YEAR

BOOK

2022-24

Ministry of Defence Production

Government of Pakistan

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Message from the Minister

Defence Production Sector of Pakistan has made steady progress from its humble beginnings just after independence of the country. Over the years, this vital element of **National Security** has contributed immensely for safeguarding our vital **National interests**. The sector which largely remains in the domain of Public sector has evolved with the development of defence related technologies. Ministry of Defence Production, while being in its **formative** stage since its inception early 2000's, is **well-poised** to steer the National Defence Production goals as required for the 21st Century **needs** of the Nation.

Recent global conflicts across the globe point towards the **transformative** and **revolutionary** changes in Defence Technologies. Unless these technologies are harnessed into our Defence Production, we shall not be able to cope with modern-day requirements. Today, our Ministry envisions a **graduated**, **transformative**, and **collaborative** approach for integration of these modern enablers. We seek a greater **interface** with **academia** for technology **innovation**. We also aim for a more **sustainable** and **diverse** industry footings, through an **enhanced partnership** between public and private sector.

Year Book 2022 – 2024 is an apt reflection of our efforts at the Ministry. I give due credit to the men and women of various Defence Production Entities as well as Executive Departments for their tireless efforts. I also thank our worthy partners of private sector for stepping up for this National undertaking. I sincerely pray to Allah Almighty to bless us with his infinite blessings, so that our Ministry can achieve greater accolades and milestones in Defence Production Sector of our Nation.

Lieutenant General (Retd)
Anwar Ali Hyder, HI (M)
Federal Minister

Foreword by the Secretary

Defence Production Sector of Pakistan since its inception is poised to ensure a whole-hearted contribution to the National Defence of the Nation. Owing to its peculiar character, the sector has largely remained in the Public sector. Together with our technology partners, the Defence Sector of Pakistan is well-established and reputed across the globe. Over the years, we have not only provided for the domestic needs, but have also shared technologies to many Allied Nations. Defence Production sector has evolved to a multi-domain, and a multi-discipline sector, with an adaptive character.

As we turn the pages of history and move into the fast paced warfare of 21st Century, the Defence Production Sector is also making appropriate adaptations. These transformative steps are aimed to be graduated and steady, so as to make the effort sustainable. We are vying for enhanced partnerships both domestic and abroad for harnessing the new and innovative technologies. Interface of IT-based AI solutions into various military systems remains a key area of our Ministry's focus. Through a collaborative approach, we aim to enhance our Research and Development Capacity in partnership with Academia.

I feel satisfied to offer the achievements of our Ministry through the Year Book 2022 – 2024. Our Defence Production Entities and Executive Departments have made steady efforts to this end. We assure the Nation that through sincerity of our effort, the Defence Production Sector of the country is well-poised to live up to and beyond the challenges of 21st Century.
Wishing all our readers, a happy read!

Lieutenant General (Retd)
Muhammad Chiragh Haider, HI (M)
Secretary

PART – I

MODP AND ITS ALLIED DEPARTMENTS / ORGANIZATIONS

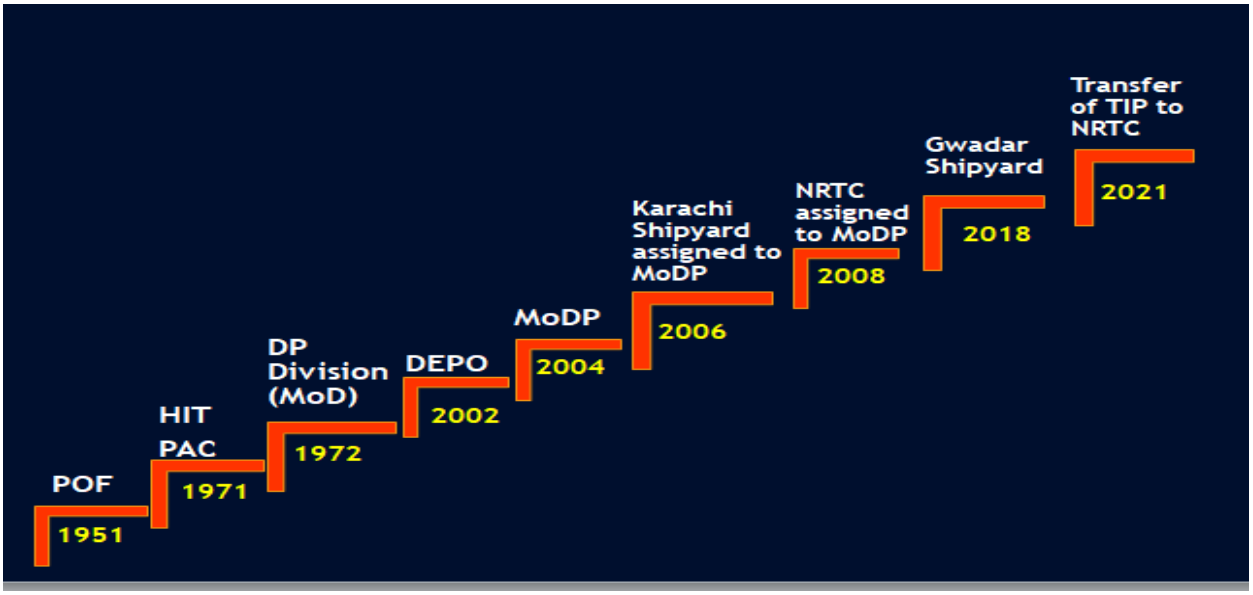
"Against them make ready your strength to the utmost of your power, including steeds of war, to strike terror into the hearts of the enemies of Allah and your enemies, and others besides them, whom you may not know, but whom Allah does know. Whatever you shall spend in the cause of Allah, shall be repaid unto you, and you shall not be treated unjustly."

Al-Quran (8:60)

1. **Existing Defence Production Sector of Pakistan**. After the partition all Sixteen (16) Ordnance factories went under Indian possession, since not even one of them was situated in Pakistan. The indigenous development of arms kick-started with the establishment of Pakistan Ordnance Factories (**POF**) in 1951 to produce the required munitions /ammunitions for the Defence Forces and Law Enforcement Agencies. 1965 & 1971 Wars further strengthened the resolve of achieving self-reliance in the defence production capabilities and diversifying sources of military procurements.

2. **Defence Production Division** was established in 1972, under Ministry of Defence with an aim to supervise defence production and procurement activities to accelerate pace of technological development for achievement of greater self-reliance through indigenization. Later, Defence Production Division was elevated to the status of **Ministry of Defence Production (MoDP)** in 2004 to spearhead the defence production / indigenization efforts.

3. **Expansion in Defence Production under MoDP.** Since inception, MoDP has undergone vast expansion in quest of its aim and objectives which is illustrated below:-



4. **Mandate of MoDP**. To meet the requirements of armed forces through indigenous production as well as foreign / inland procurement and to **export surplus capacity to friendly countries**.

5. **Key Functions of MoDP**

   a. Formulation and execution of **policies** related to Defence Production.

   b. **Indigenous production** and manufacturing of defence equipment / stores.

   c. **Procurement** of defence equipment / stores for Defence Forces.

   d. **Research & Development** related to defence equipment / stores.

   e. **Coordination** of defence scientific research with civil scientific research organizations.

   f. Declaration of **industries** for defence and war.

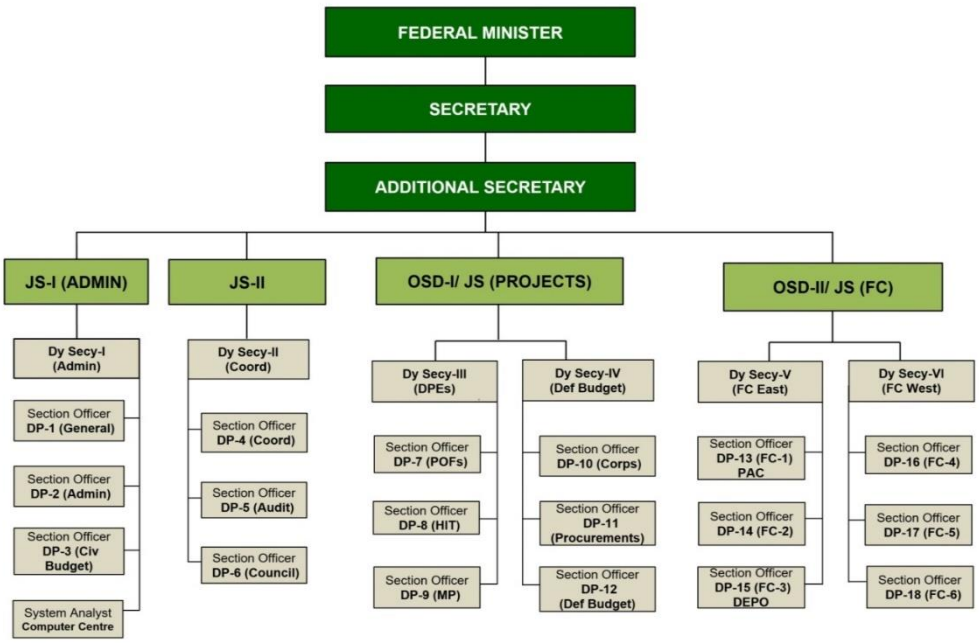
   g. Negotiations of agreements / MoUs for **foreign cooperation and collaboration in Defence Production and Procurement.**

   h. Loans for purchase of military stores and Transfer of Technology (**ToT**).

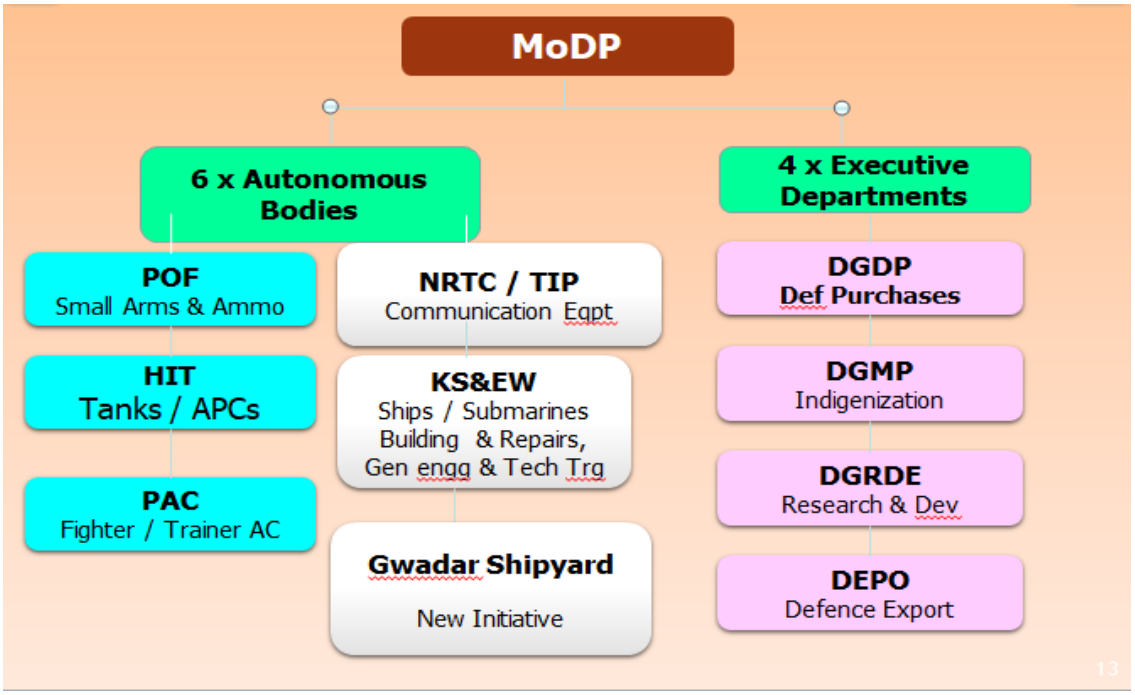
   i. **Export** of defence products including marketing and promotion of activities relating to export of defence products.

   j. Coordinate and monitor activities of all Defence Production's Executive Departments and Autonomous Bodies

6. **Internal Structure of MoDP**



7. **Executive Departments and Autonomous Bodies**



8. **Vision of MoDP**. Aligned with the vision of Federal Government, the vision of MoDP is "*to facilitate Defence Production Sector that collateralizes local Defence Industries with the Defence needs of the Armed Forces through Public Private Partnerships and contributes toward national security and economy".*

9. **Key Objectives Derived from the Vision**. In line with the vision, MoDP started a focused campaign for a self-reliant / self-sustained defence production industry along with increasing job opportunities, generation of revenue, decreasing dependence onimports and increasing the exports to earn foreign exchange. Accordingly, following key objectives were set for the defence production sector:-

a. **Modernization of Public Sector** Defence Industry to fulfil needs of Armed Forces at an affordable cost.

