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Mini Rukma Vimana Unmanned Air Vehicle

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ABSTRACT
Taking advantage of ancient Indian Knowledge of Vimanas, the Mini Rukma Vimana Unmanned Air Vehicle designs make a several advantages for many purposes as mentioned. The MRV UAV concept is proposed mainly to create VTOL, the lift fans configuration similar to Rukma vimana, hence the name Mini Rukma vimana Unmanned Air Vehicle.
Lift fans are the main part of the MRV UAV. They can be used to go through mountainous regions. And fans are preferred other than wings for Vertical takeoff. The lift fans configuration is similar to Rukma vimana Mentioned in Vimanika shasthra.
Based on Analysis for VTOL, UAVs are having lift fans embedded in Wings. But MRV UAV has simpler configuration, enabling the UAV to lift off with fans provided at the top of the UAV directly connected to the base of UAV with the help of Ducts.
The Direction control can be achieved by operating the maneuvering fans acting as propellers, the UAV can move 360 degrees in at mid air in single position. Using the MRV UAV, the missions become much more simpler and easier to be carried out.
Keywords : *VTOL , Object Collector , Landing Gear , UAV , Rukma Vimana*

I. Introduction :

Gravitational Force is one of the first important properties essential for successful flight. To overcome this difficulty one of the promising options is to study gravitational property & laws by considering air as a fluid medium. Just by using Newton's Three laws of motion and Archimedes & Bernoulli s Principal, it is possible to overcome this difficulty. Another way by just simple idea that when a body rotates about an axis with a greater than Particular velocity, weight of the body decreases, it will be becomes weight less at certain velocity. God like kinnaras, Gandharvas and others like Ravana have livingly traveled through air with special aircraft. It is constructed from material that has very high strength but negligibly small weight property material. This type of material can be fabricated by using nano- techniques.

II. Detailed Explanation :

Rukma Vimana "Atha Rukma Vimaana Nirnayaha" (Next the principles of Rukma Vimaana) "Rukmascha" Sootra 1.

Bodhaananda Vritti:

This vimaana is of golden colour. Therefore it is called Rukma vimaana, Rukma meaning gold. The Rukma should be made out of Raajaloha only. By duly processing, Raajaloha can be made to assume golden colour. That metal should be used for the vimaana. After first producing golden colour for Raajaloha, the vimaana should be formed.

"Varna-sarvasva" mentions the colouring process: Praana-kshaara or ammonium chloride 4 parts, wild Bengal gram 32 parts, shashakanda (or lodhra?) benzoin? 18 parts, naaga or lead 20 parts, sea-foam 16 parts, maakshika or iron pyrites 6 parts, panchaanana or iron 20 parts, paara or mercury 15 parts, kshaara-traya or 3 kinds of salt: natron, salt-petre, borax, 28 parts, panchaanana or mica 20 parts, hamsa or silver 17 parts, garada or aconite 8 parts, and panchaamrita or 5 sweets--curds, milk, ghee, sugar, honey, these should be filled in the melter, and after boiling, and drawing the liquid through two outlets, fill in the crucible and place in furnace, and blow to 800 degrees' heat, and then transfer it to the cooler.

That will be Raajaloha, pure, golden-coloured, tensile, and mild. The vimaana, made out of this loha or alloy, will be very beautiful and delightful.

The Peetha :

The peetha or ground plate of the Rukma vimaana should be tortoise-shaped, 1000 feet long, and 1 foot thick, or any other desired size. On its eight sides, 20 feet long spaces should be fixed underneath the peetha. At each centre fixtures like birds' beaks should be attached with revolving keelakas. Then double iron-balls or wheels, in couples, should be fixed in each of the 8 centres Ayas-chakra

III. Lallahcharya gives the form of ayaschakra-pinda:

12 feet long and wide, and 8 kankushtas in weight, they should be made round like a grind-stone. They should be inserted in the beaks at the 8 centres. From each chakra-pinda up to the electrical generator chain wires should be connected with switches.

Batinikaa-Stambha (Button-switch pole)

One foot wide and 4 feet high poles should be fixed. They should have switches wired up to the electric pole. 8 inches wide wheels should be fixed in the middle of the pole, on either side, with wires. From the electric pole chain wires should enclose the wheels and be fixed in another pole with inside hinges. On the top of the poles should be fixed goblet shaped cups with button-switches like half-blooms with wheels and keys, so that on pressing the button with the thumb the wheels in the other pole will revolve from electric contact. Then the wheels in the electric pole will also revolve, producing 5000 linkas of speed.

