Research Paper Engineering

Feasibility of Sky Bus in Urban Area

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ABSTRACT

The rapid growth of India's urban population has put enormous strains on all transport systems. Burgeoning travel demand far exceeds the limited supply of transport infrastructure and services. Public transport, in particular, has been completely overwhelmed. Most bus and train services are overcrowded, undependable, slow, inconvenient, uncoordinated, and dangerous. Moreover, the public ownership and operation of most public transport services has greatly reduced productivity and innate costs. India's cities desperately need improved and expanded public transport service. Unfortunately, meager government financial assistance and the complete lack of any supportive policies, such as tra□c priority for buses, place public transport in an almost impossible situation Sky bus is a passenger transport system in an urban area with a high capacity and frequency, and grade separation from other traffic. Rapid transit systems are typically located on elevated viaducts above street level.

Keywords : Growth of traffic, Congestion,

INTRODUCTION

Sky Bus Metro is latest, economical, eco-friendly, reliable and most innovative but simple technological solution developed by Konkan Railways as a rail based futuristic Urban Mass Transit System. It is free from derailments and collisions and therefore very safe. It can be constructed on the median of the road without affecting road traffic. Sky bus Metro is a modern Suspended railway. Due to its eco-friendly, noise-free and economical operation it has not only been seen with interest in cities in India, but also in different cities in Europe and Americas.

The Sky bus is essentially a fusion of a bus and a train. Its carriage looks like a bus, but it runs like a train, and instead of the compartments running on rails, they hang below the rails and slide 10 meters above the regular road traffic. Sky bus as the one of the solution to decongesting the cities.

Sky bus metro technology will cause a paradigm shift to rail based systems, by improving safety. The coaches can never escape guidance system and jam over tracks. But same speeds as carried in regular high speed metro rail can be handled by Sky bus.The two-coach Sky bus has a capacity for 300 passengers on a single trip and depending on the number of coaches; it is expected to handle 18,000 to one laces passengers per hour.

ELEMENTS OF SKY BUS

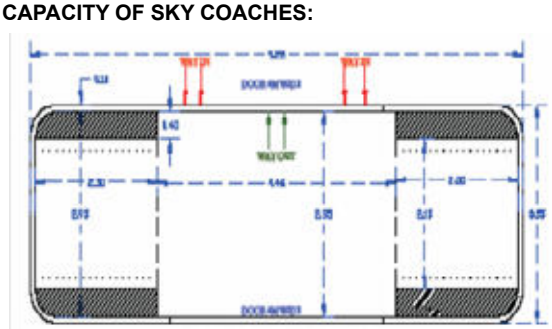
The system Sky Bus Metro consists of several conventional and some new proven technologies, which makes the Sky bus more efficient. These are designed so that to keep the sky bus moving without any defect and to give the passengers the ultimate comfort along with other luxurious facilities which they cannot get in the local buses or in trains. The various important components of this system are given bellow with their real views;

The sky way, Sky bogies , Sky coaches , Sky station , Traverser arrangements

They also have special 4 m. wide sliding doors for quick entry and exit of passengers.

Each pair of coaches carries 300 persons and service every one minute or 30 seconds is possible.

CAPACITY OF SKY COACHES:



SEATING ARRANGEMENT

- Seating capacity:
- (2.3*0.45)*4= 20 person
- Open space:
- (2.3*2.15)*2+(4.46*2.95)=23.04m2
- If 5 person can stand in 1 m2 area then:
- o 5*23.04= 130 person
- So, sky coach can carry 150 persons at a time.

THE SYSTEM:

Sky bus can be built like a grid network on existing roadways and flyways, offering point-to-point connectivity, requiring no land acquisitions and can be made operational in interior of suburbs, within a span of two years. Sky bus works on the principle of smaller units carrying smaller loads but at a high frequency, easily accessible from roads, just like a bus stop, since its stations are mere 40 meter long with no crossings and signals. Sky bus thus, matches the passenger carrying

capacity of 20,000 to 80,000 with that of a heavy Metro system. The cost of Rs. 50 Crore per km. in India , the system is noise – free and pollution – free with a capacity to transport 36000 passengers per hour (pph), scalable to 72,000 pph as required. With no signaling and having no points and crossings, it is a unique mass-transit system that can be put up within two years in any crowded & congested city.