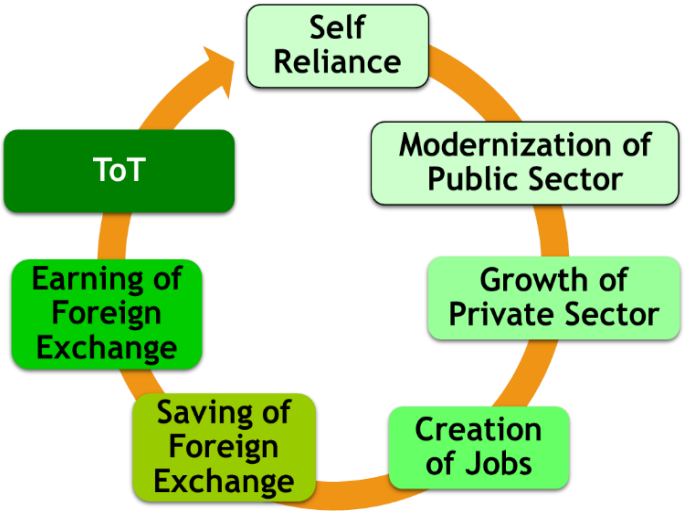
b. Sustainable **growth of Private Sector** Defence Industry through public-private interface.

c. Optimal self-reliance through **R&D / ToT / Offsets**.

d. Minimize burden on national exchequer through **earning / saving of foreignexchange** from defence exports and import substitution.

e. Boost national economy through **industrialization and employmentgeneration**.

f. Streamline the procedures for maximum Ease of Doing Business (**EoDB**).



10. **<u>Goals</u>**. Major goals are to achieve self-reliance and self-sustenance in defence production:-

a. To achieve **Self Reliance** through :-

1) Revitalization of Public Defence Industry.

2) Growth of Private Defence Industry.

3) Gradual indigenization using R&D, ToT, Offset, Human Resource Development etc.

b. To achieve **Self Sustenance** through:-

1) Enhanced Defence Export.

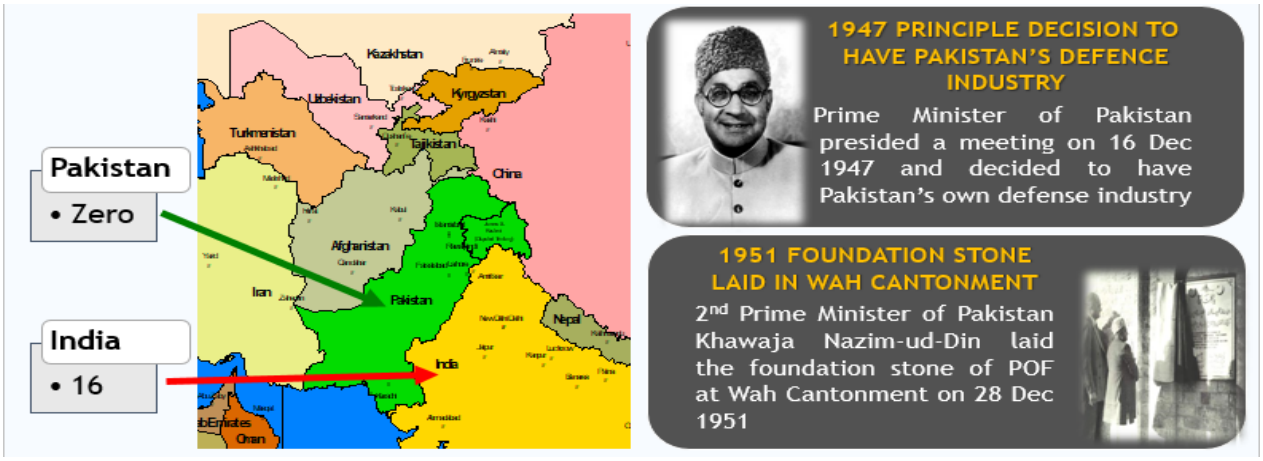
2) Corporatization.

PART – II

AUTONOMOUS BODIES OF MODP

PAKISTAN ORDNANCE FACTORIES BOARD

1. Introduction



2. Mission Statement and Functions

POF Mandate - Section 6 of POFB Ordinance 1961

3. Capability.

POF stands as the largest manufacturing hub in the country, boasting unmatched expertise in mechanical, chemical, heat treatment and tools manufacturing. Capabilities avail with POF are as following: -

a. **Manufacturing**

1) **Machining and CNC Machining**. Turning, Drilling, Milling, Grinding, Honing, Tapping, Threading and Boring
2) **Surface and Heat Treatment**
    a) Annealing, Hardening, Tempering and Normalizing
    b) Tin, Nickle, Cadmium, Chromium, Electrostatic plating and Phosphating
3) **Casting**. Die Casting, Green Sand Casting, Aluminum Casting and Non-Ferrous Metals
4) **Forging**. Hammer, Drop and Press
5) **Press Work**. Sharing, Blanking, Piercing and Forming
6) **Moulding**. Plastic injection and Plastic Thermo
7) **Welding**. Electric, Gas, Seam, Spot, Soldering, Brazing, Tig and Mig
8) **Tool and Gauges**. Manufacturing of Tool and Gauges, Coordinate Measurement and Calibration of Gauges
9) **Other Capabilities**. Wood Working

b. **Engineering Services**

1) Power Generation and Distribution, Solar Power Generation and Steam Generation
2) Transport Management and Maintenance
3) Water Pumping and Distribution
4) Telecommunication
5) Retrofitting and Reconditioning

6) PLCE Controls Upgradation
7) PCB Fabrication
8) THT and SMT Assembly Plant

c. **Offered Products**. List/ Gist of exportable products are appended below: -

1) **Small Arms**
   a) MP5 and its variants (SMG PK and PK 1)
   b) G3A3 Rifles
   c) Machine Gun (MG-3)
   d) Anti-Aircraft Gun 12.7mm Type W-54
   e) POF AZB (DMR) Sniper Riffle
   f) Light Sniper Rifle (LSR)

2) **Small Arms Ammunition**
   a) 7.62 mm x 51 mm Ammo
   b) 7.62 mm x 39 mm Ammo
   c) 9 x 19mm Ammo

3) **Aircraft & Anti-Aircraft Ammunition**
   a) 12.7x108mm API & APIT
   b) Cartridge Quick Firing 37mm HE

4) **Artillery Ammunition**
   (a) 122mm HOW HE (Type 54)
   (b) 122mm HOW HE D-30
   (c) 130mm HOW HE

(d) 155mm HOW HE

(e) 25 Pdr HE

(f) 25 Pdr Blank

5) **Tank and Anti-Tank Ammunition**

(a) 105mm HE TK

(b) 105mm APFSDS

(c) 125mm HE TK

(d) 125mm APFSDS/ T

6) **Rockets**

a) 40mm Heat P1 MK1

7) **Mortar Bombs**

a) 60mm Illuminating & Signal (Red & Green)

b) 60mm HE P2A1 & Smoke P2A3

c) 81mm HE M57D A2 & Smoke M57 DA1

d) 81mm Illuminating & Signal (Red & Green)

e) 120mm HEM 44 A2 & Smoke M44 A1

8) **Grenades, Pyrotechnics, Demolition Fuzes and Primers**

a) Grenade Hand Target Indication MK-2

b) Fuze PDM 557

9) **Military Explosives**

(a) Plastic Explosive (PE-3A)

(b) RDX/ WAX

(c) PETN Plasticized

10) **Misc. Items**

(a) Blasting Charges

(b) Demolition Items

(c) TA Scrap

(d) Clothing & PLCE Items

HEAVY INDUSTRY TAXILA (HIT)

1. **Introduction** HIT was established as a Heavy Rebuild Tank Factory in the early 1970s. The idea was to rebuild Chinese origin T-59 Tanks and later on series production started in 1979. Over the time HIT has developed and today it has 7 x sub-factories alongwith R&D Centre which are engaged in manufacturing of Tanks, Armored Personnel Carriers (APCs), Armored Security Vehicles (ASVs) / products. In addition, rebuilding of Tanks / APCs / Self Propelled (SP) Guns, and manufacturing of barrels for Tanks, Arty Gun and various other research and development projects were started. HIT also utilizes commercial potential of its factories to meet requirements of civil sector & friendly countries.

2. **Mission** Manufacture, rebuild, upgrade and conduct R&D of Armoured Vehicles with emphasis on self-reliance through indigenization and utilize HIT's commercial potential to meet requirements of civil sector and friendly countries.

3. **Functioning / Capacity of Factories / Facilities** Functioning of HIT technical facilities and their annual production capacity.

4. **Heavy Rebuild Factory T-Series (HRF–T)** Rebuild / upgrade 50 x Tanks and 100 x engines per year.

5. **Heavy Rebuild Factory M-Series (HRF–M)** Rebuild 100 x APCs, 15 x SP Guns and 50 x power packs per year.

6. **Tank Manufacturing Factory** Manufacture 50 x Tanks per year.

7. **APC Manufacturing Factory** Manufacture 150 x APCs per year.

8. **Gun Factory** Rebuild 50 x Tanks gun and manufacture 50 x Tank guns per year.

9. **ESCOM (Development Engineering Support & Components Manufacture) Factory**

Develop and manufacture assemblies / components for Tanks and APCs.

10. **ARDIC (Advance Research Development & Information Centre)**

Carry out R&D and integration of different systems of Tanks and APCs.

11. **ASRF (Advanced System Rebuild Factory)** Support Tanks rebuild mission of HIT and carries out Research & Development in the field of Fire Control System / Gun Control System, Optronics & Thermal Imaging / Night Vision Devices, Hydraulic Systems and Electronics / Electrical sub systems.

12. **HITs Performance Outlook** Cost Benefit analysis is appended below. Saving was incurred on account of indigenization, import substitution, commercial sales, proportionate cost and taxes:-

Financial Year	Total Expenditure on HIT (Rs in Billion)	Total Savings (Rs in Billion)
2019-20	5.85	21.84
2020-21	6.45	25.84
2021-22	7.60	26.86
2022-23	9.52	25.56
2023-24	11.01	37.92
Total	**40.43**	**138.03**

PAKISTAN AERONAUTICAL COMPLEX KAMRA

1. Introduction

Pakistan Aeronautical Complex (PAC) was established in 1972. The idea was conceived to develop indigenous facility for overhauling Chinese origin fighter aircraft. Realizing the benefits, it was soon ascertained that a huge amount of national exchequer could be saved if such facility could also be established for other weapon systems, like the newly inducted PAF Mirages. The conceived idea leads to the formation of Mirage Rebuild Factory. In order to meet the requirements of light military trainer aircraft for Pakistan Armed Forces, another facility named Aircraft Manufacturing Factory was established in 1975. Manufacturing of Super Mushshak aircraft for Pakistan Armed Forces as well as for international customers was undertaken by this factory. Subsequently, a facility for in-country overhaul of ground based radars and airborne avionics was also established, which has gradually transformed into a modern avionics design development and manufacturing facility. Pakistan Aeronautical Complex, while continuing its role as Maintenance Repair Overhaul (MRO) organization for technical and operational support of PAF, took a giant leap forward towards manufacturing of JF-17 fighter aircraft. At present, PAC Kamra consists of a vast complex comprising four factories, and an Aviation Design Institute (AvDI) namely:

a. **Aircraft Rebuild Factory (ARF)**
b. **Mirage Rebuild Factory (MRF)**
c. **Aircraft Manufacturing Factory (AMF)**
d. **Avionics Production Factory (APF)**
e. **Aviation Research Indigenization and Development Center (AvRID Center)**

Aircraft Manufacturing Factory (AMF)

2. AMF was established in 1975 as P-751 Project. This Factory is manufacturing JF-17and Super Mushshak aircraft in addition to Unmanned Aerial Vehicles and subassemblies of K-8 Jet Trainer aircraft.

3. The following achievements were made by AMF during the period under review:-

a. **<u>JF-17 Airframe Co-Production Project</u>**

Currently, production of 02 different aircraft, Dual-seat and Block-III, is underway at AMF, in line with contractual obligations with Chinese counter-parts. Besides, AMF has taken a step forward in equipping its infrastructure with required prerequisites to undertake parts manufacturing for Chinese commercial aircraft. A comprehensive summary on aforesaid projects is briefed below:

1) **<u>Dual-Seat Aircraft Co-production</u>** With completion of co-production work of first 08 JF-17 Dual-seat aircraft, AMF has gradually enhanced its production capability. Required training of AMF manpower on a newer system was ensured prior to commencement of production work and all prerequisites, including production documents, installation/commissioning of machines/jigs/testers etc were timely completed in order to pursue defined milestones in flawless manner. Another remarkable feather in AMF's cap

which ratcheted up the production pace was incorporation of 3D manufacturing modality in production of dual-seat aircraft. Implementation of this nascent technology ameliorated the pace of production work by curbing several technical flaws of older modality. Presently, AMF is fully geared up to produce further dual-seat aircraft, to take its tally to predefined numbers and all concerned stakeholders are being engaged at all levels to ensure adherence to these milestones.

