DRONE ASSEMBLING UNIT

1. INTRODUCTION

The drone industry has witnessed remarkable growth in recent years, driven by technological advancements and diverse applications across multiple sectors, including agriculture, logistics, surveillance, and entertainment. In India, the government's initiatives, such as the Drone Policy 2021, aim to boost the drone manufacturing and assembling ecosystem. With its growing tech ecosystem, scenic landscapes, and government support, Uttarakhand provides a strategic location for setting up a drone assembling unit. This business venture promises a high return on investment, especially given the increasing demand for drones across commercial, industrial, and defines sectors. Additionally, the government's push towards promoting self-employment and MSMEs makes it an attractive opportunity for young entrepreneurs in Uttarakhand.

2. DRONE MARKET IN UTTARAKHAND AND INDIA

Drones are gaining traction across India, with applications in agriculture (for crop monitoring and spraying), mapping and surveying, logistics (parcel delivery), defines, and surveillance. The Indian drone market is expected to grow at a CAGR of 15% from 2023 to 2028, indicating a substantial market opportunity for drone manufacturing and assembly businesses.

Uttarakhand's diverse terrain, combined with a strong agricultural sector, presents an opportunity to promote agricultural drones while catering to the growing demand for drones in sectors such as delivery and surveillance. The state government's focus on technology-driven industries further bolsters the sector's potential.

3. DESIRED QUALIFICATION FOR PROMOTER

To succeed in the drone assembling industry, the promoter should possess:

- Basic knowledge of aerodynamics and electronic engineering.
- Formal education in electronics, mechanical engineering, or a related field.
- Hands-on experience in electronics assembly, hardware and software integration, and product design.
- Strong business management skills in operations, procurement, and customer service.
- Willingness to undertake training in drone technology, including flight control, battery management, and drone repair services.

4. BUSINESS OUTLOOK AND TRENDS

The demand for drones in India has steadily risen, especially for agricultural monitoring, infrastructure inspection, and surveillance applications. As of 2023, India is one of the leading adopters of drones in Asia, and the drone market is expected to expand rapidly.

- Agriculture: Drone use for crop monitoring, pest control, and crop spraying is expected to grow significantly, especially in regions like Uttarakhand, where agriculture plays a central role.
- defence & Surveillance: India's defines sector is increasingly investing in drones for surveillance and security purposes, offering an excellent opportunity for manufacturers.
- Logistics and Delivery: Drones for logistics (last-mile delivery) are also gaining popularity, offering vast potential for growth in this space.

The Uttarakhand government's initiatives, including subsidies and grants for technology-based ventures, are conducive to setting up a drone assembling unit, allowing entrepreneurs to take advantage of financial incentives and a growing market.

5. MARKET POTENTIAL AND MARKETING ISSUES, IF ANY

Market Potential:

The drone industry in India is experiencing rapid growth, with projections indicating a market size of USD 1.9 billion by 2026. Uttarakhand, with its diverse rural and urban landscape, presents a unique opportunity to demonstrate the versatile applications of drones in both agriculture and urban sectors. Using drones for agriculture, real-time surveillance, and infrastructure inspection is expected to expand significantly, offering innovative solutions to enhance efficiency and productivity in these areas.

Marketing Issues:

The drone industry faces several challenges, including technological obsolescence, as rapid advancements necessitate frequent upgrades and substantial capital investment. Navigating government regulations, such as securing the UAS (Unmanned Aircraft System) license, is essential for ensuring compliance. Additionally, customer education, particularly in sectors like agriculture, is crucial, as many potential users are still unfamiliar with the benefits of drone technology, requiring time and effort to build awareness and trust.

6. BUSINESS INPUTS

To set up a drone assembling unit, the following key inputs are required:

- Raw Materials: Electronic components (motors, batteries, propellers, sensors, etc.), frame materials (carbon fibre, plastic), and software for flight control systems.
- Machinery and Equipment: Soldering tools, assembly fixtures, testing rigs, and packaging materials.
- Manpower: Skilled labour for assembly, testing, and quality control, as well as non-skilled workers for packaging and handling.
- Technology: Design and simulation software for drone and flight control software.

7. ASSEMBLY PROCESS

The drone assembly process involves several key stages:

1. Component Procurement: Gathering parts such as motors, batteries, flight controllers, propellers, cameras, sensors, and frames.

2. Assembly:

- Frame assembly: The drone's frame is assembled using lightweight materials such as carbon fibre or plastic.
- Motor and Propeller Installation: Motors are mounted onto the frame, and propellers are connected to the motors.
- Flight Controller Installation: The flight controller is integrated and includes sensors, GPS, and communication systems.

3. Wiring & Power Systems: Connecting the battery, motors, and flight controller with wiring and power distribution boards.

