PTC Industries Limited

TOWARDS PARITY

INVESTOR PRESENTATION
JUNE 2023

Safe **Harbor**

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Current **Macro Themes**

1

Global Supply Chain Disruption
(China Plus one)

2

Russia Ukraine War
Implications

3

Aatmanirbhar Bharat
(Make in India)

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Global **Supply Chain Disruption** (China Plus One)

Global supply chain continues to shift away from China, but it remains the top sourcing location

American and European companies are gradually reducing their reliance on China, and its popularity as a sourcing market among Western buyers took a hit during the pandemic

In 2019, 96 per cent of US-based companies and 100 per cent of Europe-based companies listed China as one of their top-three sourcing countries, but those proportions respectively dropped to 77 and 80 per cent in the first quarter of this year, according to Qima, a provider of supply-chain-compliance solutions that conducted the survey.

Changes in global commerce

Trade tensions rose around the world, particularly between USA & China

COVID-19's Effects

Huge Reliance on China: Post-Covid Recognition of the Need for Reorientation and Diversification

The long-term Chinese closure has disrupted supply chains & purchasing from China

Most businesses recognized their reliance on China & diversified their supply chains to countries such as India

INDIA has a huge opportunity

The government's push to boost manufacturing

Many countries, especially India, have a huge opportunity to benefit from re-alignment for export

Source: World Exports.com | *According to United Nations Statistics Division a Exchange rate: 82.85 (USD -NR)

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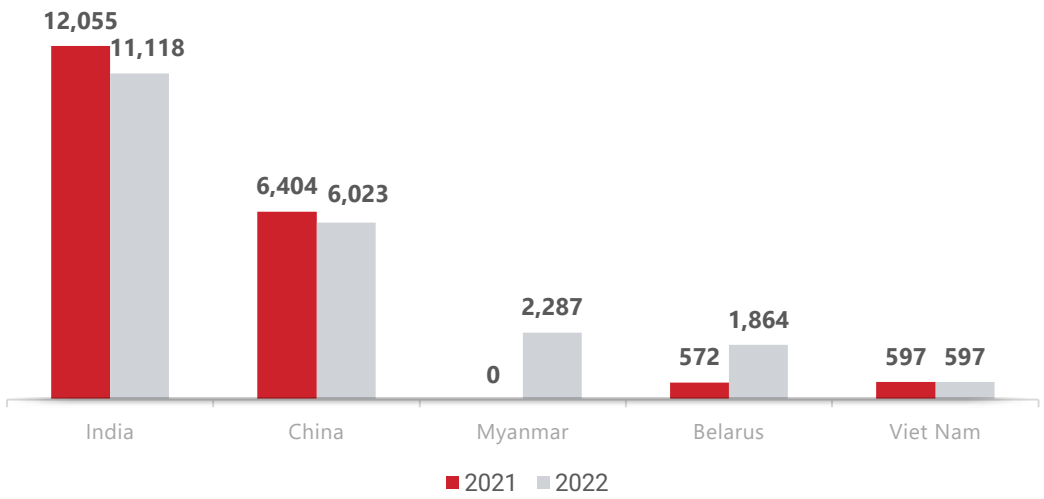
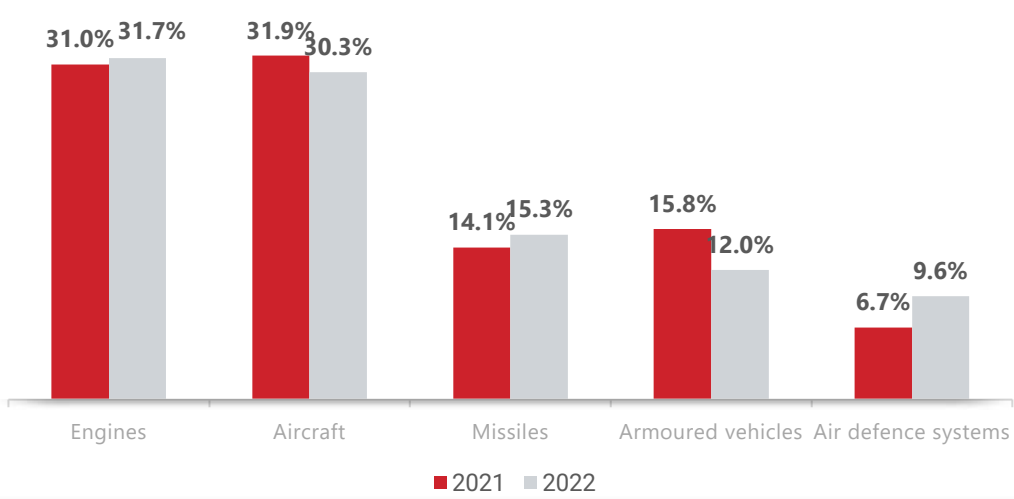
Russia-Ukraine War Implications

Russian Defence Exports

(Figures are SIPRI Trend Indicator Values (TIVs) expressed in INR Crores)



% of Total Defence Exports by Russia



Source: World Economic Forum | World Exports.com
Exchange rate: 82.85 (USD -NR)

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Titanium – An Untapped Opportunity

MARKETSHEARD ON THE STREET

The West Must Wean Itself Off Russian Titanium

Aerospace companies like Airbus need alternative sources of titanium sponge to diversify their supply chains and bolster national security

Russia produced roughly a fifth of global titanium sponge supplies before the pandemic.
PHOTO: DONAT SOROKIN/TASS/ZUMA PRESS

By Jon Sindreu Follow

Aug. 5, 2022 7:35 am ET

Europe's natural gas crisis shows the problem with industrial strategies that rely on Vladimir Putin. Some Western governments and companies still haven't

Airbus says to decouple from Russian titanium 'in months'

MUNICH, Dec 1 (Reuters) - Airbus (AIR.PA) will halt its reliance on Russia for titanium supplies within months, a senior executive said on Thursday.

Russia is the largest producer of titanium, a strategic metal prized for its strength relative to its weight. It is used mainly in aircraft engines and landing gear for large planes.

CLICK HERE

Aerospace & Defense

3 minute read - March 8, 2022 4:12 AM GMT+5:30 - Last Updated a year ago

Boeing suspends Russian titanium as Airbus keeps buying

By Aishwarya Nair and Tim Hepher

CLICK HERE

BOEING (Annual Report Comments)

Most important raw materials required for our aerospace products are aluminium (sheet, plate, forgings and extrusions), titanium (sheet, plate, forgings and extrusions) and composites (including carbon and boron)

We suspended maintenance and support for Russian customers, & then in spirit of doing the right thing, we had suspended titanium import

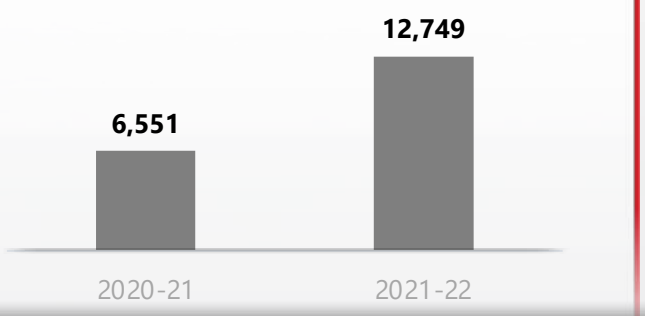
AIRBUS (Annual Report Comments)

Part of the titanium used is sourced from Russia, both directly and indirectly through Company's suppliers

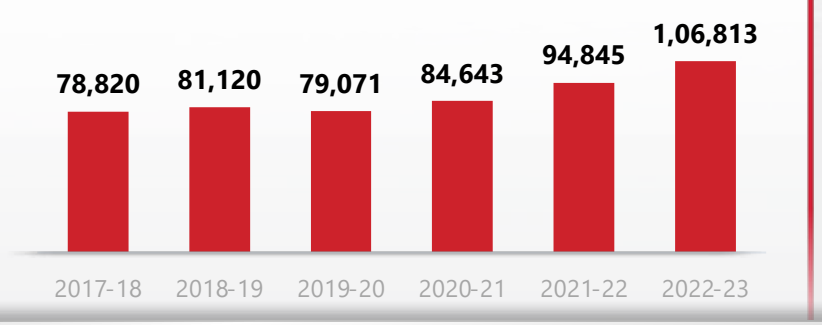
While geopolitical risks are integrated into Company's titanium sourcing policies, impact of Russia's invasion of Ukraine on Company's ability to source materials and components and any future expansion of sanctions is being reviewed

Aatmanirbhar Bharat (Make in India)

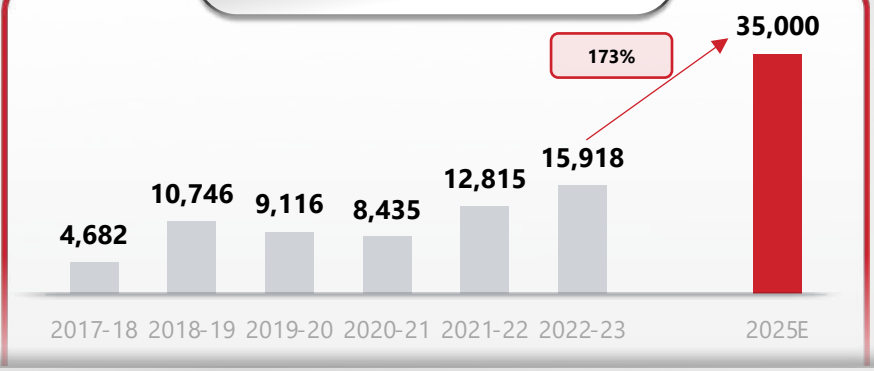
Indian Defence Imports by DPSUs (Rs. Cr)



Defence Production Value (Rs. Cr)

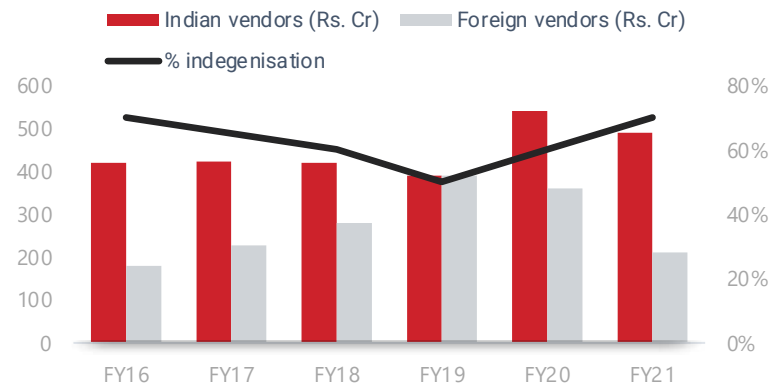


Defence Export Value (Rs. Cr)



The Government of India is focused on "Make in India" in Defence Sector to Reduce Imports and Boost Exports | Opportunity of Indian Private Players

- The Government to ban the import of more than ~400 Platforms/ Weapon/Systems/ Equipment by 2032
- Indigenisation Rising in India
- The Government is setting up Defence Corridors to push domestic manufacturing



UP Corridor | **Tamil Nadu Corridor**

INVESTMENT IN UP CORRIDOR TILL DATE

Rs. 3,732 crores

Investment by PTC Industries

Rs. 500 crores

KEY HIGHLIGHTS OF THE POLICY FOR INDIGENIZATION OF COMPONENTS AND SPARES USED IN DEFENCE PLATFORMS (8th MAR 2019)

Value of components (including alloys & special materials) imported by Defence PSUs & Ordnance Factories: **~Rs. 13,810 crores (2017-18)**

According to an estimate nearly **1 Lakh components** used for various Defence & Aerospace related platforms are being imported

Source: Defence Ministry
Home | Department of Defence Production | MOD | Government Of India | India (ddpmod.gov.in)

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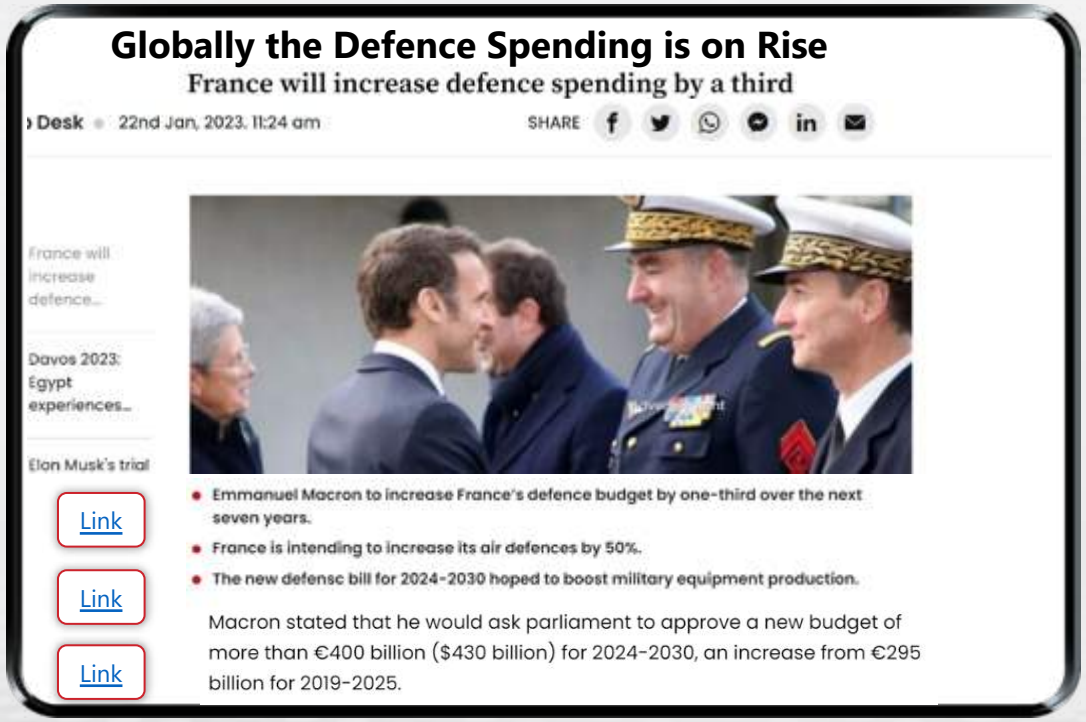
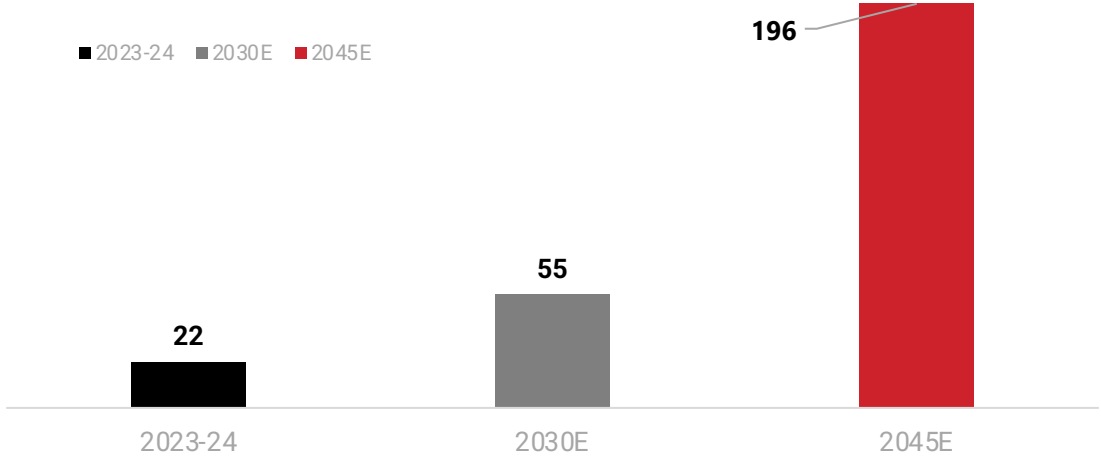
Increase in **Defence Capital Expenditure**



India's defence Capital Expenditure ($ Billion)



Based on 30% of Defence Budget

*Out of total Defence Spending ~30% is the capital expenditure

Indian Defence spending in 2045E
$654 Billion

Indian Defence spending in 2030E
$183 Billion

Indian Defence Spending in 2023-24
$74 Billion

Indian defence companies will get orders worth Rs 8 lakh crore over next 7 yrs, says Army chief

Discerning that the Russia-Ukraine war has shown the need to cut dependence on foreign suppliers, Army chief Gen Manoj Pande Thursday said indigenous weapon system is the way forward and that orders worth **Rs 8 lakh** crore will be placed with Indian companies in the next **7-8 years**.