2) **Block-III Aircraft Co-production** As per contractual timelines, number of Block-III aircraft are to be produced by the end of 2022. Needless to reiterate that Block-III aircraft is a modern fighter jet and have been upgraded in entirety. It shall be equipped with upgraded radar, up-to-date Avionics, improved design, enhanced payload capacity and several other features. AMF has already commenced its parts manufacturing work.

3) **Parts Manufacturing Commercial Aircraft** Through the consistent pursuance with AVIC, CCAC has qualified AMF as a supplier from October, 2019 for metal pats machining process for Chinese Commercial Aircraft program. After identification of scope of first batch of parts to be manufactured at AMF, AMF has completed technology and production preparation followed by prototype manufacturing. Currently, parts production is in progress and production plan has been shared with Chinese side.

b. **Super Mushshak Sales & Delivery**

1) **Turkish SMK Project** A contract for 52 SMK aircraft with Turkey was signed in June, 2017 and assembly of 03 Inspection Aircraft are currently under progress. In same connection, ILS contract has also been signed in June, 2019, with Turkey for logistics support of the aircraft.

2) **Follow-On Support contract with RSAF** Finalized Contract document of SMK. Follow on Contract-IV (FOC-IV) has been sent to RSAF Officials after signing by PAC Authorities. It is pertinent to mention that contract execution shall commence subsequently after signing of contract by RSAF Officials.

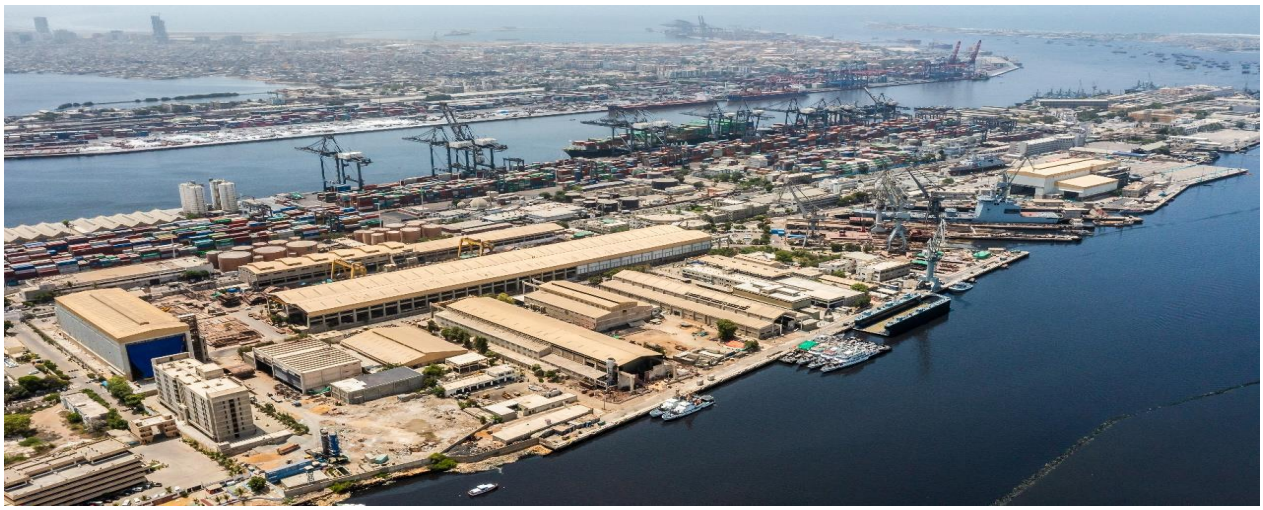
3) **Azerbaijan Air Force (AZAF)** Second batch of 05 aircraft delivered in December, 2019. Spare support for sustainment is being provided as per contract.

4) **Zimbabwe Air Force (AFZ)** Contract for sale of 10 aircraft to AFZ has been signed and is under ratification.

5) **Dynon Modification of Pak Army SMK A/C** The conversion of number of Pak Army SMK aircraft into Dynon glass cockpit has been finalized with Pak Army.

KARACHI SHIPYARD & ENGINEERING

WORKS LIMITED



1. INTRODUCTION

a. Karachi Shipyard & Engineering Works Limited (KS&EW) was established in mid-fifties as a project of Pakistan Industrial Development Corporation (PIDC) and incorporated as a public limited company in 1957. KS&EW is entirely owned by Government of Pakistan and working as an autonomous commercial organization under Ministry of Defence Production. It is managed by a Board of Directors with Managing Director as the Chief Executive and Chief of Naval Staff as Chairman of the board.

b. KS&EW is situated at west wharf Karachi and spread over an area of 71 acres. It has a large shipbuilding hall, 2 x block fabrication areas, 3 x shipbuilding berths, 2 x graving docks, a well-equipped machine shop, large grit blasting and painting facility with modern machinery for paint application under controlled environment as per international standards. A Ship Lift & Transfer System with a lifting capacity of 7321 Tons and 11 x parking stations is being operational to undertake above water repairs or ship construction since September 2021. A well-equipped laboratory for material testing and calibration, shipyard training school for skill development programs and dedicated storage facility for logistic support is also available. The Heavy General Engineering Division (GED) role in support of industry and developmental engineering is prominent. GED has a long record of services to local industry with complete customer satisfaction.

2. VISION

To make KS&EW a leading shipyard and heavy engineering facility in the region.

3. MISSION

To undertake projects in the fields of Shipbuilding, Ship Repairs and General Engineering through our core competences that meet customer's satisfaction.

4. MAIN FUNCTIONS

a. PAKISTAN NAVY'S REQUIREMENT:

1) As per Government's mandate KSEW caters for Pakistan Navy's requirements of warship & submarine construction.

2) Additionally, KSEW undertakes commercial activities in the field of Shipbuilding, Ship repair and Heavy General Engineering.

b. SHIPBUILDING:

1) **Commercial Activities**

KSEW shipbuilding Division is well equipped to build all types of Marine Crafts, Cargo Vessels, Containerships, Oil Tankers, Bulk Carriers, Harbor Tugs, Pilot Boats, Hopper Barges, Diving Tenders, Fast Response Boats and Dredgers up to 26000 TDW etc.

2) **Defence Related Activities**

KSEW has the capability of indigenous construction of naval vessels such as Fast Attack Craft, Patrol Crafts, Gun Boats, Missile Craft, Submarine, Frigate, Fleet & Coastal Tankers, Landing Crafts, Harbour and Support Vessels etc.

c. INFRASTRUCTURE:

To carry out the shipbuilding activities, KS&EW has three shipbuilding berths with following sizes and capabilities.

Berth No.	Size	Max TDW
1	169 x 23 M	15000
2	118 x 23 M	6000
3	213 x 31 M	26000

It has well-equipped workshops to support shipbuilding activities and a large grit blasting and painting facility with modern machinery for paint application under controlled environment as per international standards. Shipbuilding division has undergone extensive up-gradation during 2008-09. This has enhanced its capacity to compete with international shipbuilding industry for small and medium size ships.

NATIONAL RADIO & TELECOMMUNICATION CORPORATION

1. Introduction & History

a. The National Radio Telecommunication Corporation (NRTC) was established in February 1966. Initially NRTC remained under the administrative control of Ministry of IT&T from its inception to 2007. From 2008 onward, NRTC was transferred to Ministry of Defence Production (MoDP). It's administrative and business affairs are managed by MoDP.

b. NRTC is a high-tech and world-class industry engaged in manufacturing of telecommunication and electronic equipment in Pakistan. NRTC is dynamic telecommunication equipment and state-of-the-art advance electronic system manufacture and holistic solution provider in the country. We have built our business around our ability to offer creative and tailored solutions worldwide, providing the best total value while building premier customer relationships.

c. Since 1966, NRTC has been a highly stable and reliable partner for customers who require high-tech communication equipment and solutions.

d. Our success comes from the innovative value proposition we bring to electronic manufacturing, proof of its uniqueness is in our enviable track record for decades.

e. At NRTC, we build lasting relationships with our customers through provisioning of quality solutions and unparalleled 24x7 support based upon commitment and dedication.

f. Over last 56 years, its unrelenting struggle and constantly growing R&D base with a purpose to duly comply with emerging diversified technological needs of Pak Armed Forces, Public and Private sectors including various international clients have moved it to a new peek of engineering competences with highest level of attaining professional excellence.

g. NRTC is committed to sustainability and our strategy and policies underline the unique contribution of our products / services in facing the security and technological challenges in the country.

h. NRTC, with its robust R&D, has indigenously produced various cost-effective and reliable solutions having salient operational and maintenance services with captivating customer satisfaction and saving substantial FE to national exchequer.

2. Our Motto

Reliability, Quality and Self-Reliance

3. Human Resource

2000+ Employees

Technical	–	80 %
Management	–	20 %

4. Vision

NRTC envisions becoming a leading company in Pakistan's technological landscape by aligning its efforts through cutting edge technologies and the best national talent. By localized innovation & indigenization, strategic partnerships, community engagement and a customer-centric approach, NRTC is aiming to be among the top technology industries in the world.

5. Mission

By virtue of long experience in the field of telecommunication, NRTC has attained excellent technical backed-up knowledge and support with a modern infrastructure and standard expertise. Mission of the organization is as under:

"Design, Develop and Manufacture military as well as commercial telecommunication equipment, electronic systems & IT solutions for local and international clients / customers."

6. Quality Policy

NRTC is a quality conscious company. To provide our customers world class quality telecommunication equipment which meets all their operational requirements in time at affordable costs. User's satisfaction is our top priority in the process chain, from receipt of raw material, through manufacturing and delivery, till final acceptance.

The moorings of our policy canvas are:

a. World-class high-quality equipment with affordable cost / cost-effectiveness that can meet operational requirement timely
b. Indigenous solutions through innovation
c. Continuous improvement and up gradation through robust R&D

7. Quality Certifications:

8. Priorities and polices to achieve goals:

A comprehensive re-vamped marketing plan characterized by both dynamism and pro-activeness was formulated to address marketing, R&D and production placement challenges. Key elements of plan are:

a. Products Diversification
b. Promotion of Local as well as Foreign Sales
c. Identification of customers' requirements
d. Enhancement of capacity & capability to design and develop competitive products
e. Adequate marketing arrangement

9. Our Capabilities:

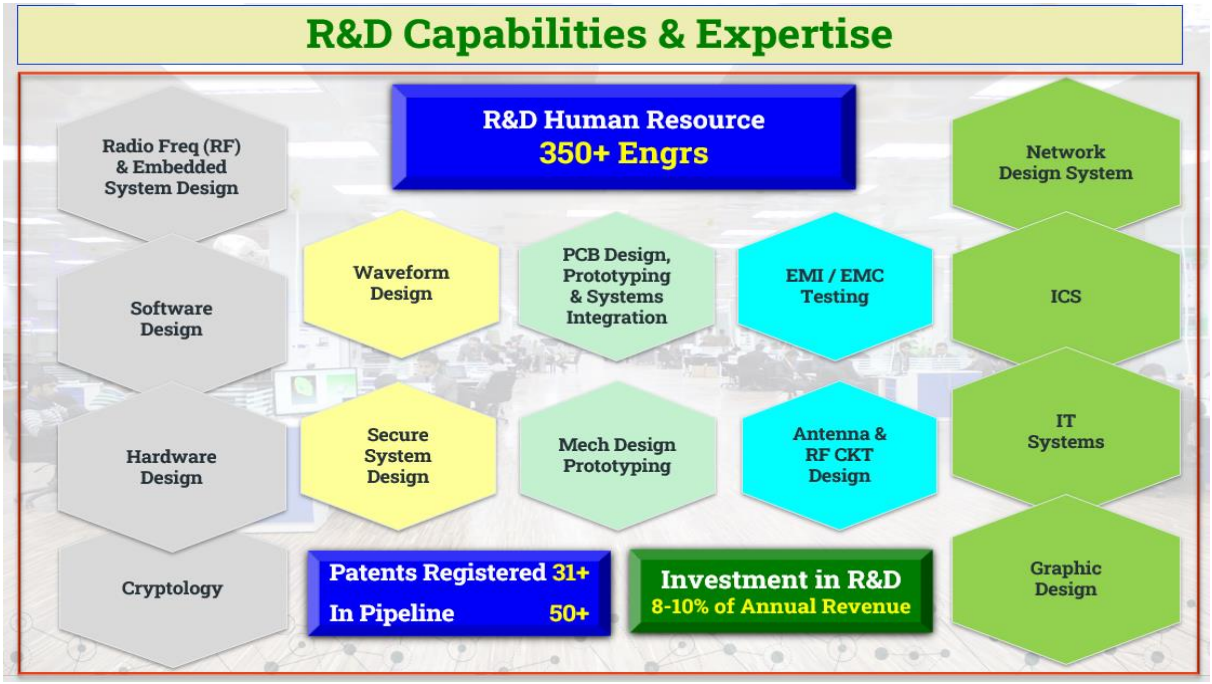
a. Our mission is based on Unique Solutions through Innovation, at NRTC; we work for our customers to achieve this for both new and evolving product requirements
b. At NRTC, we meet challenging demands and excel in competition by:
    (1) Continuous up-gradation and use of innovative concepts/ state of the art tools
    (2) Designing for testing, manufacturing, process and experiment
    (3) Continuous investment in testing equipment and skills enhancement for product development
c. With its highly skilled design team equipped with state-of-the-art test equipment and development tools, our R&D is working on modern technologies and designing of wide array of complex telecom equipment, systems and solutions.

