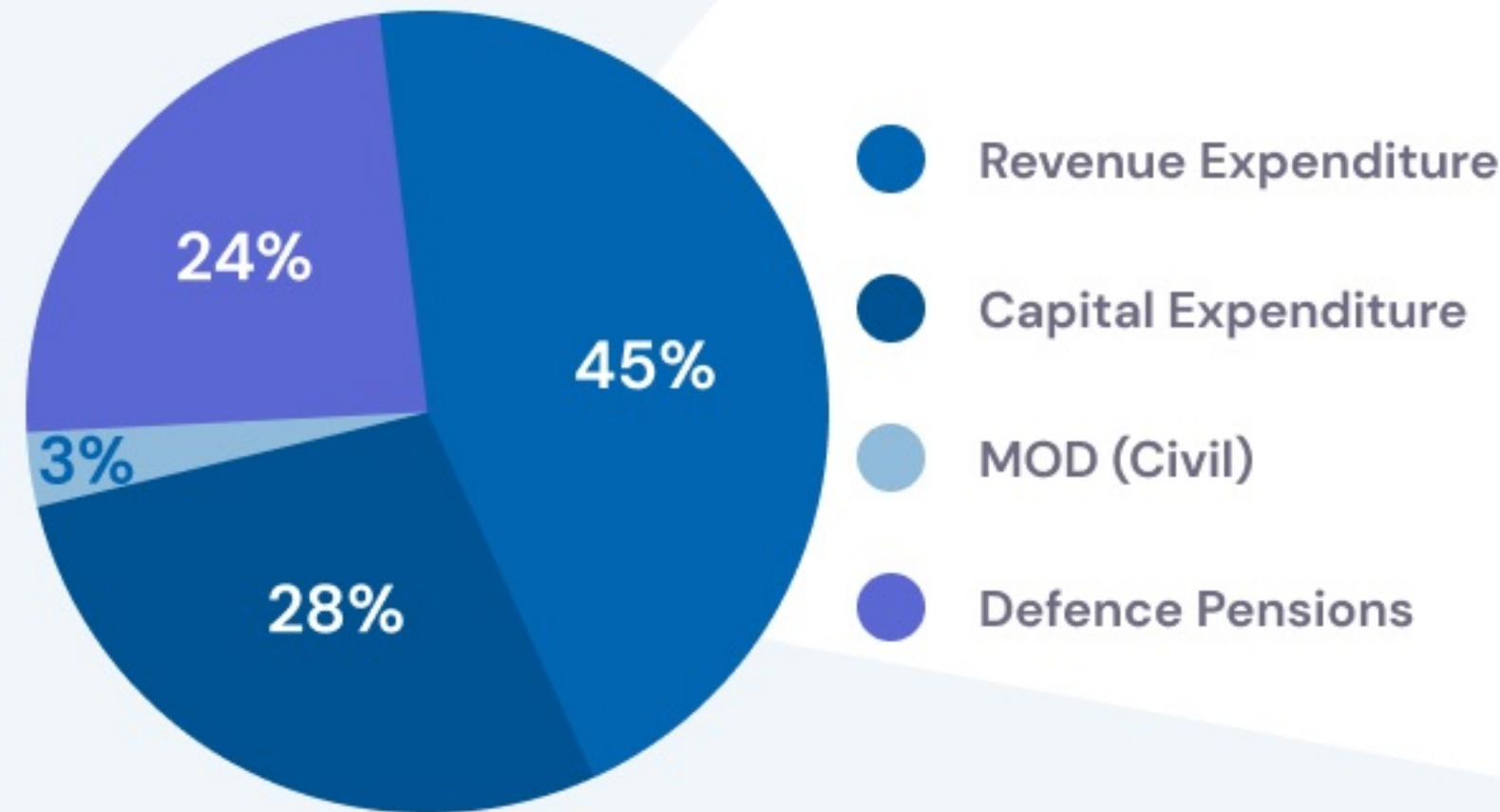
India's extensive modernisation plans, an increased focus on homeland security to increase government allocation for defence expenditure along with Make in India focus are expected to drive healthy growth in the sector.

## Growing Defence Budget (in Bn \$)



India is the 3rd largest military spender

## Defence Budget Components – FY22



Source: Ministry of Defence, various news articles

## Business Potential till 2028



The Indian government has taken various initiatives to promote on indigenization in this space:

**Atma Nirbhar Bharat**

**Imports Embargo**

The Indian government has set the defence production target at USD 25 bn by 2025 (including US\$5 bn from exports by 2025).

ISRO has planned multiple deep space and experimental missions to strengthen India's position in global space industry through new technology development.

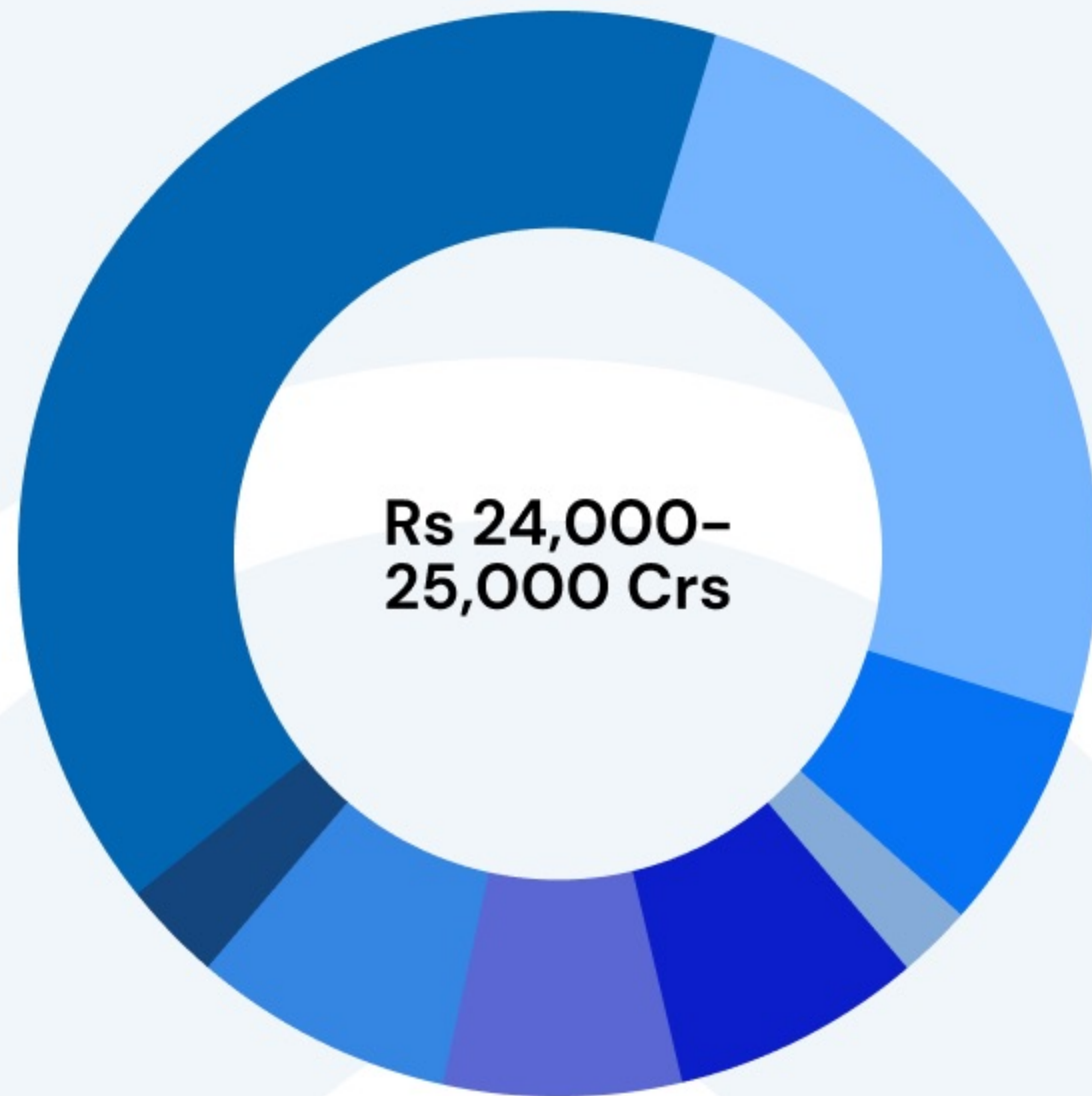
Indigenous shipbuilding with a remarkable increase in capability and programme fulfillment.

Defence Acquisition Procedure, 2020.

Category	Indigenous Content (IC)
Buy (Indian-IDDM)	Indigenous design and $\geq 50\%$
Buy (Indian)	In case of indigenous design $\geq 50\%$ , otherwise $\geq 60\%$
Buy and Make (Indian)	$\geq 50\%$ of the 'Make' portion
Buy and Make	Category not present
Buy (Global - Manufacture in India)	50% or more
Foreign Vendor	Foreign Vendor – Nil/ Indian Vendor $\geq 30\%$

# Total Addressable Market

Major opportunities for AMPL of around Rs 24,000–25,000 Crs across all sectors till FY28.



