

Operations



Typically around 90% of Ultra pod passengers are served within one minute thanks to the system's comprehensive operational procedures that ensure it runs safely, reliably and efficiently.

Passenger operation

From the passenger's point of view the interface is uncomplicated and intuitive; a touchscreen panel enables them to choose their destination while an automated voice-over talks them through the process. Once on board they can relax as the vehicle takes them straight to their destination.

Passengers wishing to use the system follow the procedure outlined below:

- Travel to the nearest station on the network – this should never be more than 300m away
- Purchase a ticket if required
- Go to the first available berth
- Select your destination using the touchscreen display and scan your ticket (if applicable)
- Enter the vehicle
- Once seated, press the close doors and journey start buttons

From this point the vehicle automatically takes the passengers non-stop and by the best available route to their destination where they disembark and continue on their journey.

System operation

Three layers of control form the heart of the Ultra pod system and ensure that it functions to maximum efficiency and without error; these are:

Central synchronous control – ensures vehicle journeys do not conflict

Autonomous vehicle control – uses laser sensors to guide the vehicle on its path

Automatic vehicle protection system – ensures vehicles don't make contact with each other

Central synchronous control

- Immediately allocates the passenger a vehicle
- Instructs the vehicle to follow a set path and timing in order to reach the destination
- Ensures that there is no interaction between vehicles
- Manages empty vehicles

Autonomous vehicle control

- Receives instruction from central synchronous control
- Navigates the pod to its destination, using lasers to continually verify vehicle position and heading

Automatic vehicle protection system

- Based on fixed block signalling system, similar to railways
- Inductive loops set into the guideway interact with sensors on the vehicle
- Each vehicle must be receiving a constant “proceed” signal in order to move
- This signal is inhibited in an area directly behind each pod to automatically halt others that are approaching; this provides a failsafe system independent of the other layers of control

Operational robustness

The Ultra pod system has been designed to be robust in, and adaptable to, a variety of climatic conditions and other exceptional circumstances.

Adverse weather conditions

The Ultra pod system is designed and tested to continue operating in a variety of extreme weather conditions, including heavy rain, bright sunshine, ice and strong winds.

In the event of heavy snowfall, a special vehicle will be deployed in order to de-ice the guideway and sweep away any snow.

Guideway blockage

In the unlikely event of the guideway becoming blocked, the following system will be put into action:

- CCTV monitors the whole guideway and the blockage is detected early by control room operators
- Operations in the affected area of the system are temporarily halted whilst a technician is dispatched to remove the offending item
- Once the blockage is removed the passengers will be able to complete their journeys
- Passengers will be kept informed throughout the process by the control room staff

In addition, the extensive health usage monitoring systems (HUMS) ensure vehicles are taken out of service for maintenance well before any problem can develop and will stop a vehicle mid-journey if appropriate.

Mains power failure

In case of mains power failure, the control room has a battery powered back-up, enabling all occupied pods to complete their journeys.

The system will then disable all new journeys and the control room staff arrange for alternative transport for passengers until power is restored.