World military expenditure and weapons trade | Knowledge for policy (europa.eu)
Source: European Commission
Lowey Institute for 2030 figures and UK study for 2045 figures

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Technology **driven opportunities**

1

Global Supply Chain Disruption

Opens a huge opportunity for PTC in Industrial as well as Aerospace and Defence Sector

2

Russia Ukraine War Implications

Have opened gates for supply of Titanium

Recently acquired Technologies

Vacuum Arc Remelter

Electron Beam Cold Hearth Remelting furnace

Pioneer to bring this technology to India

3

Defence Spending and Indigenisation in India is on rise

PTC's vision of PARITY gives opportunity. Investing in the UP Defence Industrial Corridor to develop cutting-edge technology

Building cutting edge Technology

Widening Offerings

Proven track record

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Our *Dharma* – achieving **Parity**

Therefore, It Is Our Dharma To Work
Towards Building Equality In Respect of

Capability, Technology,
Skill, Workmanship, Talent,
Knowledge, Quality,
Productivity, Efficiency, & Sustainability
in the country to allow us to become a nation that is at par with the world.

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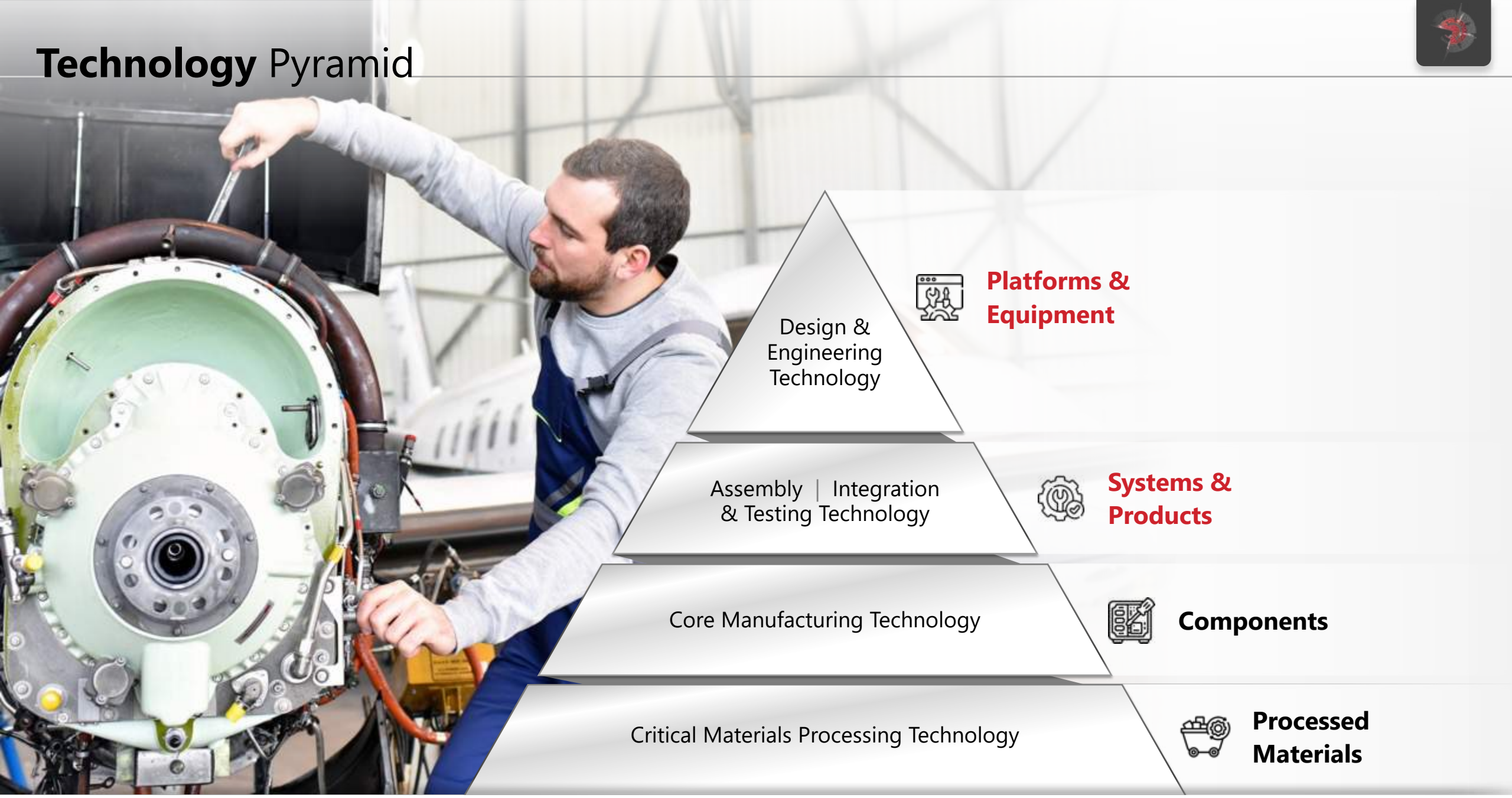
Technology Pyramid



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Air Defence Systems

Platforms

Aircrafts | Helicopters | UAV & Drones

Sub-systems

Airframe, Propulsion | Landing Gear | Weapon Systems Dynamic Parts

Components

Aero engine parts for low temperature & hot section | Small Turbo Fan Engine parts for UAV | Starters for Turbo Engine

Processed Materials

Titanium Alloys | Aluminium Alloys | Cobalt Alloys | Super Nickel Alloys | Controlled Microstructure Alloys

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Technology Pyramid – **Air Defence**

Sensors and electronics
- Gallium
- Cadmium
- Tellurium
- Mercury
- Rare Earths
- Elements
- Beryllium
- Silver

Nose
Kevlar

Canopy
- Special glass

Fuselage
- Carbon Epoxy Composite
- Aluminium
- Zinc
- Magnesium
- Copper
- **Zirconium**

Engine
- **Nickel**
- Cobalt
- Chromium
- Molybdenum
- Aluminium
- **Titanium**
- Hafnium
- Vanadium
- Ceramics
- Tantalum
- Tungsten

Electro-optical systems
- Cadmium
- Tellurium
- Mercury
- Germanium
- Neodymium
- Yttrium
- Aluminium
- Copper
- Beryllium
- Indium
- Tantalum
- Cobalt

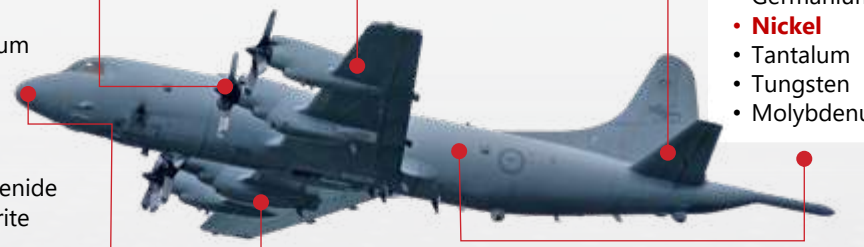
Landing gear
- Aluminium
- **Titanium**
- Aluminium
- Vanadium
- Special steels
- Rubbers
- Composites

Wings
- Carbon Epoxy Composite
- **Titanium**
- Aluminium
- Copper
- Magnesium
- Manganese

Nozzle and post -combustion
- Carbon carbon composite

Flaps
- Iron
- Chromium
- **Nickel**
- Molybdenum
- Aluminium
- **Titanium**

Taill
- Carbon Epoxy Composite
- **Titanium**
- Aluminium
- Vanadium
- Copper
- Magnesium
- Manganese



Propulsion
- Aluminium
- Magnesium
- Manganese
- Yttrium
- Cobalt
- **Nickel**
- Tungsten
- Chromium
- Niobium
- Molybdenum
- **Titanium**

Wings
- Aluminium
- Magnesium
- Manganese
- Copper
- Tit**anium**
- Vanadium

Taill
- Carbon Epoxy Composite
- Aluminium
- Magnesium
- Manganese
- Copper
- **Titanium**
- Vanadium

Fuselage
- Aluminium
- Zinc
- Magnesium
- Copper
- **Zirconium**
- Beryllium
- Cadmium
- Germanium
- **Nickel**
- Tantalum
- Tungsten
- Molybdenum

Sensors
- Gallium arsenide
- Gallium nitrite
- Beryllium
- Silver
- Barium titanate
- Lithium
- Mercury Cadmium telluride
- Neodymium yttrium aluminium garnet
- Indium
- Carbon composites

Landing gear
- Copper
- Beryllium
- Aluminum
- **Titanium**
- **Nickel**
- Chromium
- Molybdenum

Source: European Commission

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Indian **Air Defence** Opportunities

HAL GETTING ENQUIRIES FROM VARIOUS COUNTRIES FOR ITS ADVANCED HELICOPTERS

Thursday, January 19, 2023 by Indian Defence News

INDIA'S LIGHT COMBAT ATTACK HELICOPTER 'PRACHAND' IN LIMELIGHT FOR GLOBAL EXPORT COMPETITION

Wednesday, December 07, 2022 by Indian Defence News

INDIA IS AN IDEAL CANDIDATE FOR IMPROVING ARMENIA'S SU-30SM FIGHTER JETS WITH ASTRA AND BRAHMOS MISSILES

Friday, January 13, 2023 by Indian Defence News

1

AMCA Aircraft

Initial development cost is estimated to be close to Rs. 25,000 crore

The engine development program is Rs. 15,000 crores

2

India's Ministry of Defence (MoD) in July 2022, indigenous content levels of

HAL Tejas Mk1/Mk1A fighter (slightly more than 53%)

Airframer's Dhruv utility helicopter (almost 56%)

Light Combat Helicopter (54%)

Light Utility Helicopter (52%)

3

India's air force to acquire nearly 20 squadrons, with 18 aircraft in each, of 3 indigenously developed fighter types

Tejas Mk1A, Tejas Mk2

Advanced Medium Combat Aircraft (AMCA)

More than 350 of the aircraft manufactured by 2045

4

Air Force chief said the service will procure enough aircraft to equip seven AMCA squadrons and six with Tejas Mk2s.

5

Air force has placed orders for 83 Tejas Mk1As single-seat Tejas Mk1A was approximately USD 42 million

6

HAL received an $850 million contract for 70 HTT-40s in October 2022

7

The Air Force has ~ 260 Su-30MKIs in use, from a total procurement of 272, and is seeking to upgrade 84 of the aircraft

8

Indigenization of spares: Su 30, MiG 29, Mi Series of Helicopter, Rafael

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Strategic Defence Systems

Platforms

Missiles |
Rockets |
Aerial Bombs

Sub-systems

Warhead | Propulsion |
Frame | Bomb Shells

Components

Cannisters | Rocket Motors | Jet Vanes |
High Pressure Bottles | Titanium Wings |
Penetrators

Processed Materials

Titanium Alloys | High Strength Steel Alloys |
Tungsten

Technology Pyramid – **Strategic Systems**

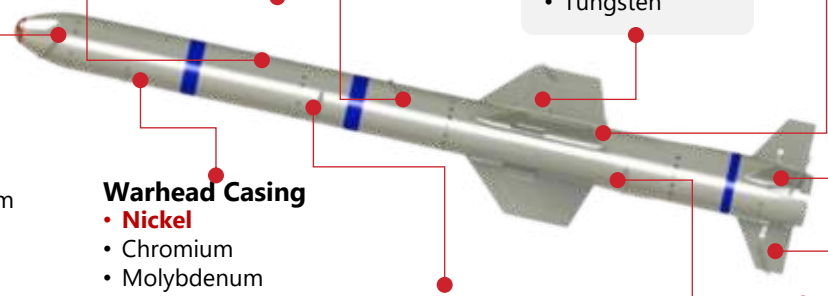
Guidance
- Niobium
- Lithium Niobate

Hangers
- Carbon
- **Nickel**
- Chromium
- Molybdenum
- Aluminium
- Titanium

Wings & Structural Parts
Copper
- Nickel
- Chromium
- Molybdenum
- Niobium
- Tungsten

Fuselage
- Aluminium
- Cupper
- Magnesium
- Chromium
- Silicon
- Zinc
- Zirconium
- **Titanium**

Booster Motor case
- **Nickel**
- Chromium
- Molybdenum



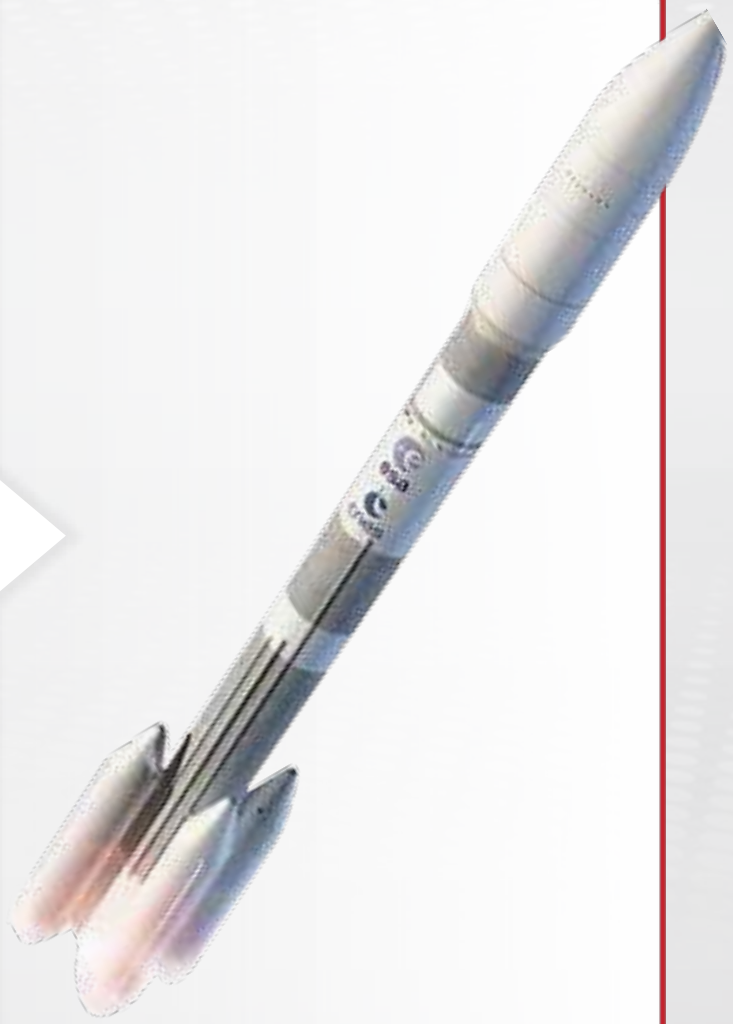
Warhead
- Cupper
- Molybdenum
- Tantalum

Warhead Casing
- **Nickel**
- Chromium
- Molybdenum
- Silica Ceramics

Control Actuator Section
- Samarium
- Cobalt
- Boron
- Neodymium
- Praseodymium
- Dysprosium

Propulsion
- Lithium
- Chromium
- **Nickel**
- Molybdenum
- **Titanium**
- Aluminium
- Samarium

Tail
- Carbon
- **Nickel**
- Chromium
- Molybdenum
- Manganese
- Cobalt
- **Titanium**



Source: European Commission

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Indian **Strategic Systems** Opportunities

ARMY TO GET INDIGENOUSLY DEVELOPED HELINA ANTI-TANK MISSILES, VSHORAD MISSILE SYSTEM WORTH RS 4,276 CR

Wednesday, January 11,2023 by Indian Defence News

PRODUCTION OF QRSAM TO START WITHIN SIX MONTHS FOR INDUCTION IN INDIAN ARMY

Thursday, January 05, 2023 by Indian Defence News

YEAR ENDER 2022: BRAHMOS, AGNI, PRITHVI II: LETHAL MISSILES INDIAN TESTED THIS YEAR AMID TWIN BORDER THREATS

Friday, December 30, 2022 by Indian Defence News

Successful test firing of a highly advanced version of BRAHMOS air-launched missile from Su-30MKI

New Brahmos Manufacturing Center in Lucknow will produce from 80 to 100 Brahmos missiles per year (Indian Defence Ministry's press office)

Philippines accepted Indian BrahMos Aerospace proposal worth $374.9 million to supply a Shore-based Anti-Ship Missile System Acquisition for navy