**Meteorology/ Hydrology**



Rs 900 – 1,000 Crs

**Special Projects**



Rs 2,000 – 3,000 Crs

**Radar Programs**



Rs 10,000 – 11,000 Crs

**Space (FM)**



Rs 500 – 600 Crs

**Missiles & Telemetry**



Rs 1,800 – 2,000 Crs

**Turnkey Projects**



Rs 5,000 – 6,000 Crs

**Exports**



Rs 1,500 – 2,000 Crs

**EW**



Rs 700 – 750 Crs

# Esteemed Clientele



## Major stake in upcoming Defence Programs



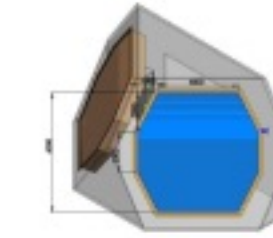
AATRU FOR ASPJ



Light Combat Aircraft



AAAU for Uttam AESA Radar



AAAU for Naval Radar



AAAU for AEW&CS



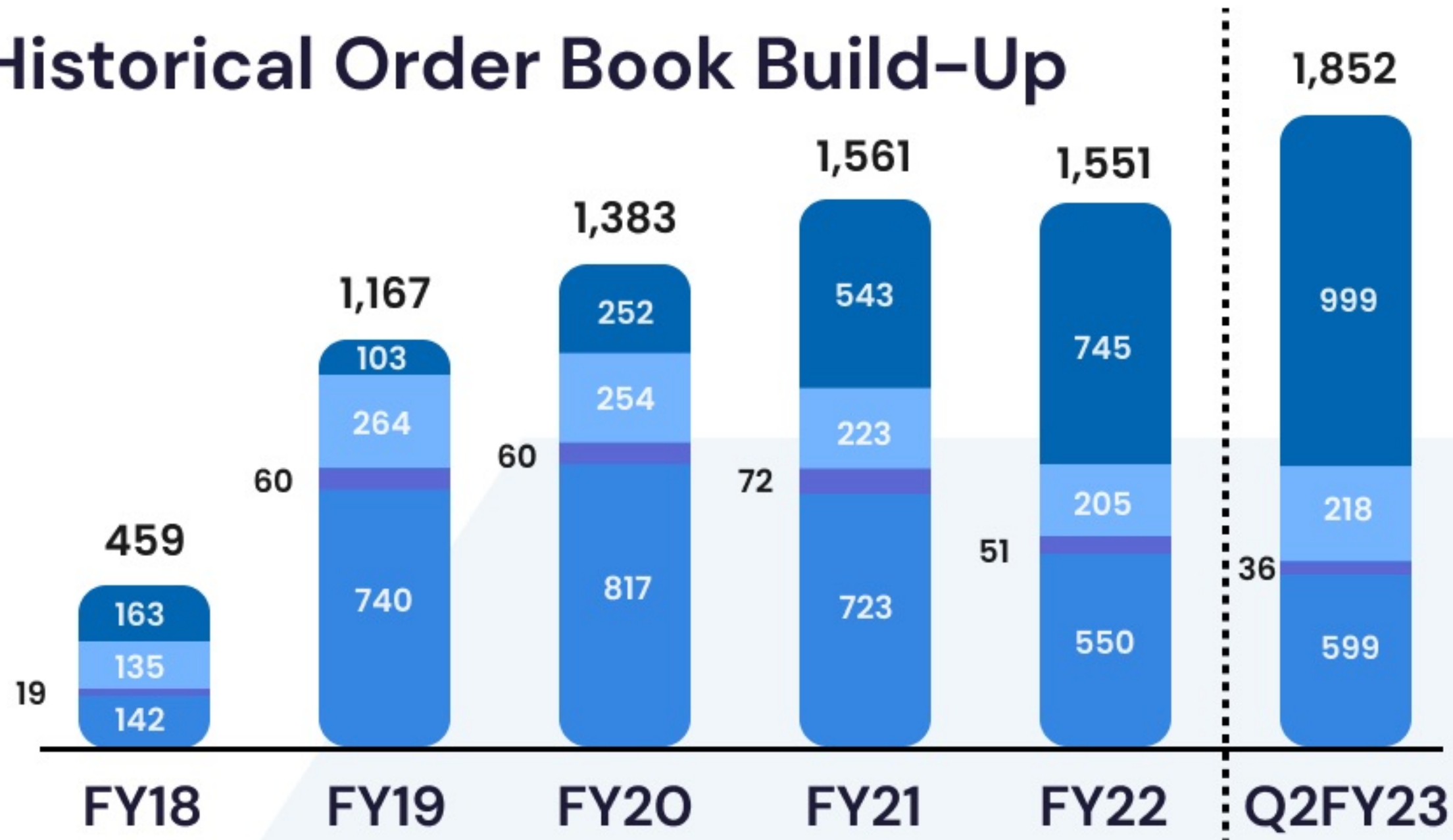
Long Range Radar TRMs, BSNs, PS



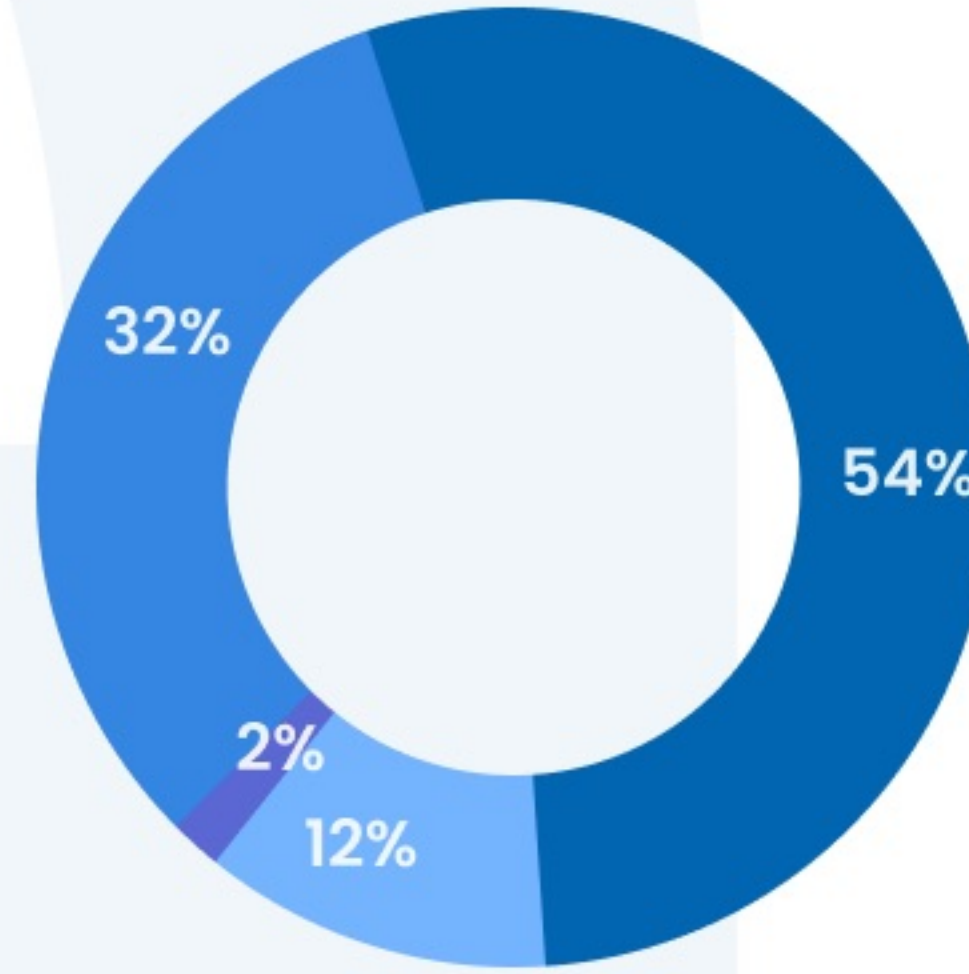
Medium Power Radar DTRMs

# Robust Order Book

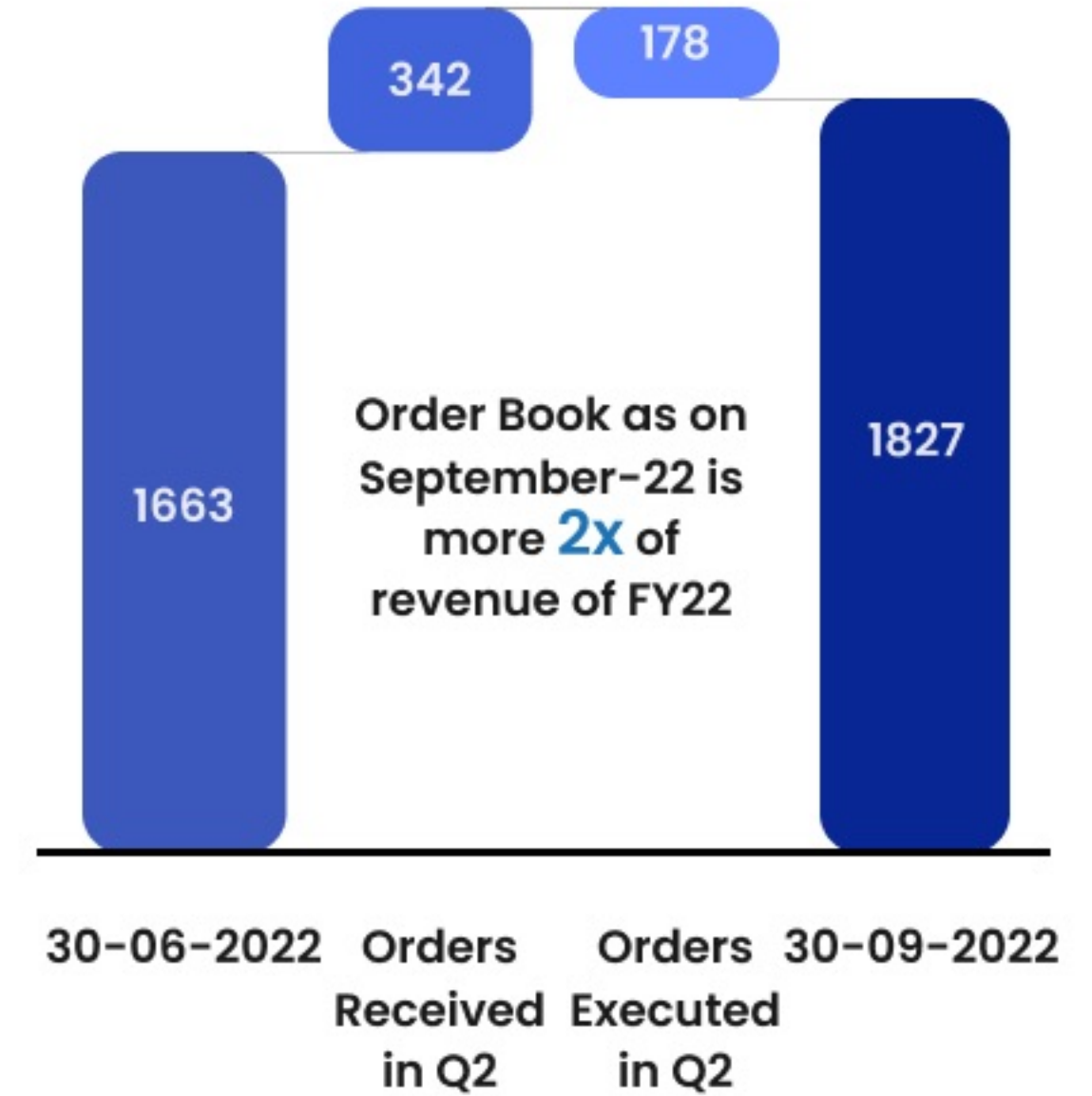
## Historical Order Book Build-Up



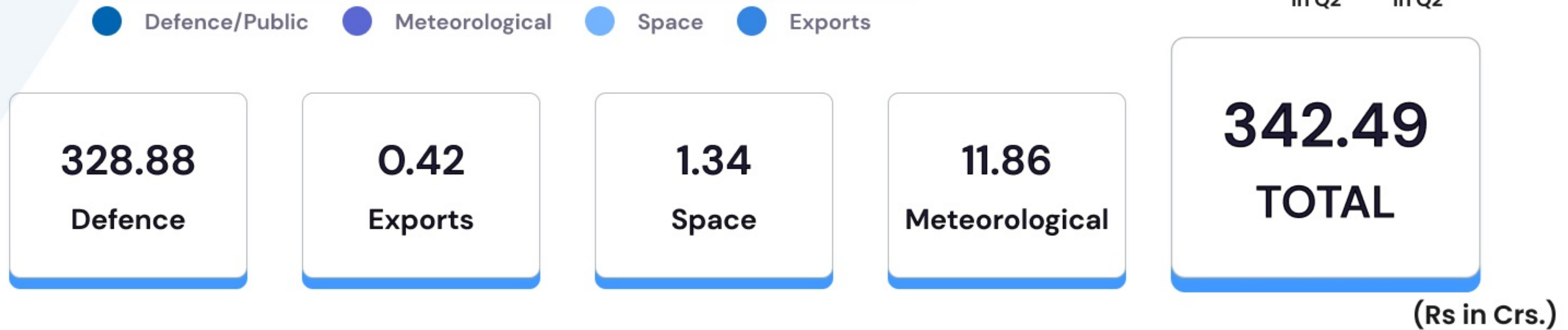
## Diversified Order Book



## Order Book Build-Up



## Order Book of Q2 FY23



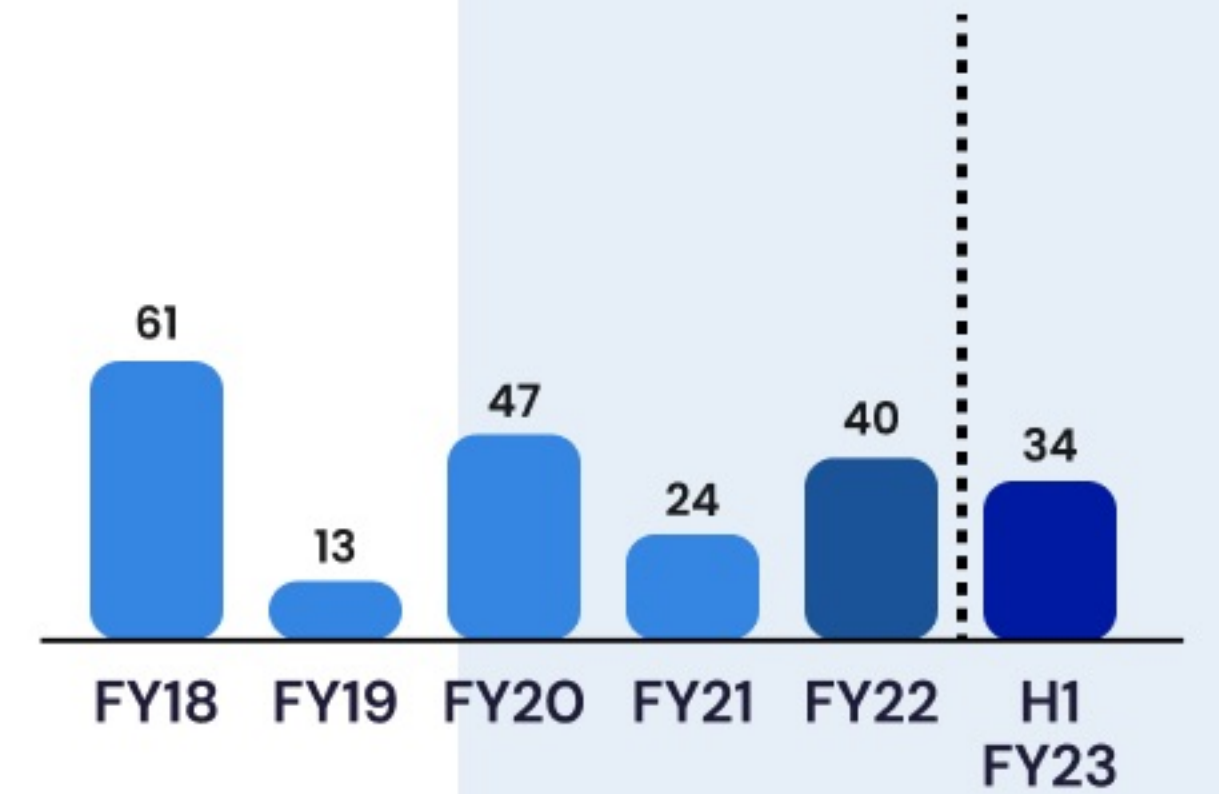
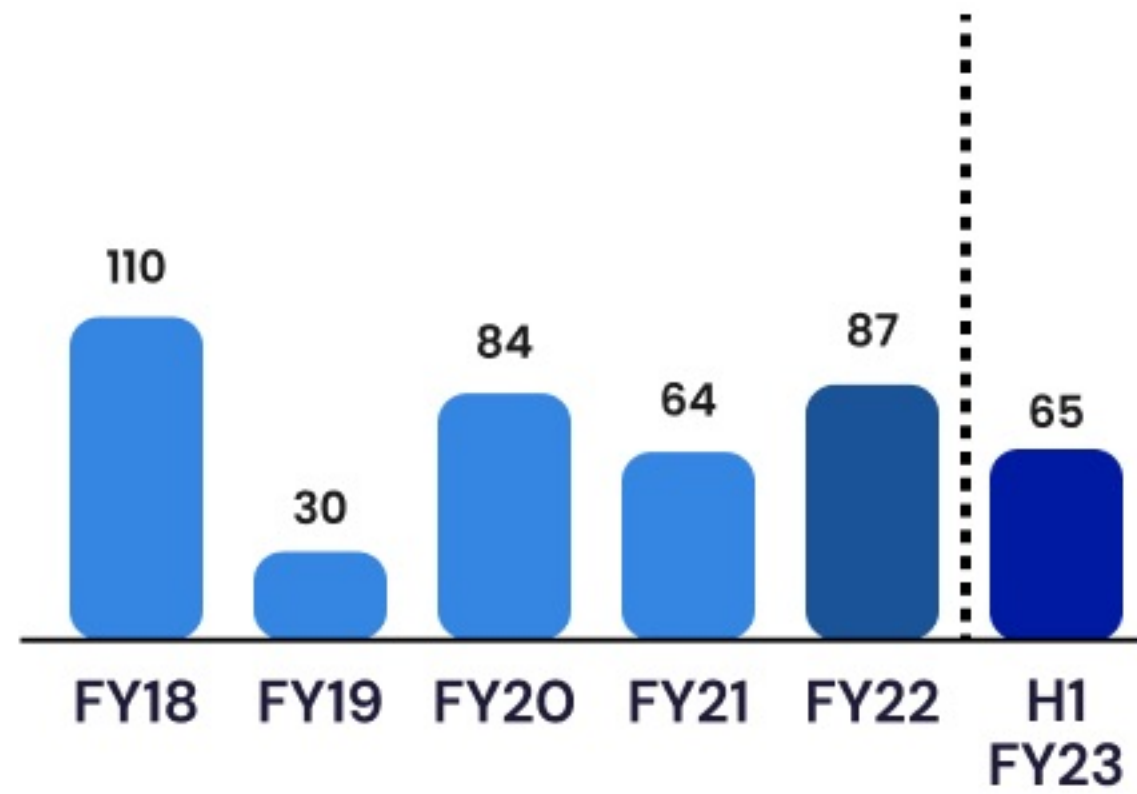
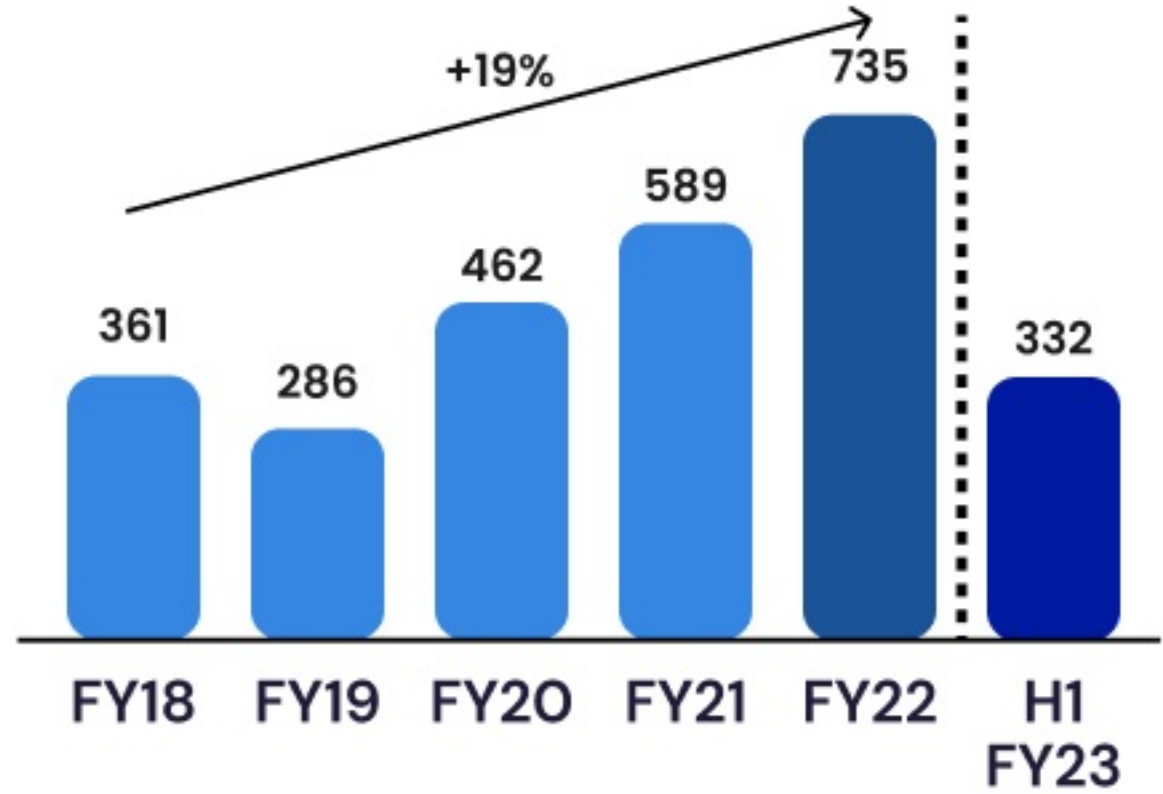
# Performance Highlights