Flying :

Due to this electrical force, the ayah-pinda wheels beneath the peetha will beat against it and make it rise and move upwards. And by moving the switches of the wheeled poles above the peetha, the poles will revolve with speed, and accelerate the speed of the vimaana. By the concussion of the wheels underneath, and the action of the poles above, the vimaana will move upwards and gain height and fly with dignity.

IV. Electric tube wheels aiding flight:

Above the peetha, naalas or tubes should be fixed at 1 foot intervals. On both sides of each naala toothed wheels 2 feet wide and 1 foot high should be fixed with proper keelakas. Taking electric wires through the keelakas, and passing over the wheels and reaching the foot of each naala, they should be attached to wheels 3 feet wide and 3 feet high. In the midst of 20 naalas a pole should be fixed in the centre.

Preparing a pillar 4 feet wide and 4 feet high, and making a 2 feet opening in its middle, fix keelakas at the top, middle, and lower end of the opening. Two keelakas with 6 wheels, with glass coverings, with wires, and naala and leather covering should be fixed at the lower end for attracting electricity. In the middle part of the opening, for transmitting the current, a five-faced keelaka should be fixed, with 5 wheels, glass covering, 2 naala tubes, two wires, attached to 3 rods, and vessel containing veginee oil. By the flow of the current the wheels in the upper end should be made to whirl by properly adjusting keys. In front of the opening a big wheel should be fixed with gumbha keelakas. Similarly wheels should be fixed at the foot of each pillar. On top of them a four inch wide pattika or flat band should be adjusted commencing from the samsarga key chakra up to the front of the electric yantra. By operating that key, power will flow through the wires, and entering the key at the foot of the pillar set the wheels in motion. On the motion of the big wheel the sandhi-wheels in the naala-dandas will also revolve with speed, and the current will enter the 5 faced keelaka, and entering the oil vessel it will gather force, and passing through the 2 naalas, set all the wheels in the pillar in forceful motion, generating 25000 linkas speed, which will give the vimaana 105 krosa or nearly 250 miles speed per ghatika, or 24 minutes.

Having dealt with the mechanism for setting the vimaana in motion, we now consider the mechanism for giving direction to the vimaana in its course. In the 8 diks or directions of the peetha, pillars made of mica and shining like panchakantha, 2 feet thick and 15 feet high should be fixed at intervals of 10 feet. On the pillars should be built the passenger seating arrangements, and booths or locations for the machinery, as in the case of the Sundara Vimaana. The pillars should be made of mica only.

V. Its production is given in Kriyaasaara:

Shaara-graava or lime 25 parts, kshwinkaasatva or iron-sulphate 30 parts, gunja or wild-liquorice 28 parts, tankana or borax 12 parts, roudree moola 8 parts, chaandree or kantakaari....solanum xanthocarpum flower salt 2 part, purified shoonya or mica 100 parts,, to be filled in koorma crucible, and heated in paadma furnace with blower to 800 degrees, and then poured into the cooler, will yield mica alloy most useful and attractive. Fashioning the pillars or walls or partitions and booths, and fixing the mechanisms for turning, circling, diving, and manoeuvring, in the fore and middle and aft of the vimaana, it could be moved in any direction as desired.

In order to make the vimaana change its course from one path to another or one direction to another, revolving keelakas should be fixed on the eight sides of the vimaana. Two keelakas should be made, purva and apara, or right side and left side. They should be fitted together.

By operating it, the vimaana could be made to change its course one way or another. In order to operate the keelaka, at the peetha moola, on the 4 sides crescent shaped naalaas or tubes, 2 feet wide and 2 feet high should be fixed. 4 inches long metal rods should be fixed inside the naalaas on either side. One foot wide and 1 foot high wheels should be fixed in them. They should be wired all around. Such crescent naalas should be fixed on the 4 sides of the peetha. In order to set the wheels in the naalas in motion big wheels should be fixed at the beginning, middle, and end of the naalas. By turning the top wheel with speed the wheels inside the naalas will revolve. That will force the keela-shankus to twist round so as to force the vimaana to change its course in the required direction. **[1]**

VI. MINI RUKMA VIMANA UNMANNED AIR VEHICLE METHODOLOGY

Micro UAVs Requirements:	
Specification	**Requirement**
Size	< 15 cm
Weight	100 g
Payload	20 g
Range	1-10 Km
Endurance	60 min
Altitude	< 150 m
Speed	15 m/s

Fig-1 MAV Requirements **[2]**

Design Considerations

Unmanned aerial vehicles (UAVs) are mostly used in military applications nowadays, the UAVs can also perform such scientific, public safety, and commercial tasks as data and image acquisition of disaster areas, map building, communication relays, search and rescue, traffic surveillance, and so on.

