Conference on
Green Metro Systems
12 June 2015 New Delhi

Unity Infra Transit Project Implementers, Chennai

Welcomes

All Delegates to the Green Metro Program
DMRC,Metro Bhawan ,New Delhi
June -12,2015

We, **Unity Infra Transit Project Implementers** take immense pleasure in welcoming the dignitaries present on this occasion for attending the Smart Cities 2015, India program for the most technologically advanced, Green Transportation project called the "**Maglev Magnetic Two-tier Monorail rapid transit System**" likely for Puducherry.

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Parakkumbus Solar Power Monorail

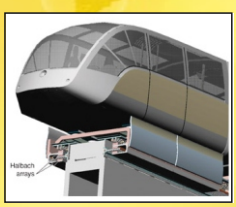
ABOUT - UNITY INFRA TRANSIT PROJECT IMPLEMENTERS

Transportation specific project implementers, has hunger in taking up more and more green transportation projects in India. We are based in Chennai. This enterprise was started in 2013. We have 8 members in our team, headed by Mr. Dhoulat Sah and Mr. Heerlal, Guided by Dr. Smarajit Roy from UK.

Puduvai Trans" is the name assigned for this particular **Maglev** transportation project which is likely to be started in Puducherry. So, it is named as "**Puduvai Trans**".

Why this *green* idea?

Natural resources in India are very rapidly depleting by all means due to unplanned methodologies, fast growth in population, accidents etc. So, here is a time to make use of the more readily available renewable energy resources available in abundance across the world by combining it with the most ***Innovative Non-Polluting*** technologies for making best possible use of these available resources, thus reducing expenses and maximizing profits in all fronts.



WHAT IS MAGLEV?

Maglev trains use magnets to lift the carriages above the track. This eliminates the need for wheels and therefore reduces friction, providing a faster and quieter service.

Acceleration and deceleration far exceeds that of conventional trains. And maglev also makes for much smoother journeys. High reliability and lower maintenance and operating costs make magnetic levitation (maglev) technology integral to advancing the nation's transportation networks. In urban settings maglev has additional advantages over conventional mass transit and transport systems, including lower noise, higher efficiency, and higher grade and turn capabilities that allow vehicles to run on elevated tracks to eliminate the constraints and costs of underground tunnel operation.

Germany and **Japan** have developed large urban maglev transit systems, and other nations have maglev systems in development are on the drawing board. Despite maglev's compelling advantages, conventional maglev technologies have drawbacks. Electromagnetic (EMS) maglev systems have problems with levitation instability. Electrodynamic (EDS) maglev systems require magnetic shielding to protect onboard electronics, and energy efficiency is eroded by the cooling requirements of the cryogenic superconducting magnetic coils used in those systems. IAT technology has solved the above instability problem.

THE VEHICLE CABIN SPECIFICATIONS

9.20 meters long

2.623 meter high.

2.244 meter wide

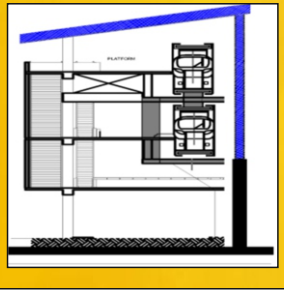
Each cabin is:
1) **9.20 meter** long,
2) **2.244 meter** wide and
3) **2.623 meter** high.
4) The interior height for standing passengers is **2.003 m**.
5) Sliding doors: **1.350 m** wide automatic at each side.
6) Seating: **16** persons.
7) Standing: **29** passengers.
8) The cabin shell weighs **4955 kg**.
9) The complete car weighs **8455 kg** with bogies weighing 1750 kg each. It can carry a useful load of upto **4923 kg** and has a maximum gross weight of **13378 kg**.
10) The vehicle made up of Aluminum body.
11) Are weather-proof.
12) Equipped with state-of-the-art safety systems, can keep things in control under any situations.

