

# Awareness Workshop on Defence Production in Odisha.

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# General requirements

- Highest quality and reliability– workmanship, equipment and material and organisation
- Satisfy the requirements of the defence forces without compromise – the requirements keep changing during contractual period also
- Maintenance and upgradation during service – life cycle management
- Production facility may be required to be inspected by defence personnel
- Design Drawings have to be approved
- Tests and Trials – Performance check
- Defence applications should normally find their non-defence applications

# Developmental Activity

- DRDO
- Research Boards – funding for R&D work relevant to Defence Needs
- Technology Development Fund – Funding for Prototype Development of proven technology
- DRDO is also involved in Infrastructural Development for testing and analysis
- DRDO is also dedicated for resource generation – provides technology and know-how for new productions

# Entrepreneurship in New Technologies (alternate energies)

- Use of fossil fuels in transport and energy sectors is being discouraged due to green house effect
- In India we have missed the bus for marine diesel engine manufacture
- Can we develop Hydrogen Fuel based engines for defence transportation sector?
- Production of Hydrogen from renewable sources like fresh or sea water is another issue
- Development and manufacture of batteries for electrical energy storage is necessary for the entire defence sector.
- Manufacture of efficient electrically powered land, air and water vehicles

# Entrepreneurship in New Technologies (Vehicles)

- Development and Manufacture of amphibious vehicles – vehicles that can move in air and water
- Development of Floating Bridges
- Manufacture of Drones
- Manufacture of under water drones
- Noise reducing devices for stealth – alternate propulsion system

# Entrepreneurship in New Technologies (Electronics and Software)

- Sensors
- Software
- Big data and AI
- Defence data is normally secret and therefore its availability for use may be very limited
- Similarly, defence software is highly secret and it may not be possible to use these for commercial use.

# Entrepreneurship in Manufacturing (for naval use)

- There are navy-approved shipyards to build naval vessels with armaments. There is no scope for new entrepreneurs to get into this field.
- However, navy uses a lot of other support vessels and small craft for normal, as well as, war-time use. These vessels could also have other users like coastguard, customs and marine police.
- These vessels could be of steel, FRP and aluminium.
- Most of these vessels could have commercial applications with minor modifications.



# Entrepreneurship in Manufacturing (Steel Vessels)

- Utility ships – landing craft, fleet tankers etc.
- Large patrol vessels, small coastal patrol vessels (up to 50m)
- Remote controlled and autonomous vehicles
- Such vessels require to be launched to water (end launching, side launching or building dock floatation). So the building yard requires water front with requisite draught.
- If such a facility is developed new, care must be taken to ensure computer based design and management.
- Such a yard must have a product mix of both naval and commercial vessels.
- In the eastern coast of India only Titagarh yard in Kolkata and L&T in Ennore have this capability.

# Entrepreneurship in Manufacturing (FRP Vessels)

- FRP – small vessels – up to maximum 35m length
- Low, medium to high speed – vessel design in each case is different. It is not true that by putting more power in the engine one would get more speed.
- These could be single hull and catamarans – again, designs are different
- Work boats, rescue and emergency craft, fully covered lifeboats, Remote controlled vehicles and autonomous liferafts
- The FRP boat manufacture does not require high skill and can be made in reasonably small dedicated yards. If these could be carried on road vehicles, water front is not necessary.
- The navy may insist on air-conditioned storage and laying facility.
- Could we have standard moulds of various lengths and designs so that manufacturing time and cost can be reduced.
- Integrating the hull, engine and propulsion system is important.

# Entrepreneurship in Manufacturing (Aluminium Vessels)

- Small boats of single hull and twin hulls for navy and coast guard
- Work boats, rescue and emergency craft, fully covered lifeboats, Remote controlled vehicles and autonomous vehicles
- Aluminium boats are light like FRP boats, but, perhaps, more expensive
- Manufacturing capacity in this area is small (Big shipyards are involved in manufacturing aluminium superstructure for navy and coastguard) and so this area can be explored
- Aluminium boats require workmen with adequate skill in aluminium welding. The welders should be certified welders
- Aluminium does not rust like steel nor does it crack like FRP. It bends.
- Being light, small boats can be carried on land vehicles to the launching site.

# Key to successful Boat building

- Good communication skills with client, designer, vendors and certifying authorities
- Aggressive marketing policy ensuring full order book at all times
- Good and innovative cash flow and cost control
- Timely delivery
- Systems approach to the entire order execution – design components, finance, manufacturing and marketing
- Modern manufacturing facility at a location with good accessibility.
- Knowledge of the performance indices of the product

*Thank you*