

City Talk



The Autonomous Rapid Transit system in Zhuzhou.

GUIDEWAYS ARE GOING TO MAKE LIFE EASIER

In my last article, I mentioned the application of guideways for mass rapid transit for districts with lower traffic density. A simple description is

that Guideways is a transport system that has right-of-way priority. It is a dedicated transport link that does not need to stop at traffic intersections and can travel at its designed speed without interruption.

This system was conceived in the United States and operated successfully as it can dispense with this need to stop.

We have seen this shortfall in our Tuen Mun Light Rail Transit system with its need to stop at traffic lights in some intersections with highways, leading to traffic accidents in some cases.

The types of vehicles used in guideways can be small pods, used as taxis for transporting small numbers of passengers to specific locations, buses and articulated rubber-tired trains.

Such vehicles can be already running on public roads as AI-automated vehicles.

In some cases, they can even be converted to a light rail system on steel rails, though this conversion will involve a service interruption of a few years, which is undesirable for a developing town with growing need for mass transit.

With the technology growth in IT and 5G communications, AI can accurately control operations of such vehicles for better carrying capacity.

For city roads that are not very congested, it is now possible to run articulated rubber-tired trains on highways, sharing road space with existing traffic.

China's CRRC has developed a system of AI road trains to operate in Zhuzhou, Hunan, that it calls Autonomous Rapid Transit.

The system uses a three-car articulated road train that is 32 meters long and can carry 300 passengers.

It runs on a virtual track without needing rail tracks and a power supply system.

We all know that longer trains can carry a large number of passengers, but



Nuts and bolts

Edmund Leung

long trains will block cross traffic when stopping at traffic lights in a busy city.

The need for an overhead catenary to supply power to the train also limits its flexibility in busy sections.

With modern communication technology, use of high-capacity batteries or capacitors, and given priority at intersections, such articulated vehicles can carry a lot of passengers across a city to meet demand during traffic peaks, while freeing up roads for other vehicles when traffic loads are lighter.

However, such systems will only work in cities and districts with less busy traffic and are not easily applicable to a congested city like Hong Kong.

With roads already used to full capacity, we need transport systems that travel on a dedicated path and not on existing roads, and therefore guideways on viaducts would appear to be a better way forward.

But for new towns in the planning, such as those for the Northern Metropolis or in the Kau Yi Chau artificial islands in the western waters, with properly designed transport systems, mixed-mode traffic could be considered.

By the time these new towns are ready for occupation, hopefully the advance in technology will allow much more flexible but efficient transport systems.

We are fortunate that transport engineers continue to develop new systems to meet our commuting requirements.

Apart from underground railway and light rail systems, guideways and mixed-mode transport systems will be effective solutions, as they can adapt to variable and increasing needs with flexible systems.

Veteran engineer Edmund Leung Kwong-ho casts an expert eye over features of modern life