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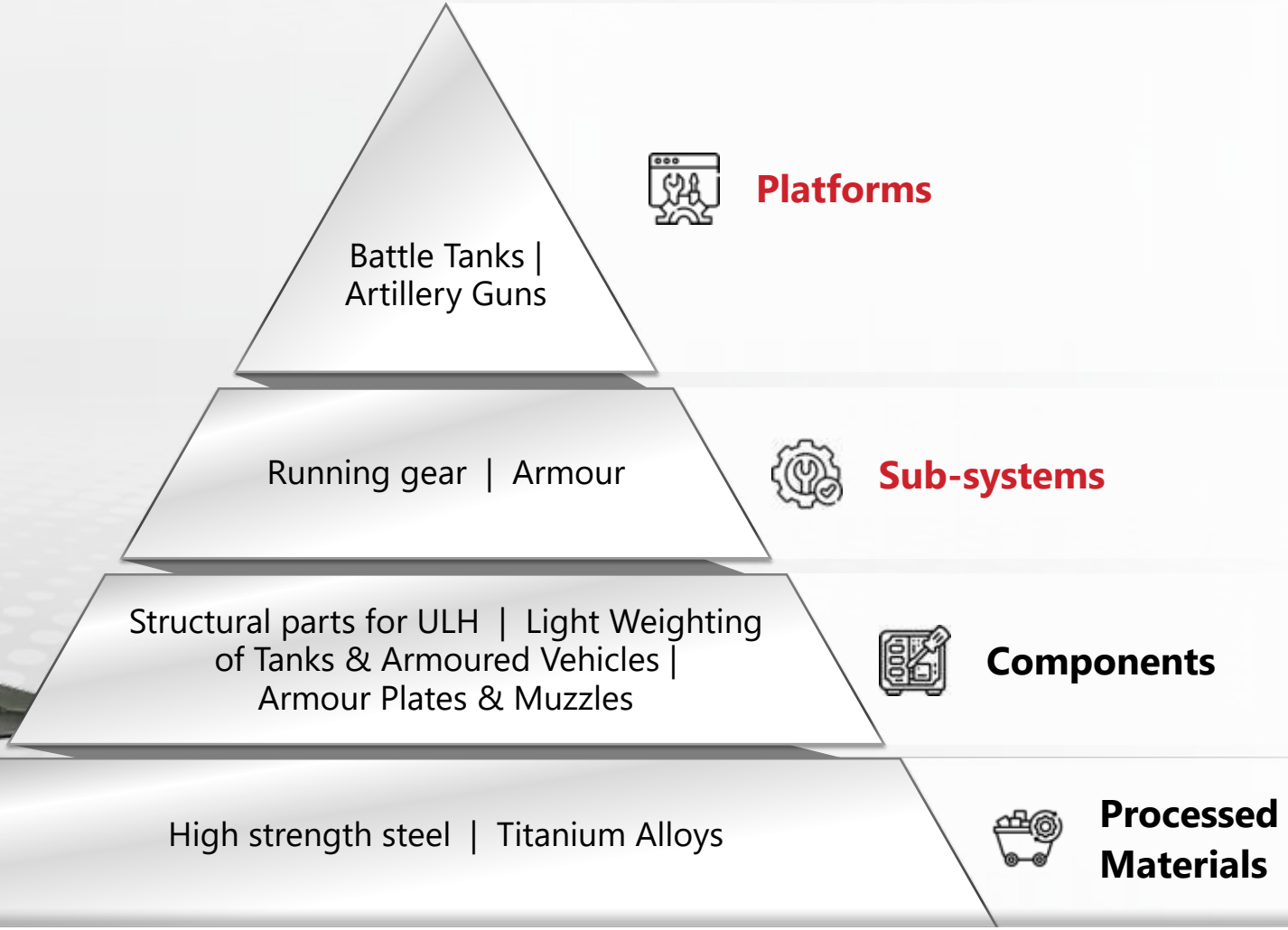
Land Defence Systems



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Technology Pyramid - Land Defence

SIT Communication
Gallium Arsenide
Gallium Nitrite
Beryllium
Silver

Optic-mechanic devices (frames)
Carbon
Carbon composites
Beryllium
Cupper

Night vision binoculars
Germanium
Copper
Tantalum

Infrared vision binoculars
Mercury cadmium telluride

Lazer range finder
Neodymium yttmium-aluminium gamet
Indium

Glass and mirrors, lens, optical windows
Quartz Ceramics

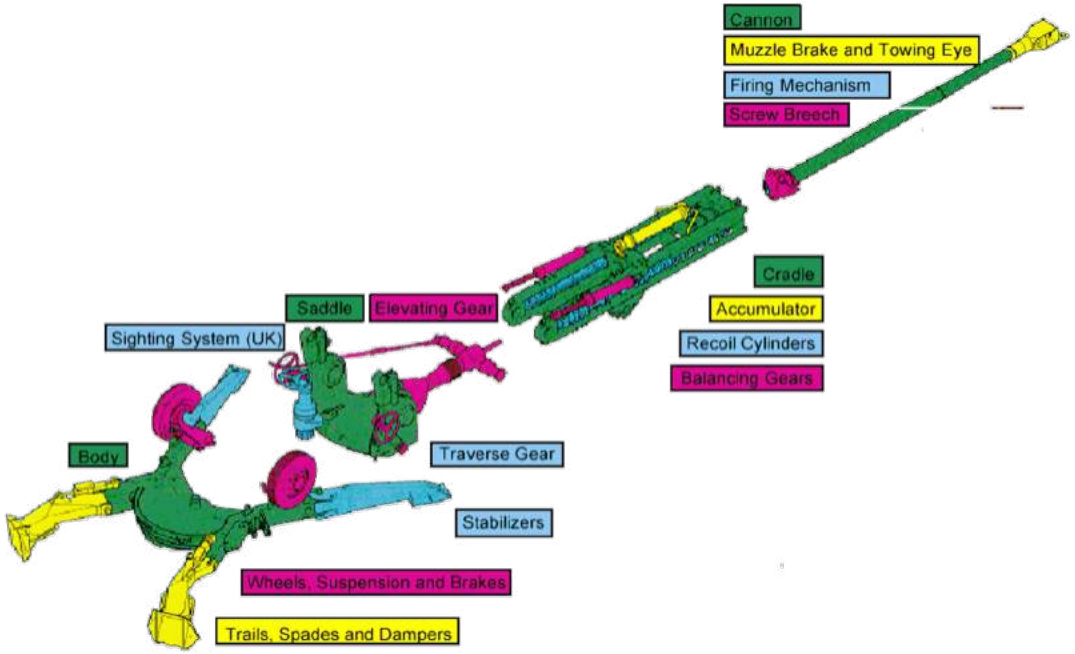
Hull
Beyllium
Light aluminum alloys
Very high hardness steel

Armour
Tungsten
Composites
Titanium

Gun barrels and accessories
(breech rings, breech blocks, muzzle brakes)
Carbon | Manganese | Chromium | Nickel | Molybderium | Vanadium

Source: European Commission

XM777
ASSEMBLIES



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Land Defence Opportunities

M777 Howtizer (Domestic & Global)

- **Spares, Fabrication and Assembly of sub systems**
- **New guns requirement for India ~>50%**
- **It is now the part of negative list of GOI**

BAE SYSTEMS IN INDIGENIZATION OF INDIAN DEFENCE MANUFACTURING

TUESDAY, MARCH 10, 2020 **BY** INDIAN DEFENCE NEWS

India ordered 145 howitzers from the US for $750 million in November 2016. As part of the deal, M777 manufacturer BAE Systems will supply 25 ready-built howitzers and the remaining 120 guns are being built locally

WATCH: INDIAN ARMY'S ARTILLERY GETS MORE FIREPOWER WITH INDUCTION OF VAJRA & M777 HOWITZERS

SATURDAY, NOVEMBER 10, 2018 **BY** INDIAN DEFENCE NEWS

The decks for the Indian army's proposal for 814 155mm/52 calibre mounted guns systems (MGS), at a cost of Rs 15,750 crore ($2.55 billion) were cleared by the former defence minister Manohar Parrikar at DAC meeting a couple of years ago.

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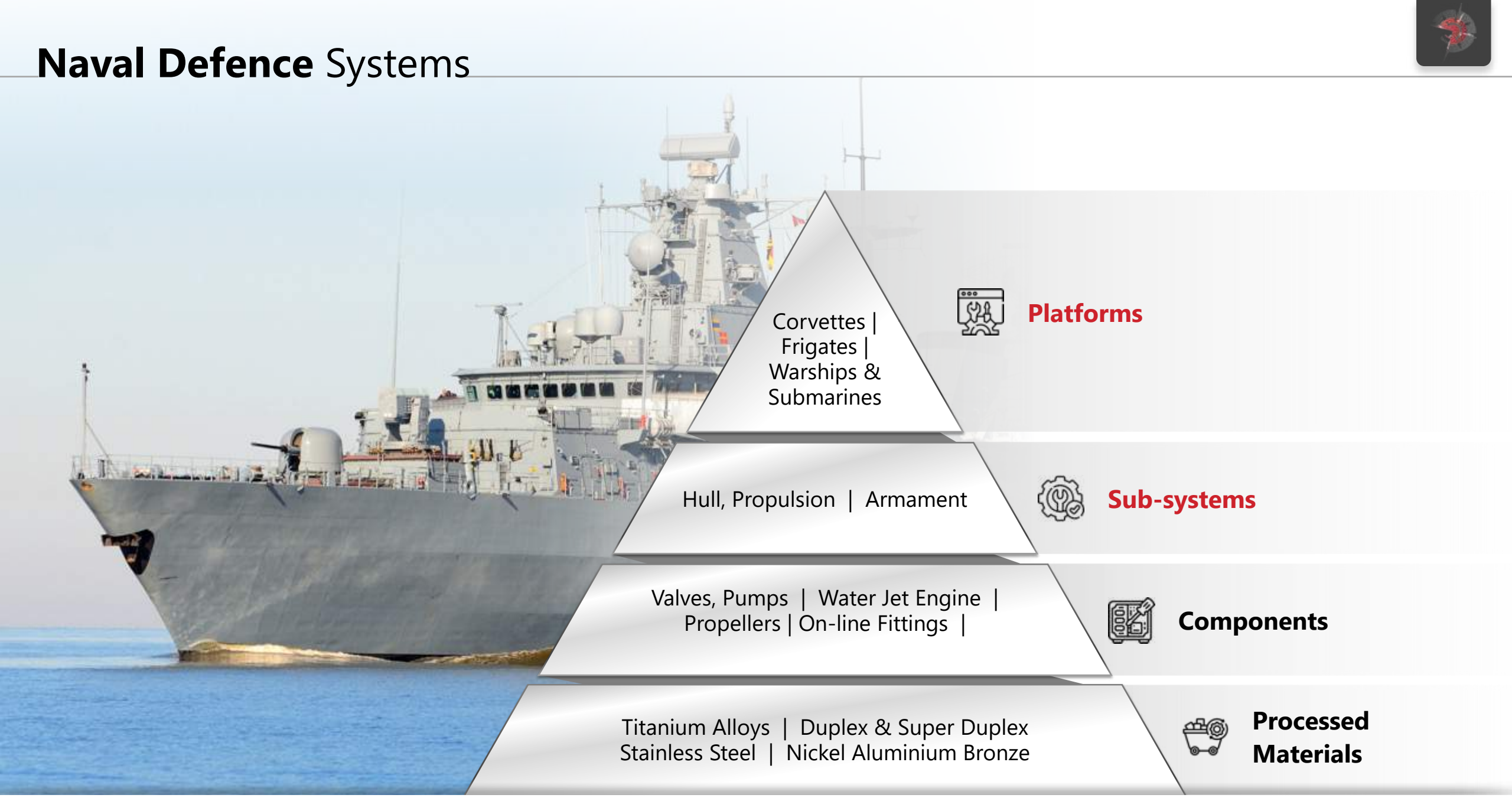
Naval Defence Systems



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Technology Pyramid - **Naval Defence**

Decks
- Aluminium
- Composites
- Chromium
- Nickel
- Molybderum
- **Titanium**

Hanger, habitations, pipes
- Tungsten
- Nickel
- Chromium
- Molybderum
- Aluminium

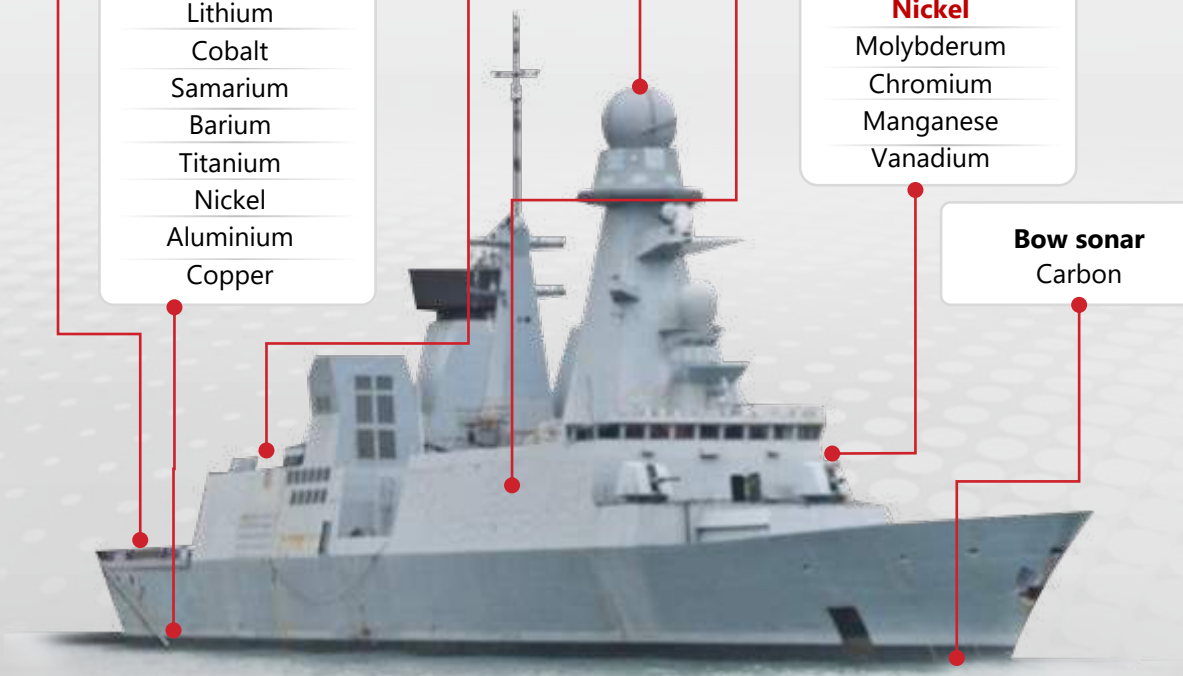
Radar
- Gold
- Gallium
- Aluminium

Hull
- Nickel
- Chromium
- Molybderum
- **Titanium**

Propulsion
- Lithium
- Cobalt
- Samarium
- Barium
- Titanium
- Nickel
- Aluminium
- Copper

Gun
- **Nickel**
- Molybderum
- Chromium
- Manganese
- Vanadium

Bow sonar
- Carbon

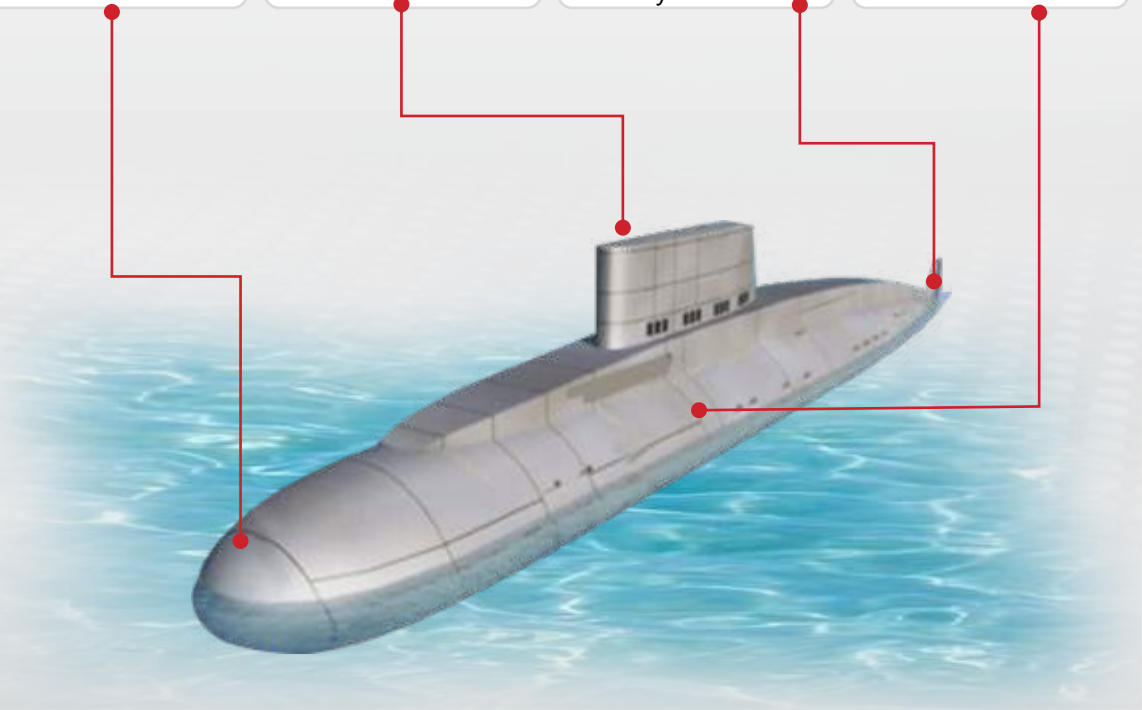


Torpedoes
- Lithium
- Aluminium
- Magnesium
- Manganese
- Zirconium
- Chromium

Periscope, sensors
- Carbon composite
- Piezoelectric ceramics

Propulsion
- Lithium
- Cobalt
- Samarium
- Barium
- Titanium
- Nickel
- Aluminium
- Copper
- Molybdenum

Hull
- Nickel
- Chromium
- Copper
- Molybdenum
- Titanium
- Manganese
- Silicon
- Vanadium
- Niobium



Source: European Commission

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Indian **Naval Defence** Opportunities

INDIAN NAVY MAY REPEAT KALVERI CLASS ATTACK SUBMARINE ORDER: REPORT

TUESDAY, JANUARY 24, 2023 **BY** INDIAN DEFENCE NEWS

On July 20, 2021, the Ministry of Defence floated a request for proposal (RFP) for AIP equipped six Project 75 I class submarines at the cost of ₹40,000 crore. Since it is normal for Indian military-civilian bureaucracy to take at least 10-15 years to complete any big acquisition, it means that the current Scorpene submarine line at MDL will go to seed with the next set of 75 I class being built in late 2030s with a fresh massive investment on submarine line. All this appears to be set for a change.