10. Research & Development (R&D) capabilities and technologies

a. NRTC has one of the finest R&D setups in Pakistan with human resource working on cutting edge technologies and latest test and measurement facilities.

b. At R&D, our prime focus is indigenous development through in- house blooming of core technologies. NRTC R&D has made relentless efforts in fulfilling the communication requirements of not only Pakistan Armed forces but has also supported friendly countries.

c. NRTC invests a substantial capital every year on its R&D and has more than 300+ in-house researchers, collaboration with 15 plus universities, 30 plus versatile developments. NRTC has more than 100 innovative products and state-of-the-art solutions, with 1000+ successful projects deliveries to defence sectors and patents that truly represents the hard work, dedication, wisdom, vision and impactful exponential growth.



11. Business Areas

a. Since 1966, NRTC has emerged as a world class telecommunication and electronic equipment manufacturer, producing battle hardened solutions, field proven – State of the art equipment not only for Military / Defence uses but also for Law Enforcement Agencies, Domestic Civil and International friendly countries around the globe.

b. NRTC is producing high quality ruggedized indigenous products to be used in harsh environment such as defence services and para / auxiliary security services besides commercial

products / versions for use by civil telecommunication operators and organizations. NRTC also produces around 45 different systems / equipment for export.

c. After years of dedication and commitment, our creative and tailored solutions have found a niche in the global market which includes our valued customers from South Asia, Middle East, and African region.

d. Potential market turbulence demands defence industry agility to stay ahead. NRTC, by its robust R&D, is concentrating on technological enhancement from conventional to revolutionary defence domains particularly in telecommunication, Artificial Intelligence, Satellite monitoring and Counter UAV, Electronic Warfare, IT & Cyber Security technologies for building better & safe future.

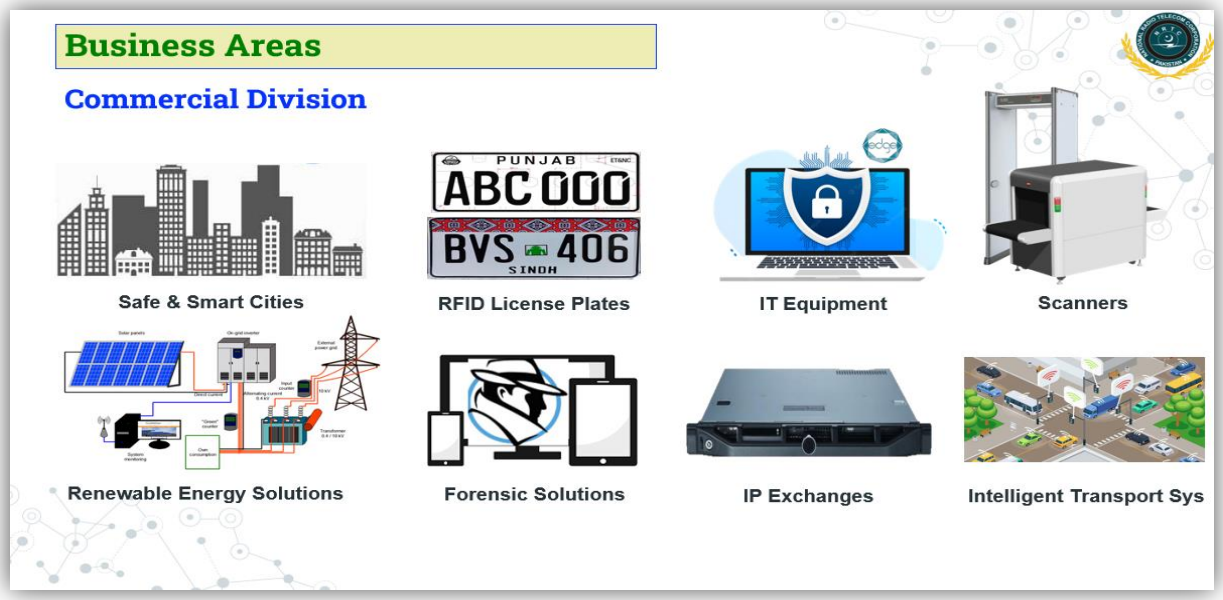
e. NRTC completely revamped its marketing strategy from Jan 2022 onward. A comprehensive marketing plan, characterized by dynamism and pro-activeness, was formulated to address marketing and product placement challenges. Key elements of the marketing plan are:

1) Products Diversification.
2) Promotion of foreign sales.
3) Identification / filling of customer requirement.
4) Enhancing capability to design & develop competitive products.
5) Adequate / aggressive marketing arrangement.
6) Market oriented R&D and capacity development of Engineer

f. NRTC has divided its technologies into two following main categories:

a) Defence Technologies

b) Commercial / Common Use Technologies



A. In – Land Customers

B. International Customers

12. TECHNICAL PERFORMANCE / CAPABILITIES

NRTC has the following technical facilities / capabilities for the Manufacture, Assembly, Testing and Measuring of following equipment/tasks: -

1) High-Capacity Line of Sight / Low-Capacity Line of Sight
2) Smart & Safe Cities
3) Operation and Maintenance of Safe Cites
4) ANPR and Facial Recognition Cameras at Entry and Exits of Toll Plazas
5) Prime Minister Youth Laptop Scheme through Higher Education Commission
6) Thin Clients PCs and ATM Hotlines
7) Recce and Scout Vehicles for Reconnaissance
8) Bullet Proof Jackets
9) Lahore Metro Bus Service Operational & Maintenance solutions
10) HF and VHF Military Version Radios.
11) VHF and UHF Commercial Mobile Radios.
12) Digital Investigation Suit
13) Smart & Office Automation
14) Safe Cities Solutions
15) Ground Surveillance Radar and Unattended Ground Sensors System
16) Electronic Warfare Equipment
17) Military Version Switches / EPABXs 16 lines, 20 lines, 40 lines and 96 lines.
18) Commercial Version Switches / EPABXs 50 lines to 1024 lines.
19) Digital Field Telephone and Ruggedized Auto Field Telephone.
20) Printed Circuit Boards for all type of Telecommunication equipment.
21) Environmental Test facilities as per MIL-STD-810E
22) Mechanical and Surface treatment workshops
23) PCB Stuffing up to 16-layers
24) RFID Based Number Plates Recognition solutions
25) Big Data Analysis – Digital Data Drilling – Intelligence Equipment
26) Digital Forensics
27) Solar Power Solutions
28) LTE Solutions

GWADAR SHIPYARD

Govt of Pakistan has approved the establishment of a large size shipyard at Gwadar. After initial survey, the allocated site at Kappar Gharbi was found to be technically and commercially unsuitable. Accordingly, survey of number of potential sites along the coast was carried out and Sur Bandar was declared as the best suited alternate site. Hence, the case for change of site was presented to the competent forum (Policy Board) and same was approved. Currently, the acquisition of land through GoB is being pursued for the construction of a commercially viable shipyard at Gwadar.

PART – III

INITIATIVES / ACHIEVEMENTS

PAKISTAN ORDNANCE FACTORY

1. Production

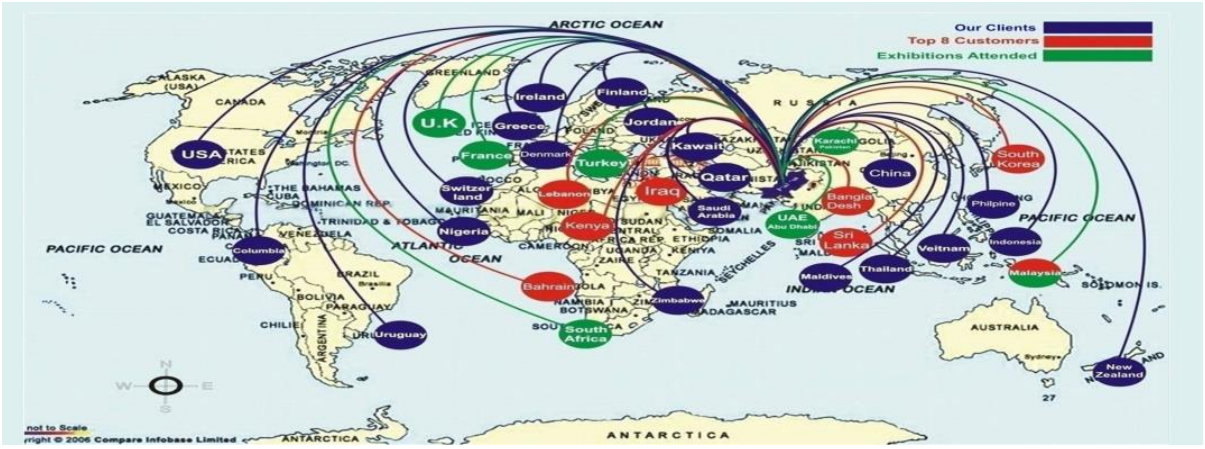
Year	Budget (Rs in Bn)	Production (Rs in Bn)
2023-24	50.34	32.7

a. Exports

1) Highlights

Year	Exports (USD in Mn)
2023-24	143
2024-25	329
Total	**472**

2) Exports Footprint



3) Exhibitions

Year	EXIBITIONS
2023-24	IDEF Turkeye
	DSEI London UK
	EDEX Egypt
	Shot Show USA
	WDS KSA
	DSA Malaysia
	SEDEC Turkeye

2. Wah Industries Limited

a. Financial Highlights

FY	(Rs in Bn)		
	Gross Sale	Pre-Tax Profit	Net Profit
2023-24	88	31	16

b. Awards & Achievements

3. Taxes

Year	Taxes (Rs. in Bn)
2023-24	25

4. Welfare Activities

a. Welfare Grants / Assistance

Sr	Nomenclature	2023-24	
		No. of Beneficiaries	Rs. in Mn
i.	Wards Marriage Grant	349	12.564
ii.	Merit Scholarships	817	5.504
iii.	Death Grants (Self)	48	3.272
iv.	Death Grants (Family Members)	700	7.140
v.	Payments of Shuhada	-	0.249
vi.	Charity Meal	27614	1.519
vii.	Financial Aid on Medical Treatment	07	3.415
viii.	Wheel Chair	01	0.025
Total			**33.688**

b. Establishment of Day Care Centre.

c. Central Library.

1) 729 x new books, enhancement of internet bandwidth from 20 to 100 MB and 13 x new PCs added for community services.
2) Under Text Book Exchange Program, 523 x complete course sets for various classes handed over to the students / parents free of cost.

d. Tree Plantation

1) Plantation of 20,000 x plants during Monsoon 2024.
2) Plantation of 17,500 x plants during spring 2025.

5. Contract Negotiation

FY	Saving (Rs in Mn)
2023-24	142.558

6. Training and Awareness through HSE Department

To enhance the capacity building of employees in the field of HSE, in-house training and awareness sessions were conducted on various operational and safety-related topics. Additionally, guest speaker and subject specialists delivered lectures on key areas. Summary of In-House Training Session are appended below: -

Topic	Sessions	Attendees
Fire Fighting	13	1378
Chemical Plants & UN Classification System / Safety Distance	2	35
Road Signs & Their Meanings	2	335
Solid Waste Segregation & Management	1	35
Fire Safety in Estate Area	3	440

7. Engagement with Local Industry / Private Sector and Academia to Support R&D and Indigenize Defence Production

POF has great potential to have JVs with the reputable foreign / local firms to enhance its capability and capacity. In line with the Govt's vision to increase public-private partnerships, local industries / vendors are also being engaged to reduce import dependency. The development of barrel steel by Peoples Steel Mills and Rifle Parts & Fuze project by Alsons Group, Development of ET fuze with NRTC, AGL project through Daudsons and Depth Charge project through NTC are some of the major success stories.