Revenue (Rs. in Crs)

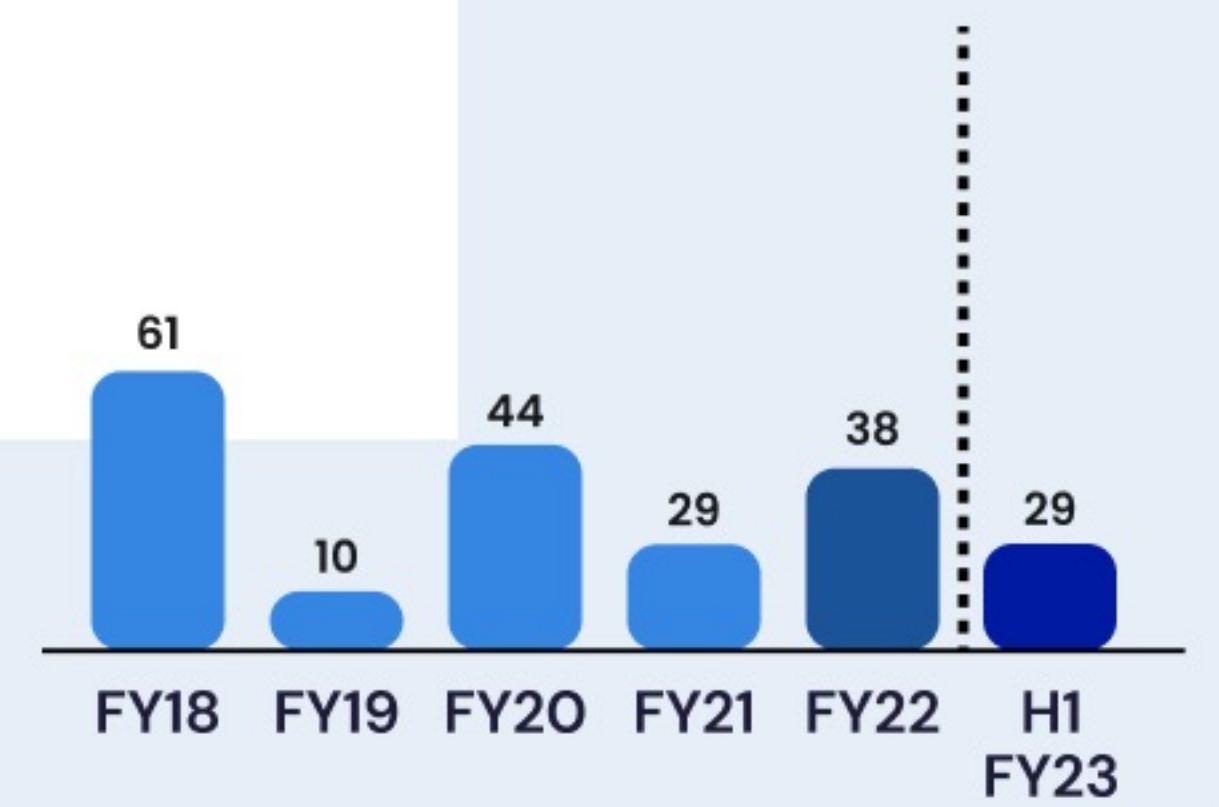
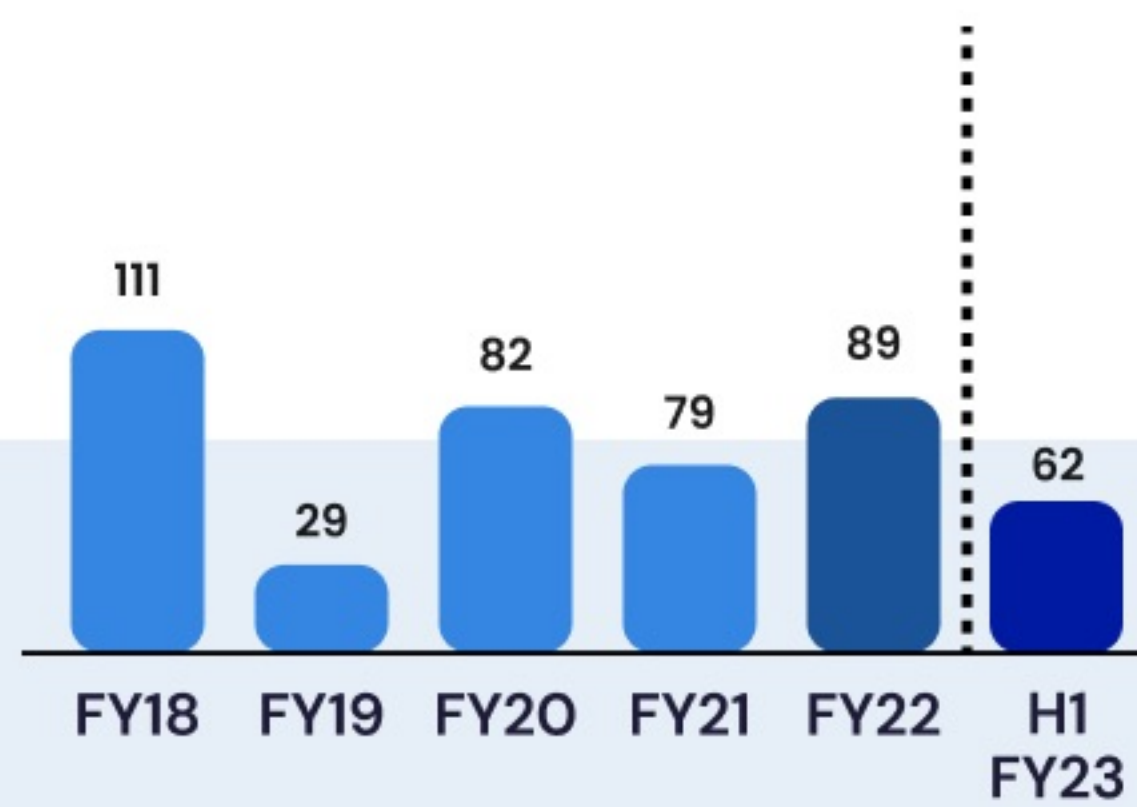
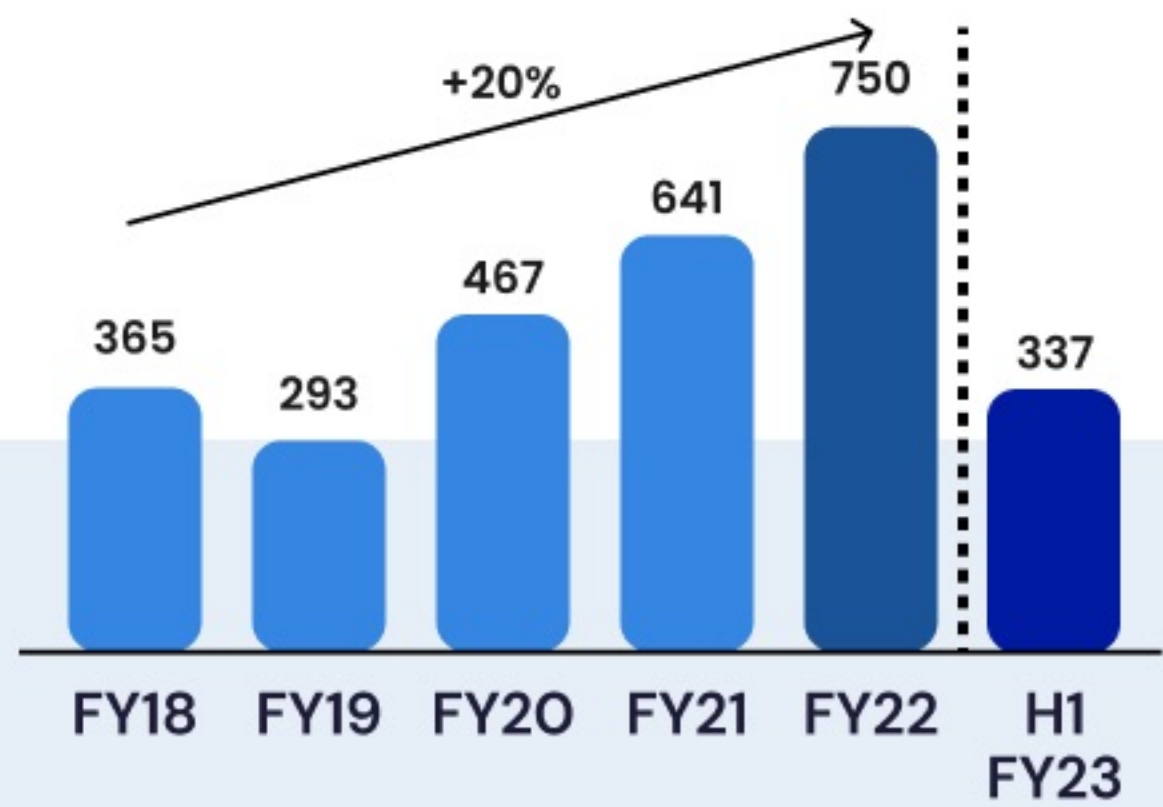
EBIDTA (Rs. in Crs)

PAT (Rs. in Crs)

Standalone



Consolidated



# State of the Art Infrastructure

AMPL has advanced in-house facilities for lower turnaround time for product realization appreciated by domestic and foreign customers.

