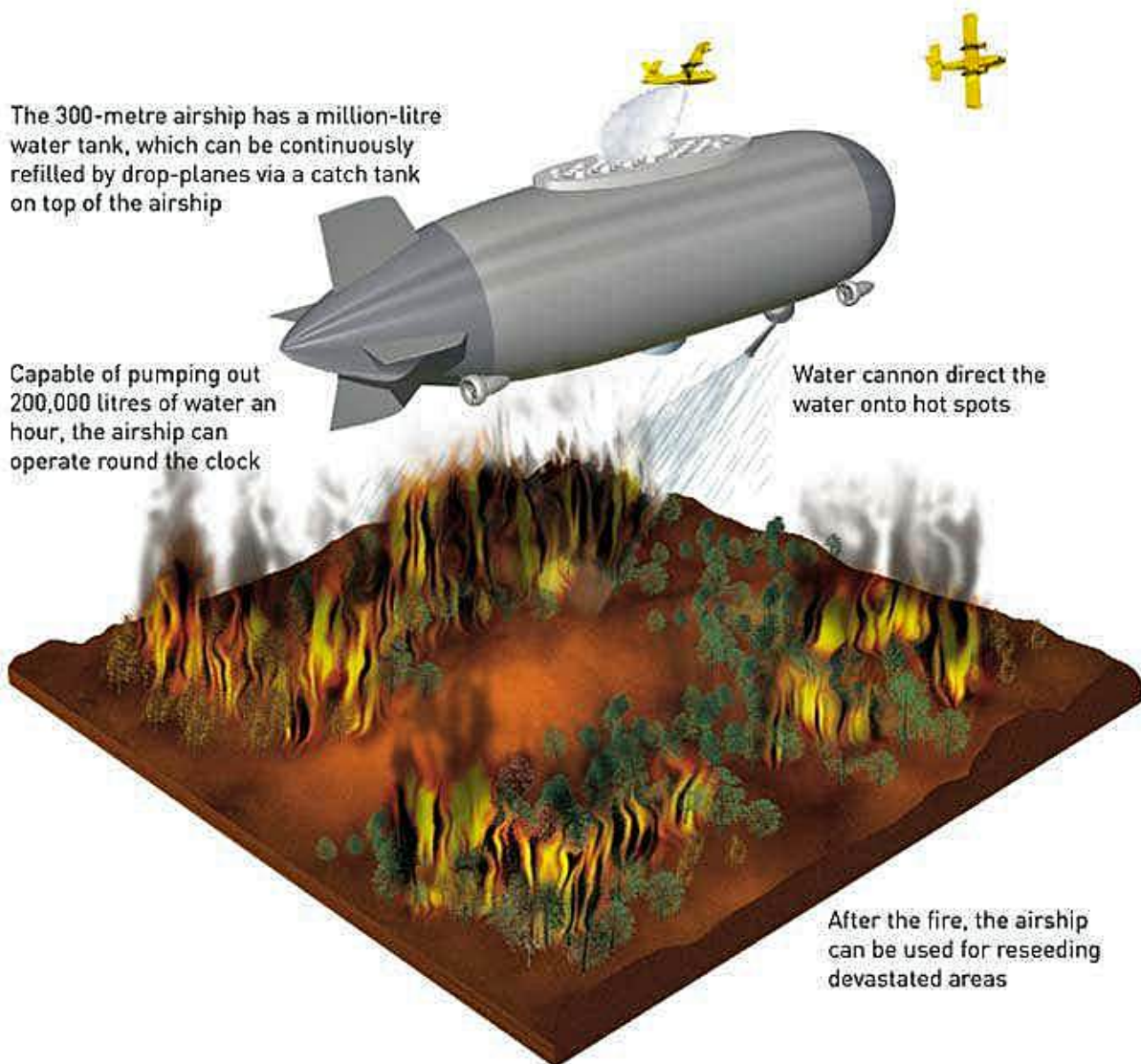


Wetzone Engineering – Firefighting airship

Peter Lobner, 8 September 2025

In 2002, the Huntington Beach, California firm Wetzone Engineering, with Thomas Gagliano serving as CEO and Principal Scientist, promoted their concept for a very large, unmanned firefighting airship with a large internal water reservoir that could be replenished in flight by water dropped by helicopters and fixed-wing airplanes into a large collection basin on top of the airship. The concept of operation of this airship is depicted in the following illustration.



