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INTERNATIONAL MOBILITY OBSERVATORY

INNOVATION FACT SHEET

STRATEGY: **ADVANCED TRANSIT SYSTEMS** No. 5.1.1

CONCEPT: Automated Guideway Transit

PROJECT NAME: VAL; Docklands Light Railway

LOCATION: Lille, France; London, U.K.

The city of Lille in northern France holds the distinction of having pioneered city-wide automated guideway transit (AGT) systems. The driverless VAL system has been in operation more than 10 years and currently carries more than 50 million passenger a year over a 25-km 35-station network. By the year 2000, the VAL system is expected to almost double in length, to 45 km. Other VAL-type systems operate at Orly airport in Paris and in the French city of Toulouse. In the United States, VAL systems have been installed at O'Hare Airport in Chicago and in Jacksonville.

In London, the Docklands Light Railway (DLR) is England's entry into the field of AGT systems. Opened in 1987 to provide access to the Docklands' Canary Wharf development, the 21.5-km system connects directly with the London Underground and currently carries 45,000 passengers a day. The DLR has been recently extended further east to Beckton, to provide a ground link to the new London City Airport. A further 4.5 km extension is being planned as a joint venture with the private sector.

While automated guideway technology has found acceptance in the United States since the early 1980s, it has been applied primarily in the context of "downtown people movers" (Detroit, Miami) and airport systems (Atlanta, Chicago, Orlando, Houston, etc). The only truly suburban people mover — in Las Colinas, Texas — has been decommissioned because of high operating costs and inadequate patronage. Several other suburban people mover projects (City Post Oak TX, Irvine CA, Montgomery County MD) have never progressed beyond planning stages. However, as our suburban centers expand and increase in density, the use of people movers may become economically more attractive as internal circulators in suburban downtowns and suburban feeders to rapid transit.

INTERNATIONAL MOBILITY OBSERVATORY

INNOVATION FACT SHEET

STRATEGY: **ADVANCED TRANSIT SYSTEMS**

No. 5.1.2

CONCEPT: Automated Guideway Transit

PROJECT NAME: U.I.T.P. Study

LOCATION: Brussels

A study by the Union Internationale de Transport Public (U.I.T.P.) has looked at fully automated driverless transit systems now in operation or under construction in 11 cities around the world and has concluded that these systems are “less expensive in capital and maintenance costs and offer a more attractive service quality than conventional systems.” The systems examined by the study include four VAL-type systems in France (Lille, Lyon and Toulouse), two automated people movers in Japan (Osaka and Tokyo Waterfront), London's Docklands Light Railway (see, 5.1.1) and Vancouver's *Sky Train*. The remaining three systems include the Paris *Meteor* (see, 5.1.6), Berlin's U5 U-Bahn line and the PUTRA light rail line in Kuala Lumpur, Malaysia. Eight of the systems have been in operation for more than 12 years.

The report concludes that full automation allows for very rapid and precise service adjustments to handle peak loads and provides a high degree of safety and on-time performance. Service reliability has also been judged superior, with average service availability of 99.7 percent — far superior to conventional metro. Passenger satisfaction with automated transit service has been ranked as superior.

Ref: Better Quality Service at the Lowest Cost: Automated Metros, U.I.T.P., 1998; “Driverless Metros,” Mass Transit Magazine, Sep/Oct 1997.

INTERNATIONAL MOBILITY OBSERVATORY

INNOVATION FACT SHEET

STRATEGY: **ADVANCED TRANSIT SYSTEMS**

No. 5.1.4

CONCEPT: Automated Guideway Transit

PROJECT NAME: *Aeromovel*

LOCATION: Blumenau, Brazil

Blumenau, Brazil, situated 200 miles south of Sao Paulo, is the site of a seven-km air-propelled people mover system, one of only three in the world. The other two are in Porto Allegro, Brazil and Djakarta, Indonesia. The system was developed by Oskar Coester and is being built by Aeromovel Brazil. The Blumenau line will operate through a linear city center bordered by mountains on one side and a river on the other. The line will have nine stations and will operate with 18 train sets. The air propulsion system makes this relatively low-cost installation unique among automated people movers. Aeromovel is marketing its system actively in Asia and the Middle East