Cochin Shipyard (CSL) link

According to ICICI Securities, CSL's Q2FY23 performance was impacted mainly on account of slower than expected execution; possibly in its major active projects. Order backlog is estimated to be at around Rs. 21,000 crore post the recent vessels contract of Rs 1,000/- crore from Europe.

The majority of the large contracts in order-book is expected to witness meaningful execution from FY24 onwards (like 6 NG Missile Vessels, ASW corvettes, export order of vessels). Moreover, Ship repair segment, which is already doing better, would see more good opportunity in the future post the expansion of facilities at Mumbai, Kolkata and Port-Blair, it said.

Rs 48,000-cr orderbook nominated primarily by Navy; margins pegged at 7.5-8%: Mazagon Dock Shipbuilders

CNBC TV18

By **Mangalam Maloo** | **Nigel D'Souza** |

Nov 11, 2021 9:02 PM IST (Published)

With record ₹22,930-cr order book, Garden Reach Shipbuilders eyesdouble turnover

November 25, 2022 - Updated 07:47 pm IST | November 25

The MD said he was "eagerly looking forward" to the company's riverine electric passenger vessel being built for West Bengal govt, as electric vessels are the need of the hour

BY BL CHENNAI BUREAU

Government of India owned naval shipbuilder, Garden Reach Shipbuilders & Engineers Ltd, has a record order book of ₹22,930 crore. This is for seven shipbuilding projects, two of which are expected to be completed in the current year. The other five will be executed in 2024-25.

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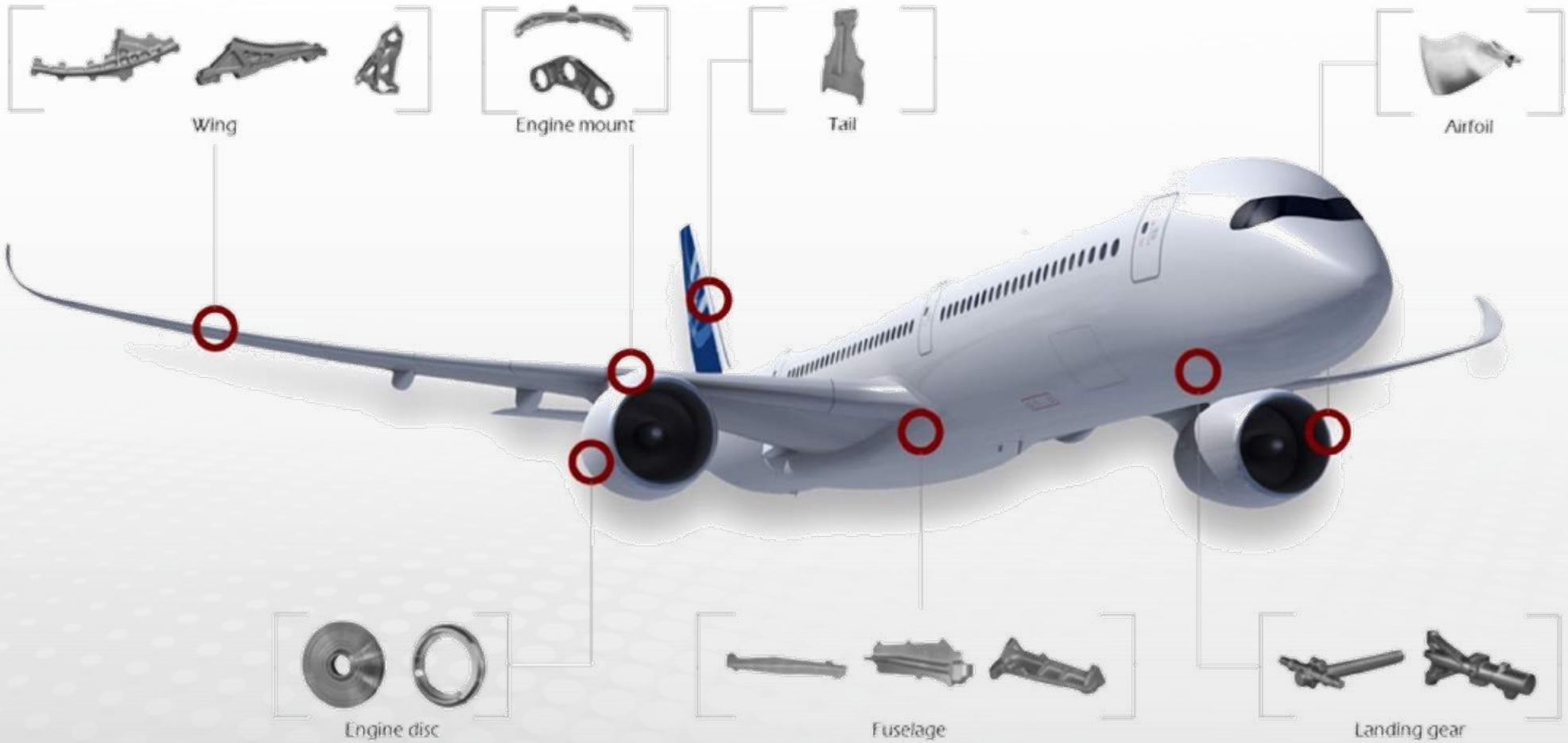
Global **Civil Aerospace**



Source: European Commission

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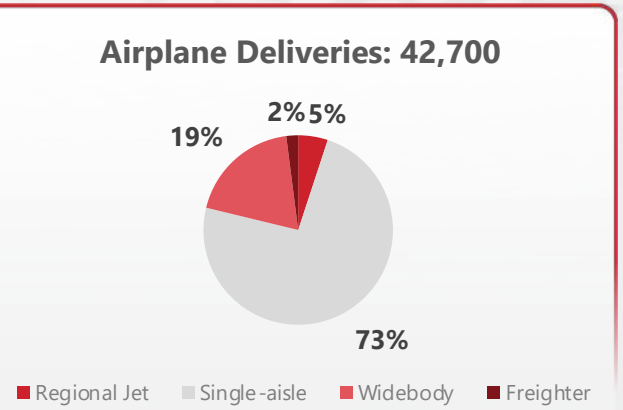
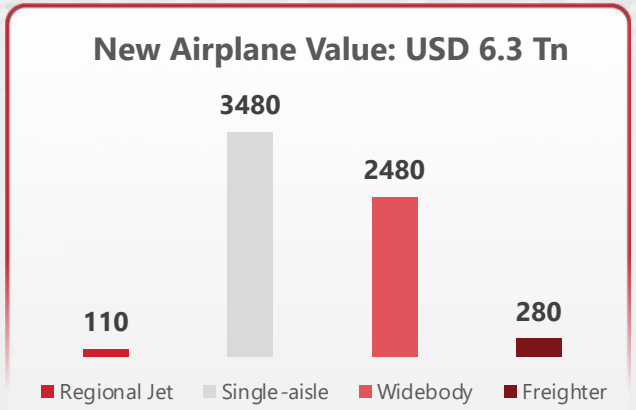
Global **Civil Aerospace** Opportunities

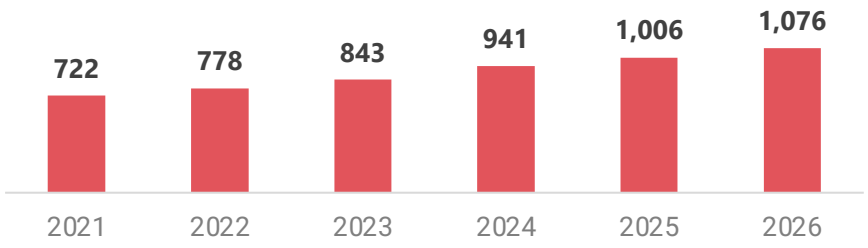
42,700 New aircraft in next 20 years (2043)

Value in USD **6.3** trillion

44% Will replace older aircraft in service







The Indian Aerospace & Defence market to reach
~US$ 70 billion by 2030

Tapping the opportunity in Aerospace and Defence Market (A&D)

Industry is facing supply-chain disruptions amid geopolitical issues

Creating opportunity for Asian players (along with the China plus one policy India is a bigger beneficiary in Aerospace and Defence Market)

The Government's push for Make in India and exports to thrust domestic demand in A&D sector

PTC's technological advantage is setting stage to cater to opportunities in this market

Source: Titanium USA Report | IBEF

PTC INDUSTRIES AEROLLOY TECHNOLOGIES

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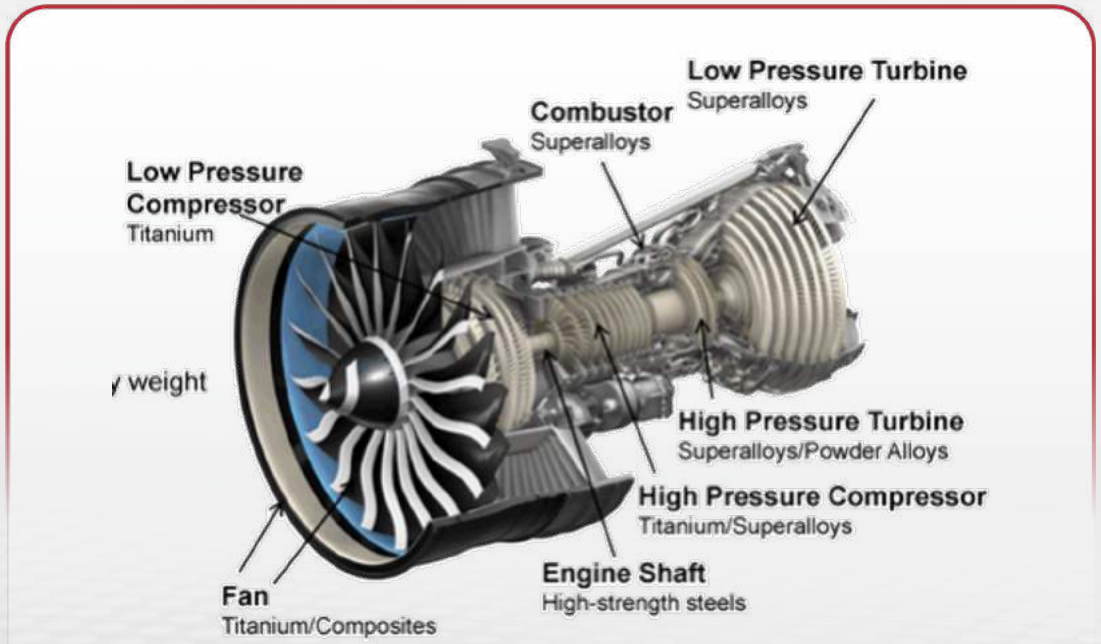
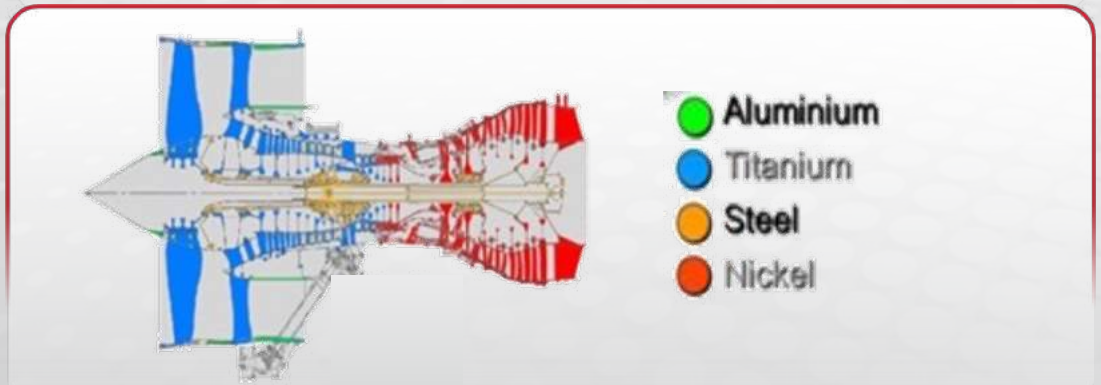
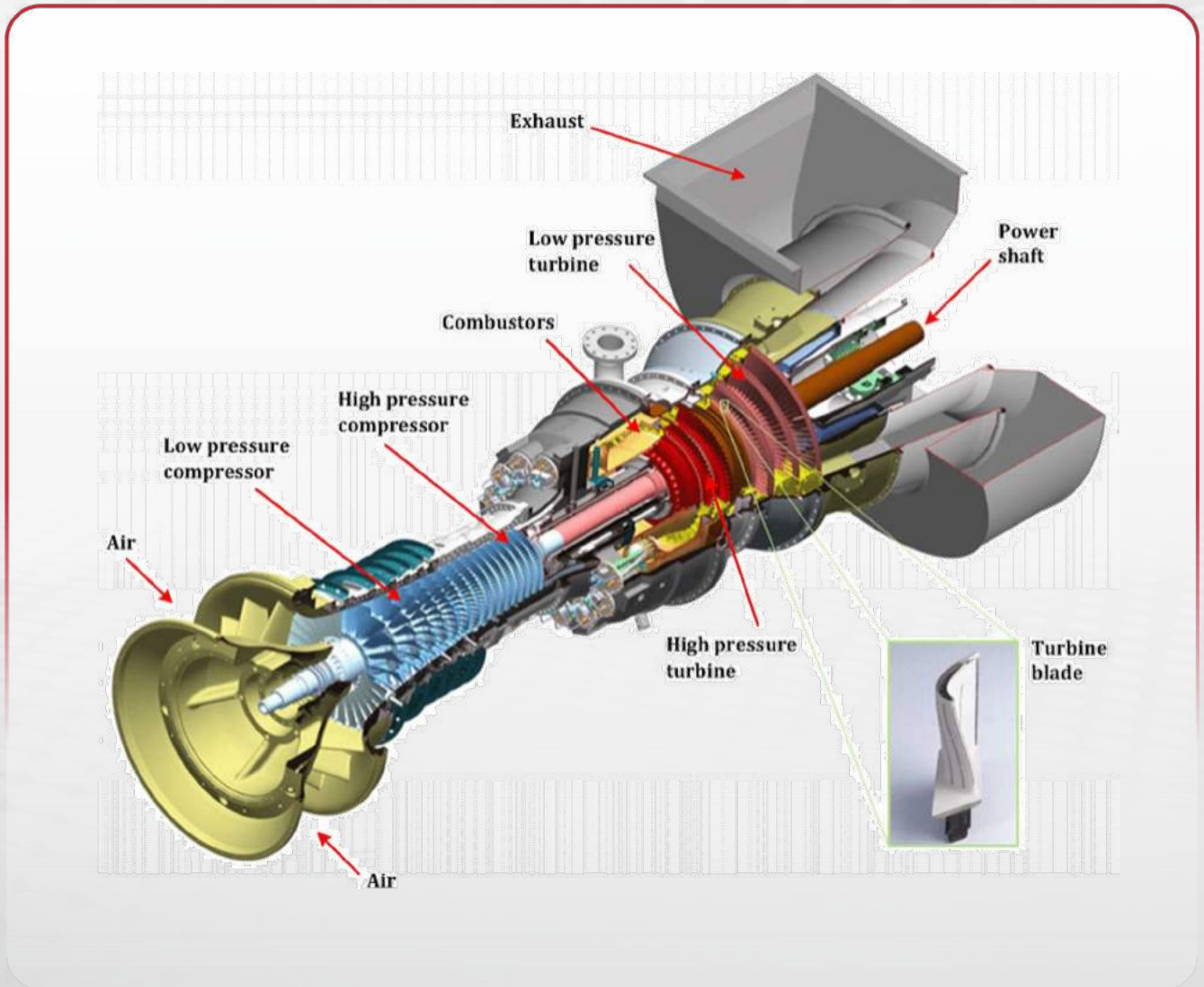
Aero Engines **&** Gas Turbines





Source: European Commission



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Indian **Aero Engines** Opportunities

21ST CENTURY PROPULSION FOR INDIAN NAVY WARSHIPS: ROLLS-ROYCE AND HAL MOU FOR MT30 MARINE ENGINES

Sunday, May 8, 20121 by Indian Defence News

DEFENCE EXPERTS URGED THE INDIAN GOVERNMENT TO MAKE AERO ENGINES IN INDIA FOR SELF RELIANCE

Sunday, July 21, 2019 by Indian Defence News

DRDO'S TURBO FAN ENGINE FOR UAVS WILL MAKE INDIA SELF-RELIANT IN THIS COMPLEX AND CRITIVCAL TECHNOLOGY: G. SATHEESH REDDY, SECRETARY DDR&D & CHAIRMAN DRDO

Thursday, November 25, 2021 by Indian Defence News

Greater use of lightweight materials

Fan Frame

LPC Vanes & Blades

Fan Hub Frame

Fan Frame Shroud

Fan Blade

+30% of Titanium per **Leap** Engine

Titanium main parts for **leap**

- Fan Disk and Fan Blade Leading Edge
- Fan Hub Frame and LPC Vanes & Blades
- **Fan Frame Shroud, Struts & Shroud Link**
- Bearing Housing and Supports
- Kit Engines, Tubes, Struts..

