MATHERAN – AN ECOLOGICAL SENSITIVE HILLSTATION IN INDIA WITH POOR ROAD-INFRASTRUCTURE; TRANSPORT-SCHEMES, Part IV

Proposed automated on-Demand PODCAR Shuttle Service for personal Travel and Good/ Freight Transport between Dasturi Car-Park and Matheran Market

By Dr. F.A. Wingler, August 2019

Animation of an on Demand electric propulsed automatic PODCAR Shuttle Service between Dasturi-Car Park and Matheran Market – for an ecological friendly and Monsoon **proof** Transport

Matheran is a “ecological sensitive” declared hill station and a municipal council in Karjat Tahsil in the Raigad District in the Indian State of Maharashtra. It is the smallest hill station in India, and it is located on the Western Ghats range at an elevation of around 803 m (2,636 feet) above sea level. It is about 90 km from Mumbai and 120 km from Pune. Matheran's proximity to many metropolitan cities makes it a popular weekend getaway for urban residents.

Matheran is the only location in India, where no tar roads and no motorized vehicles are allowed. The only road access from Neral with a height of 39.31 m above sea level ends at a height of 758 m 2 km outside the town Matheran at **DASTURI**. All goods and delivery products have to be transshipped from arriving lorries and good carriers on coolie load carriers, hand pulled carts or pack horses and transported over an unfortified, dilapidated stony cart road, which turns in rainy season into a slurry or mud way to Matheran Market at a height of 804 m above sea level. The supply route Dasturi-Matheran is the life artery of Matheran. Visitors either walk on the last miles, ride on a horse or us a hand pulled rickshaw.

The “Only” Road to Matheran from Neral, during Monsoon

Dilapidated Cart Road from Dasturi to Matheran, during Monsoon; Photo by Team.PHB.com

Pack Horses on MG Road Matheran; Source go4mumbai.com

During dry season locals and visitors can reach from Neral the heart of Matheran by a nostalgic and heritage narrow gauge toy train.

The **Matheran Toy-Train**, opened on 22nd March 1907, had been planned and constructed as a 2 ft Narrow-Gauge *TRAMWAY* by the Entrepreneur ABDUL HUSSEIN, the son of the business tycoon Sir Adamjee Peerbhoy. The construction of the line was authorized by the Public Works Department Bombay under notification No. 34, dated July 28, 1904. Abdul Hussein floated

a company in the title ***"MATHERAN STEAM LIGHT TRAMWAY COMPANY (MLR)"*****,** wholly owned by the Peerbhoy Family. Nowadays it is operated by Indian Railways.

The line climbs 720 meters from the rail-link of the Bombay-Pune railway line at Neral with a maximum gradient being 1 in 29 over 21 km with 221 tight curves of tightness of up to 60 feet radius and through one tunnel. The track is vulnerable to destruction during monsoon periods. In recent years some improvements have been undertaken to make the track safer.

In the last years a 2 km rail shuttle service had been introduced between Aman Lodge near the road endpoint Dasturi-Car Park and Matheran Railway Station in the heart of the town, with up to 7 services during the week and 10 services on weekends. The shuttle service is operated with two articulated Diesel locomotives at the front and rear in push-pull mode polluting the air with their emissions. This service is not only ecologically questionable but also extremely staff intensive.

Ecologic questionable Amman Lodge-Matheran Diesel Rail Shuttle Service with two Smoke producing Locomotives

Since years the author suggests to operate this shuttle service with electric powered Light Rail Vehicles, LRV. The technology for battery operated electric rail cars is nowadays far advanced, as well the electric propulsion and drive technology for tight gauges. A compromise would be to operate the shuttle service with one Diesel-Battery Hybrid locomotive in the middle of the train-set. A Diesel-Battery Hybrid traction will come soon to the famous 800 m NG rack Snowdon mountain railway, system Abt, in Wales, UK. The new 800 mm-gauge locomotives will be driven by high torque, maintenance-free electric motors, powered by battery traction and a diesel genset generator.

On descent, the diesel genset generator will be switched off while regenerative braking will recharge the battery.

One other alternative could be, to power the Light Shuttle Service electric motorized Vehicles on this 2 km section with 750 V DC through an overhead catenary system like a street tram. The electric converter and battery power back-up could be stationary at Matheran Railway Station. In case of severe power failure – often at Matheran - the back-up could be fed by emergency Diesel generators. On down-gradient run the electric energy could be recuperated and fed back into the storage/back-up stationary battery system.

Snaefell Mountain electric **Catenary powered** NG Light Tram on Isle of Man; UK

Ropeway and Funicular as transport modes up to the height of Matheran have proven to be not feasible.

The only reliable access to Matheran during monsoon period is the road from Neral to Dasturi-Car Park. An all year round reliable, easy and smooth way of transport for people and goods between Dasturi and Matheran Market is in urgent need.

India has been always open for innovative, intelligent and smart solutions. For a shuttle service between the railways station in Amritsar to the Golden Temple an automated ***"PODCAR"*** people mover is planned:

Animation of envisaged PODCAR Shuttle Service in Amritsar

PODCARS are utilised as **Personal Rapid Transit (PRT),** a new public transportation system designed for swift travel in congested areas.

These futuristic transport vehicles will offer an environmentally friendly, clean energy alternative for urban transportation. **PODCARS** are automated driverless vehicles, which operate on elevated or underground shuttle networks or on traditional roadways in the near future as on Demand Personal Rapid Transits, PRT.

The **PODCAR** networks operate much like traditional rail and streetcar networks, on right-of-way elevated corridors above busy roads and highways (or underground). **PODCARS** will be convenient, affordable to operate and beneficial to the environment as they are powered by electricity.

There are many companies around the world currently developing various **PODCARS** and personal on demand rapid transit systems. Large scale projects include the ULTra PRT automated people mover (APM) at Heathrow International Airport in London and the Masdar City pod car system in Abu Dhabi - both now in operation - . And West Virginia University has been operating a PRT service since the 1970's:

Morgantown Personal PODCAR Rapid Transit, PRT, West Virginia University; USA; source: http://www.prtconsulting.com

PODCARS run with rubber tires and electric propelled autonomous on a right-of-way roll-guideway of light structure. **PODCARS** had been original designed to carry delivery goods in townships. **PODs** are good/freight containers, which are collected and transshipped on demand.

Automated driverless Delivery PODCAR

On Demand automated PODCAR Personal Rapid Transit, PRT, People Mover at Heathrow Airport; UK

A 2 km on demand **PODCAR** shuttle service for passengers as well for transport of delivery goods between Dasturi and Matheran Market on a right-of-way elevated light concrete structure, which will be not affected by the monsoon water flows and corrosion, could provide many advantages for Matheran:

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Animation of an on-Demand electric propulsed automatic PODCAR Shuttle Service between Dasturi-Car-Park and Matheran Market

Such a smart and ecologically friendly shuttle installation for personal and good/freight container transport in the ecological sensitive zone could not only ease the transport and traffic between Dasturi car-park and Matheran; it could become also a major tourist attraction.