A UAV can be remotely controlled, semi-autonomous, autonomous, or a combination of these, capable of performing as many tasks as you can imagine, including saving your life. Nowadays, UAVs perform a variety of tasks in both military and civil/commercial markets. Indeed, many different types of UAVs exist with different capabilities responding to different user needs.

The purpose of this column is to give the reader an overview of the large number of existing UAV systems and R&D projects as well as the practical challenges facing UAV designers and applications.

	Category (acronym)	Maximum Take Off Weight (kg)	Maximum Flight Altitude (m)	Endurance (hours)
Micro/Mini UAVs	Micro (MAV)	0.10	250	1
	Mini	< 30	150-300	< 2
Tactical UAVs	Close Range (CR)	150	3.000	2-4
	Short Range (SR)	200	3.000	3-6
	Medium Range (MR)	150-500	3.000-5.000	6-10
	Long Range (LR)	-	5.000	6-13
	Endurance (EN)	500-1.500	5.000-8.000	12-24
	Medium Altitude, Long Endurance (MALE)	1.000-1.500	5.000-8.000	24-48
Strategic UAVs	High Altitude, Long Endurance (HALE)	2.500-12.500	15.000-20.000	24-48

Fig-2 UAV classification **[2]**

6.2 VTOL:

VTO Ls A feature of particular interest in rotary wing UAVs is the capability for vertical take off and landing (VTOL). Although different in weight and configurations, the VTOL UAVs can be found in the mini, CR, SR, MR, and MALE catego-ries. Indeed, the use of VTOL-capable UAVs is rapidly increasing due to their ability to hover over specific sites and fly at low altitudes in urban areas. These capabilities make them favor-ites for civil and commercial applications such as surveillance and reconnaissance in urban canyons and indoors. Conse-quently, several institutes are working with this type of platform to aid their research projects, frequently present-ing their results at events such as the International Aerial Robotics Compe-tition organized by the Association for Unmanned Vehicle systems Interna-tional (AUVSI). Because VTOL platforms are mostly used by research institutes and agencies, tactical or strategic UAVs are unsuitable as test platforms for their experiments. Thus, an interest and need persists for designing micro and mini UAVs with the same degree of autonomy as their larger counterparts.

6.3 Dimensions Considering Rukma Vimana

As mentioned in our ancient scripts, Rukma vimana dimensions are larger, because it is a manned Space vehicle. But considering UAV applications, the Rukma vimana dimensions must be taken in a scale to reach the requirements of Purpose according to the type of UAV.

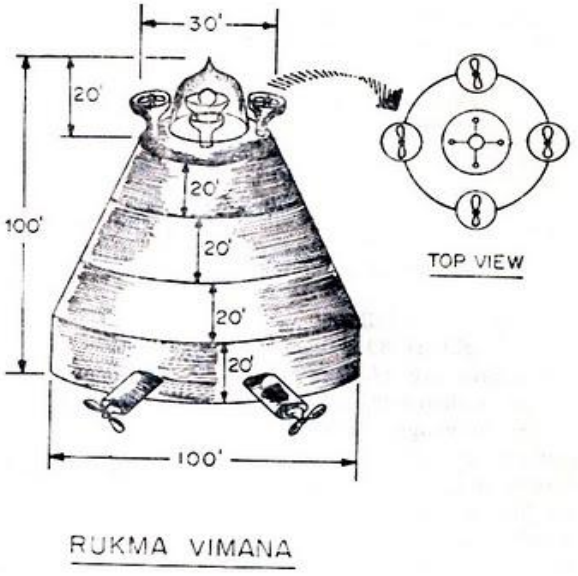

Fig-3 Rukma vimana Dimensions **[3**

Indians have always been unable to experiment on our own Ancient Aeronautics, due to several financial reasons, but other countries have used our designs and tried to experiment, Russians tried to manufactur the Rukma vimana Russian development based on Indian design of Rukma Vimana. Tests take place in the Kara Kum desert. Book named Yantra Sarvasva is being used by engineers to make new designs of aviation technology but it was very difficult to understand it as its real version was in Sanskrit however some Russians did used their intelligence & succeeded.