## Hyderabad, Telangana

## Karnataka

### Unit I



Land : 1.13 Acres  
 Building : 18,000 Sq. Ft  
 Status : Own  
 Year : 1999

#### Facility Offering

Automatic weather  
 Station AWS and other  
 Hydrology &  
 Meteorology

### Unit II



Land : 2.0 Acres  
 Building : 20,000 Sq. Ft  
 Status : Own  
 Year : 1995

#### Facility Offering

Near Field Test Range  
 Out-Door Test Range  
 Multi-Layer Antenna  
 Fabrication

### Unit III



Land : 9.9 Acres  
 Building : 77,000 Sq. Ft  
 Status : Own  
 Year : 2003

#### Facility Offering

Clean Room Laser  
 Welding  
 Vibration Table

### Unit IV



Land : 19.0 Acres  
 Building : 1,80,000 Sq. Ft  
 Status : Own  
 Year : 2009

#### Facility Offering

EMI/EMC Halt/Hass  
 Chamber  
 ESS Chamber

### Unit V



Land : 0.59 Acres  
 Building : 23,000 Sq. Ft  
 Status : Own  
 Year : 2019

#### Facility Offering

MIC Facility  
 CNC Drilling  
 Copper Plating  
 Gold Plating  
 Etching developing

### Bengaluru Unit



Land : 5.0 Acres  
 Building : 1,00,000 Sq. Ft  
 Status : Own  
 Year : 2012

#### Facility Offering

Near Field Test Range

**Equipped  
 with**

Clean room  
 compatible oven  
 for curing epoxy

Temperature controlled  
 hot plate with nitrogen  
 purging facility for  
 eutectic attachment

High-precision  
 bonding  
 machines

ESD  
 measurement  
 equipment

DC probing station  
 for on-chip  
 measurement of DC  
 parameters



# State of the Art Infrastructure

## Assembly Infrastructure

- 450,000 sq. ft. of research, design, development and manufacturing across 6 units
- Fully automated Assembly facility consisting of 3 Automatic SMT assembly lines with high end testing capabilities that include AOI, 3D X Ray, and functional test using Flying probe tester.
- Class 10000 clean rooms
- Laser Welding
- SMT Lines

## Functional Testing

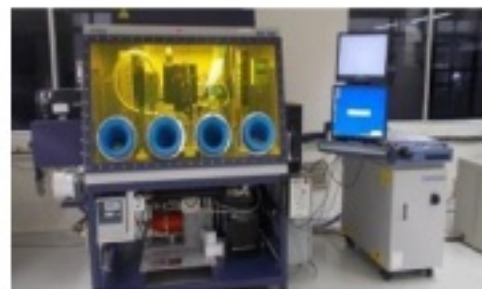
- Near Field Test Range (NFTR)
- Digital Signalling
- Function and pulse generators
- Open air antenna test range
- Spectrum Analyzers, Vector Network Analyzer, Signal generator, RF power meter
- Distortion Analyzer
- ATE-ATS facility

## Environment Testing

- EMI/EMC Test facility
- HASS/HALT Chambers
- Environment Chambers (-650C to +1750C; 98% RH)
- Vibration systems
- WeissChamber



Clean Rooms - Class 10,000



Laser Welding



FFTR



ATE ATS - Facility



EMI-EMC Test



Environmental Chamber



SMT Lines



Automated Optical Inspection



Open Air Antenna - Test Range



Oscilloscope



Vibration



HASS Chamber

# Strong R&D Capabilities

Through its focus on R&D, the company develops innovative designs useful for the manufacture of cost-effective products.

Strong in-house capability in the microwave radio-frequency (RF) applications domain.  
Executes orders through BTS (Build To Specifications) and BTP (Build To Print) route

## Engineering Capabilities

- In-house PCB assembly facility
- In-house Mechanical design & simulation R&D
- In-house digital R&D
- In-house environmental qualification facility

## Dedicated Facility in Bengaluru

AMPL Research and Development center is recognized by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India.

Investing further to develop expertise on system design and integration.

## Key product developments

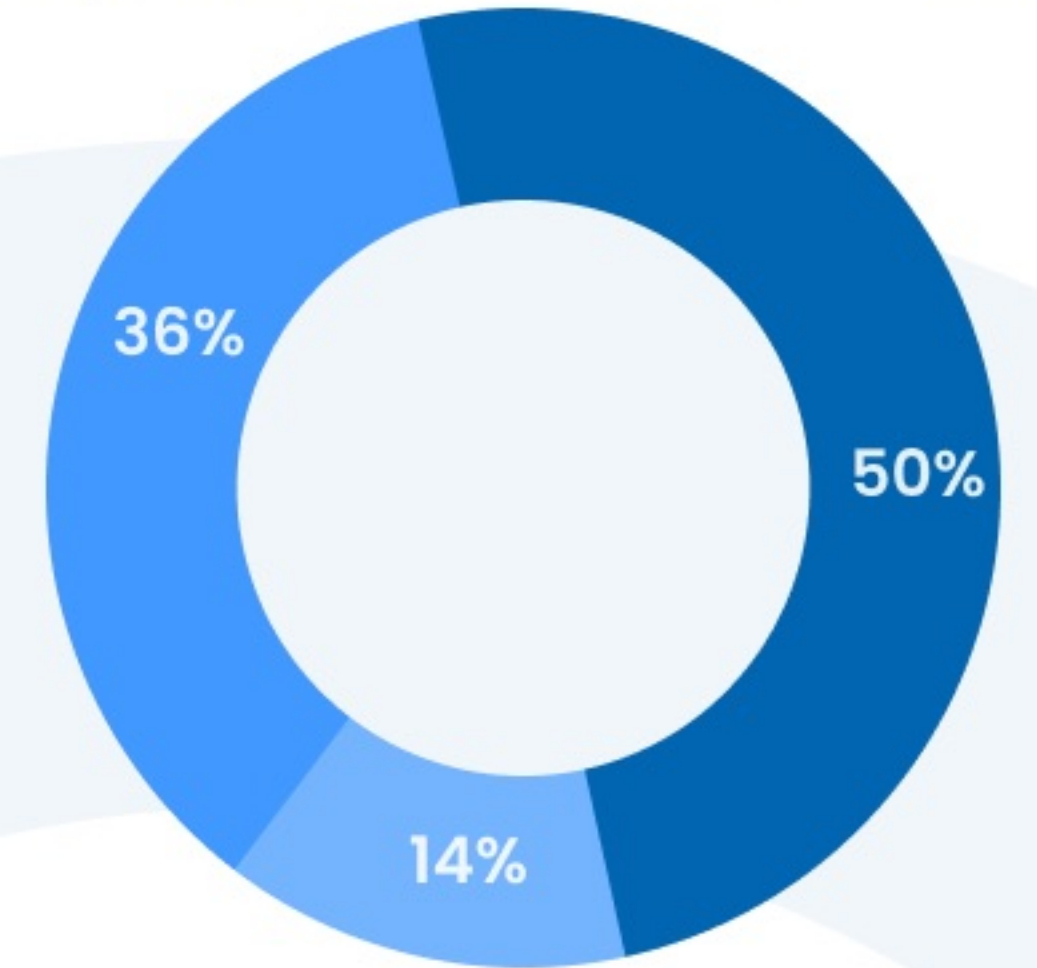
Strong track record of new product development and seamless execution leading to new orders.

**Defence** – Developed sub-systems for various defence programs and new technologies in India for radars such as Ashlesha, LRTR, CSR, AESA radars, BFSR, 3D-CAR, AEW&C and electronic warfare equipment

**Space** – Developed sub-systems for India's RISAT & GSAT program, Resourcesat, Megatropics, Cartosat

**Meteorology** – Developed and manufactured DWR (Doppler Weather Radar), Wind Profiler Radar (WPR), automatic weather stations along with met towers, Agromet towers, hydrology stations

Total workforce (as on September 30th, 2022) – 1,320



● Production ● Support ● R&D

AMPL has a highly experienced workforce (including 401 technocrats of which two are Doctorates) which keeps the company on forefront of technology. Its employees are continuously trained through in-house workshops and external programs

# Serving Markets Through

## Build To Specifications (BTS) Orders

The company's strong relationship with large corporations builds its brand equity and helps it in establishing itself as a prime contractor for large and longer-term programs in the marketplace. AMPL works on high-value complex projects awarded by companies.



- Receipt of order from the customers (such as government research organisations – Domestic & Foreign, private entities etc.)
- Customers provide the electrical and mechanical specifications of the modules or sub-systems as per their system requirements

- Work with the customer team to specify the target specifications of the required module or sub-system presenting the various options and latest technologies involved to finalize the target specifications.

- Realizing the product using the engineering expertise in-house and deliver a fully qualified product (airborne, naval or ground application) to its customers.

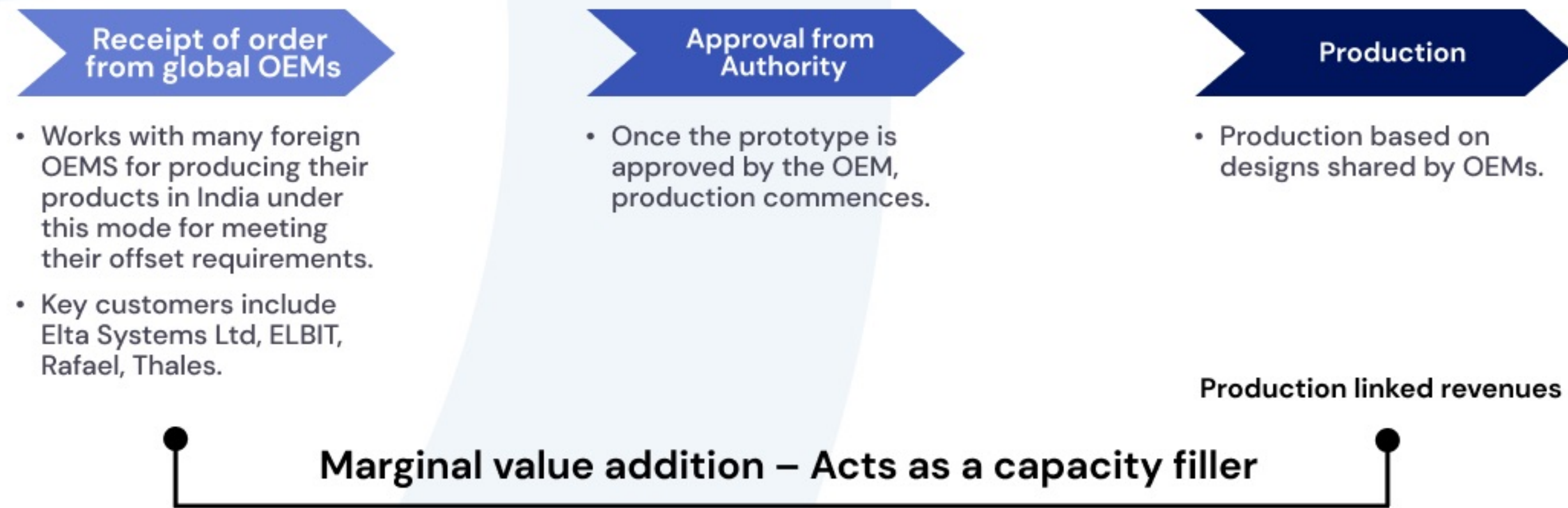
- Once the system is qualified by the customer production orders are released.

- Works with systems integrators like DPSUs (Defence Public Sector Undertakings) and others for commercialization of the products

Production linked revenues

## Build To Print (BTP) Orders

AMPL has produced more than USD 150 million worth of high-end modules under BTP route.



- Works with many foreign OEMs for producing their products in India under this mode for meeting their offset requirements.
- Key customers include Elta Systems Ltd, ELBIT, Rafael, Thales.