8. Achievements and Progress

a. Export-oriented approach has significantly strengthened the country's **diplomatic relations** with friendly countries (exports of USD 143 Mn in 2023-24 and USD 329 Mn in year 2024-25).

b. Ensured Pakistan's presence in Int'l arms and ammo market and earned forex.

c. POF Subsidiaries experienced notable expansion with exceptional increase of revenues comparing to the preceding years.

d. POF developed new products to **enhance capabilities and** established State of the Art **Design & Process Improvement** Center and Electra-Tech **(PCB** manufacturing facility).

e. Domestic market pursued by opening outlets under **"Guns & More"** located in Lahore, Wah, Karachi, Multan, Rawalpindi and Peshawar.

f. Improvement in overall supply chain management (**e-procurement,** integration of **inventory modules** and **digitization** of processes).

g. Business/operational processes for effective monitoring, evaluation and control are improved through a digitization drive:

1) Digitization of Inventory Management System

2) Shifting to e-Procurements

9. <u>R&D Facilities</u>.

POF has improved its R&D infrastructure by addition of latest capabilities related to design, simulation and fabrication. The objective is being pursued through: -

a. State of art Design Centre and simulation stations

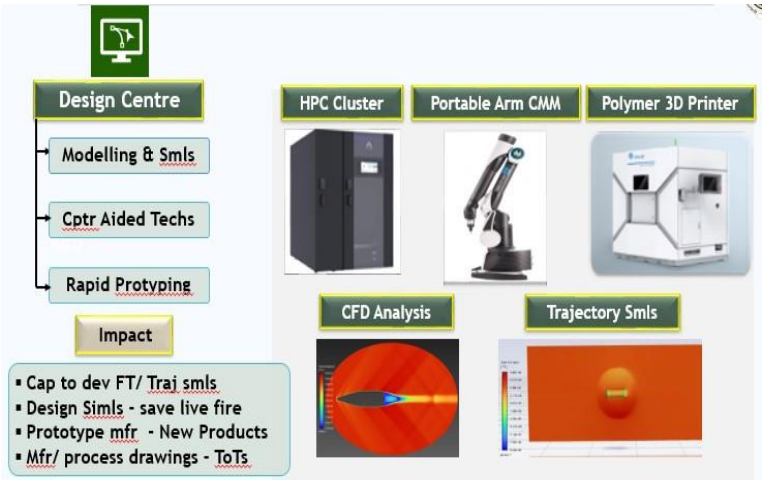
b. Rapid Prototyping (Polymer & Metallic) for sophisticated parts manufacturing

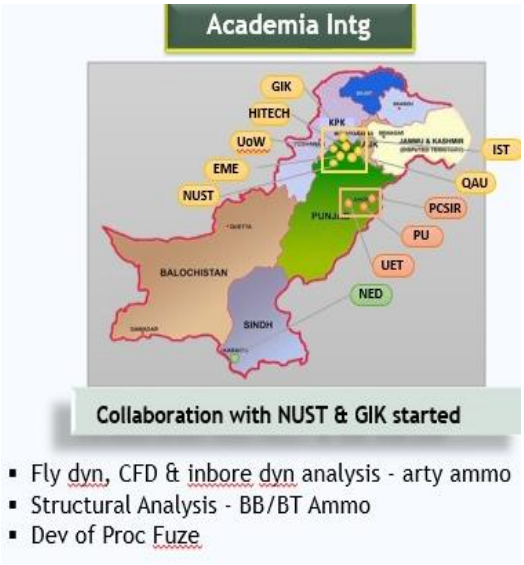
c. Mech / Chem and Energetic Material Labs

d. Induction of subject matter experts

e. Academia / industrial integration – 04 x Research Project in collaboration with NUST

f. 34 x new products are under development





10. <u>Projects</u>. POF has successfully developed following new products / capabilities indigenously: -

a. **<u>Development of 125mm APFSDS</u>**. POF has indigenously developed the 125mm AFPSDS with penetration of 620mm round. This is a great achievement as this has brought Pakistan among the only five countries in the world manufacturing APFSDS rounds of 600mm+ penetration capability.

b. **<u>Firing Table (FT) and Ballistic Trajectories (BT)</u>**. Development of Firing Table is an essential capability required by all ammo manufacturers. POFs being OEM of Artillery /

Armored ammo is in process of improving existing FT dev capacity. Collaboration with SPD is being manifested.

c. **ADB 60mm Air Drop Bomb**. POF has introduced new versions of 60mm and 81mm mortars compatible for use with ammo carrying drones. This has contributed significantly to developing the capabilities of our Armed Forces.

d. **5.56 x 45mm Ammo**. The ammo has successfully been developed. The subject ammo has considerable commercial potential for local sales.

e. **POFX Pistol (9mm)**. POF acquired Tech Data Package from M/s Girsan Turkey in 2019. The product is being manufactured for Armed Forces, LEAs and Civilian population.

f. **12.7 mm x 108mm HMG LV**. POF has introduced a lighter version of Chinese origin 12.7 HMG type 54-Gun by reducing its weight by more than 40 Kg.

11. New Initiatives

a. **Under Development**

1) **Infantry**

a) 40 AGL HE - 2026
b) 40 AGL HEI - 2026
c) 5.56 AP - 2027

2) **Weapons**

a) CW-56 Rifle - 2027
b) Gas Op Rifle - 2027

3) **Armored Corps**

a) 125 EP DU - 2028
b) FT 125 EP - 2025
c) 76 Smoke AB - 2026

4) **Artillery**

a) ET Fuze - 2027
b) Prox. Fuze - 2027

5) **Engineering**

a) MDS V 1.1 - 2027

b. **Under Trials**

1) **Weapons**

a) BW-20 Rifle - 2025
b) CW-39 Rifle - 2025

2) **Armored Corps**

a) 12.7 SCD - 2025

3) **Artillery**

a) ETSQ Fuze - 2026

4) **Air Defence/ Engineering**

a) 35 HEI - 2025

b) 35 HEI-T - 2025

c) MDS V 1.0 - 2025

d) RDMS - 2025

c. **Under Pilot Lot**

1) **Infantry**

a) 81 ADB - 2025

2) **Armored Corps**

a) 125 EP - 2025

d. **Developed**

1) **Infantry**

a) 60 ADB - 2024

b) 81mm AB - 2024

c) 5.56 Ball - 2024

2) **Weapons**

a) POF-X - 2024

b) 12.7 HMG LV - 2024

3) **Armored Corps**

a) 12.7 HMG LV - 2024

b) 76 smk GB - 2024

4) **Air Defence**

a) 35mm TP - 2024

b) 35mm TP/T - 2024

e. **Transfer of Technology Acquisition**

1) **Infantry**

a) 12.7 API - 2025

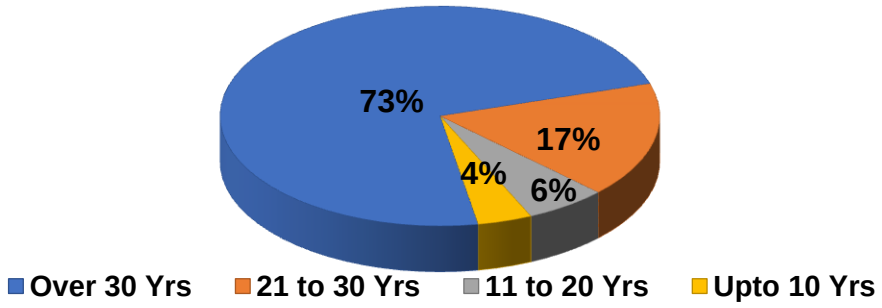
b) 12.7 APIT - 2025

2) **Artillery**

a) 155 BT, BB & BBRA- 2028

f. **Capacity Enhancement**. Acquisition of ToT for 12.7mm and 155mm ammos was contracted 02 x years back. Both the plants will be operational in 3rd qtr of the CFY.

g. **BMRE**. 73% of Plant & Machines are more than 30 Yrs old.



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(1) BMRE plan has been initiated with a focus to bring modern technologies / products for enhancing user potential & POF sustainability comprising: -

a) 289 x Plants & Machines for different ammunition Fys.

b) Acquisition of ToT for 155mm Streamline Ammo from China.

(2) BMRE plan will enable to adequately meet AFs current / future requirements with improved quality, cost reduction, increased export potential and self-sustenance.

HEAVY INDUSTRY TAXILA (HIT)

1.	**Manufacturing Projects**		**Quantity**
	a. Tank Al-Khalid1	-	10
	b. Tank Haider / VT4	-	2
	c. 125mm Tank Guns – Tank Haider	-	2
	d. 125mm Gun Barrels Assembly – Tank Haider	-	2
2.	**Rebuild / Upgradation Projects**		
	a. Rebuild of APCs	-	34
	b. Rebuild of Tank Engines	-	80
	c. Tank T-85IIAP (T-85UG)	-	55
	d. Rebuild / Upgradation of 125mm Gun of Tank T-85IIAP	-	55
	e. Rebuild / Upgradation of 125mm Gun Tank T-80UD	-	1
	f. Upgradation of ARV W-653 to W-653A	-	12

3. **Tank Sustenance by HIT to Field Formations of Army**

Repair work carried out by Site Repair Teams (SRTs) on requirement basis in Army field units is as under:-

a. 44 x Site Repair Teams (SRTs) sent to different formation of Army

b. 1 x Site Repair Team assist in preparation of equipment participate in 23rd JS Pak Day Parades

c. Equipment Rendered Fit in the Field

1)	Tank T-85IIAP	-	4
2)	Tank Al-Khalid	-	1
3)	Tank Al-Khalid-I	-	1
4)	Tank T-85UG	-	4
5)	Tank Al-Zarrar	-	1
6)	Tank Engines	-	10
7)	Components / sub-assemblies of tanks repaired on Deposit Repair Work Order (DRWOs)		303

4. **Indigenization** All HIT projects are subjected to time based deletion plan through indigenization. This includes manufacturing of in-house items and development of parts and components through downstream industry. The achievements for **year 2023-2024** are as follows: -

S.No.	Products	Number of Components Manufactured in year 2023~24	
		In House Manufacturing	Through Down Stream Industries
(1)	Tank T85IIAP	80868	-
(2)	Tank T85UG	22688	-
(3)	Tank Al-Khalid-I	9042	-
(4)	Tank Al Khalid	18	-
(5)	Tank Al Zarrar	575	-
(6)	Tank T80UD	98	114
(7)	Tank T69IIMP	15	-
(8)	Tank Haider	21293	10742
(9)	APC M113P	114	-
(10)	APC SAKB	35	-
(11)	APC M113A1/A2	2	-
(12)	ARV W653	658	-
(13)	580 HP Engine	4795	-
(14)	6TD-I/II Engine	208	353
(15)	730 HP Engine	33742	-
(16)	Gun 125 mm	6291	-
(17)	ASV Protector	882	-
(18)	Tool Items	2843	
(19)	Inter Shop Requisition	142209	-
(20)	Pivot System	82177	
Total		**408553**	**11209**

a. **<u>Manufacturing of 155 mm 52 Calibre Truck Mounted Artillery Gun System</u>**

HIT **intends to develop 155 mm 52 Calibre Truck Mounted Artillery Gun System sequel to successful qualification of already developed 155 mm Gun barrel**. From June to September 22 – SAMI (Saudi Arabia Military Industries) evaluated HIT's capabilities and selected HIT as "Prime Contractor" for prospective collaboration. **1st contract has been signed by SAMI and HIT in January 23. 2nd contract is signed on 22nd Dec 23**.

b. **<u>Discrete Armouring / IED Protection Toyota Hilux</u>** To ensure the safety of troops in the prevailing hostile situation especially in 11 & 12 Corps Area of Responsibility (AOR), a prototype protection solution in the form of **discretely armoured Single Cabin Toyota Hilux was developed** by HIT as per the instructions of GHQ. Vehicle was put to **rigorous trial regime consisting of in-house trials, user trials (11 & 12 Corps AOR) and destructive testing** by trial board which remained successful. Subsequently **a project of 32 x vehicles (14 x Single / 18 x Double Cabin) has been completed and transported to formation / units.**

c. **<u>ASV Mohafiz V</u>** It Is **improved version of Mohafiz IV** with B6 level protection, **improved maneuverability, aesthetics and body kit design**. Essential upgrades carried out in Mohafiz V

include, suspension, brakes and engine power. **Prototype vehicle was developed and now series production has commenced as per requirements.**

5. **Commercial Activities** HIT is pursuing commercial activities by utilizing its commercial potential for manufacturing of marketable products for export and domestic sales under HIT board Act. Commercial products manufactured / developed in year **2022-24** are as under: -

S.No	Products (Delivered during FY 2022-24)		Quantity
(1)	**Products Manufactured**		
	(a)	ASV Mohafiz-IV	4
	(b)	ASV Protector	11
	(c)	Riser Assemblies	15
	(d)	Bullet Proof Helmets (BPH)	1706
	(e)	Bullet Proof Jackets (BPJ)	929
	(f)	Discreet Armoring of Vehicles Toyota S/D Cabins	32
	(g)	Bullet Proofing of Vehicle Revo	6
	(h)	Bullet Proofing of Vehicle HIACE	2
	(i)	Armouring Land Rover Defender	6
	(j)	Runflat Insert with Tyre	5
	(k)	Bullet Proof Glass Wind Screen	5
	(l)	Bullet Proofing Coaster	3
	(m)	Bullet Proofing TLC V8	1
	(n)	Gun Barrel 125mm for Tank T-72	1

(2)	**Products (In hand / Under Manufacturing)**		
	(a)	ASV Mohafiz-V	19
	(b)	Gun Barrel 125mm for Tank T-72	9
	(c)	Bullet Proof Helmets (BPH)	2218
	(d)	Bullet Proof Jackets (BPJ)	2983
	(e)	Rebuild of Track APC	3
	(f)	Bullet Proofing of Totyota HIACE	2
	(g)	Bullet Proofing of Double Cabin	27
	(h)	Bullet Proofing of Revo	2
	(i)	Bullet Proofing of Fortuner	1
	(j)	Protection Shield	6
	(k)	Superstructure of RSV	1
	(l)	IBMS	1
	(m)	Installation of Jammers	7
	(n)	IFCS Cards of Tank M60	400

6. New initiatives/ Projects Planned for Coming Years

a. **Manufacture / Rebuild**

1) **Rebuild / Upgradation of 160 x Tanks T-85IIAP** Rebuild / upgrade of 3rd batch of **50 x Tanks T-85IIAP** during current financial year and all **160 x Tanks** by June 2025.