SALIENT FEATURES

SR. NO	PARAMETER	SPECIFICATION
1	Gauge	Standard Gauge - 1435 mm.
2	Gradient	1 in 60 max.(but can take up to 1 in 25)
3	Curves	Minimum radius of curvature -50m follows roadway
4	Platform access	Automatic turnstiles
5	Coach access	Automatic doors
6	Power supply	Three phase power supply converted from 750 V DC 3rd rail
7	Types of Signaling	Moving Block Auto Driving Device, Anti collision Device developed by KRCL
8	Average Speed	36 to 47 Kmph depending on station interval
9	Max. Speed	100Kmps
10	Capacity maximum	150X2 passengers at 5.6 person/sqm
11	Acceleration	1.3m/sec/sec(max)
12	Frequency of Service/ Headway	40 Seconds TO 1 minute
13	Weight(Twin car)	Max. 48T(Loaded)
14	Distance between Sky Station	0.5 Km to 1.2Km
15	Coach	Air-condition(comfort)
16	Maximum passenger per hour per direction	18,000 to 81,000 (1 Sky Bus unit with 60 second and 3 Sky Bus units with 40 second headway)
17	Length x Width	9.25 x 3.15m
18	Height	2.40 m
19	Material	Steel and Poly-carbonate
20	Types of propulsion	3 ph AC asynchronous motors
21	Motor Rating	4 x 85 KW
22	Commuter rate of flow Bus	300 Nos. in seconds
23	Differently enable person	Special access facility & audio visual info.

OPERATION OF SKY BUS

Our Country's Technology, Sky Bus is an improved railway technology. It can carry 18K to 72K pphpd, with 100kmph and air – conditioned travel.

The two problems suffered by railway technology are derailment and separation of travelling coach from the rails.

As long as the wheels are on the rails, the coach runs. But failure of rails / obstruction by a heavy wind force may create dangerous situations.

When the wheels climb 25 to 30 mm flange, then derailment occurs.

If derailment occurs, then there is nothing to hold the coach, then the coach just topples.

Such falling of coach can kill people inside the coach and also people on the road, if any.

EVOLUTION OF SKY BUS TECHNOLOGY

Suppose a standard railway coach running on a railway track…

The under frame with standard railway wheel – set running on a railway track The under frame remains the same, railway wheels run on the same track, coach is firmly attached to under frame positively.

The under-frame with wheels and railway traction motors & railway track enclosed in the concrete box- travel on the railway track , carrying the coach below outside the concrete box- now the coach and the track are positively held together- cannot escape from rails!

SAFETY MEASURES

Compared to conventional railway systems, the centre of gravity of the mass being carried on the wheels is brought down to be closer to the wheel support. Hence dynamic safety is many times improved.

In conventional railway wind can topple the trains. In Sky Bus wind cannot topple- there is positive link between the rail guidance system and the Bus Coaches- with 400%.

The railway bogies in conventional system have propensity to lose control on derailment, but additional safety in Sky Bus bogie is that we have derailment arresters, which prevents the wheel from jumping off the rails. So we are ensuring that there is no derailment. Safety factor built into multiple suspenders.

The chances of collision between two sky buses is nearly zero. Because the well tested anti collision device developed by Er.B.Rajaram called as "RAKSHA KABACH" will be there in each sky bus bogie.

If braking fail and the Sky Bus units hit each other in a collision, the Sky Coaches in which people are travelling, will only swing to but will not collide with each other nor capsize.

But, if there will be any problem occurs in the sky bus during its running and it has to be stopped between two sky station, then there are the safety air bags are provided with each coaches for emergency exit of the passengers in the midway.