AMCA Aero Engines: The project's initial development cost is estimated to be close to **Rs. 25,000 cr, out of which engine development program is Rs. 15,000 cr**

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Medical Implants

Knee Femoral Component

Polyethylene Articulating Surface

Stemmed Tibial Plate

Knee Replacement Market Size

Total Knee Replacement Market Size was valued over USD 9 Billion in 2019 and is expected to grow at over 4.5% CAGR up to 2026. Total Knee Replacement is a surgical procedure to resurface a damaged knee due to arthritis. Growing trend among doctors for using robotics technologies to treat knee arthroplasty is booming.

TOTAL KNEE REPLACEMENT MARKET

2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2028

>$9.0BN — **CAGR (2020-26): 4.0%** — **>$12.0BN**

CAGR (2020-26)

- **6.0%** — Revision Knee Replacement System
- **9.0%** — Technology Assisted Surgery Segment
- **4,7%** — Ceramic on Plastic Segment
- **6.1%** — ASC Segment

Regional Insights

- APAC Market Value (2019): **>$1.7 BN**
- UK Market CAGR (2020-26): **4.3%**
- Germany Market Value (2019): **>$430 MN**
- NA Market Value (2026): **>$5.8 BN**

Total Knee Replacement Market Share - Industry Size Report 2018-...
www.gminsights.com/industry-analysis/total-knee-replacement-market

Source: European Commission

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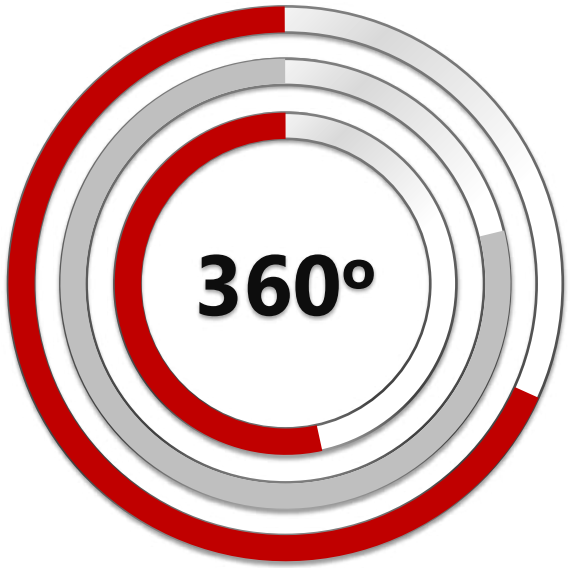
Platform Independent Core Manufacturing Technologies

Established Capabilities to Cater to entire Spectrum of A&D Sector



Civil Aviation

- Torque tubes
- airframe structural
- engine mounts
- turbine frames
- engine liners
- swirlers and injectors

Air Defence

- Airframe Structures
- Intermediate casings
- Bearing Housings
- Re-fuelling nozzles
- Turbine oil-tanks
- Engine Gearboxes

Land Defence

- Suspension arms
- Muzzle Brakes
- Lightweight artillery structures
- Armour Protection

Naval Defence

- Pump components
- valves
- on-line fittings
- radar structures
- propellers and propulsion components

Space

- Propellant tanks
- Propulsion nozzles
- bulkheads
- liquid fuel pump casings and impellers
- lightweight structurals

Aero Engines

- Turbine frames
- blades, buckets and vanes
- bearing housings
- inlet and outlet structures

Strategic System

- Propellant tanks
- Propulsion nozzles
- bulkheads
- Pressure bottles
- lightweight structural

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PTC & Aerolloy **Technology Verticals**

Industrial Castings	Machining & Assembly	Titanium Castings	Super Alloy Castings	Controlled Microstructure	Titanium Alloy Mill	Super Alloy Mill
Replicast, Rapidcast, Investment Casting	CNC 5-Axis Machines; Assembly shop	Investment Casting; VAR; HIP	Investment Casting; VIM; HIP	Investment Casting; SX, DS, EQ	VAR, EBCHR, PACHR; Forging	Masteralloy VIM, VAR; Forging

INDUSTRIAL
CASTINGS & MACHINING

AEROSPACE
CASTINGS
GROUP

AEROSPACE
MATERIALS
GROUP

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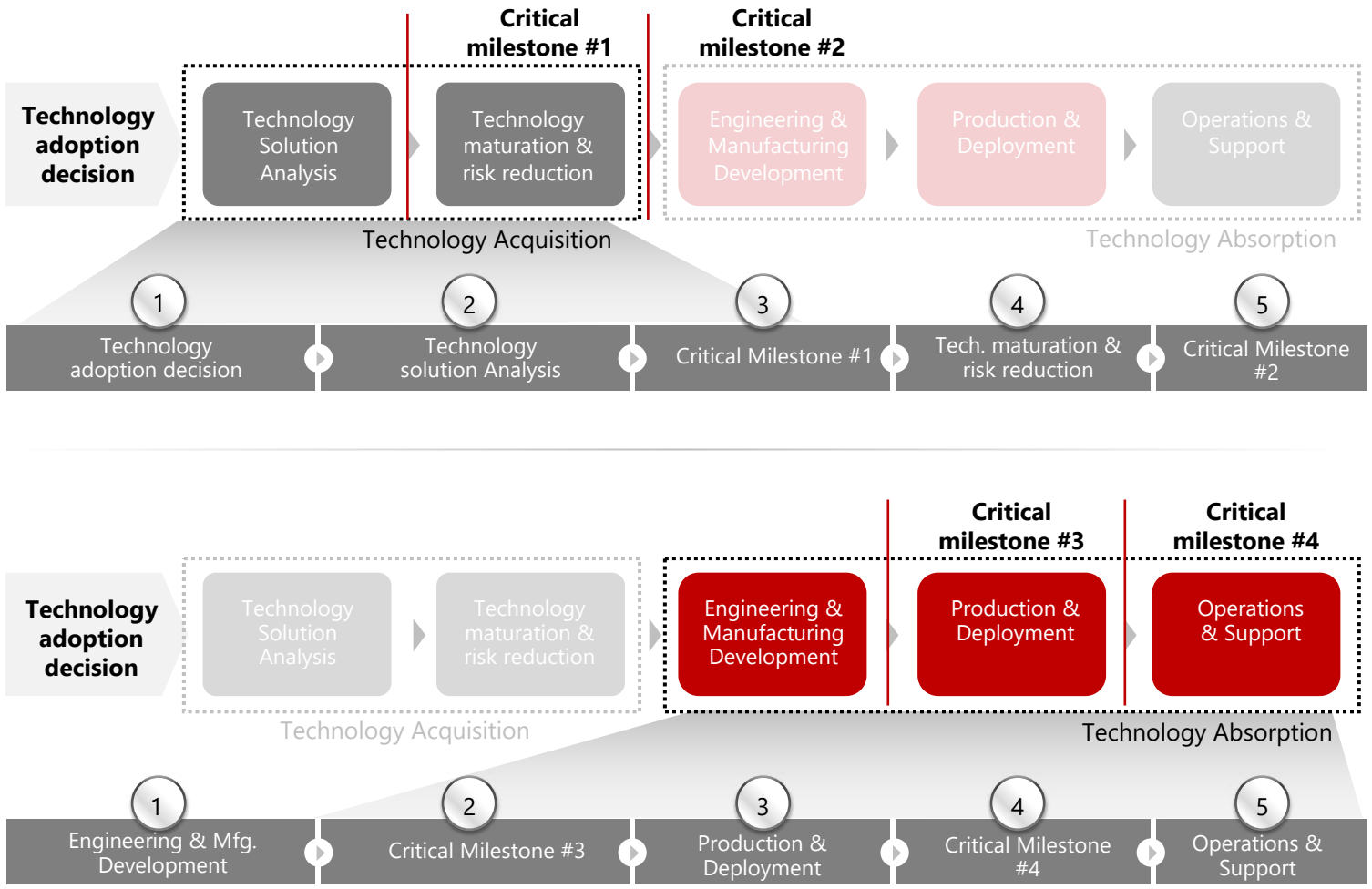
Technology Development Process

Readiness Phase	MRL	Product Development Cycle	Stage owner	Definition for PTC
Pre development decision	MRL 1		R&D team under CTO	Documentation of basic idea and identified potential applications and identification of basic mfg. implications
	MRL 2			Technology concept and / or application formulated, and mfg. concept developed
	MRL 3			Manufacturing proof of concept developed
Solution Analysis	MRL 4	Concept Initiation Gate 1 Critical for PTC		Capability to produce the technology in a laboratory environment
Technology Maturation & Risk Reduction	MRL 5	Concept & Technology Development		Capability to produce prototype components in a production relevant environment
	MRL 6	Gate 2 Critical for PTC		Capability to produce a prototype systems or subsystem in a production relevant environment.
Engineering & Mfg. Development	MRL 7	Product Development Gate 3	Technology Development team under CTO	Capability to produce systems, sub systems or components in a production representative environment.
	MRL 8	Product Development Gate 4 Critical for PTC	To be decided	Pilot line capability demonstrated. Ready to begin low-rate production
Low-rate initial production	MRL 9	Initial Production Gate 5	CFT invoicing Technical team (under CTO), BE and Ops.	Low-rate production demonstrated. Capability in place to begin Full Rate Production.
Full-rate production	MRL 10	Rate Production	Operations Team only	Full rate production demonstrated and lean production practices in place.



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Developing **Cutting-Edge Technologies**

REPLICAST | RAPIDCAST | INVESTMENT CASTING | TICAST | FORGECAST | POWDERFORGE | PRINTCAST | TITANIUM POWDER

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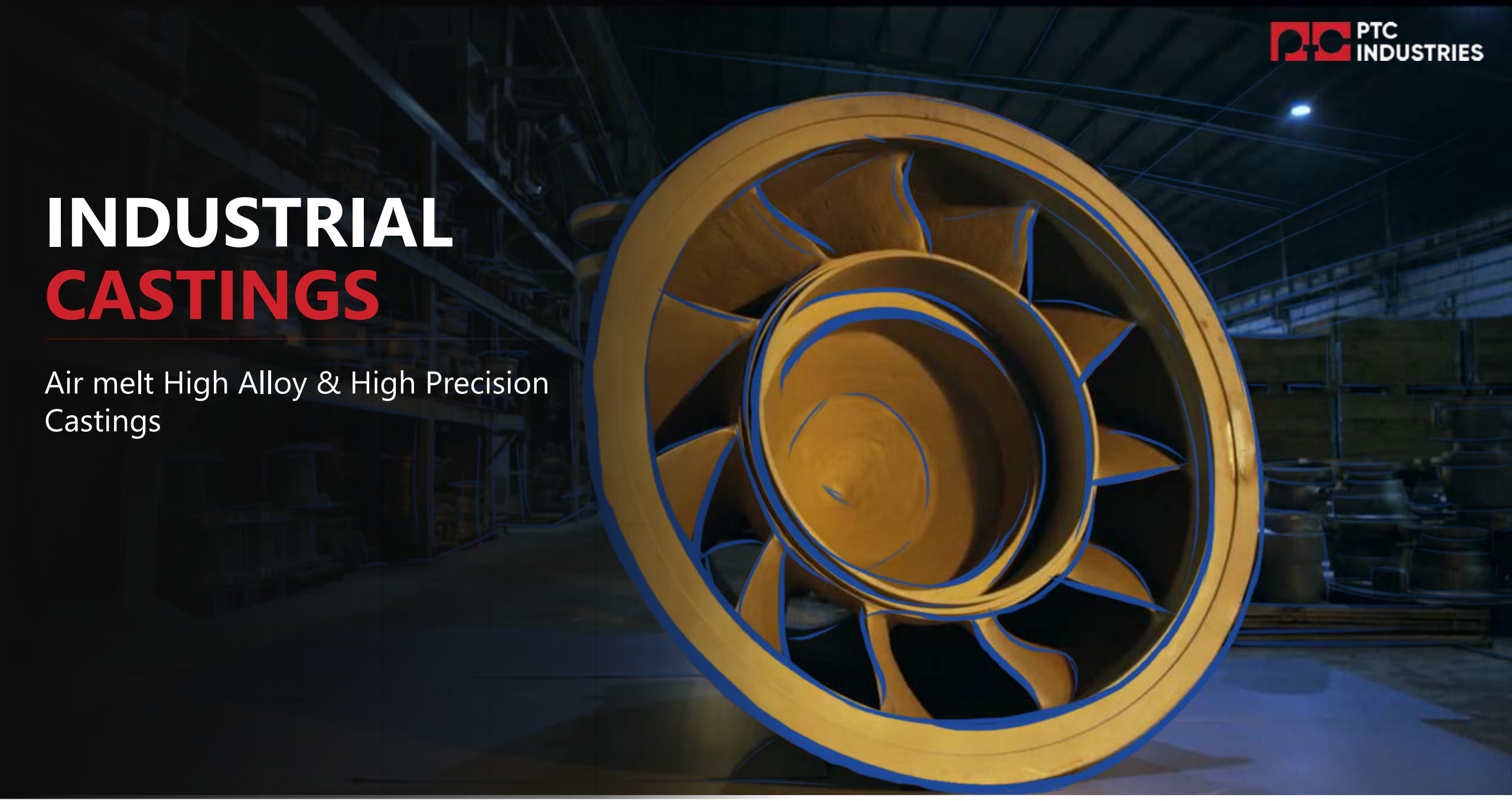

INDUSTRIAL CASTINGS

Air melt High Alloy & High Precision Castings

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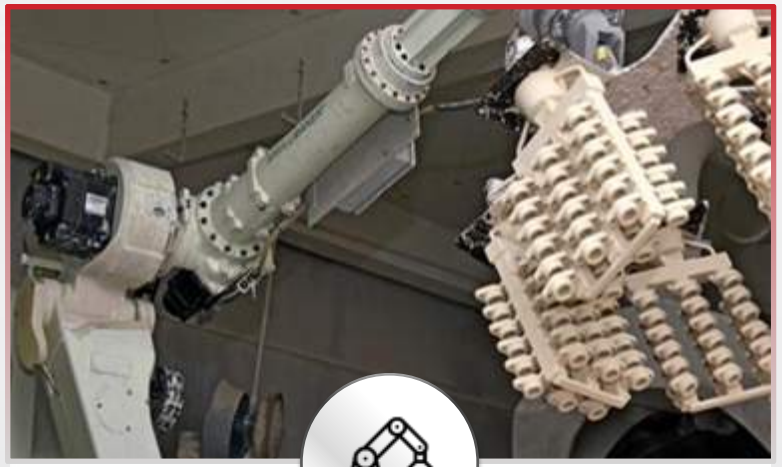
Technology – **Rapidcast, Replicast, Investment Casting**