2) **Manufacturing of 110 x Tanks Haider** **110 x Tanks** will be manufactured in Tank Haider configuration in 5 x batches. 2 x Pilot tanks completed and qualified. 20 x tanks of batch 1 are under manufacturing. Probably date of completion of 110 x tanks is June 2026.

3) **Tanks Engine Rebuild Plan Financial Year 2024/2025**

S.No.	Engine HP	Target
a.	520	20
b.	580	50
Total		**70**

4) **Indigenization Plan Tank Haider** HIT is in process of indigenizing **3452 x** assemblies / sub-assemblies both through in-house and technical partner's including SPD organizations. Moreover, **346 x items** require for Army field sustenance are also

included in HITs indigenization plan. Progress on phase wise indigenization plan is as under: -

Details	Phase 1 Completed		Phase 2		Phase 3	
Timeline	Upto 2023/24		Upto 2024/25		Upto 2026/27	
	Assigned	Completed	Assigned	Completed	Assigned	Completed
No of items *(Indigenous status)*	313	313	2242	837	897	217
OEM Cost (US$ Mn)	0.606		1.05		1.97	
Major Systems	Main Gun, Tr Assy, Turret Head, Periscopes		RHA, CABs, Common / Std items		Hi Tech items (FCS / GCS, Elec, D&M)	

5) **Indigenization Plan (T-80 UD and Al-Khalid Tank)** HIT is in process of indigenizing **203** x items ex-Tank T80UD and **213** x items ex Tank Al-Khalid loaded by Army for indigenization: -

Details	Tank T-80UD		Tank Al-Khalid	
Timeline	Upto 2025		Upto 2026	
	Assigned	Completed	Assigned	Completed
No of items – HIT Requirement (Army Requirement)	203	165	213	-
Major System - Components	Eng, Armt, Elec and FCS / GCS items			

6) **HISAAR - MRAPs (4 x 4)** Under prevailing security environment, there is a growing / consistent requirement of MRAPs (4x4) by LEAs, UN and friendly countries. MoU for prototype dev signed with M/s Chaiseri; prototype will be showcased in IDEAS 24. Series production will be done on sup-based model; provision of certain no of CKD kits with gradual deletion (30 – 50%).

7. **Existing Welfare Measures**

   a. **Education**

      1) A mega education facility i.e HITEC, comprising Engineering University, Medical / Dental College, **2 x Colleges** (boys & girls) and **2 x High School** / **Preschool** is functioning to impart quality education. Special fee concession upto **80%** to wards of HIT employees is being offered.

      2) **3 x High Schools** (2 x Federal Government, 1 x provincial government) and 1 x Degree College are providing quality education to the wards of HIT employees at par with other best institutions in the vicinity.

      3) Technical education is imparted through **Vocational Centre**.

8. **Health** HIT hospital providing health facilities to HIT employees and their dependents. With the start of Medical / Dental College, Specialist faculty of college is also assisting the Hospital in better medical care of patients.

9. **Financial Assistance** It includes Funeral assistance includes monetary help, coffin box and ambulance for transportation. Details of expenditure (in Rupees) are as under: -

a.	Scholarships	-	243000
b.	Distress Grants	-	55000
c.	Sewing Machine	-	56000
d.	Blood Honorarium	-	46000
e.	Financial Assistance	-	4000000
f.	Financial help to Disabled children	-	120000

10. **Community Projects** Spring festival, worker's Club and Community Hall.

    a. **Sports Facilities**

       1) Up gradation of Sports Stadium
       2) Establishment of futsal (Play Area)
       3) Improvement of sports complex.
       4) Renovation of swimming pool.

    b. **Plantation Drives** Plants are distributed among residents to create greener environment.

    c. **Up-gradation of Parks** Up-gradation of Parks has been carried out to provide peaceful and serene environment to the families of HIT employees inside the cantonment premises.

11. **Miscellaneous** A coffee and BBQ shop within HIT campus has also been established to provide exclusive services to the families in HIT complex.

12. **Proposed Welfare Measure**

    a. Construction of overhead Pedestrians Bridge at Taxila Bypass on NH-5.

    b. Construction of under pass for railway crossing on Saghir Hussain Shah Road.

KARACHI SHIPYARD & ELECTRICAL WORKS

1. 01 x 48 TONS BOLLARD PULL TUG FOR PAKISTAN NAVY

01 x 48 tons Tug designed for safe harbour movements of PN submarines. The design and KoM for the tug have been acquired from TOR of Turkey. The tug has push/ pull capacity of 48 tons and tug delivered to PN 31 Aug 2023.

2. 04 x GRP UTILITY BOATS FOR PAKISTAN NAVY

GRP Boat No. 1 & 2 has been delivered to PN on 26 Jan 2021 and 18 Nov 2021 respectively. Complete TDP and Mold has been provided to PN Dockyard. KoM/ ToT Packages – I & II has already been delivered to PN. In this regard, GRP boat No. 3 & 4 construction has been completed at PN Dockyard. Upon completion of construction/ trials, Boat No. 3 has been delivered to PNS RAHBAR on 30 Jul 2024. Furthermore, Boat No. 4 also been delivered to PNS HIMALAYA on 21 Oct 2024.

3. 02 x MILGEM CLASS CORVETTES FOR PAKISTAN NAVY

Construction of Two 108m, guided missile PN MILGEM Class Corvettes in collaboration with Türkiye. Each corvette has displacement of 3,000 tons and can reach up to a speed of 26 knots. Harbor trials of the first vessel (PNS Badr Desig) have already commenced and these ships will be delivered to Pakistan Navy by 2025-26 respectively. The second ship (PNS Tariq Desig) was launched by Prime Minister of Pakistan and Vice President of Türkiye on 02 Aug 2023.

4. 01 x GUN BOAT FOR PAKISTAN NAVY

a. Pakistan Navy Gunboat is another indigenous design Project being undertaken jointly by Karachi Shipyard and Platform Design Wing of Pakistan Navy. Steel cutting and Keel laying

milestones have been achieved successfully. The boat is planned to be delivered to Pakistan Navy in 2025.

SUPPLY OF DESIGN (COMPLETE TDP & KOM) FOR CONSTRUCTION OF DIVING TENDER (CONSTRUCTION WILL BE UNDERTAKEN AT PN DOCKYARD)

b. The contract was signed on 30th June 2021. Contract Effective Date (CED) established on 24th August 2021. All the Kit of Materials has been received from the Designer/ Supplier and delivered to PN Dockyard. As regard provision of TDP, ~ 98% (i.e. 126/ 129) drawings have been delivered to PN Dockyard and only 03 drawings left from designer.

5. CONSTRUCTION OF 01 x JINNAH CLASS FRIGATE (JCF) FOR PAKISTAN NAVY

KS&EW has also signed a contract for construction of 01 x Jinnah Class Frigate. This will be the first totally indigenous designed and constructed platform of this size. Presently our design team is engaged with M/s ASFAT for joint design efforts. The construction time of this vessel is 52 months.

6. CONSTRUCTION OF 02 x FAST RESPONSE BOATS (FRBs) FOR PAKISTAN MARITIME SECURITY AGENCY

Karachi Shipyard has signed a contract for construction of 02 Fast Response Boats (FRBs) for Pakistan Maritime Security Agency in Jan 2024. The design and KoM of these boats are being acquired from Italian firm. Construction of both the FRBs is in fast pace. Aluminum cutting of these boats will be undertaken in Nov 2024. These boats will be delivered to PMSA by August 2025.

7. CONSTRUCTION OF 01 x 1100 TEUs CONTAINER SHIP FOR PAKISTAN NATIONAL SHIPPING CORPORATION

KS&EW is proud to inform that Karachi Shipyard has also signed a contract on 02 Mar 2024 for construction of one 1100 TEUs container ship for Pakistan National Shipping Corporation (PNSC). Contract with PNSC for construction of ship is signed after a gap of 4 decades. Contract Effective Date is due and PNSC is likely to complete its contractual obligation shortly, thereafter the construction activities will commence at full pace.

8. CONSTRUCTION OF 02 x MOORING BOATS FOR SHIP REPAIR DEPARTMENT

a. 02 x Mooring Boats are currently under construction at Karachi Shipyard for self-use. Role and functions of these boats are towing & tugging operations during docking & undocking of the vessels, assist vessels to navigate safely during berthing & unberthing and handling of mooring lines.

b. Karachi Shipyard may sell these mooring boats to any potential customer.

9. Projects in Line (Almost Confirmed)

a. 02 x Logistic Support Ships for RSNF

b. 02 x Mooring Boats for KPT

c. 02 x Mooring Boats for PQA

10. Potential Projects (Being Pursued)

a. 01 x Gun Boat for PN (Repeat Order)

b. 2nd 48 TBP Tug for PN (Repeat Order)

c. 4th Pusher for PN (Repeat Order)

d. 01 x 100 m Target Platform

e. 01 x 60 m Target Platform

f. 01 x LCM for PN

g. 01 x Fast Patrol Boat for Pakistan Coast Guards

h. 02 x Tug Boats for RSNF

i. Training Facility at PNS BAHADUR

j. 15HT for PMSA

k. Improvised Target Platform

l. Floating Dock for PN

m. Hopper Barge for KPT

n. Tugs for Bahrain Navy (RBNF)

o. 32 TBP Tug for PN

p. Multipurpose Ship for PN

q. Supply of KoM for SPDB to PND

r. 03 x FRBs (Repeat Order) for PMSA

s. Diving Tender for PN

11. SHIP REPAIRS

Ship Repair has a comprehensive setup for repairing, rebuilding and overhauling of Naval and Commercial vessels with high quality and safety standards. We provide integral services through a highly qualified workforce with wide experience. Ship Repair is well-equipped with Dry Docks,

Ship Lift & Transfer System (SLTS), Cranes, Workshops, as well as with the best machinery and tools to undertake above and underwater repair works. Details of the major infrastructure include:

12. <u>Dry Docks.</u>

a. KS&EW has 02 x Dry Docks for underwater repairs of vessels. For the above-water repairs, Quay Walls of 500 meter on the northern side and 165 meters on the southern side of KS&EW sea front are available. Moreover, above-water repairs for vessels can also be undertaken in Karachi harbor and even at the outer anchorage.

b. Both the Dry Docks and North Quay Wall are fitted with Level Luffing Cranes with lifting capacity of 15, 30 and 40 tons for repair/ maintenance activities. All the ancillary facilities required to undertake the repair/ maintenance activities at DDs as well as Quay Walls are available which includes; shore power supply, compressed air, Oxygen, Acetylene gas, Natural gas, fresh water and fire main supply. ∗ Specifications of both the DDs are appended below:

Dry Dock	Built on	Length	Width	Crane Facility	Capacity	Status
1	1958	189m	27m	30 Tons	26,000 DWT	Ops
2	1971	171m	24m	15 Tons	18,000 DWT	Under Rehabilitation

c. Dry Dock-2 remained under rehabilitation work since Feb 2022 by M/s GRC under the consultancy of M/s NESPAK. Rehabilitation work of Dry Dock-2 has been completed and inauguration / commissioning ceremony was carried out on 08 July 2024. Subsequently, the rehabilitation work of Dry Dock-1 has been started upon completion of Dry Dock-2.