- Once the prototype is approved by the OEM, production commences.

- Production based on designs shared by OEMs.

Production linked revenues

# Strategy for Growth



## New product development to accelerate growth

Develop products in close association with government research organizations for defence and space.

Gol has introduced policy measures promoting Indigenous shipbuilding.

Grow business by producing new and innovative products.

Enter commercial end user markets for radars.



## Focus on Research & Development

Invest in modern technology and equipment's to address changing industry trends and customer requirements.

Leverage strong R&D base to broad base domestic offerings.

Developing digital expertise by spending more on R&D.



## Joint Ventures and Strategic alliances

Through JV or strategic alliances, offer improved technology and products.

Target the offset requirement in large defence procurement programmes of Gol.

**Exploring the areas in the anti-drone, EW, satellites, SDRs and electro-optics through JVs.**

In discussion with our JV partners to expand the origin 21.30 like in the SDR product portfolio to develop EO (electro-optics) product line.



## Reap benefits of sectoral tailwinds

By doing extensive investments to strengthen our position as a systems vendor.

**Bidding for the whole system – the complete radar system – for both DRDO and for future MoD requirements.**

Atma Nirbhar Bharat initiative is encouraging the industry to develop the system either through in-house development or through foreign technology tie-up.

# Opportunities

## Wide Array of Opportunities due to Government Initiatives

Various government initiatives are encouraging the industry to develop the system either through in-house development or through foreign technology tie-up.

AMPL in alliance with System Knowledge of its partners aims to deliver the product that meets Government thrust on Atma Nirbhar Bharat.

Getting opportunity from the Services to build for the intersystems.

Indian industries are getting opportunities to develop and supply products which are published as negative import list by GOI.

AMPL will utilise its skill on design and production of high-end defence equipment in India and would also cater to the after-sale support.

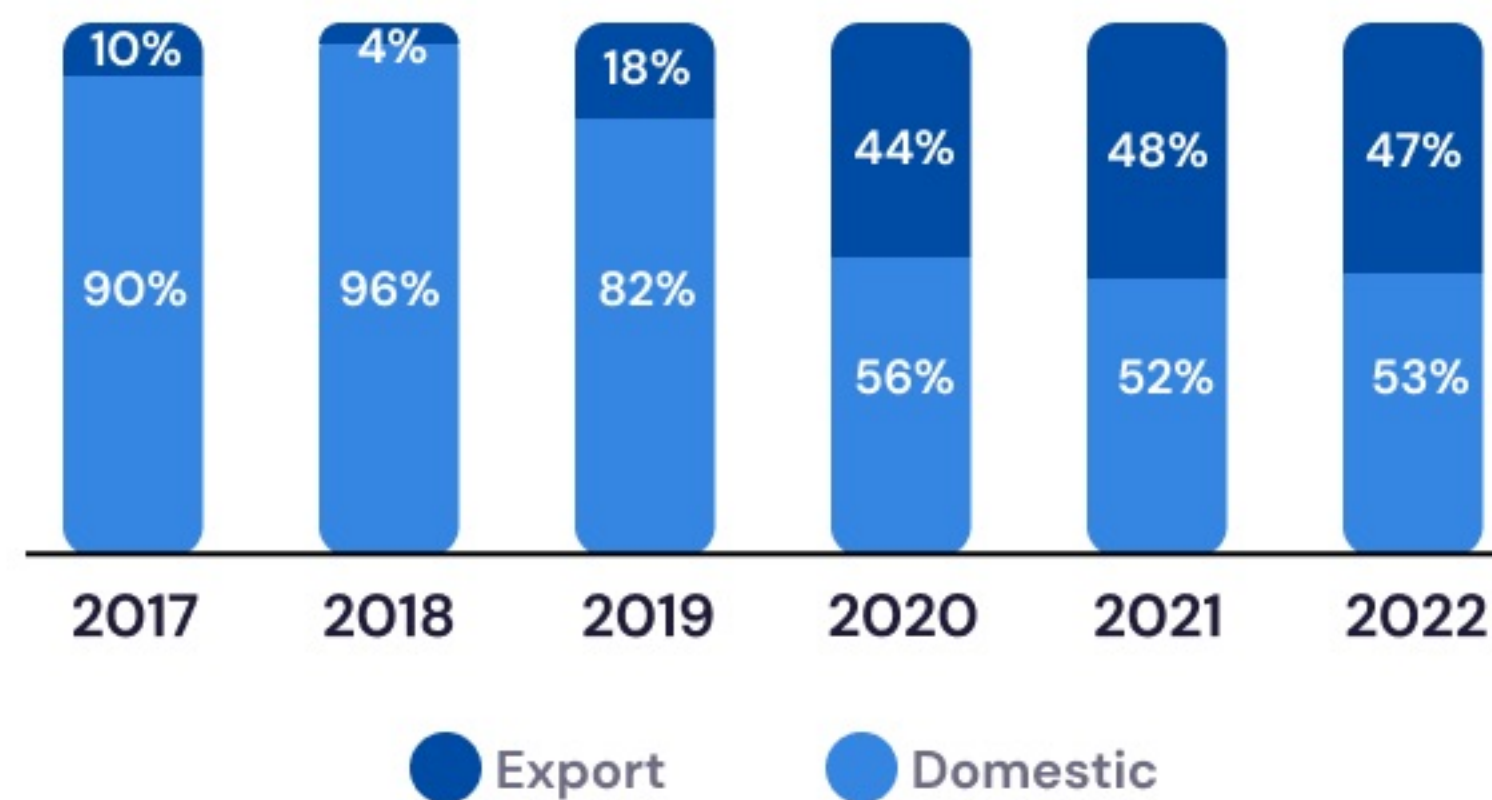
Indigenous integrated and strategic defence and aerospace electronics solutions provider which is well positioned to benefit from the Atma Nirbhar Bharat initiative.

**We aim to achieve 70% Domestic 30% Export Revenue distribution over next 2-3 years. Domestic business on an average carries 40 to 45% of gross margin as against 8 to 10% gross margin in exports.**

## Defence Offset

The defence offset policy mandates a foreign vendor to source at least 30% of the value of an order (when the order is worth Rs.2,000 crore or more) from Indian manufacturers.

AMPL has been active in tapping this opportunity and its export business is driven by these offset provisions.



## Ready for Electronic Warfare

- Antennas
- EDLVA and BLI Super Components
- EW Simulators
- DIFM Receivers
- Front End Receivers
- Up/Down convertors
- Homodyne Receivers

## Strategic Electronic Telemetry Sub-systems

- Command guidance units
- Radio Proximity Fuze
- L, S, C & X-Band Transponders
- Phased Array based Telemetry Tracking System
- Sub-system for gimbal based and AESA Seeker
- Ground and Airborne data link systems
- Data and video Telemetry transmitters, Transponders,
- Encoders & decoders Telemetry Receivers

# Competitive landscape

	Systems	Supplied >25 Radars	Sub-Systems	Components	MMIC	Planar Antenna Testing (NFTR)
BDL	✓					
BEL	✓	✓	✓	✓	✓	✓
L&T	✓					
Mahindra Defence	✓					
Bharat Forge	✓		✓			
Adani Defence	✓		✓			
<b>Astra Microwave</b>	✓	✓	✓	✓	✓	✓
Paras Defence	✓		✓			
Data Patterns	✓		✓	✓		
Centum Electronics			✓	✓		
CoreEL			✓	✓		
Mistral			✓	✓		
Alpha Design	✓		✓	✓		
TASL	✓		✓			

# ANNEXURE



# Standalone Profit & Loss

PARTICULARS (Rs. In Cr)	H1FY23	FY22	FY21	FY20	FY19	FY18
<b>Revenue from Operations</b>	<b>332.1</b>	<b>735.0</b>	<b>589.2</b>	<b>461.6</b>	<b>286.2</b>	<b>360.5</b>
Total Raw Material	206.4	524	418	267	159	152
<b>Gross Profit</b>	<b>125.7</b>	<b>211.2</b>	<b>170.7</b>	<b>194.7</b>	<b>126.9</b>	<b>208.5</b>
<b>Gross Profit Margin</b>	<b>37.9%</b>	<b>28.7%</b>	<b>29.0%</b>	<b>42.2%</b>	<b>44.3%</b>	<b>57.8%</b>
Employee Expenses	37.5	73	64	66	61	66
Other Expenses	22.8	51	42	45	36	33
<b>EBITDA</b>	<b>65.4</b>	<b>86.9</b>	<b>64.2</b>	<b>83.8</b>	<b>29.8</b>	<b>109.5</b>
<b>EBITDA Margin</b>	<b>19.7%</b>	<b>11.8%</b>	<b>10.9%</b>	<b>18.2%</b>	<b>10.4%</b>	<b>30.4%</b>
Other Income	3.1	7	12	12	24	8
Depreciation	11.2	22	23	25	29	27
<b>EBIT</b>	<b>57.3</b>	<b>72.6</b>	<b>52.8</b>	<b>70.5</b>	<b>25.7</b>	<b>90.9</b>
<b>EBIT Margin</b>	<b>17.3%</b>	<b>9.9%</b>	<b>9.0%</b>	<b>15.3%</b>	<b>9.0%</b>	<b>25.2%</b>
Finance Cost	12.0	20	21	8	9	12
<b>Profit before Tax</b>	<b>45.3</b>	<b>52.7</b>	<b>31.4</b>	<b>62.7</b>	<b>16.7</b>	<b>78.9</b>
<b>Profit before tax margin</b>	<b>13.6%</b>	<b>7.2%</b>	<b>5.3%</b>	<b>13.6%</b>	<b>5.9%</b>	<b>21.9%</b>
Tax	11.3	12	7	15	4	18
<b>PAT</b>	<b>34.0</b>	<b>40.3</b>	<b>23.9</b>	<b>47.3</b>	<b>12.5</b>	<b>60.7</b>
<b>PAT Margin %</b>	<b>10.2%</b>	<b>5.5%</b>	<b>4.1%</b>	<b>10.3%</b>	<b>4.4%</b>	<b>16.8%</b>
<b>EPS (Rs.)</b>	<b>3.93</b>	<b>4.65</b>	<b>2.76</b>	<b>5.47</b>	<b>1.45</b>	<b>7.01</b>



