

Amazon delivery drone shows hybrid nature of vertical-to-horizontal (w/ video)

November 30 2015, by Nancy Owano



Amazon wants to acquaint us with their future delivery system, which has been designed to get [packages](#) to customers in 30 minutes or less using small unmanned aerial vehicles—yes, drones.

Amazon is highlighting the fact that the company intends to carry this out safely.

The vehicles will be flying under 400 feet and they will be weighing less

than 55 pounds.

"We will not launch Prime Air until we are able to demonstrate safe operations," said Amazon. "We will deploy when and where we have the regulatory support needed to safely realize our vision."

More on the safety theme: Amazon said Prime Air vehicles will take advantage of sophisticated "sense and avoid" technology, as well as "a high degree of automation," to safely operate beyond the line of sight to distances of 10 miles or more.

Kelsey Atherton and Carl Franzen said in *Popular Science*: "That [altitude](#) [almost 400 feet] is no coincidence, as it's what the U.S. Federal Aviation Administration says is the upper limit for hobby aircraft, including drones." According to the FAA's page on Model Aircraft Operations, safety guidelines include flying below 400 feet and staying clear of surrounding [obstacles](#).

Also, the aircraft must be kept within visual line of sight at all times and the aircraft weight should not top 55 pounds.

The focus among tech watching sites over the Amazon design for a Prime Air [drone](#) is that this is a new design since its first iteration; this one is being called a "hybrid" design in the way it goes from vertical in its takeoff and landing to switching to horizontal while in flight mode.

A report in *The Guardian* discussed the newest hybrid design: It has "eight rotors, assembled in pairs, that provide the helicopter-style vertical thrust. In addition there is a larger blade situated at the back of the plane, giving forward horizontal movement." The Guardian added that once the horizontal [motor](#) was engaged, the drone would fly at up to 60mph.

"This design enables it to fly long distances efficiently and go straight up and down in a safe, [agile](#) way," a company spokesperson told *TechCrunch*. "It is one of many prototype vehicles we have developed."

Commented Ed Pilkington, chief reporter for Guardian US: "The hybrid aeroplane has long been an aspiration of flight engineers and it already exists in various large-scale vehicles, including the military Osprey. Amazon's prototype is believed to be the first effective hybrid achieved in a small [unmanned](#) drone of under 55lb."

It appears that Amazon is actually testing different designs, intended for different usages. In answer to their own posed question on what the Prime Air machine will look like, they said, "We are testing many different vehicle designs and delivery mechanisms to discover how best to deliver packages in a variety of environments. We have more than a dozen prototypes that we've developed in our research and development labs. The look and characteristics of the vehicles will evolve over [time](#)."

Amazon's Prime Air development centers are in the United States, the UK and Israel. The company website stated that "One day, seeing Prime Air vehicles will be as normal as seeing mail trucks on the road." That is a fitting segue into the recent video about Prime Air. British personality Jeremy Clarkson is the presenter about a "story from the not too distant future"

"It's the day of your daughter Millie's big football and, to be clear, it's the sort of football you play with your feet," he narrates. The girl is seen fretting over a missing piece of equipment for her game, a Size 3 Puma shoe—and some of it is in the mouth of the family bulldog.

The video shows her mother in the kitchen with a tablet, ordering the shoe from Amazon.

The video shows the drone, Amazon Prime Air in a warehouse. The drone is rising vertically like a helicopter, to nearly 400 feet. This hybrid design then assumes a horizontal orientation and becomes a fast airplane. "In time," said the presenter, "there will be a whole family of Amazon drones—different designs for different environments."

The one shown in the video can fly for 15 miles, and it knows what's happening around it. It uses "sense and avoid" technology, he said.

Back at the kitchen, the mother gets a message on her tablet saying the package is arriving and the drone goes back to vertical mode, scanning the landing area. The vehicle then lowers itself to the ground, drops off the package, and flies straight back up to altitude.

More information: www.amazon.com/b?node=8037720011

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