Ship in Dry Dock-1

Dry Dock-2 under Rehabilitation

13. Ship Lift & Transfer System (SLTS)

a. To meet the ever-rising demand of construction and repair of sea-going vessels, and to increase business volume of Karachi Shipyard and Engineering Works Ltd, installation of a state of the art Ship Lift and Transfer System (SLTS) along with parking infrastructure for repair of ships (of different sizes) and submarines in parallel was completed in 2021. This was a public sector development project in the domain of transport and communication sector. The facility is Lloyd's UK certified.

b. SLTS is contributing directly to the capacity building for the sectoral objectives by upgrading and consolidating modern docking technologies. Volume of ship construction and repairs is expected to see an almost 300% rise when the facility operates at its full capacity. This also has the potential to boost allied inland engineering businesses.

c. Following are the salient features of the facility:

SLTS facility designer	Inros Lackner SE, Germany
System manufacturer	Syncrolift AS, Norway
Certification	Lloyd's UK
Lifting capacity of vessels	7,300 tons
Number of ship parking stations	09 for repair of ships / submarines 02 for submarine construction
Ship lift platform dimensions	125 x 32 m
Ship parking station lengths	125, 90, 75, 60 m
Services available on parking stations	Electrical power, pressurized seawater, natural gas, Oxygen, compressed air, fresh water, telephone, cranes, fork lifters

d. The facility was inaugurated on 10 August 2021 by Prime Minister of Pakistan. It has started attracting national and foreign clients for shipbuilding & repairs business.

Ships parked at SLTS

14. <u>Repair Activities Undertaken by Ship repair Division</u>.

Ship repair Division is capable to undertake following ship repair works as per international marine standards:

a. Overhauling & repair of all types of engines, generators, hydraulic equipment, ship auxiliaries, pumps, valves, compressors, etc.

b. Shafting work which includes repairing of rudders, propellers, CPP system, bow thruster system etc.

c. Installation, servicing & repairing and fabrication of all types of piping system.

d. Installation & repairing of AC & refrigeration system.

e. Grit (Abrasive) blasting and hydro blasting.

f. Airless & conventional spray painting.

g. Ship hull & deck repair.

h. Construction of tanks, stairs foundation trunkings.

i. Repair/ renewal of ships fenders.

j. Fitting of Zinc Anodes.

k. Jet washing.

l. Any alternation / conversion on hull / super structure.




15. <u>Repair of National Vessels.</u>

a. Repair / maintenance and major refit of 20 x vessels of Pakistan Navy, PMSA, KPT, PQA and other clients were carried out at KS&EW during the period. Similarly, Fuel Ships were also docked for repair during the period.

b. **Repair of Foreign Vessels.** KSEW also successfully repaired a number of foreign vessels of various countries.

INDUS DOLPHIN Chinese Vessel

16. GENERAL ENGINEERING

a. KS&EW stands as "The First Major Heavy Mechanical Engineering Industry of Pakistan." While primarily established for shipbuilding, the General Engineering Division (GED) plays a crucial role in supporting industry and developmental engineering. GED has a long history of delivering services to the local industry with a strong focus on customer satisfaction.

b. Being OGRA and ASME Section VIII Div I certified yard, General Engineering Division oversees and manages various engineering projects within the organization includes LPG pressure vessels, LPG plant, boilers, Sugar Mill Rollers, steel fabrication works, Oil Rig refurbishments, Marine and Barrage gates, Ship Lift & transfer system installation, sluice gates and stop logs EPC Contractor, EOH cranes etc., ensuring timely completion while ensuring quality and adherence to budget. It also offers technical expertise and support to other internal key business units, resolving engineering challenges and enabling informed decision-making. GE Department has recently completed the following projects:

c. Replacement of Gate 47 & supply of standby second gate on emergent basis for Sukkur Barrage in record time of just one month

d. Repair, replacement, and reinforcement of damaged segments of Rig Basement, Sub Structure, and Setback Tables of Rig-04 (N-4) for M/s OGDCL in just 04 months.

e. About 4300 Tons of steel billets have been produced so far and delivered successfully to Client and efforts have been made to approach different clients across the country

f. KS&EW has successfully manufactured/fabricated 42 x sugar rollers in fiscal year 2023-24 which is record casting and delivery in any particular season.

g. Fabrication of Non-Pressure Hull for Hangor Class Submarines.

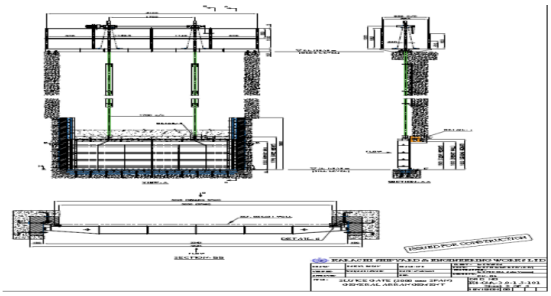
REPLACEMENT OF GATES ON EMERGENT BASIS SUKKUR BARRAGE GATES

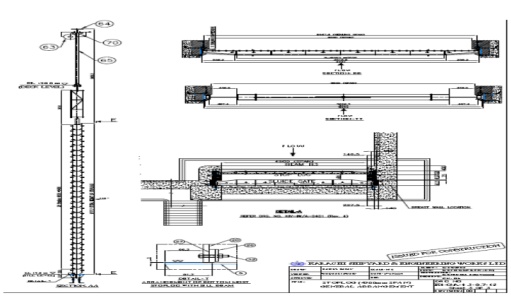
REPAIR/REFURBISHMENT OF OGDCL RIG N-4 FOR M/s OGDC

KS&EW is currently working on Supply, Installation & Commissioning of EOH Crane 10/3 Ton Capacity at MYP, Karachi for M/s Pakistan Railways.

WORK IN PROGRESS FOR M/S PAKISTAN RAILWAYS

Design, Supply, Installation and Commissioning of Sluice Gates at K-IV Intake works for M/s WAPDA.



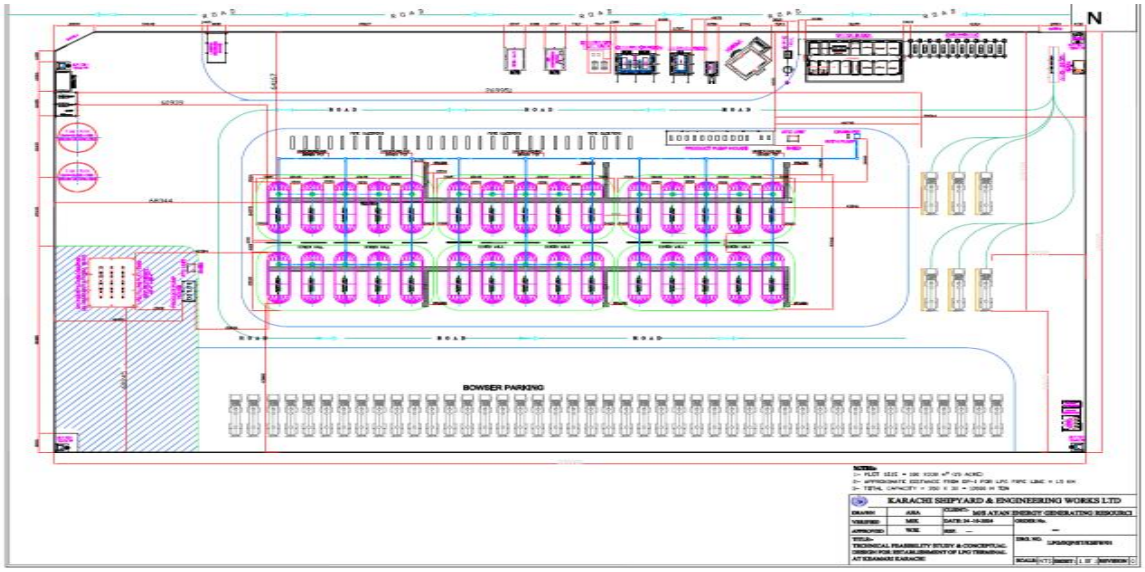


GENERAL ARRANGEMENT DRAWING FOR SLUICE GATE & STOP LOGS

(a) GE Department has exploring business opportunities to oil & gas sector and connecting to potential clients.

(b) Working with Ayan Energy Limited as a joint venture for LPG terminal at KPT.

TECHNICAL FEASIBILITY FOR LPG TERMINAL AT KPT



(a) Design, Fabrication and Supply of Mud Tanks for M/s OGDCL is at inquiry stage and GE striving hard to capture the project.

(b) GE also inquiring potential clients such as PRL, PPL for manufacturing of Boiler, Pressure Vessel, Bobtails etc.

(c) GED continues to explore new frontiers both locally and internationally. As it designs and delivers for sectors like sugar mills, steel and energy, the Division stays committed to innovation, ensuring every challenge transform into an opportunity.

17. SHIPYARD TRAINING SCHOOL (STS)

Shipyard Training School (STS) is located in KS&EW premises in a purpose-built building with an Admin Block, Academic Block, and Workshop Area. The facility has 14 standard classrooms for 360 sitting capacity per shift. STS has 08 x workshops for various trades including Machinist, Fabrication, Welding, Refrigeration & Air Conditioning (RAC), Plumbing, Diesel Mechanic, Crane Operator, and Rigger. STS also has 02 well-equipped multi-purpose labs and an adequately equipped library and training audio/visual facility. STS is instrumental in providing training and running courses, as per the requirement of NAVTTC which has declared STS as an "A" Category Technical Institute. The STS-trained manpower employment rate is around 54%. STS is rated in Hi-Tech Institute due to training in shipbuilding trades. STS is also one of the very few selected Tests Centers to undertake the TAKAMOL Skill Verification examination/tests for personnel nominated for employment in the Kingdom of Saudi Arabia (KSA). STS is also accredited with TUV Rhineland for Metal Fabrication Trade as part of STS efforts to get international accreditation. STS undertakes the following training profiles:

(a) 06 x months Short Course under NAVTTC as part of Prime Minister Youth Skill Development Program (PMYSDP).

(b) 06 x months Short Courses which are recognized by STEVTA/TTB.

(c) 02 x years Diploma in Ship Construction Technology with core competence in Welding, Fabrication, and Fitting which is affiliated with SBTE.

(d) 06 x months paid internship program is offered in collaboration with PEC to fresh graduates leading to MTO status and job depending on vacancy and performance of individual.

(e) KS&EW own-paid internship program is offered to fresh DAEs leading to MTS status and job depending on vacancy and performance of individual.

(f) TAKAMOL skill verification test is conducted (as part of KSA Govt initiative) under supervision of NAVTTC.

18. MATERIAL TESTING LABORATORY

KS&EW Central Laboratory was established in 1960, though, initially for rendering assistance to quality control & checks on KS&EW's projects. The scope of work has now been extended to undertake variety of test services like metallurgical analysis, mechanical, physical, chemical, and welding tests required for various outside agencies / clients. These also cover the chemical composition and testing of metals, ferrous and non-ferrous, alloys, refractory, cement etc. The tests are carried out in accordance with BSS/ASTM standards and/or to any other classification / rules to meet customer's requirement.

19. <u>KS&EW provide following testing services to its valued customers:</u>

a. Mechanical / Physical test of ferrous / non-ferrous metals.

b. Non-Destructive Testing (NDT).

c. Welders Qualification Tests.

d. Galvanizing tests.

e. Minerals & Refractory.

f. Fire & Bentonite Clays.

g. Dolomite, Lime Stone & Magnesite.

h. Feldspar & Fluorite.

i. Chromite, Gypsum.

j. All kinds of Ores.

k. Silica & River Sand.

l. Fire and other types of Bricks.

m. Acid Resistance Bricks.

n. Cement / Sulphate Resistance Cement.

o. Ferro-Alloys.

p. Pig iron, Plain Steel, Cast lron & Alloys Steel.

q. Brass, Bronze, All kinds of Non-Ferrous Metals.

r. Sodium Silicate.

s. Non-Ferrous ingots.

t. Calibration of measuring & Test Equipment.

u. Load Testing and Hydrotesting.

