

Get ready – the era of the flying car is on its way

We have the technology, says Nick Collins – there are just a few practicalities to overcome

Sitting stationary in a spluttering line of traffic on a weekday morning, choking on exhaust fumes as the minutes tick by, who wouldn't want to be like George Jetson? As the patriarch of the space-age cartoon family from the 1960s, Mr Jetson was forced to contend with endless problems, ranging from malfunctioning robots to a tyrannical boss. But what sealed the show's appeal was that each episode began with a tantalising montage in which George was able to complete the school run, drop his wife off at the shopping centre, and make the journey to work in approximately 15 seconds, thanks to his flying car.

Society has not yet progressed to the point where we live in pods suspended in space, but the idea of using our own airborne vehicles to travel from A to B may not be so far-fetched. Manufacturers have carried out successful test flights involving prototype air-and-road vehicles which, if made

affordable, could consign rush-hour traffic to history. And so wary are the experts of the chaos that could be unleashed by thousands of untrained pilots gaining access to the sky that the European Commission is investing £3.7 million in a research project to ensure that there is an infrastructure in place to cope.

The first attempt to construct



a flying car came in 1917, when Glenn Curtiss, a rival of the Wright brothers, constructed a car that could hop through the air. In 1956, an American called Moulton B Taylor successfully tested his Aerocar, the world's first flying car, but it was never mass-produced.

More recently, Terrafugia, a spin-off from the Massachusetts Institute of

Technology, has built a lightweight carbon-fibre vehicle that works both on roads and in the air; but after a test flight last year, a demonstration planned for this year has been postponed.

The problem with moving the technology into the mass market, says Dr Mike Jump of Liverpool University's school of engineering, is that most attempts to design personal aerial vehicles have focused on developing craft that can take off from runways. The need to take off and land at airfields makes any time-saving negligible compared to all but the longest car journeys. In addition, many previous designs, in particular earlier models, were over-burdened by the additional weight required for their dual purpose, and performed poorly as both cars and aircraft.

Dr Jump and his colleagues in the "MyCopter" project – a pan-European research effort led by scientists at the Max Planck Institute for Biological Cybernetics in Tübingen, Germany – believe that if the



Taking the high road: by the end of the century, families could be using flying machines capable of taking off vertically

flying car is to catch on with busy commuters, it must be capable of taking off vertically from a domestic driveway, possibly using rotors or ducted fans to provide vertical lift. But that creates problems of its own. Helicopters, for example, require about an hour's maintenance in the warehouse for every hour in the air.

To combat this, researchers envisage a system where the vehicles are kept in a central warehouse, and flown by autopilot to driveways or offices. Commuters would ride to and from work along mid-air highways, with their vehicle automatically falling into formation with those around it. On arrival at their destination, the passenger would disembark and the vehicle would return to its warehouse on autopilot.

But even with the use of an autopilot, there are problems. "Everyone drives down the motorway in fairly close formation," explains Dr Jump. "The technology exists to enable that to happen automatically. But you cannot just have a flying car and then expect everyone in the world to figure out how to deal with it."

Creating a viable infrastructure for flying cars involves devising sensory systems and flying patterns that avoid mid-air collisions, and finding ways to cope with the noise that would be generated by swarms of low-flying vehicles – perhaps by directing traffic to avoid built-up areas. The cars will also need a simple interface that enables someone without training to fly the vehicle safely: piloting a helicopter needs to be made as easy as driving a car.

According to Dr Jump, "there might be occasions where the operator wants or needs to take control [from the autopilot], for example in an emergency. A pilot has a series of displays that provide him with a great deal of information. Full automation means you do not need all that, but if you are in manual mode you might need the dashboard. We are looking at what handling qualities that vehicle must possess to enable it to be flown or driven by a member of the public, and how it would have to behave and react for the average person to fly it."

If and when these flying vehicles arrive, it will not be a moment too soon. EU figures show that drivers in London spend more than 50 hours in traffic jams each year, while in Manchester it's 70 hours – and it will only get worse. Moving our traffic from the earth to the skies would also reduce the maintenance burden on roads, railways and airports.

Other potential solutions being explored by scientists

include giant aero-trains, which would float on cushions of air and reach top speeds of 361mph. Earlier this summer, the aerospace group EADS announced its plans for a Zero Emission Hypersonic Transportation vehicle, a Concorde lookalike which its makers say will be

able to carry passengers from Paris to Tokyo in two-and-a-half hours, flying above the atmosphere.

Dr Jump hopes that, by the end of the MyCopter project in 2015, they will have "a good idea about what the vehicle dynamics will look like, some idea of how the

occupant will interact with the vehicle, the levels of attention that that will require, and the social and environmental issues that we may have to overcome". By the end of the century, we could be using flying machines as an everyday form of transport. Others are

even more optimistic: "It is now a question of when we'll get personal aerial vehicles, not if we'll get them," Heinrich Bühlhoff, of the Max Planck Institute, told *New Scientist*. And as the logjams on our roads attest, shortage of demand is not likely to be a problem.

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