# Standalone Balance Sheet

ASSETS	H1FY23	FY22	FY21	FY20	FY19	FY18
<b>Non-Current Assets</b>	<b>216</b>	<b>215</b>	<b>202</b>	<b>213</b>	<b>222</b>	<b>217</b>
Property, plant and equipment	154	158	150	158	176	193
Capital WIP	0	0	0	12	2	1
Investment in Associates	2	2	2	-	-	-
Investments in joint ventures	20	20	20	16	16	-
Investments in subsidiaries	15	15	13	8	8	6
<b>Financial Assets</b>						
Other Financial Assets	11	9	10	11	12	17
Deferred tax assets	7	6	2	0	-	-
Non-Current Tax Assets	3	3	-	5	5	-
Other non-current assets	4	3	3	2	2	1
<b>Current assets</b>	<b>797</b>	<b>743</b>	<b>714</b>	<b>644</b>	<b>391</b>	<b>457</b>
Inventories	419	402	291	226	130	104
<b>Financial assets</b>						
Investments	0	0	14	13	20	126
Trade receivables	264	202	254	247	190	188
Cash and cash equivalents	9	21	14	7	7	21
Other Bank balances	51	49	24	43	18	8
Other financial assets	1	4	13	0	-	-
Current tax assets (net)	1	1	1	-	-	-
Other current assets	52	62	103	107	26	11
<b>Total assets</b>	<b>1,013</b>	<b>958</b>	<b>915</b>	<b>857</b>	<b>613</b>	<b>674</b>

EQUITY AND LIABILITIES	H1FY23	FY22	FY21	FY20	FY19	FY18
<b>Equity and Liabilities</b>	<b>612</b>	<b>590</b>	<b>561</b>	<b>547</b>	<b>503</b>	<b>502</b>
Equity share capital	17	17	17	17	17	17
Equity attributable to owners of the Company	595	572	543	530	486	484
<b>Non-current liabilities</b>	<b>7</b>	<b>47</b>	<b>4</b>	<b>3</b>	<b>9</b>	<b>20</b>
Financial liabilities						
Borrowings	-	3	-	-	5	14
Deferred tax liabilities (net)	-	-	-	-	5	4
Provisions	3	4	4	3	-	1
Contract liabilities	4	40	-	-	-	-
<b>Current liabilities</b>	<b>394</b>	<b>321</b>	<b>351</b>	<b>307</b>	<b>101</b>	<b>152</b>
Financial liabilities						
Borrowings	140	56	100	47	0	20
Trade payables	56	53	35	38	22	14
Other financial liabilities	9	15	11	16	20	66
Current tax liabilities (net)	4	-	1	2	-	2
Provisions	3	3	2	2	3	5
Contract liabilities	181	192	201	201	51	24
Other current liabilities	1	2	2	1	5	23
<b>Total equity and liabilities</b>	<b>1,013</b>	<b>958</b>	<b>915</b>	<b>857</b>	<b>613</b>	<b>674</b>

(Rs. In Cr)

# Subsidiaries & JV

## Subsidiaries

BE

Bhavyabhanu Electronics Pvt. Ltd.

- BEPL is a fully owned subsidiary of AMPL
- Established with State-of-the-Art manufacturing & test facilities to meet Global Standards. This combined with experienced man power & stabilized processes ensure that the needs of various Industry Segments can be met easily.
- A dependable player with excellent technological capabilities and a long-term commitment to the defence, aerospace, medical and industrial electronics industry
- Products are known for ruggedness and reliability and conform to the latest quality standards. BEPL can handle both high-mix, low/medium volume products as well as high volume production for our customers.



- A fabless MMIC Design House, based in Singapore. Aelius Semiconductors develops GaAs and GaN MMIC products based on a robust and reliable design philosophy. These designs are fabricated at leading foundries across the world.
- The products are tested and packaged as per customer's requirement utilizing state-of-the-art facilities
- Aelius's unique and wide range of MMIC products are focused primarily on the Defence and Space industries, with competitive time lines and prices. We offer the flexibility to custom-package our products to customer's chosen configuration of die, package, or module.

## JV



- Astra Microwave Products Ltd and M/s RAFAEL ADVANCED DEFENCE SYSTEMS LTD., Israel (RAFAEL) came together to form a Joint Venture Company called Astra Rafael Comsys Private Ltd. (ARC) in Aug-19
- Focuses on indigenous technology and Atma Nirbhar Bharat programs
- Engages in carrying out production, integration, customization, marketing, sale, life cycle support and additional activities as required in the fields of Tactical Radio Communication systems, Electronic Warfare Systems and Signal Intelligence Systems.

# Capabilities

## Engineering Capabilities

### Research & Development

- Expertise in development of critical products for Radar, EW, Missile, Telemetry and Space Elx
- PCB Design
- Mechanical design & simulation
- ATE design
- Test validations
- Environment & EMI/ EMC qualification
- Antenna Testing & Calibration

## Digital System R&D Capability

### 80+ R&D Manpower in Digital domain

- Xilinx Alliance Partner
- Hardware Design
- Firmware Development
- Software Development
- Algorithm Development and simulation
- GUI development
- Real Time Operating System
- System Level Integration
- Inhouse Cadence team for RF & High speed Digital PCB design including SI, PI and Thermal Analysis

## Test Facilities

- Near Field Test Range (NFTR)
- Open Air Antenna Test Range
- Far Field Test Range (RF Anechoic Chamber)
- EMI/EMC Test Facility
- Vibration/Shock Machine/ Bump Test Facilities
- HASS Chamber
- ATE and ATS Facilities
- Other Facilities
  - Multilayer Microstrip Antenna Assembly Facility
  - Thermovac Facilities
  - Laser Welding Machine

## Quality Standards

- Compliant to AS 9100D
- Inward Inspection
- In-process Inspection
- Final Inspection
- Counterfeit part control
- Reliability Engineering
- Reliability prediction and estimation
- FMECA & FRACAS
- Process standardization

# Products : Defence

## Radar Electronics

- Active Antenna Array Units – L, S, C, X, Ku-Bands
- Wideband TR modules
- Solid State Power Amplifiers
- Receiver Exciters upto Ka Band
- Central Units- L & S Bands
- Antenna Beam forming units
- All receiver subsystems
- Array Group Receivers
- Monopulse Receivers
- Waveform Generators
- Own MMIC's

## Electronic Warfare

- Antennas
- EDLVA and BLI Super Components
- EW Simulators
- DIFM Receivers
- Front End Receivers
- Up/down convertors
- Homodyne Receivers

## Missile Electronics

- Command Guidance Units
- Radio Proximity Fuze
- L, S, C & X-Band Transponders
- Phased Array based Telemetry Tracking System
- Sub-systems for Gimbal based and AESA Seeker
- Ground and Air-borne data link systems

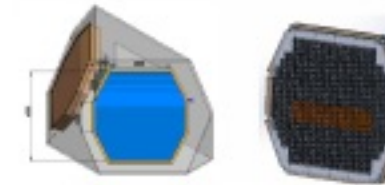
## Telemetry

- Data and Video Telemetry transmitters, transponders, encoders & decoders
- Telemetry Receivers

## Products



S-band Pulsed Phased Array Tracking Radar (PPTR) – PXE, DRDO



AAAU for Naval Radar



Phased Array Telemetry System (PATM) – ITR, DRDO



Counter Drone System Received (LAToT from DRDO)



Bird Detection & Monitoring Radar



Coastal Surveillance Radar (LAToT from DRDO available)



AATRU for ASPJ Pod



Radiation Mode T&E Facility for Radar EW Systems



Parth Anti-Personal Mine (Received LAToT from DRDO)



Course Correction Fuse (CCF)

# Products : Meteorology

## Ground-based

- Water Level Measurement (Bubbler/Radar Sensor)
- Agromet Meteorological Stations (AMS)
- Automatic Rain Gauge (ARG)
- Automatic Weather Stations (AWS)
- Mini boundary layer masts
- 50m tower masts
- Agro met towers

## Products



Agro-Meteorology



Flood Monitoring Station



Data Buoy



1 kW VHF TRMs:  
NARL (MST Radar)



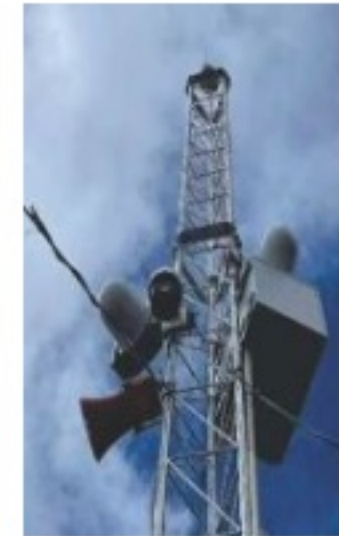
Wind Profiler  
Radars : NARL



Weather  
Monitoring Station



Meteorology  
Radar Systems



Avalanche Radar



Multi Mission Met Data Rx &  
Processing System  
(MMDRPS) : Antrix/IMD



53 MHz ST Radar :  
Kolkata University

# Products : Space

## Ground-based

- Sub-systems for Multi-object Tracking Radar
- Coherent frequency generators
- L-band modulators
- 8x8 switchable routers for earth station
- V/UHF T/R modules for ST radar
- Ka-band indoor/outdoor units

## Flight Model

- Sub-systems for SAR Payloads
- Sub-systems for Geostationary Satellites
- Sub-systems for Remote Sensing Satellites
- Fabrication of Flight sub-systems
- Screening of components of FM
- Examples:
  - C-band T/R modules
  - SSPA
  - X-band phase shifter, power amplifier
  - S-band transmitter

## Association

Proud to be associated with every major satellite launch in India.