Fig-4 Russian development based on Rukma Vimana **[3]**

6.4 SOLUTION:

Indians can still work on Vimanas atleast by taking the vimana dimensions in smaller scale for UAV. As done by Shivkur Bapuji Talpade who flew Marutsakha Vimana, an Unmanned Air vehicle, which entirely depends on the ancient hindu technology, sanskrit texts.

The Proposed Project Mini Rukma Vimana UAV is thus done in smaller scale dimensions to implement the designs of Rukma vimana. We may not reach all the aspects mentioned in the Vimanika shasthra, but up to some extent we can implement the mechanisms of Rukma vimana as a useful VTOL UAV.

VII. MRV UAV DESCRIPTION:

Parts of MRV UAV:

1. **Lift fans:** Lift fans are the main part of the UAV. They can be used to go through mountainous regions. And fans are preferred other than wings for Vertical takeoff. The lift fans configuration is similar to Rukma vimana Mentioned in Vimanika shasthra.
2. **Camera:** The cameras can be used to record the video of path the UAV is going through or any disastrous incidents can be captured and help the situations.
3. **Object collector:** They can be used for defence purposes, delivering the medicine to the soldiers through object collectors.
4. **Landing gears:** The main purpose of landing gears is to make the UAV land in any desired location.

Advantages:

The main Advantages of MRV UAV in comparison with other UAVs are as follows:

- Based on Analysis for VTOL, UAVs are having lift fans embedded in Wings. But this MRV UAV has simpler configuration, enabling the UAV to lift off with fans provided at the top of the UAV directly connected to the base of UAV with the help of Ducts.
- The Direction control can be achieved by operating the maneuvering fans acting as propellers. NOTE: The UAV can move 360 degrees in at mid air in single position.
- It can not only land anywhere but also move on ground for various purposes.

Fig-5 Rukma vimana **[3]**

VIII. CONCLUSION AND FUTURE SCOPE

From the observed data and information, Mini Rukma Vimana Unmanned Air vehicle would be a better Vertical Takeoff and Landing UAV fulfilling necessities of the missions. The Rukma vimana mentioned in ancient texts when calculated the speed, it proved to be a subsonic aircraft used on earth like planet, using air, extracting from the fans and passing through ducts at the base, the plane would takeoff. The experiments can be carried out taking a scale of mentioned dimensions of Rukma vimana, a Successful VTOL MRV UAV can be designed. The three floors mentioned in the Rukma vimana were used for passengers, but the mini rukma vimana UAV can make arrangements of using such place in a scaled dimension, to embed the weapons, or missiles used for Defence purposes.

In scaled dimension of UAV, the lower floor can be used for location of retractable landing gears, middle floor can be used for locating missiles and weapons systems inside the UAV and top floor can be used to set the cameras. The main advantage is the 360 degrees rotation of MRV UAV which becomes easy to attack the enemy planes from the back of the

UAV. Or settings can be made to locate the several weapons and missiles in the entire circular cross section of the UAV. This can make the UAV to attack easily and also escape from enemy planes.

Not only for defence purposes but also the same MRV concept can be used for other missions such as disaster rescue mission, the place inside the UAV can be utilized for medicinal objects and also food for the victims. The bottom of the UAV can be designed such a way that it can be opened at the central part (other than landing gear belly) in order to unlock the container of medicine or food packets. Farmers have been facing many problems due to the unusual Weather conditions, there have been UAVs helping for this purpose also. But the main advantage using MRV UAV is, it has enough space inside it and simple configuration with VTOL can provide much better facilities without the damage of UAV in worst weather conditions.

Ancient Indian technology have been used by foreign countries and it benefitted them in many ways. India has donated enough of technology through Ancient writings and developed other countries. Now the time has come to realize the fact that Indian Sanskrit texts provide us better technology. Indians can still work on Vimanas atleast by taking the vimana dimensions in smaller scale for UAV. Inspired by Shivkur Bapuji Talpade who flew first UAV, Marutsakha Vimana, which entirely depends on the ancient hindu technology and sanskrit texts.

Inspired from Shivkur Bpuji Talpade, who was first to fly a UAV based on ancient sanskrit texts, the Proposed Project Mini Rukma Vimana UAV can thus be done in smaller scale dimensions to implement the designs of Rukma vimana. We may not reach all the aspects mentioned in the Vimanika shasthra, but up to some extent we can implement the mechanisms of Rukma vimana as a useful successful VTOL UAV.

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