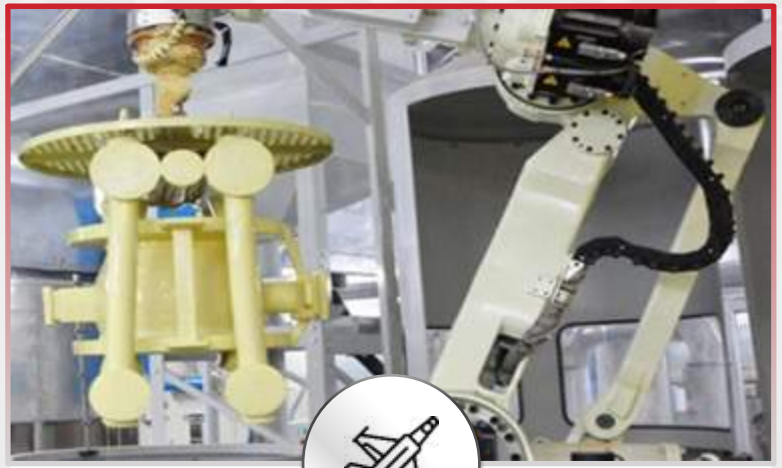
RAPIDCAST

Quality – Value – Speed
up to **5,000 kgs** single piece

7-Axis CNC machining robots
to machine patterns

REPLICAST

Near net shape casting solutions
using ceramic shells with weight
range up to **2,500 kg**



INVESTMENT CASTING

Microstructure controlled castings
(Single Crystals and Directionally
Solidified) for Aeroengines

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Application of Technology (**Industrial**)

Oil & Gas	 Segment Ball	 Ball Valve Body	 Ball Valve Body	 Pump Casing
LNG	 Butterfly Valve Body	 Globe Valve Body	 Buttweld Valve Body	 Butterfly Valve Flange Body
Food Processing	 Valve Housing	 Tunnel	 Rotary Valve Body	 Rotary Valve Body
Pulp & Paper	 Housing	 Feed Screw	 Valve Box	

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PTC INDUSTRIES

AEROSPACE
CASTINGS GROUP

Titanium and Super Alloy Castings

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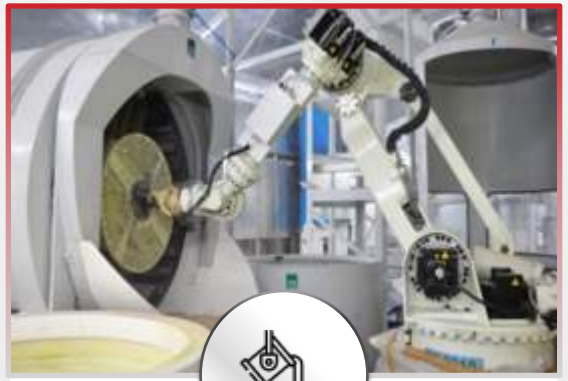
Technology – Ti Cast, Controlled Microstructure, ForgeCast



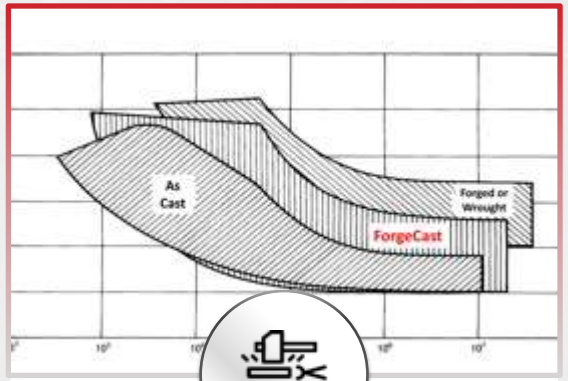
TICAST

Vacuum melt casting of Reactive alloys

Investment casting, PrintCast, Replicast

Controlled Micro-Structure

Technology helps to control both the cast microstructure and defect formation



FORGECAST

Where castings and forgings converge

Near net shape castings with forging properties

Hot Isostatic Press (HIP)

Used to eliminate pores in metal components

A must technology for critical components like Aerospace

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TiCast - Titanium and Super Alloy Castings

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Controlled Microstructure Castings (EQ, DS, SX)

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ForgeCast - Hot Isostatic Pressing (HIP)

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New Aerospace **Castings Facility**

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New **Large Titanium Casting** VAR

Total Liquid Metal (kgs)	Annual Casting Capacity	Maximum Dimensions	Minimum wall thickness	Furnace type
400Kgs	**300Tonnes**	**1,700mm**	**3mm**	**Vacuum Arc Remelter (VAR**

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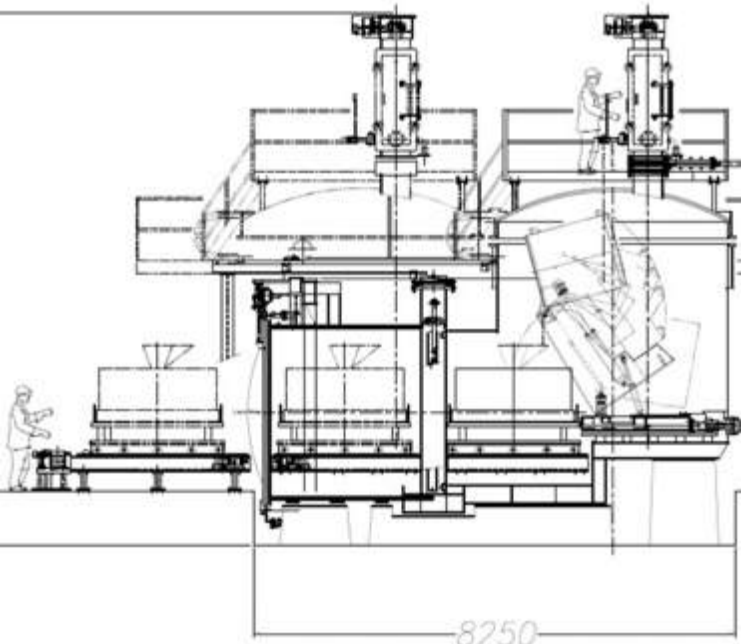
New **Large Super Alloy Casting** VIM



Total Liquid Metal

1000 Kgs

Annual Casting Capacity

300 Tonnes

Maximum Dimensions

1,800 mm

Minimum wall thickness

3 mm

Furnace type

Vaccum Induction Melting (VIM)

Alloys

Inconel 718, 706, 713 LC, 738 LC; M247 LC

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New Large **Vacuum Heat Treatment** Furnace

Total Loading Weight (kgs)

1500 Kgs

Furnace Dimensions (WXH)

1200X1200 mm

Maximum Dimensions (L)

1,500 mm

Minimum wall thickness

3 mm

Furnace type

Vacuum Heat Treatment

Installed by

Mid 2024

Commissioned by

End 2024

Status

Ordered

Alloys

All Titanium and Super Alloy grades

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AEROSPACE
MATERIALS GROUP

UPDIC Campus – **Aerospace Materials Mill**

Titanium and Super Alloy Mill
Ingots, Billets, Rods, Bars, Slabs, Plates

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New Aerospace Materials Mill

Acquired - Electron Beam Cold Hearth Remelting (EBCHR) furnace and Vacuum Arc Remelter (VAR) through its wholly owned subsidiary "Aerolloy Technologies Limited (ATL)"

Manufacturing Titainum (Ti) Ingots

One of the few global players to have capabilities to manufacture Titanium Ingots

Manufacture Ti Ingots from Recycled / Scrap Titanium

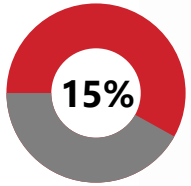
Titanium alloy ingots manufactured by recycling & remelting of scrap have equal acceptability compared to ingots manufactured using Titanium sponge (from ore)

Capacity

The EBCHR furnace will have an installed capacity of 5,000 tonnes p.a. and VAR Furnace will have capacity of 1,500 tonnes p.a. for manufacturing Titanium ingots.

Recent Supply Chain Disruption

Global supply chain, gives strategic advantage of having a facility to manufacture titanium alloy ingots with up to 80% of readily available & cost-effective Titanium scrap is a highly profitable proposition for PTC



PTC will possess a market share of over 15% of the world recycled Titanium Material production

World's largest single site Titanium recycling facility in India

Phase 1: Investment ~Rs. 150 crores

At full capacity: Potential Revenue multiple of 10-15x with robust margins

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Titanium & Super Alloy Metal Manufacturing

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Technology – **Titanium & Super Alloy material manufacturing**

Vacuum Arc Remelter (VAR)

A secondary melting process for the production of metal ingots with elevated chemical and mechanical homogeneity for highly demanding applications

Electron Beam Cold Hearth Remelting (EBCHR)

This process is of great importance for the processing and recycling of scrap and waste of reactive metals, especially Titanium

Plasma Arc Cold Hearth Melting (PAM)

Used for melting and remelting of Alloys (e.g. Titanium Alloys) which contain larger amounts of alloying elements with high vapor pressure that would evaporate under deep vacuum conditions

Vacuum Induction Melting (VIM)

A primary melting process for the production of Super Alloy metal ingots with elevated chemical and mechanical homogeneity for highly demanding applications

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Masteralloy **Vacuum Induction** Melting Furnace (VIM)

VIM

Maximum Ingot Weight (kgs)	Annual Melting Capacity	Maximum Ingot Diameter	Maximum Ingot Length	Annual Melting Capacity
1,000 Kgs	600 Tonnes	400 mm	1,000 mm	1,200 Tonnes

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Vacuum Arc Remelting Furnace (VAR)

VAR

Maximum Ingot Weight (kgs)	Minimum Ingot Diameter	Maximum Ingot Diameter	Maximum Ingot Length	Annual Melting Capacity
12,000 Kgs	600 mm	1,020 mm	3,300 mm	1,500 Tonnes

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Plasma Arc Cold Hearth Refining Furnace (PACHR)

PACHR

Maximum Ingot Weight (kgs)	Minimum Ingot Diameter	Maximum Ingot Diameter	Maximum Ingot Length	Annual Melting Capacity
250 Kgs	100 mm	150 mm	3,000 mm	200 Tonnes

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Electron Beam Cold Hearth Refining Furnace (EBCHR)

EBCHR

Maximum Ingot Weight (kgs)	Min Ingot/(Slab) Dia/(TXW)	Max Ingot/(Slab) Dia/(TXW)	Maximum Ingot Length	Annual Melting Capacity
12,500 Kgs	600/(500X1050) mm	840/(500X1300) mm	5,000 mm	5,000 Tonnes

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Metals **Recycling**

Shows that **GreenTitanium®** will avoid **26.4 tonnes** CO_2 per tonne of Titanium produced by recycling compared to traditional methods. The volume of emissions avoided is expected to increase in the future as operations reach their nominal production rate. Using this benchmark at full capacity, Titanium ingots produced by PTC's newly acquired EBCHR further would reduce **132,000 tonnes** of CO_2 emissions.

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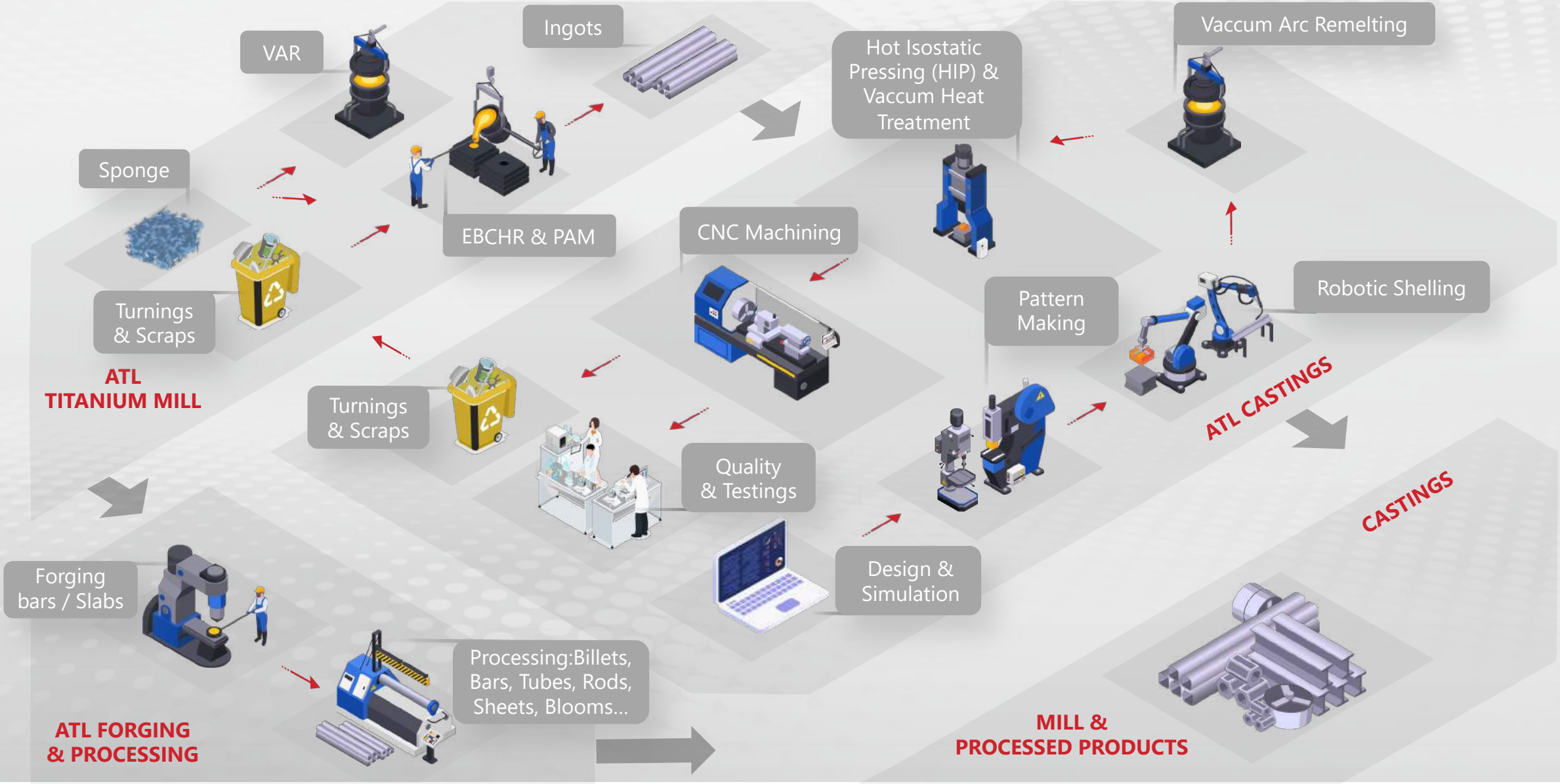
Sustainability



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Open Die **Forging Press**

Open Die Forge

Forge Press rating (Tonnes)
4,000 Tonnes

Min Billet/(Plate) Dia/(WXT)
80/(1,500X20) mm

Max Billet Diameter
600 mm

Maximum Ingot Length
4,000 Tonnes

Maximum Billet Weight
12,500 kg

Annual Forging Capacity
8,000 Tonnes

Installed by
Mid **2024**

Commissioned by
End **2024**

Status
Under procurement

Alloys
Titanium & Super Alloys

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Products

Titanium and Super Alloy Wrought Products

Ingots, Billets, Rods, Bars, Slabs, Plates

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MACHINING & ASSEMBLY GROUP

CNC & 5-Axis Machining & Assembly

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CNC Machining

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PTC
at a Glance

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Our **Journey**

THE ORIGINS

1960s

New Capabilities

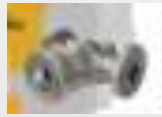
First investment Costing Foundry in India

Satish Chandra Agrawal
Begun with a dream of creating a new capability in the country

1970s

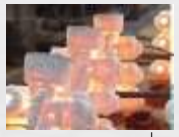
Indigening technology
Import replacements for
Import replacements for

First step towards self-relience



1965

Established Plasma arc melting capability
For manufacture of metal components in such metallurgies that the country had never produced



Vacuum melting technology

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Our **Journey**

1980s
GOING GLOBAL

At par with the world
PTC became capable of replacing import of industrial components

Make in India
Make for the world
Venture into exports

1981
Set up of in house research labs

1986
Winning Accolades
Recognition by Departmen of science & Technology

1988
Bringing technology
Technical col abenions or enhancing capability further

2006
Award winning technologies-Rapidcast

Award the National Award for R&D by Government of India

2007
Introducting automotion

First ever Robotic-Shell Coating system developed and installed

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Our **Journey**

THE LEAP
2010s

Harnessing intrinsic capability

Over 6,000 single piece Near-Net-Shape castings

2011

DSIR approved project – for RapidCast Technology

2014

One of 16 Hidden Gems

Identified as fast growing company with constant innovation

Time India Special Innovator of the Year

- CII Industrial Innovation Awards
- Rolls Royce Cost Leadership Award
- Uttar Pradesh Gomti Gaurav Award

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Our **Journey**

2017

Building a new capability from ground up

Best in class technologies

Robotics and automation

Advanced manufacturing

Global best practices

Latest methodologies and processes

State of the art/infrastructure

Design and simulation techniques

Cleans & Green

Sustainable manufacturing technologies

Reuse & Recycle

Clean energy from solar solar

Rainwater Harvesting

Passive Cooling

2015

Titanium Casting Capability FIRST time ever in India

Exotic & Hignor Alloy Powder

Add five Menufacturing

Exotic & Hignor Alloy Powder

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Our **Journey**

2021

Profound and long lasting benefits for the nation

दृष्टानां दृष्टप्रयोजनानां दृष्टाभावे प्रयोगो ऽभ्युदयाय ॥ १०.२.८ ॥

dṛṣṭānāṃ dṛṣṭaprayojanānāṃ dṛṣṭābhāve prayogah 'bhyudayāya || 10.2.8 ||

The path to prosperity is by the way of 'Prayogah',
experimentation and technological development - Vaisheshika Sutra

2019

TOWARDS PARITY

Experimentation of development through automation and robotics

MAKE IN INDIA

A path to excellence, enrichment, prosperity

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It's the proficient team which are **the strong pillar of the company**

MBA in Operations - University of Tulsa, Oklahoma & M. Sc in Finance - Boston College, Massachusetts

Industry Experience of 25+ years

Responsible for new technologies & continuous R&D efforts

Sachin Agarwal

Chairman & MD

Mr. Priya Ranjan Agarwal

Director, Marketing

Bachelor of Engineering (Mechanical)

Industry Experience of over 35+ years

Responsible for BD in key infrastructure projects & domestic marketing activities

Mr. Alok Agarwal

Director, Quality & Technical

B.E. in Metallurgy from IIT, Kanpur

Industry Experience of over 33+ years

Responsible for improving quality standards in Plant & obtaining various ISO & quality certifications

Ms. Smita Agarwal

Director & CFO

Qualified CA & DISA (ICAI)

Industry Experience of 20+ years

Led multiple strategic financial initiatives in PTC while implementing best practices for good governance and transparency

James Collins

Head Technology & Innovation

Qualified Metallurgist with a number of patents in his name

Industry Experience of 15+ years

Leading technical expert in field of Investment Casting, Vacuum Melting, Single Crystal & Directional casting & Powder Metallurgy

Stephane Bras

Head of Sales - Europe

Master degree in international Sales

Industry Experience of 20+ years

Responsible for developing the International Sales of the group, and to manage development projects.