- RISAT, RISAT1A
- GSAT Series
- HTS GSAT Series (GSAT11, GSAT19)
- ASTROSAT
- GISAT
- IRNSS
- Ka band payload GSAT-20 and
- Remote sensing satellites of ISRO
- Mega tropics
- Cartosat
- Resourcesat
- SARAL

## Defence Satellite Programs

- Kautilya (EMISAT) :  
Development of Quad Super Het Rx (0.5-18 GHz)
- Anvesha : Development of Communication Modules

## Navigation

- Integrated NavIC & GPS Receivers - MEITY

# Major Opportunities: Radar Programs

## Bharat Electronics

Program: Arudhra (MPR)  
Opportunity: Rs 400 Cr  
Timeline: FY24

Product:



## Indian Air Force

Program: HPR Sub-Systems  
Opportunity: Rs 1,100 Cr  
Timeline: FY27

Product:



## Bharat Electronics

Program: Mountain Radar  
Opportunity: Rs 130 Cr  
Timeline: FY26

Product:



## HAL

Program: Uttam AESA Radar (LCA Mk 1A)  
Opportunity: Rs 450 Cr  
Timeline: FY25-27

Product:



## HAL

Program: Uttam AESA Radar (LCA Mk 2)  
Opportunity: Rs 300 Cr  
Timeline: FY28-30

Product:



## HAL

Program: Uttam AESA Radar (Su-30 Mk I)  
Opportunity: Rs 1,000 Cr  
Timeline: FY26-30

Product:



## HAL

Program: Uttam AESA Radar (AMCA)  
Opportunity: Rs 500 Cr  
Timeline: FY26-30

Product:



## HAL

Program: Uttam AESA Radar (TEDBF)  
Opportunity: Rs 300 Cr  
Timeline: FY27

Product:



## DRDO

Program: Long Range Radar (LRR)  
Opportunity: Rs 1,000 Cr  
Timeline: FY24

Product:



## DRDO

Program: LRSAM Radar  
Opportunity: Rs 500 Cr  
Timeline: FY24

Product:



# Major Opportunities: Radar Programs

## DRDO

Program: AEW&C-II  
Opportunity: Rs 160 Cr  
Timeline: FY24

Product:



## Bharat Electronics

Program: QRSAM  
Opportunity: Rs 2,000 Cr  
Timeline: FY24-26

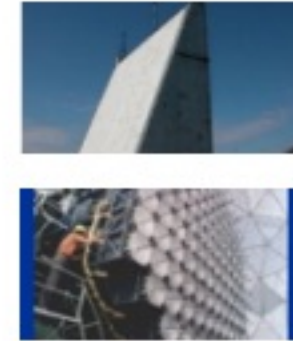
Product:



## ISRO

Program: Space Debris Radars  
Opportunity: Rs 1,400 Cr  
Timeline: FY24-27

Product:



## Bharat Electronics

Program: FCR  
Opportunity: Rs 1,317 Cr  
Timeline: FY26

Product:



## DRDO

Program: UHF Radar (2 Systems)  
Opportunity: Rs 450 Cr  
Timeline: FY29

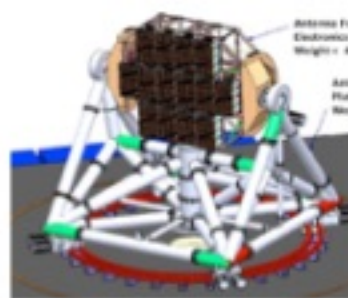
Product:



## DRDO

Program: S-band Radar  
Opportunity: Rs 1,200 Cr  
Timeline: FY29

Product:



## DRDO

Program: AD Radars  
Opportunity: Rs 700 Cr  
Timeline: FY27

Product:



## DRDO

Program: Counter Drone Radar  
Opportunity: Rs 140 Cr  
Timeline: FY24-30

Product:





# Major Opportunities: Missiles

## DRDL/BDL

Program: ASTRA  
Opportunity: Rs  
400 Cr  
Timeline:  
FY24-26

Product:



## BDL

Program: AKASH  
Opportunity: Rs  
435 Cr  
Timeline:  
FY24-26

Product:



## BDL

Program: QR-SAM  
Opportunity: Rs  
64 Cr  
Timeline:  
FY24-26

Product:



## ANSP

Program: SLCM  
Opportunity: Rs  
132 Cr  
Timeline: FY27

Product:



## DRDL

Program: NGARM  
Opportunity: Rs  
186 Cr  
Timeline: FY27



## DRDL/BDL

Program: Pralay/  
Brahmos/ SMART  
Opportunity: Rs  
50 Cr  
Timeline: FY24

Product:



## ITR

Program: Test  
Range Systems –  
PATM, Decoy etc.  
Opportunity: Rs  
100 Cr  
Timeline: FY24-26

Product:



## DRDO

Program:  
Telemetry  
Modules  
Opportunity: Rs  
94 Cr  
Timeline: FY24-26

Product:



## SPIC

Program:  
Converters  
Opportunity: Rs  
34 Cr  
Timeline: FY27

Product:



## DRDL

Program:  
Transponders  
Opportunity: Rs  
64 Cr  
Timeline: FY27

Product:



# Major Opportunities

## EW

### HAL

Program: ASPJ Pod for LCA Mk 1A  
Opportunity: Rs 50 Cr  
Timeline: FY25-27



### Bharat Electronics

Program: EW Products  
Opportunity: Rs 230 Cr  
Timeline: FY25-27

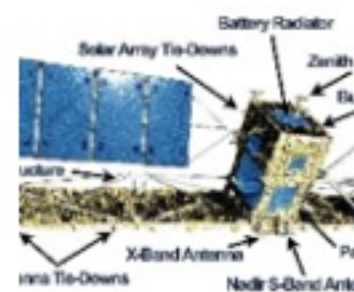
### Bharat Electronics

Program: DR118-DST, MASS, BIT for Su-30 Mk I  
Opportunity: Rs 250 Cr  
Timeline: FY24-26

## Space

### MoD, ISRO, Satellite Users

Program: SAR, Commn. Payload Satellites  
Opportunity: Rs 925 Cr  
Timeline: FY24-30



# Major Opportunities

## Systems

### Indian Armed Forces

Program: C-UAS  
Opportunity: Rs 2,000 Cr  
Timeline: FY24



### Indian Air Force

Program: Wind Profiler Radar & DWR  
Opportunity: Rs 200 Cr  
Timeline: FY24-27



### Indian Army

Program: Low level light Weight Radar  
Opportunity: Rs 100 Cr  
Timeline: FY25



### Indian Air Force

Program: Bird detection & monitoring Radar  
Opportunity: Rs 80 Cr  
Timeline: FY25



## Special Projects

### Commercial Market

Program: IRNSS module and VTU  
Opportunity: Rs 300 Cr  
Timeline: FY25-30



### Telcos, Banks, MoD, ISRO, Airports, Power grids etc

Program: NAVIC Timing Receiver  
Opportunity: Rs 500 Cr  
Timeline: FY25-30



### State Govts for Survey of India

Program: CORS Receiver  
Opportunity: Rs 500 Cr  
Timeline: FY25-30



### MoD, MHA, State Police

Program: Robotics  
Opportunity: Rs 75 Cr  
Timeline: FY25-30



### Smart Cities, NHAI and state traffic Police Dept

Program: 70 GHz ITS Radar Timing Receiver  
Opportunity: Rs 100 Cr  
Timeline: FY25-30



# Quality certifications

## Industry Leading Certifications

Certificate of Registration



**nqa**

This is to certify that the Quality Management System of:  
**Astra Microwave Products Limited**  
 SP-1, Unit-4, 100% EOU, Plot no. 18 to 21, Survey No 1/1, Hardware Park, Imarah Kancha, Raviryala(V), Maheshwaram (M) Ranga Reddy Dist., Hyderabad, Telangana, 500005, INDIA  
 applicable to:  
**Manufacture of RF/Microwave & Digital Sub Systems for aerospace and defence applications**  
 has been assessed and registered by NQA against the provisions of:  
**AS9100D & BS EN ISO 9001:2015**  
 in accordance with the requirements of EN 9104-001:2013. This registration is subject to the company maintaining a quality management system, to the above standard, which will be monitored by NQA.

*N. Venkateswar*  
 Managing Director

Certificate No: 60007  
 ISO Approval Date: 23 June 2011  
 ASCS Approval Date: 23 June 2011  
 Issue Date: 17 June 2020  
 Expiry Date: 15 June 2023  
 EAC Code: 19, 21  
 Site Structure: Single Site

**UKAS** **ASCS** **AEROSPACE CERTIFICATION SYSTEM**

Page 1 of 1



**intertek**

**CERTIFICATE OF REGISTRATION**

This is to certify that the management system of:  
**Astra Microwave Products Limited**  
 Main Site: Registered Office: Astra Towers, Survey No. 13/25, Kattigalla Post, Opp. CI Green Building, Hitech City, Hyderabad, 500084, Telangana, India  
 has been registered by Intertek as conforming to the requirements of:  
**ISO/IEC 27001:2013**  
 The management system is applicable to:  
 Design and Supply of Microwave Components, Equipment, Antennas and Monolithic Microwave Integrated Circuits (MMIC) for Defence, Space and Telecommunication Applications.

**UKAS** **ISO 27001**



**intertek**

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 has been registered by Intertek as conforming to the requirements of:  
**ISO 45001:2018**  
 The management system is applicable to:  
 Design and Supply of Microwave Components, Equipment, Antennas and Monolithic Microwave Integrated Circuits (MMIC) for Defence, Space and Telecommunication Applications.

**intertek** **UKAS** **ISO 45001**



**intertek**

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**ISO 9001:2015**  
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 Supply of Microwave Components, Equipment, Antennas and Monolithic Microwave Integrated Circuits (MMIC) for Defence, Space and Telecommunication Applications.

**intertek** **UKAS** **ISO 9001**



**intertek**

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**intertek** **UKAS** **ISO 14001**



**NABL** National Accreditation Board for Testing and Calibration Laboratories

**CERTIFICATE OF ACCREDITATION**

**EMC TEST SERVICES, ASTRA MICROWAVE PRODUCTS LIMITED**

has been assessed and accredited in accordance with the standard  
**ISO/IEC 17025:2017**  
**"General Requirements for the Competence of Testing & Calibration Laboratories"**  
 for its facilities at  
**PLOT NO 18-21, IMARATH KANCHA, HARDWARE PARK, RAVIRYALA VILLAGE, MAHESHWARAM MANDAL, HYDERABAD, RANGA REDDY, TELANGANA, INDIA**  
 in the field of  
**TESTING**

Certificate Number: TC-6264  
 Issue Date: 11/09/2019  
 Valid Until: 10/09/2021\*

\*The validity is extended for one year up to 10.09.2022

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.  
 (To see the scope of accreditation of this laboratory, you may also visit NABL website [www.nabl-india.org](http://www.nabl-india.org))

Name of Legal Identity : Astra Microwave Products Limited

Signed for and on behalf of NABL

*N. Venkateswar*  
 N. Venkateswaran  
 Chief Executive Officer

# Awards & Accolades



LAToT Ceremony for Coastal Surveillance Radar



Excellence in Innovation, Design Technology, R&D 2021



Counter-Drone System LAToT Handing over Ceremony



Award for Excellence in Aerospace Indigenisation-2021



ELCINA EFY Award for Business Excellence

## Our Contribution towards the Society

Eradicating hunger, poverty and malnutrition

Promoting education

Promoting gender equality

Ensuring environmental sustainability

Protection of national heritage

Benefit of armed forces veterans

Training to promote rural sports

Contribution to the PM's National Relief Fund

Funds provided to technology incubators

Rural development projects



Building dedicated to Vivekananda Bharathi Ashram, Medipalli on 20th April 2019



# Thank you!

 [mktg@astramwp.com](mailto:mktg@astramwp.com)

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 [astramwp.com](http://astramwp.com)