In Future: After the successful test run of the sky bus in its test track in Madgaon Goa, The Indian Railway has recognized its work efficiency and found it as the future of mass communication in the urban areas. The Sky bus has proved its effectiveness in various sectors in all the tests it has gone through. Hence the Sky bus has proposed by the Railway department in following cities of India, Ahmedabad, Pune, Kochi, Kolkata, Lucknow, Mumbai, Pondicherry, Ranchi, Shimla, Thane, Bhubaneswar, Bangalore, Chennai Coimbatore Delhi, Goa, Gurgaon and Hyderabad.

COMPARISON SKY BUS AND METRO

SKY BUS:

Sky Bus Is A Train Compartment Of Particular Length & Having Known Quantity Of Pepole Carring Capaciy.

Sky Bus Is Like Boogie & Hanging Coaches & A/C Compartment On The Rail In Air
It Can Be Run Up To 100km/Hr.
It Is Very Safe Mode Of Rail Transport.

ECONOMIC:

Sky Bus Offers Profitable Proposition To The Operator & Cheapest Mode Of Transport.

Sky Bus Start Giving Return Very Fast As 24% of Its First Year.

Sky bus Cost Rs (0.50 Paise /Km, As Compare To Metro Rs 2 /Km.)

Sky Bus In Mumbai Would Cost Rs.60 Crore Per Km, Less Than (1/3 Rd)Cost Of Delhi Metro Per Km.(Rs 215 Crore)

Sky bus Can Be Achived Rs 6000 Crore Of Almost (1/12th) Cost Incurred Of Metro.

METRO:
The Metro, In Technology Terms, Is Same As Mumbai's Very Own Local Train, Embellished With- A/C Coaches and Swanky Hi-Tech Platforms With Escalators And Modern Communication Systems

DMRC Too, Is Said To Fall In The Trap Of Loss-Making Corporations With Losses Amounting To 76.33 Crore Annually, As Reported By A Leading Daily.

Government of Andhra Pradesh is in advanced stage of talks with Ministry of Urban Development & Konkan Railway Corporation Ltd for pursuing Skybus project for its capital city Hyderabad.

Hyderabad has already snatched titles from Bangalore and Mumbai to be the most wired & cleanest city of India.

Now, it may soon have a Sky bus technology for public transportation.

If Hyderabad had all the reasons to commission Sky bus, Mumbai had even more desperate ones to do so but its political leadership found enough pretexts to reject it.

SUMMARY OF COMPARISION:
There is more space in city to accommodate Metro with its monstrous structures in the middle of lean roads, requiring substantial demolitions & evacuations?

And Sky bus can be built like a grid network on existing roadways and flyways, offering point-to-point connectivity, requiring no land acquisitions and can be made operational in interior of suburbs, within a span of two years.

Sky bus works on the principle of smaller units carrying smaller loads but at a high frequency, easily accessible from roads, just like a bus stop, since its stations are mere 40 meter long with no crossings and signals.

Thus the passenger carrying capacity is 20,000 to 80,000 The mettle to embrace Sky bus technology, be crowned and make the world of its first glory.

Ironically the city, complacently stepped aside as a flaccid witness while taking pride in bowing down to foreign Metro, progressively being promoted as a lone-saver-solution to urban traffic problems.

CONCLUSION
The Sky bus is the technology breakthrough that India has achieved. Sky bus is an improved railway technology, eliminating the problems of existing metro rail systems, like, derailments collisions, and capsizing crushing people. Old conventional railway men, who remained basically operating and maintenance experts, may take a little time to appreciate, but the fact remains. Sky bus is an improved railway technology eliminating their fears of derailments and capsizing from which they suffered for decades!

Financially Sky bus Metro makes urban transport a dream come true for administrators- virtually free gift to people without Government funding!

What needs to be done is to eliminate the doubting Thomas in our minds, and adopt the Sky bus, if we want to really solve the urban transport crisis! The Sky Bus metro is one single technology which can change the face of our cities, take out almost 10 million road vehicles in the cities and make the cities livable, improving quality of life and attract and sustain economic activity to generate wealth.

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