THE MAIN SOLAR POWER PLANT

Puduvai Trans solar panel roof top interior

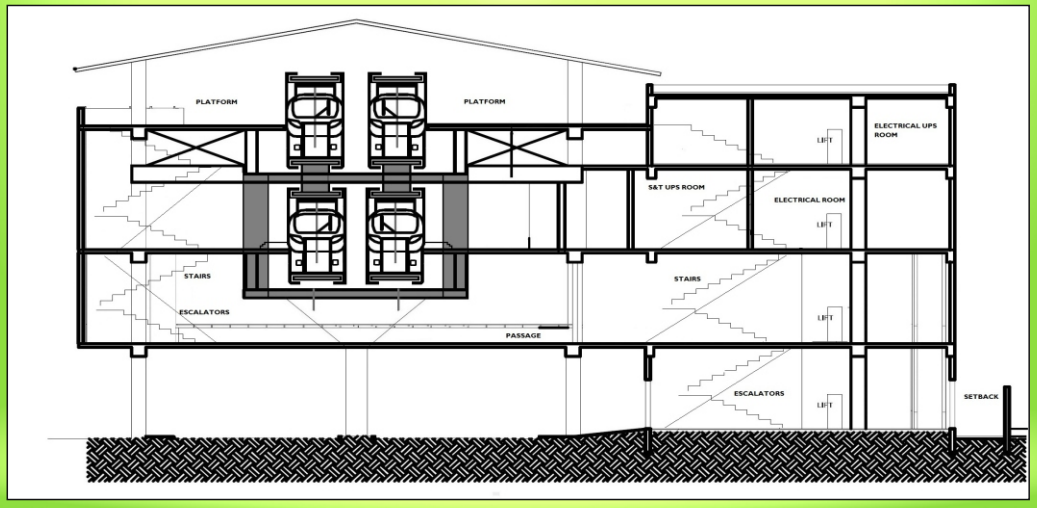
- This is the MAIN GREEN POWER SOURCE for the system.
- Set up in 3 hectares = 7.41316 Acres.
- This main Solar plant to be set up inside the premises of the depot for better maintenance purposes.
- Generates a total of 2.5 MW of green DC power required to run the system on a daily basis.
- Secured with necessary battery backup systems and security features.

- Solar panels to be installed on every Monorail station roof tops also to generate the extra DC power.



WORKING MODEL PICTURE

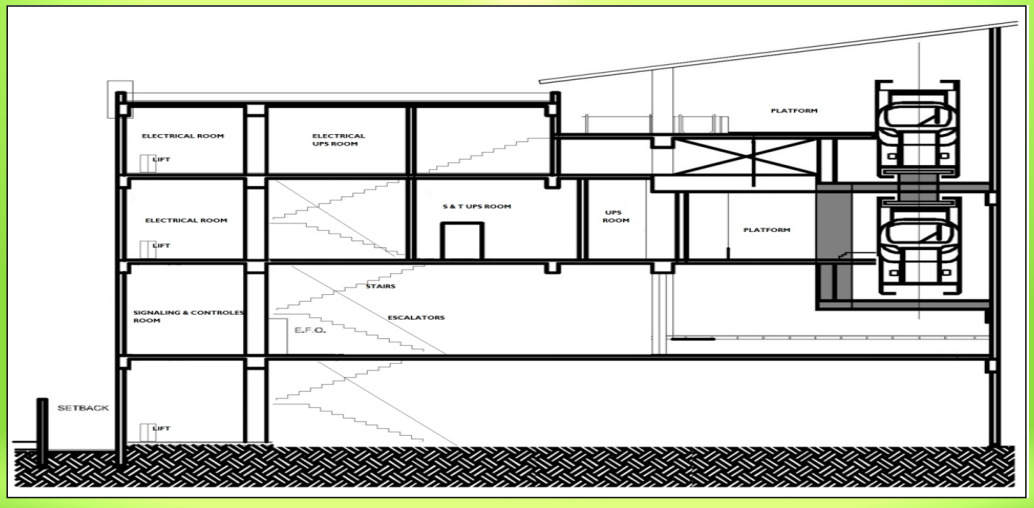
THE MAIN STATION LAYOUT



- This is the "Main Monorail Station" layout which includes features to accommodate monorails from additional routes. The minimum distance between two consecutive stations will be approximately 1000 meters.

- Provided with necessary features like sufficient lighting, excellent ambience, security, power back-up systems, passenger assistance, telecommunications etc.

THE STATION LAYOUT



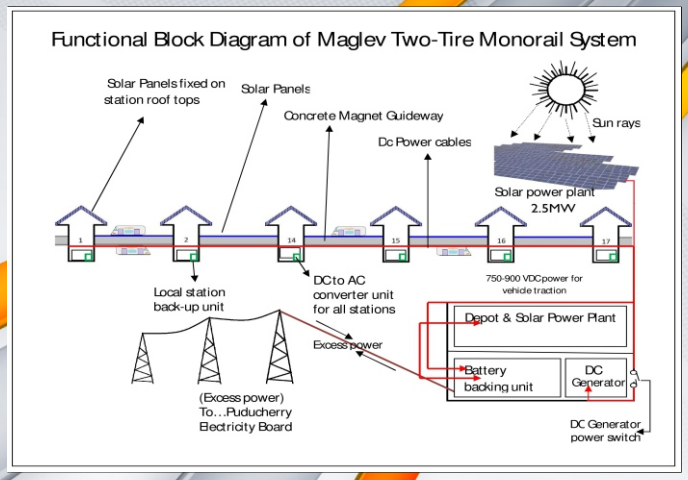
- This is the station layout for the rest of the stations apart from the main station. This layout is followed throughout for the entire route.

