Technical Data

| **Length**     | 11.20 m          |
| **Width**      | 2.65 m or 2.80 m |
| **Height**     | 3.615 m          |
| **Possible train configurations** | up to 6 cars |
| **Number of doors per car** | 2               |
| **Number of seats per car** | up to 24         |
| **CBTC**       | ✓                |
| **Automated shuttle mode (Airval)** |

Performance Data

| **Maximum operating speed** | 80 km/h |
| **Minimum horizontal curve radius** | 30 m / 22 m |
| **Minimum vertical curve radius** | 250 m   |
| **Maximum gradient**         | 12 %    |
| **Inclination**              | 10 %    |
| **Acceleration, service braking** | 1.3 m/s |
| **Power distribution system** | 750 V DC |

Options

- Inter-car gangways, air conditioning, dynamic information system, multimedia
- On-board internet access, CCTV, services on demand
- Front-end evacuation

Siemens is an international provider of rail vehicles and a global market leader in urban transportation automation.

As such, Siemens participates in metro line construction or renovation projects around the world. Its extensive experience in implementing turnkey projects and offering maintenance services provides the perfect finishing touch to its range of expertise.

Siemens France hosts the international center of competences for fully automated metro systems.

Cityval and Airval
Automated transportation systems
The last generation of the VAL systems: an efficient modular solution

Cityval and Airval provide a complete range of solutions for fully automated transportation systems, for urban and airport applications, in full respect of the environment.

Turnkey solutions from Siemens
As demonstrated by the success of the Val systems around the world, Siemens has set unrivaled records in terms of safety and availability. Thanks to thirty years’ experience in fully automated systems and a number of impressive urban and airport project references, Cityval / Airval systems guarantee both safety and efficiency. Since 1983, more than four billion passengers have been transported without any accidents caused by the system itself. The availability rate of the lines in operation is greater than 99.8%.

Modular design and configuration
Cityval and Airval have been developed using the same platform for rubber tire vehicles and for the Automatic Train Control. Different car widths are available to adapt to specific line insertion requirements. Seating configuration is very flexible and can be adjusted to the actual needs of the Customer. Using trains of up to 6 cars, with or without gangways, the system provides easy ability to cope with increasing traffic capacity.

With Cityval and Airval, line extensions can be carried out without interruption of the passenger service. This provides the capability of programming a system network implementation in consecutive stages.

Safety and quality of service
Unequaled safety and reliability are achieved by the system specificities:
- a segregated right of way,
- a minimum degree of human intervention during operation,
- fail safe and redundancy design principles in compliance with railway standards,
- a safe emergency evacuation principle.

The system provides the maximum security to the passengers through:
- automatic station platform doors,
- safe communication link between vehicles and control center (Public Address and intercom).

A high quality of service to the users is provided through a combination of attractive features such as:
- flexible operation adapted in real time to the demand,
- punctuality and high commercial speed,
- minimum waiting time at stations due to short intervals notably during peak hours,
- easy interconnection with other modes of transportation,
- if exceptionally a train is stranded on the line during operation, it can be pushed by the following train, with minimum inconvenience to the passengers.

Reduced initial investment - Life cycle costs optimization
On Cityval and Airval, the Communication Based Train Control (CBTC) sub-system, including train movement optimization can reduce energy consumption by up to 15%. The trains’ innovative storage and energy recovery devices allow for even greater energy savings. In addition to this, the unique central rail guidance system («Siemens Guidance Systems») reduces both civil engineering and operation & maintenance costs.

- Compared to conventional Mass Transit Systems, the reduced size of the trains combined with short headways permits a reduction in the dimensions of the infrastructures and the associated costs.
- Due to the short vehicle length, the track alignment can accommodate tight curves and steep gradients, which facilitates the insertion into urban or airport environment.
- In addition to the normal operating mode, the system includes provisions for implementing alternate modes ensuring a continuous service. If some section of the track is temporary out of service and no longer can permit trains to operate normally, a partial train service can be set up for the duration of the repair.

Cityval – Fully integrated into the urban environment
Cityval allows operators to adjust transportation capacities automatically and in real-time to the demand, for instance during exceptionally busy periods, or unexpected events. The Cityval can run on viaducts, in tunnels or at street levels.

In megacities, Cityval fulfills the requirements of a feeder line into high capacity metro systems; in medium-sized cities, those of the main transportation lines.

Airval – Maximum flexibility for airports
The system supports a number of different operating modes; for instance, it can be used as a demand/responsive transportation service or as a shuttle service running on a single track. This transportation service remains available 24 hours a day, 7 days a week, and is the solution to cope with fluctuating demand at airports. The Airval is adapted to both landside and airside to transport different types of passengers, for example national and international travelers. Airval fulfills the needs to transport passengers between terminals and also between the airport and the remote urban rail network.