INTERNATIONAL MOBILITY OBSERVATORY

INNOVATION FACT SHEET

STRATEGY: **ADVANCED TRANSIT SYSTEMS**

No. 5.1.6

CONCEPT: Automated Guideway Transit

PROJECT NAME: *METEOR*

LOCATION: Paris, France

METEOR (*Metro Est-Ouest Rapide*), currently under construction, is Paris' first automated driverless rapid transit line. The line, whose first segment opened in 1997, will reduce congestion on the main east-west line of Paris express rail network, which now carries 62,000 passengers an hour during the peak period. The 20 km Meteor Line will have 20 stations and a capacity of 40,000 passengers an hour, with headways of 85 seconds during rush hours. It will provide interconnections with eight Metro and four RER regional commuter lines.

The line is totally automatic, and runs vibrationless on rubber tires and pneumatic suspension bogies. Curved aluminum alloy cars have three extra wide sliding doors. Initially, each train consists of six cars carrying some 700 passengers at an average speed of 40 km/hour. Platform access is by way of a mezzanine which straddles the tracks. The platforms are equipped with safety glass doors, similar to those used in the VAL system in Lille and the Westinghouse airport people movers. These safety doors open automatically the same instant the train doors open.

The funding for this massive project is shared among the national government, the Paris region, local government and the transit authority, the RATP, with the national government and the region paying 72 percent of the cost, the RATP 18 percent, and local jurisdictions 10 percent.

INTERNATIONAL MOBILITY OBSERVATORY

INNOVATION FACT SHEET

STRATEGY: **ADVANCED TRANSIT SYSTEMS**

No. 5.1.7

CONCEPT: Automated Guideway Transit

PROJECT NAME:

LOCATION: Copenhagen, Denmark

Like Paris, Copenhagen is building a driverless automated rapid transit system. The 22 km line will connect the city center with Copenhagen's international airport and the new town of Orestad. The system is due to be completed by January 2001. The decision to opt for a driverless metro was made after careful evaluation of the alternatives: a driver-operated light rail system and a streetcar system. The main advantage offered by the driverless system are high frequency, speed and operating cost. The system is designed to operate at 90 second headways and 40 km/hour — giving it a capacity of 8,250 passengers/hour in each direction.

The Copenhagen metro is designed entirely for unattended operation, including stations. Each station will be equipped with automatic screen doors, similar to those employed in the Paris METEOR system (see, 5.5.1). The safety doors will open automatically the same instant the train door open. Video monitors at stations and in trains will ensure passenger safety.

Ordinarily automatic train control (ATC) will control the operation of the entire system. However, personnel in the Central Control Facility will monitor system performance and will be able to override any automatic functions in emergency situations.

Ref: ITS International, July/August 1997

INTERNATIONAL MOBILITY OBSERVATORY

INNOVATION FACT SHEET

STRATEGY: **ADVANCED TRANSIT SYSTEMS** No. 5.2.1

CONCEPT: Magnetic Levitation (MagLev) Systems

PROJECT NAME: MLX01

LOCATION: Yamanshi Prefecture, Japan

Japan's prototype magnetic levitation train, now being tested by Japan Central Rail and the Railway Technical Research Institute, has twice reached a target speed of 550 km/hr (344 mph) in the most recent series of unmanned, remote-controlled tests along the 27-mile test track in Yamanashi Prefecture. Last December it reached a speed of 531 km/hr during a manned test of a three-car trainset. Both are world records for unmanned and manned train operation respectively. An earlier record was set by the TGV in France, which reached a top speed of 515 km/hr during a test run in 1990.

A second four-car prototype has now been delivered and will be tested in both manned and unmanned remote-controlled mode in the second half of 1998. The second prototype incorporates a number of improvements, including inductive power collection. With two trainsets, it will be possible to begin studying the aerodynamic effects of two trains passing each other both in the open and in tunnels. Eventually, speeds will be increased to 500 km/hr in order to determine the effects of two trains passing at a speed of 1000 km/hr.

The Yamanashi test line will be part of a future maglev line connecting Tokyo, Nagoya and Osaka early in the 21st century. The maglev service will reduce the current three-hour trip on the high-speed Shinkansen Line to a little over one hour.

In the United States, Congress has authorized a \$50 million/year maglev R&D program in the recent Transportation Equity Act (TEA-21).

Source: Public Innovation Abroad, March 1998