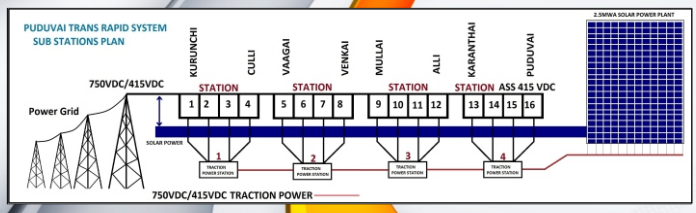
- This station setup occupies minimum land space.

- Provided with necessary features like sufficient lighting, excellent ambience, security, power back-up systems, passenger assistance, telecommunications etc.

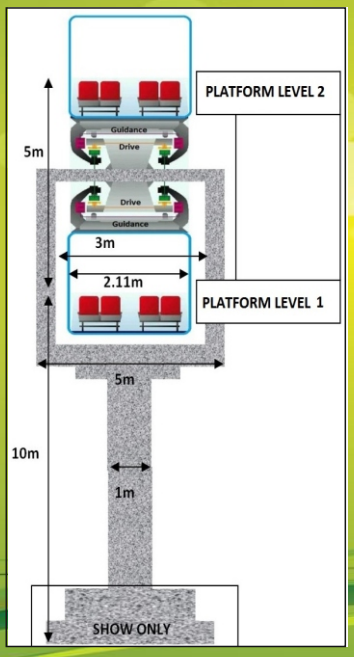
THE TRACTION POWER

- This is the actual power used to run the rail car throughout the stations.
- 750 V DC is necessary and is maintained throughout these traction substations for running the rail car.
- Four traction substations are totally present along the 17.200 km station route.
- A single traction substation takes control of 4 stations for providing and maintaining the 750 V DC power to keep the rail car moving.
- The Main solar power station has control over the 4 traction sub stations (TSS).
- The excess power generated apart from the 750 V DC is converted into AC power and sold to the Electricity Board (EB).



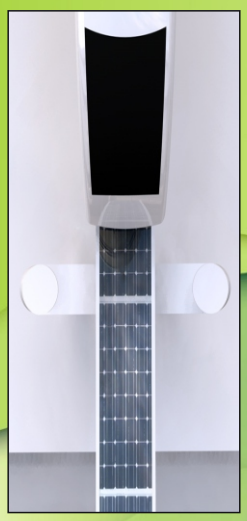


THE BOX-MODEL PILLAR



- Occupies less over-head space for the Two-Tier Monorail System.
- The entire stretch of alignment is elevated, carried on single concrete pillars generally located along the median of the road.
- This box-model pillar arrangement is since along the median (In the middle of the road) for the whole route length, allows free flow of vehicular traffic on both sides of the median.
- This pillar architecture is a compact and a customized pillar model which can be used for any road size land area, thus do not obstruct or harm any other road side superstructures.

IAT-Maglev, The New Double Decker Maglev-System

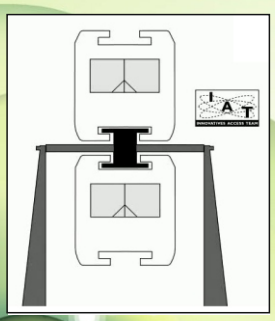


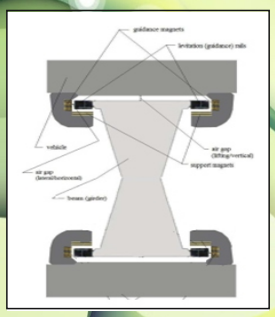
Solar Panel fixed on top of the Guideway

The technology is from "Innovative Access Team (IAT) – Germany", patent rights holders for the "**Maglev Magnetic Two-tier Monorail**" system, led by Mr. Walter J. Neumann and Mr. Dieter Schramek. The IAT trans rapid consumes approximately 40% less energy than the high speed CE in comparable speed. The magnetic levitation train provides the same energy input increased by about a third power. The Guideway is the structure that maglev vehicles move over it and are supported and guided by it.