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Certification

AS/EN 9100 Approved since 2021

ATL is an Approved Supplier to Israel Aerospace Industries (IAI)

Honeywell

ATL Is an Approved Supplier to Honeywell after completion of NSI Audit and Compliance

BAE SYSTEMS

ATL is an Approved Supplier to BAE Systems

SAFRAN

Safran Aircraft Engines Approval

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Our **Core Values**

agility

Agility is a key value for PTC driving success in today's ever-changing, globally competitive environment with the capacity for rapid change and flexibility

sustainability

Focus on sustainability is extremely important at PTC in protecting our environment and ensuring long-term sustainability for future generations

passion

Our thrust for passion is an internal motivator, a following of one's values, of one's intrinsic, unique desires constantly driving us to achieve higher standards

integrity

Our core value of integrity permeates all levels of our company and reflects our commitment to fostering a culture of ethics, transparency and good governance

respect

One of our foremost values is to treat our customers, partners, suppliers and team members, with mutual respect and sensitivity, recognizing the importance of diversity.

empathy

With an empathic approach, we work towards improving teamwork and relationships to build a productive and enjoyable working environment

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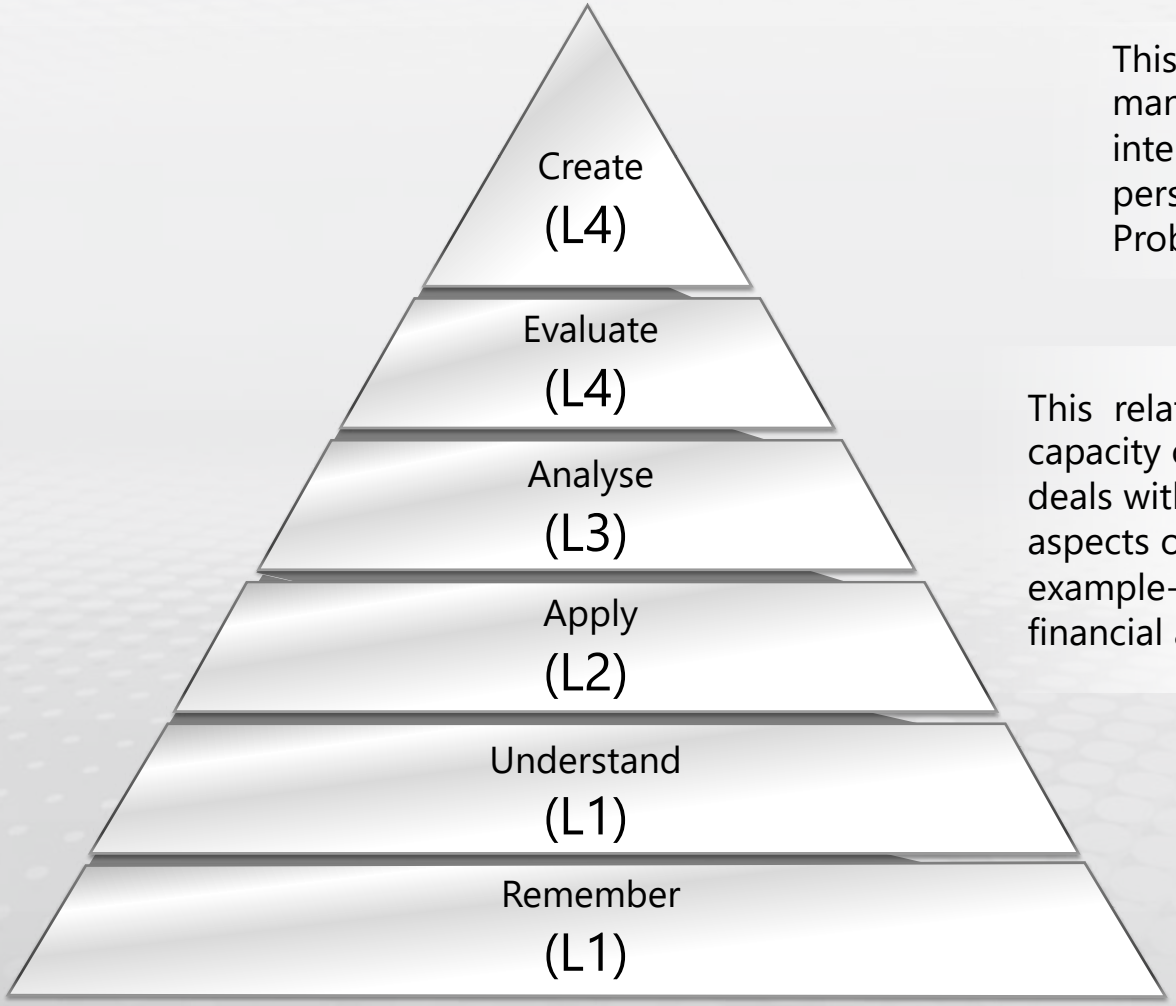
Our focus on **Human Resource Development**

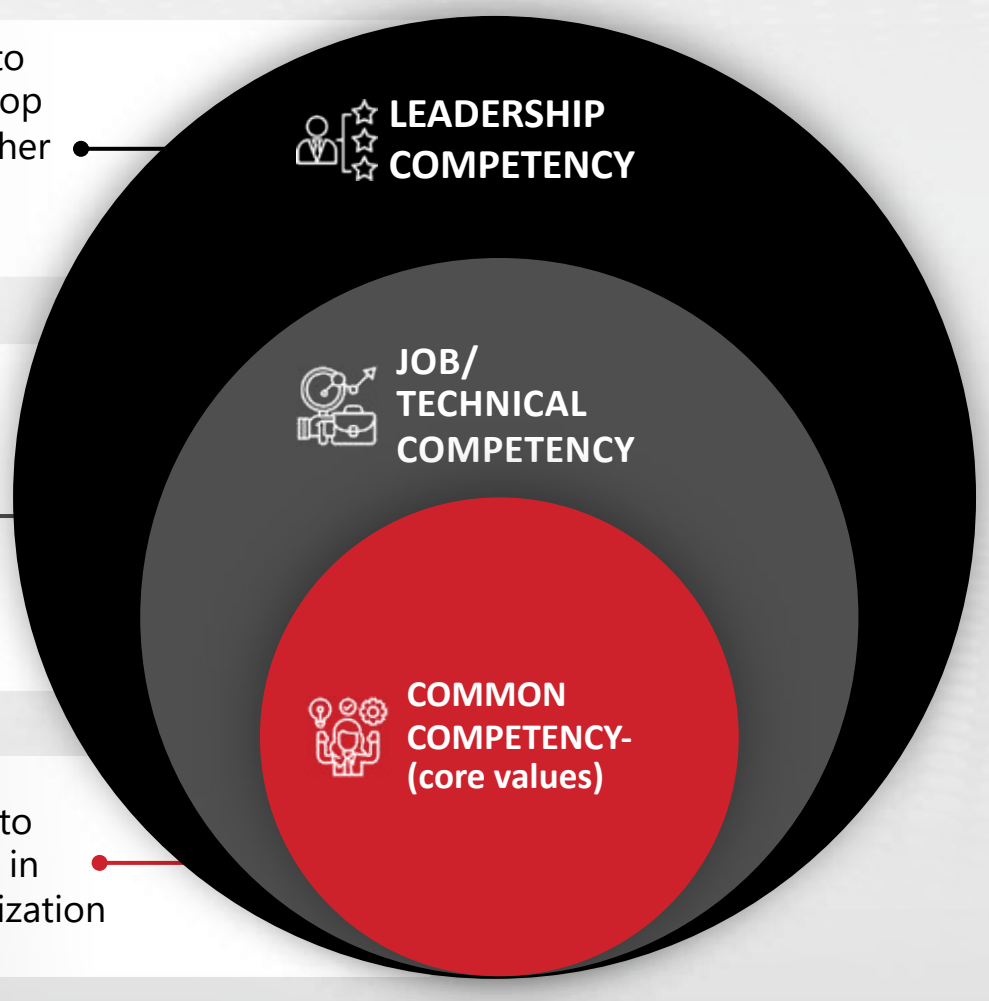
Training and Competency Development Framework.



This relates to ability to manage job and develop interaction with the other persons. For example- Problem solving.

This relates to functional capacity of work. It mainly deals with the technical aspects of the job. For example- market research, financial analysis etc.

Common to every one in the organization



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Current & Future **Renewable Energy Sources**

GREENHOUSE GAS PROTOCOL

PTC Industries and Aerolloy is committed to comply to Carbon footprint reduction and GHG protocols, in accordance with International standards, meeting the Paris Agreement targets

CURRENT

PARIS2015

- 750kW Roof Top Solar (AMTC)
- 750kW Wind Turbine (Mehsana)

FUTURE

SCIENCE BASED TARGETS

- 10-12MW Solar Plant (Aerolloy Metals)
- >50% Energy consumption from renewable sources

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Roadmap for **Carbon Footprint Reduction**

A:Environments leader (1,5° C /SBTi Validated Supplier & customers involved

A : Scope 3 action plan

B : Scope 3 Measured

B : Action plan in progess on scope 1& 2

C : Action plan defined on scopes 1 & 2 with objectives, schedule, organization, resources& budget

C : Targets on scope 1 &2 defined & communication done

D: Measures on scope 1 & 2 done with validated protocole (as GHG protocol),&verifiedby third party

D: Engaged in decarbonization approach with regular measures

E: No structured approach but wants to implements

E: No structured approach

Land at UP Defence Corridor

2025

Supply-chain involved / Low carbon freight …

2024

Green energy source implemented & /or energy reduction solution deployed …

2023

Carbon reduction strategy defined and targets in line with the Paris agreement

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Our efforts are getting recognised

Raksha Mantri's Award at #DefExpo2022

PO Handover by SAFRAN AIRCRAFT ENGINES at #AeroIndia 2023

MoU Signing with DASSAULT AVIATION at #AeroIndia 2023

AEROLLOY / PTC will exhibit at Paris Air Show 2023

54ème INTERNATIONAL PARIS AIR SHOW LE BOURGET JUNE 19-25, 2023 | 54e SALON INTERNATIONAL DE L'AÉRONAUTIQUE & DE L'ESPACE PARIS · LE BOURGET 19-25, JUIN 2023

BAE Systems, PTC sign MoU for making M777 Howitzer parts

The first sub-systems will be made by end of 2022

UP to excel in aerospace, defence sectors: Rajnath

Opens First Pvt Manufacturing Unit In Corridor

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Aerolloy Inauguration Nov 2021

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Financials

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Q4FY23 & FY23 Highlights

Particulars INR Cr	Q4FY23	Q4FY22	YoY	Q3FY23	QoQ	FY23	FY22	YoY
Total Income	**62.7**	52.7	19.0%	60.9	2.9%	**226.7**	185.2	22.4%
EBITDA	**18.9**	13.8	36.8%	16.1	17.4%	**66.1**	48.4	36.6%
EBITDA Margin%	**30.2%**	26.3%		26.5%		**29.2%**	26.1%	
Profit Before Tax	**11.4**	6.1	88.7%	7.9	45.7%	**33.7**	18.6	81.1%
Profit After Tax	**9.2**	4.6	99.1%	6.1	51.0%	**25.8**	12.8	101.5%
PAT Margin%	**14.7%**	8.8%		10.0%		**11.4%**	6.9%	

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Key **Financial Highlights (FY23)**

Total Income

Consolidated	CAGR Growth %
₹ 227 Cr	**9.9%**
Increased by 22% FY22	CAGR (FY19-FY23)

EBITDA

Consolidated	CAGR Growth %
₹ 66 Cr	**23.6%**
Increased by 37% FY22	CAGR (FY19-FY23)

EBITDA Margin (%)

Consolidated	
18.2 %	**29.2%**
In FY19	In FY23

Profit After Tax

Consolidated	CAGR Growth %
₹ 26 Cr	**24.0%**
Increased by 102% FY22	CAGR (FY19-FY23)

Property, Plant & Equipment

Consolidated	CAGR Growth %
₹ 226 Cr	**15.0%**
As on March 2023	CAGR (FY19-FY23)

Networth

Consolidated	CAGR Growth %
₹ 307 Cr	**21.6%**
As on March 2023	CAGR (FY19-FY23)

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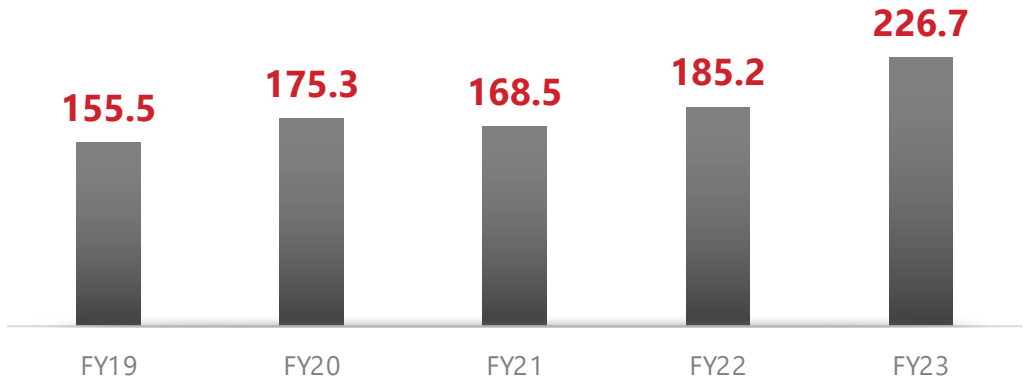
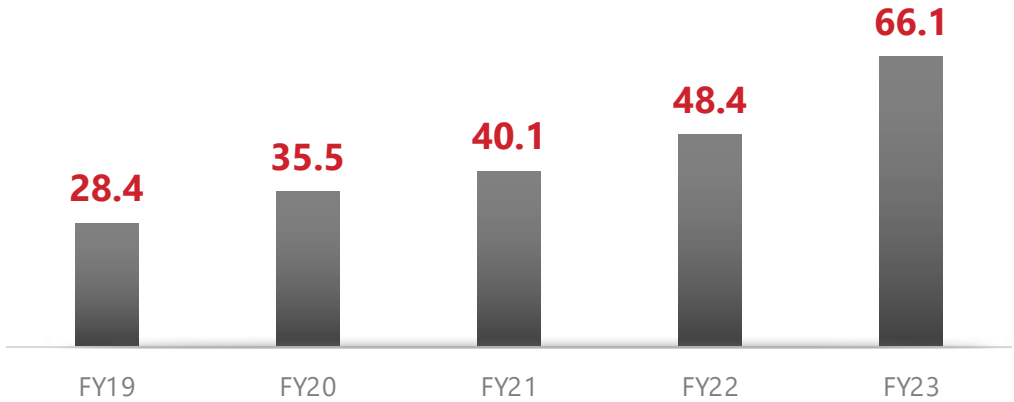
Key **Financial Highlights**