20. WELFARE MEASURES

a. In its endeavor to support employees and their families KS&EW provided medical facilities, daughter marriage loan, children education as detailed below:

b. Medical facility is extended to contract employees and this facility through health insurance, while laboratory tests etc. are borne by KS&EW. In case of hospitalization full reimbursement is given.

c. Hajj/ Umrah arrangements & expenses are provided to employees at KS&EW including Special Leaves with Pay for Umrah.

d. Son, Daughter & Self marriage loans are also granted to employees throughout the year.

e. KS&EW also provide stipend to its employees towards education of their children.

f. Organization offers training facilities to matriculation qualified individuals. Trade Internship Scheme in shipyard is a continuous process where students are trained with updated technical skills.

g. With courtesy of NAVTTC, courses are extended to youths in various trades including Crane Operator, Fitter, Welder, Carpenter, Auto CAD, Diesel Mechanics etc. New building of Shipyard Training School with modern facilities has been constructed.

h. Subsidized lunch facility is provided to all employees.

i. Funeral expenses to the legal heirs of deceased employee.

j. Death grants to the legal heirs of deceased employee, in case of his death during service.

k. Medial Insurance is offered for self/ family.

l. Foreign Technical Trainings are arranged for employees at KS&EW's cost.

DGRDE

1. **Achievements FY 2023-24**

   a. **Uplift/ Improvements of Existing infrastructure**. Uplift and improvements by DGRDE were carried out mentioned as under:-

S.No.	Nature of Project/ Work	Covered areas/ Detail of work	Remarks
(1)	Uplift of Water Supply Project	(a) Construction of New Tube Well (b) Improvement of Water Supply (c) Additional installation/ Alternate of water supply fitting / fixture in staff mess at OP Dte	The completion of these major projects has enhanced the operational efficiency, ensuring an uninterrupted electrical/ gas supply & reliable water supply for both operational needs and the well-being of DGRDE JCOs/ Sldrs/ Civ employees station in this establishment.
(2)	Improvement of Electrical Infrastructure	(a) Installation of Standby Transformer 400 KVA (b) Enhancement of HT Supply (c) Upgrades to the Over Head & LT Supply network (d) Installation of Earthing System for OAS (e) Internal electrical supply of POL store	
(3)	Relocation of Store	Relocation of Store at OP Dte	
(4)	Infrastructure Development	(a) Reconstruction and Roof treatment/ heat insulation of staff mess at MoDP Mess OP Dte (b) Additional installation of Gas fitting/ fixture in staff mess at OP Dte (c) Re-carpeting of Road & other areas around Adm block, MT Office & MT Shed to improve infrastructure of DGRDE	

b. **Enhancement in Army Office Automation System (OAS)**. 9 x additional terminals and 1 x additional edge equipment were installed in FY 2023-24, taking the total number of OAS terminals to 20 & 2 x edge equipment.

c. **Development Project Progress**. In addition to achieving targeted milestones of 89 ongoing projects, 13 projects were completed and 29 new projects were concluded in FY 2023-24 (pictures attached as Appendix-I & II). Summary is as under:-

Project Group	New Projects FY 2023-24	Completed Projects
Vehicles & Equipment	13	05
Simulators & Electronics	09	04
Armament	03	04
Optronics	01	-
Spare Development	03	-
Total	29	13
Financial Overlay	Rs. 1191.400 Mn	Rs. 335.879 Mn

d. **Spare Development Projects**. As a new initiative, in order to minimize effect of global supply chain disruption on maintenance of cycle of vital eqpts, contracts was concluded in Jun 24 for the dev of filters Tk VT-4. The filters are ready for physical test at 607 Regl Wksp.

New initiatives/ Targets Upcoming Years

e. **New Project Proposals**. In addition to projects mentioned at para 1d above 28 New project proposals are being pursued with users/ Service HQs. Summary is as under:-

Project Type	New Project Proposals	
	R&D Div Projects 2024-25	Understudy Projects
Vehicles & Equipment	08	27
Simulators & Electronics	06	02
Armament	03	25
Optronics	01	05
Spare Development	-	05
Total	18	64

f. **Business Development and Marketing Activity**

S.No.	Subject	Activity / Achievements/ Upcoming Activity
a.	Tender Participation	Activity. RDE participated in various tenders for supply of NVDs and TI Equipment's
b.	Registration of Firms	Activity. Data Bank of firms has been created containing info of firms registered through one registration system of MoDP. Currently 550 firms exist in the data bank
c.	Ongoing Activity IDEAS-2024	Preparations are underway to participate in IDEAS-2024 for showcasing of indigenously developed RDE products. The event is scheduled to be held from 19-22 Nov, 2024 at Karachi Expo Centre.

g. It is further suggested to generate revenue through collaboration with foreign countries. Following strategies may be considered:-

1) **Exporting Products**. RDE may offer products such as Simulators (A & B Vehicles), Armaments and Optronics for export to friendly countries through defence contracts.

2) **Technology transfer**. Technology Transfer agreement with foreign entities interested in RDE research projects/ products may be pursued.

3) **International Research Collaboration**. Collaborate with international defence research organization on joint venture project, which can attract funding and generate income.

h. **New initiatives planned for coming years:** Future welfare measures, existing as well as proposed are listed as under:-

1) Renovation / Reconstruction of MOQs at DGRDE.

2) Reconstruction of Main Entry Gate with enhanced svy sys (Instl of Hydraulic Barrier) at DGRDE

3) Conversion of Display hall into Auditorium.

4) Reconstruction of Store at DGRDE.

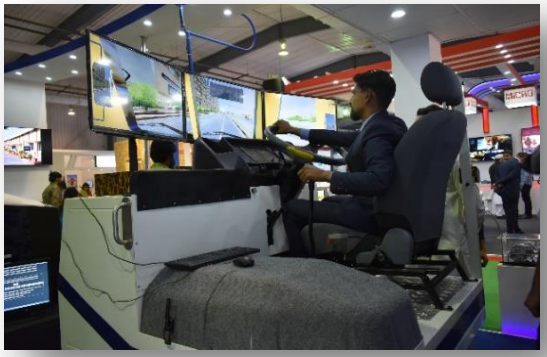
RDE COMPLETED PROJECTES – 2023-24

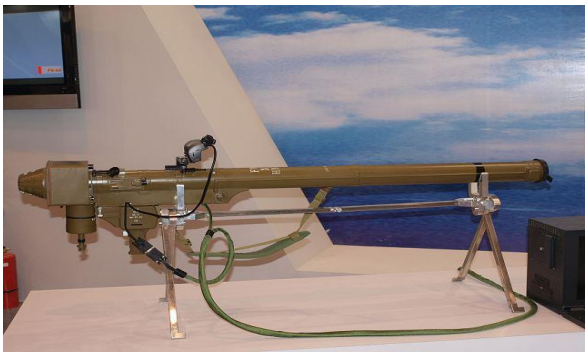
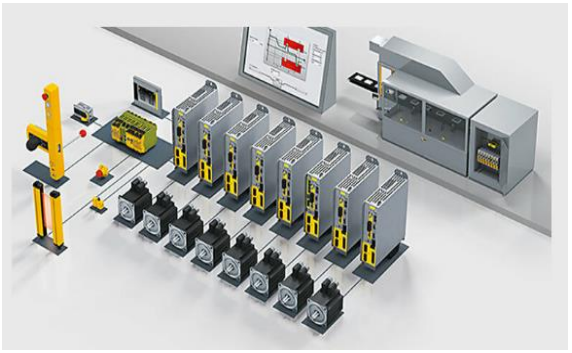
DITS for Tk VT-4 (Qty-01)	AM-50 Br VR Trg Simulator (Qty-06)
	
VR Simulator for Tk VT-4 (Qty-01)	**HADAF SAs Firing Sml Inc ALCOTAN Sml (Qty-01)**
	
Light Recovery Vehicle Mtd on Trk 5 Ton Hino GT1JHPA (Qty-05)	**Modified Bailey Bridge 100ft MLC-30 In D/S Config with existing features (Qty-01)**
	

ESD Equipment (Prototype) Qty-01	**Purchase of Rocket Proofing of RPG-7 Rocket Launcher (Qty-260)**
	
Ind Dev of Sleeping Bag (Qty-100)	**Ind Dev of Thermal Vest (Qty-100)**
	
Ind Dev of Thermal Drawer (Qty-100)	**Fuel Bowzer 4500 Lits (Qty-10)**
	

Shop Set Contract and Emergency Repair (Qty-01)


RDE CONCLUDED PROJECTES – 2023-24

Vehicle Driving Sml (Qty-01)	AVLB Virtual Reality Trg Sml (Qty-01)
	
Infra-red Surface to Air Missile Sml (Qty-01)	**Elevation Servo Amplifier (Qty-03)**

	
Control & Measurement Block (RCMU) (Qty-06)	**HF Circuits of UHF Band Receiver for Vera-E System (Qty-01)**
	
JF-17 Simulator (Qty-01)	**Integrated Battle Field management System (Qty-01)**
	

LCLOS / HCLOS Encryptor (Qty-06)	**Mobile Loading Ramp (InfTr APC only) (Qty-01)**
	
Ammo Vehicle with Mechanical Arms (Qty-01)	**Portable Rubber Mat Treadway (PRMT) (Qty-01)**
	
Electro Static Discharge (ESD) Work Benches (Qty 30 x benches, 60 Chairs & 10 racks)	**Bullet Proofing of Single Cabin (Qty-01)**

	
Fabrication Fire Tender (Qty-01)	**Bullet Proofing of Coaster (Qty-02)**
	
Rope Nylon Kernmantel 9 mm (Static) (Qty-05)	**Rope Nylon Kernmatel 9 mm (Dynamic) (Qty-05)**
	
Rope Nylon Kernmantel 11 mm (Static) (Qty-05)	**Rope Nylon Kernmantel 11 mm (Dynamic) (Qty-05)**
	

Mechanical Mine Field Fencing System (Qty-05)	Radar Emitter for GV LY-80 System (Qty-01)
	
Dev of Clip on TI Sight	**Installation of Explosive Reactive Armour (ZERA) on Tanks (Qty-01)**
	
Periodic Maintenance KIT-I, Tank VT-4 (Qty-11)	**Ruck Sack HA (Qty-50)**

	
5 x piton item (Qty-250)	**Indig Dev of Avn Spares M/s Avn Engg, (Qty-14)**
	
Ind Dev of Avn Spares M/s Elektro Control Ind Isb (Qty-16)	

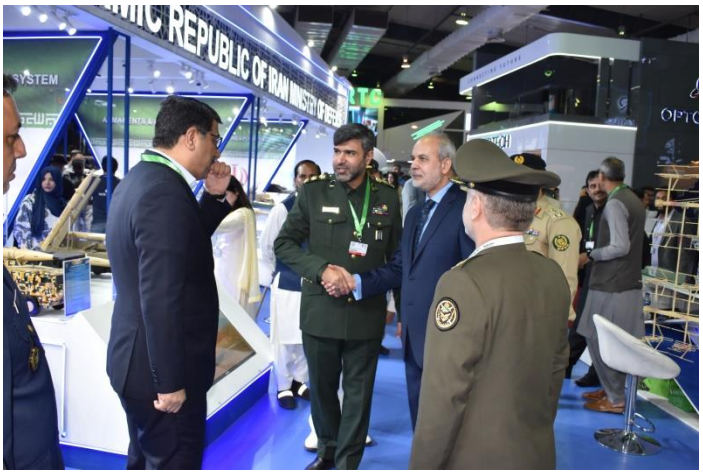
DEPO

1. **Foreign Exhibitions.**

   DEPO and DPEs participated in 10 exhibitions in FY 2023-2024.

2. **IDEAS-2024:**

   For successful conduct of IDEAS-2024 (19 to 22 Nov 2024) 12th Edition, two Steering Committee meetings were held 1st SCM on 11 Jun 2024 at HQ 5 Corps chaired by Commandant 5 Corps and 2nd SCM on 3rd Jul 2024 held at CM House, chaired by CM Sindh. Moreover, DEPO helps in promotion of products of defence industry through participation in foreign exhibitions and conducting visits of foreign delegation to DEPO.



PART- IV

MAJOR INITIATIVES / ACHIEVEMENTS BY MODP

1. **Successful ToT Ventures**. ToT has been made part of major contracts to enhance self-reliance.
2. **Revision of Defence Procurement Procedure .** DPPI-35 has been revised and shared with all concerned .
3. **Interaction with Legislative Bodies.** MoDP is regularly engaged with the standing committees of NA.
4. **Policy Reforms-Energizing Defence Production Sector.**
   a. Defence Production Policy - Draft under finalization
   b. Ease of Doing Business.
   c. Single Registration Procedure - Being implemented
5. **Contribution Towards National Exchequer**. Substantial contributions to **national e**xchequer through huge savings as import substitution, procurement negotiations and taxes /duties.
6. **Defence Exports**. An unprecedented boost in the Defence Exports and was accomplished.
7. **Corporate Social Responsibilities**. A substantial amount is also spent annually on quality education, medical facilities, respectable living, and welfare of over 50,000 employees.
8. **Conduct of Exhibitions & Seminars**. Holding of IDEAS-2022 and 2024 and Defence Seminar 2025. Participation in Defence Exhibitions