4. Testing: The drone is tested for stability, flight control, GPS functionality, and camera/sensor calibration.

5. Software Calibration: The drone’s software is calibrated to ensure proper functionality, including firmware updates and fine-tuning.

6. Quality Control & Packaging: Ensuring the final product meets quality standards before packaging for sale or delivery.

8. MANPOWER REQUIREMENT

Sr. No	Particulars	No.	No of month in year	Wages/Salaries per month (Rs. In Lakhs)	Annual Expense (Rs. In Lakhs)
1	Production Manager	1	12	0.25	3
2	Assembly Technicians	2	12	0.15	3.6
3	Quality Control Inspector		12	0.25	3
4	Electronics Technician	1	12	0.12	1.44
5	Maintenance and Repair Technician	1	12	0.1	1.2
	Total				**12.24**

9. IMPLEMENTATION SCHEDULE

Sr. No.	Activity	Time Required (in months)
1	Preparation of Project Reports	0.5
2	Essential Registration	1
3	Site Selection	0.5
4	Arrangement of Finance	1
5	Machinery and Equipment purchase	0.5
6	Recruitment of required manpower	1
7	Trial Operation	1
8	Commercial Operation	1
9	Total time required (some activities shall run concurrently)	**6.5**

10. COST OF PROJECT

Sr. No	Particulars	Annual Expenses (Rs. in lakhs)
1	Land	-
2	Building (Rented)	0.12
3	Plant & Machinery	0.48
4	Equipment and Furniture Exp.	0.59

5	Misc. Fixed Asset	0.02
6	Preoperative & Preliminary Exp.	0.17
7	Working Capital	21.01
	Total Project Cost	22.39

11. MEANS OF FINANCE

Bank-term loans are assumed @ 60 %

Sr. No.	Particulars	Annual Expenses (Rs. in lakhs)
1	Promoter's contribution	8.96
2	Bank Finance	13.43
	Total	**22.39**

12. LIST OF MACHINERY & FURNITURE

(A)

Sr. No	Particulars	Unit	Price per Unit(Rs. in lakhs)	Total Amount (Rs. in lakhs)
1	Computers with all necessary hardware and installed Windows	1	0.30	0.30
2	Network Installation	1	0.05	0.05
3	Drill Set	1	0.13	0.13
Total Amount				0.48

(B)

Sr. No	Particulars	Unit	Price per Unit(Rs. in lakhs)	Total Amount (Rs. in lakhs)
1	Basic Hand Tools Kit: Screwdrivers, pliers, wrenches, cutters, and tweezers for assembling the drone components.	3	0.02	0.06
4	Multimeter	1	0.12	0.12
3	Fixture (Light, Fan, Cabinets etc.)	-	0.00	0.05
4	Others			0.02
	Total Rs.			0.59

13. SALES REALISATION

Sr. No	Product	Sales in Percentage	INR
1	Assembled Drones	100%	9600000
	Total	**100.00%**	**9600000**

14. PROFITABILITY CALCULATIONS

Sr. No	Particulars	Amount (Rs.)
A.	Sales realization	9600000
B.	Cost of production	
i)	Raw materials	6240000
ii)	Utilities	10000
iii)	Manpower Cost (Salaries/wages)	1224000
iv)	Administrative expenses	4000
vii)	Selling & distribution expenses	66000
viii)	Repairs & maintenance	10000
ix)	Rent	70000
x)	Interest	162101
	Total (B)	**7786101**
	No of Unit production	**720**
	Cost of Goods Sold *per unit*	**10814**
	Gross profit/loss (A – B)	**1813899**
	Less: Depreciation	13650
C.	PBIT	1800249
D	Income-tax	-
	Net profit/loss	1800249
F.	Repayment (Annual)	-119621
G	Retained surplus (E-F)	1919870

15. BREAKEVEN ANALYSIS

Fixed cost	Year-I
Land & Building Rent	70000
Depreciation	13650
Interest	162101
Manpower	367200
Total Fixed cost	612951
Variable cost	
Utilities	10000
Manpower	856800
Administrative expenses	4000
Selling & distribution expenses	66000
Total Variable cost	936800
Contribution Margin	0.20
Break-Even Point in Value	3064757
Actual Capacity	720

16. STATUTORY/GOVERNMENT APPROVALS

The following licenses and approvals are required for the drone assembling unit:

1. UAS (Unmanned Aircraft Systems) License from the Directorate General of Civil Aviation (DGCA).

3. Trade License from local municipal authority.

4. GST Registration for compliance with tax regulations.

17. TRAINING CENTERS AND COURSES

1. Aero Lab: Drone Training and Certification, Dehradun, Uttarakhand.

2. DJI Academy: Drone Pilot and Technology Courses (Nationwide).

3. National Drone Association of India: Online and Offline Training Programs.