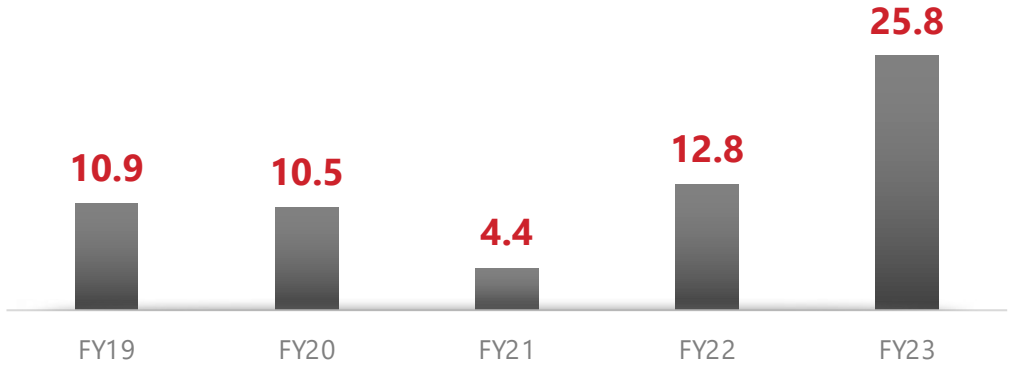
Total Income



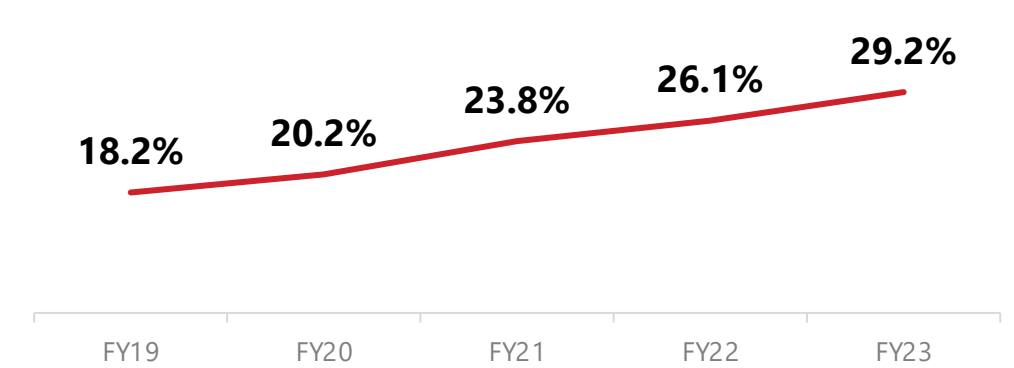
EBITDA



PAT



EBITDA Margin %



In Rs. Cr

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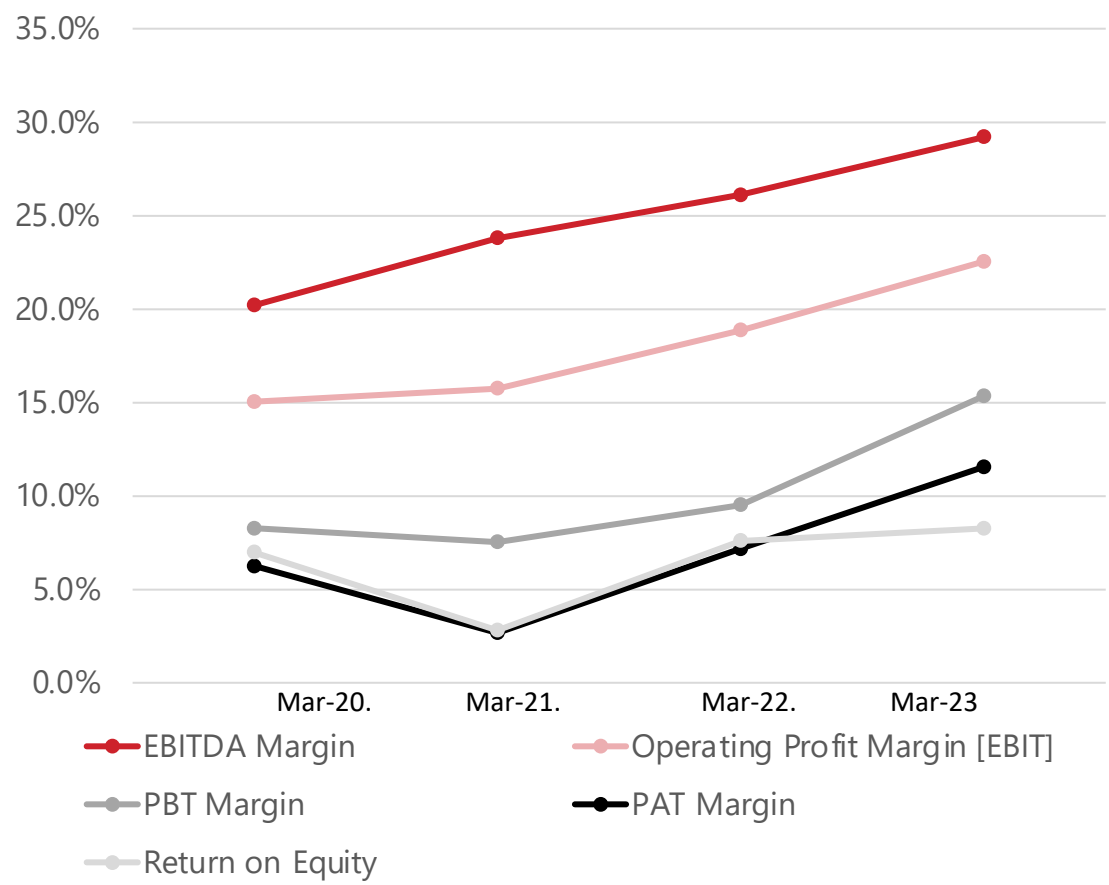
ACCOUNTING **RATIOS**

Particulars	As at March 31, 2020	As at March 31, 2021	As at March 31, 2022	As at March 31, 2023
Profitability Ratios				
EBITDA Margin	20.2%	23.8%	26.1%	29.2%
Operating Profit Margin [EBIT]	15.04%	15.75%	18.86%	22.55%
PBT Margin	8.27%	7.53%	9.51%	15.35%
PAT Margin	6.25%	2.67%*	7.16%	11.56%
Return on Equity	6.97%	2.80%*	7.60%	8.26%

Profitability Ratios



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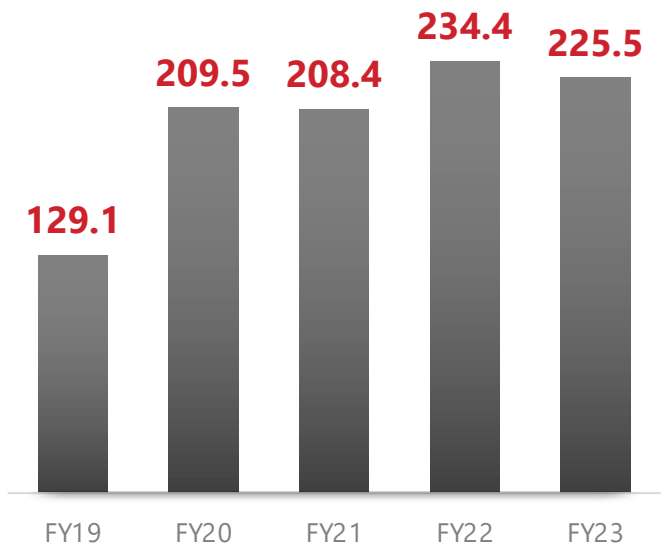
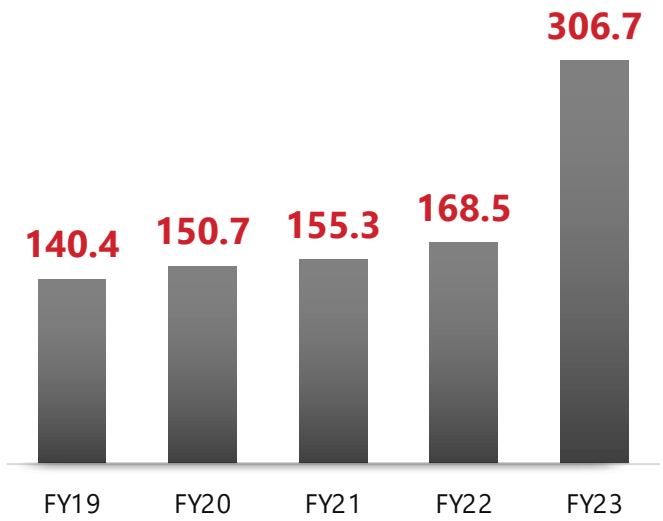
Key **Financial Highlights**

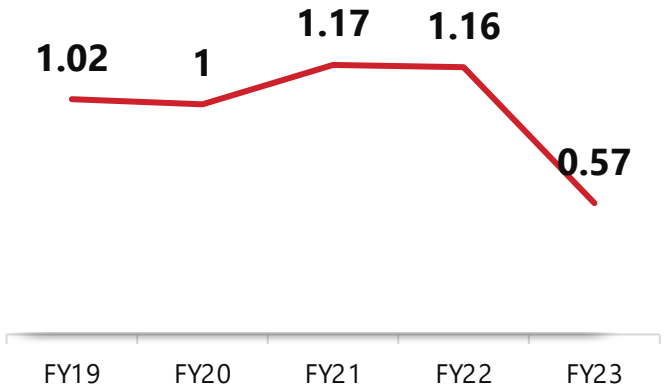
Gross Property, Plant & Equipment



Total Equity



Debt to Equity (x)



In Rs. Cr

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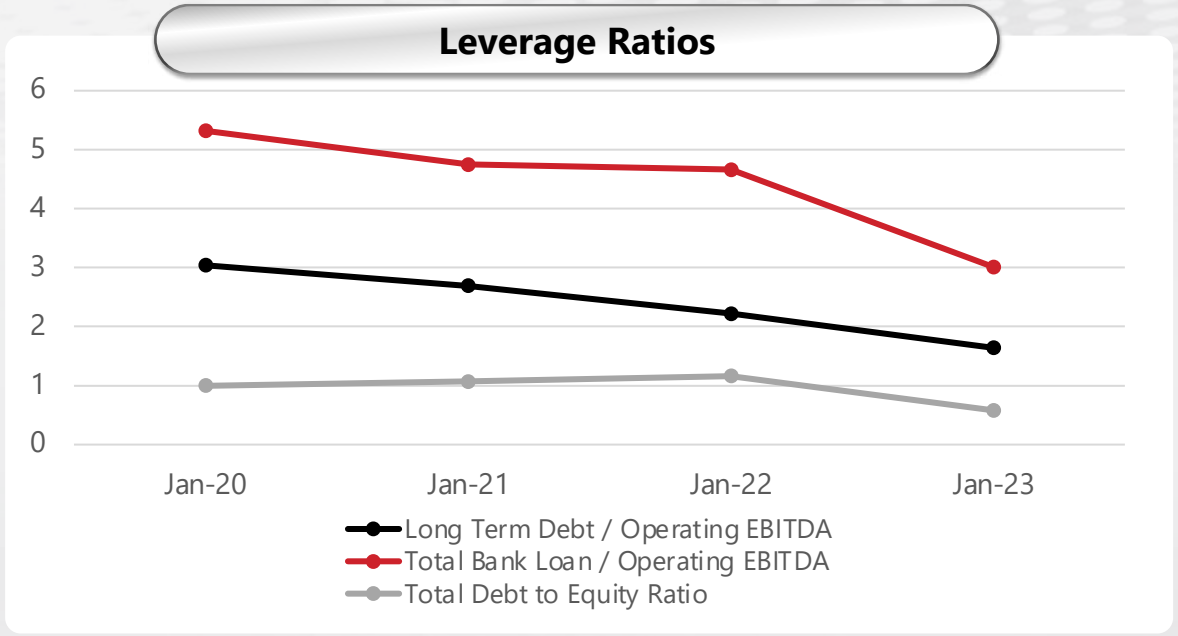
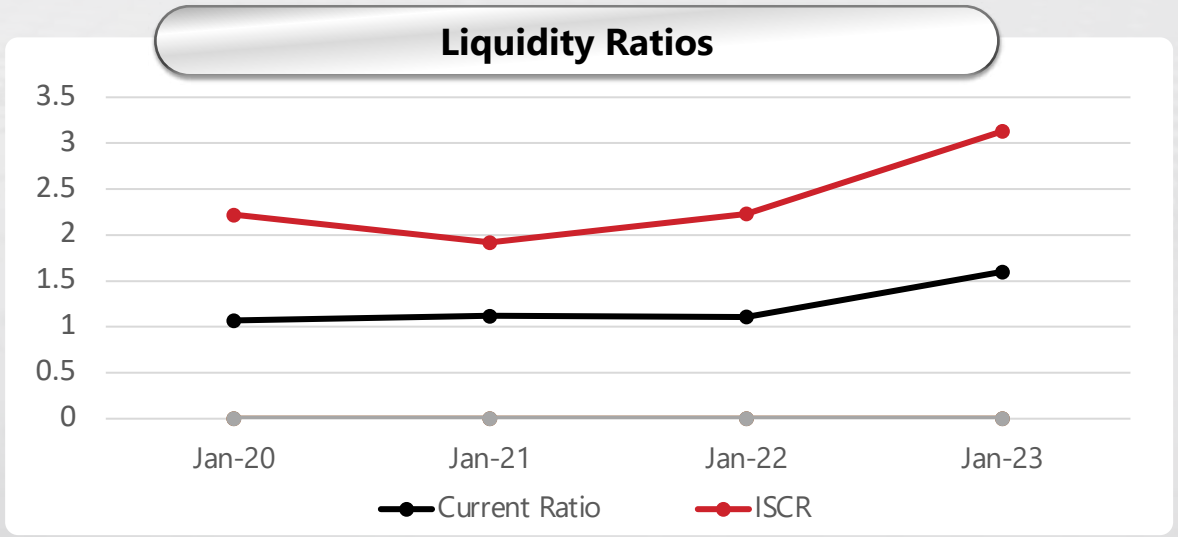
ACCOUNTING **RATIOS**

Particulars)	As at March 31, 2020	As at March 31, 2021	As at March 31, 2022	As at March 31, 2023
Leverage Ratios				
Long Term Debt / Operating EBITDA	3.04	2.69	2.22	1.64
Total Bank Loan / Operating EBITDA	5.32	4.75	4.66	3.01
Total Debt to Equity Ratio	1.00	1.07	1.16	0.58
Liquidity Ratios				
Current Ratio	1.07	1.12	1.11	1.60
Interest Service Coverage Ratio (ISCR)	2.22	1.92	2.23	3.13





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REALISATION OVER THE YEARS

Particulars	PTC Industries Limited						
	Unit	**FY18**	**FY19**	**FY20**	**FY21**	**FY22**	**FY23**
Total Revenue*	**Rs Crs**	**104.2**	**155.5**	**175.3**	**168.6**	**185.8**	**226.7**
EBITDA	Rs Crs	18.3	28.4	35.5	40.1	44.1	58.6
EBITDA/kg	Rs/kg	**149**	**168**	**204**	**268**	**281**	**380**
Revenue per kg	Rs/kg	**849**	**922**	**1005**	**1126**	**1183**	**1480**

* Includes revenue from sale of products, pattern development, tooling, waste and scraps, export incentives, income from power generation, gain on foreign exchange fluctuation (net) and other income

The uptrend in realizations is likely to continue as it focuses on higher sales of high value-added product segments

Company has in-house pricing mechanism which helps to determine price of the finished products

Regular and repeat parts (supplied for many years) - made with dies using RepliCast or Investment casting technologies

For prototyping or small quantities - made with virtual tooling using RapidCast/PrintCast

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Successful Fund Raise to **Fund the Expansion**

Mode of Fund Raise	Instrument
Rights Issue	The company offered **78,58,594** Fully Paid-Up Equity Shares for cash at a price of **Rs 10/-** each, totalling **Rs. 7.9 crores**, and the transaction has been successfully completed
Preferential Issue	Issue and allotment of **2,89,600** Equity Shares and **6,30,170** Fully Convertible Warrants convertible into an equal number of Equity Shares, on a Preferential basis, both at an issue price of **Rs. 2,349/-** per share/warrant, aggregating to a total of approximately **Rs. 214 crores**

Aggregate Fund Raise

Rights + Preferential Issue

~₹222 Crores

The Raised Funds will be utilized towards CAPEX funding

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PASSION & COLLABORATION

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