Its main roles are:

- To direct the movement of the vehicle.
- To support the vehicle load.
- To transfer the load to the ground.
- Guideway can be constructed at grade (ground-level) or elevated including columns with concrete, steel or hybrid beams. www.iat@iat-maglev.com





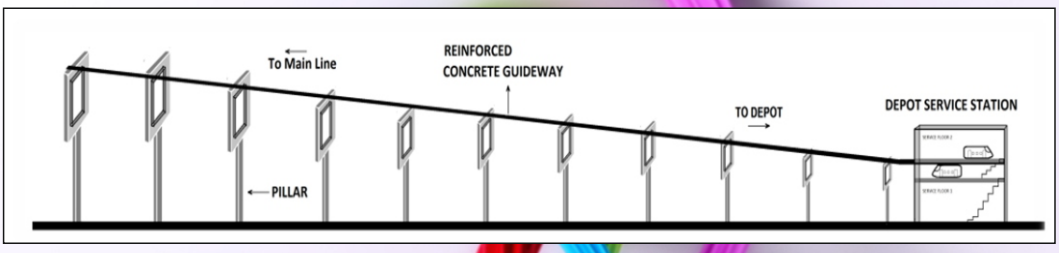
THE AUXILIARY POWER

Auxillary Sub-Station

MMTMRTS uses 33kv/110kv AC power from grid substation as its auxiliary power. This power is received from the SEB (State Electricity Board) grid station and fed to the ASS (Auxillary Sub station) for only the usage of electrical appliances (like escalators, lifts, air-conditioners, lights etc …) in the station premises only.
The Auxiliary power from the EB is directed to the ASS and is in turn connected to all the station for providing the AC power and is connected through cabling.

The total consumption of the Auxiliary power in the station premises is recorded and the cost for the consumed power is paid to the SEB (State Electricity Board) under the "**Net Metering**" policy.

THE DEPOT



The main components of the maintenance/Inspection depot will contain:

- Workshop and heavy cleaning shed for the Rolling Stock.
- Operational and functional safety requirements.
- Ancillary buildings for other maintenance facilities.
- Electrical & Mechanical Services, power supply and distribution system.
- Inspection bay.
- Stabling and rack facility.
- Staff Quarters.
- Water Supplies, Drainage & Sewerage.

TELECOMMUNICATION SYSTEMS

- **MMTMRTS** uses state-of-art advanced telecommunication systems like Digital Protection Control System (DPCS), Operation Control Centre (OCC), Supervisory Control and Data Acquisition (SCADA) for communication & total security for the overall system.
- The Overall systems (depot, stations, solar power plant, traction substations, auxiliary substations, the monorail vehicle etc are all inter-connected by necessary telecommunication systems for their communication and security demands.

Monorail Systems handle large number of passengers. Ticket issue and fare collection play a vital role in the efficient and proper operation of the System. To achieve this objective, ticketing system shall be simple, easy to use/operate and maintain, easy on accounting facilities, capable of issuing single/multiple journey tickets, amenable for quick fare changes and require overall lesser manpower. In view of above, computer based automatic fare collection system is proposed apart from the conventional (manual) ticketing system present in India.

SAFETY & RESCUE CONCEPT

- Advanced Fire fighting, processing and telecommunication equipments.
- Presence of CCTV'S, Station control rooms, Operations Control System.
- Proper fencing.
- More importance to the differently-able persons, Customer care services.
- The entire system of power supply (receiving, traction & auxiliary supply) monitored, controlled from a centralized Operation Control Centre (OCC) through SCADA systems.
- Digital Protection Control System (DPCS) provides data acquisition, data processing, overall protection control, interlocking, inter-tripping and monitoring of the entire power supply FSsystem.
- Trained staffs to deal with emergencies.
- DPCS, microprocessor-based fast-acting numerical relays & Programmable Logic Controllers (PLCs) with suitable interface with SCADA system.

A typical Emergency slide

WHY THIS PROJECT IN INDIA?

India is a vast and fast developing country in all economic fronts with many natural resources readily available.

Moreover transportation in India is playing a vital role in everyone's life in India.

The population in India is heavily on the rise, where transporting people and freight by the safest means plays an important challenge in India.

The **Maglev** technology is the proven one across the world in safety, non-polluting and various other reasons.

Solar power with **Maglev** will be the safest mode of rail transportation to be implemented in India.

We sincerely thank as principal share holder of scientist Walter J. Neumann and development engineer Mr. Dieter W. Schramek of the IAT Maglev team **Innovative Access Team NRW** from Germany **for signing a MOU with us and to cooperate in project implementation**.

Thank You.