Source: *New Scientist* (Jun 2002)

In one Wetzone Engineering design concept, a 300 meter (984 ft) long, propeller-driven, firefighting airship would carry up to one million liters (264,000 gallons) of water. One liter of water weighs about one kilogram, so that payload would weigh about one million kilograms (1,000 metric tons / 1,100 tons). Wetzone Engineering claimed that the airship would be capable of delivering 200,000 liters (52,800 gallons) of water per hour (200 metric tons / 220 tons per hour) over a large area of a fire. That would be a remarkable balancing act for the unmanned airship's automated flight control system, which would require a hard-working variable buoyancy control system and/or a powerful propulsive lift system to manage the buoyancy and trim effects of rapidly changing airship mass.

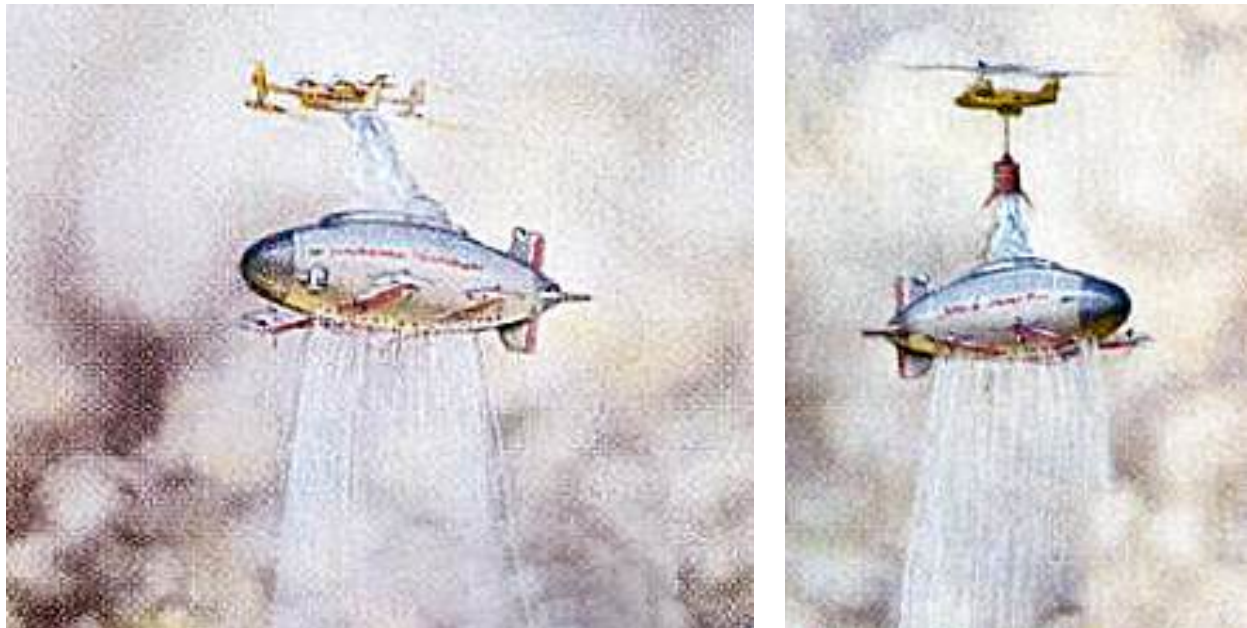
In a short article in the June 2002 issue of *Popular Mechanics*, author Don Chaikin reported:

“Keeping a safe distance from the fire, the airship would take advantage of prevailing winds to evenly disperse the water in a spray that could vary from a mist to a monsoon. Stubborn hot spots would be attacked with a water cannon.....After the fire was extinguished, the airship would briefly touch down and pick up a seedling dispenser. Returning to the fire scene, it would pelt the terrain with tiny trees encased in protective, nutrient-filled packages. In its final pass over the burned land, the airship would water the seedlings.”



*Wetzone Engineering airships creating an artificial rainstorm over a fire.
Source: Popular Mechanics (Jun 2002)*

The firefighting airship would be able to operate at range of altitudes, depending on the flying conditions in the vicinity of the fire. Typical operating altitude would be about 1,200 m (3,937 ft). In turbulent conditions, the airship could operate from a higher altitude and adjust the water droplet size to still provide an effective artificial rainstorm at ground level.



Concepts for replenishing the water reservoir on the Wetzone Engineering firefighting airship from a fixed-wing airplane (left) and a helicopter (right).

Source, both graphics: Popular Mechanics (Jun 2002)

Replenishing the airship from a helicopter seems possible since the flight speeds of the helicopter and airship overlap and the helicopter pilot typically has good downward visibility, enabling an accurate water drop on a moving target at relatively close proximity. The largest firefighting helicopters in operation in the U.S. are the CH-47 Chinook and the CH-54 Skycrane:

- A CH-47 Chinook helicopter configured for firefighting can carry 8,700 to 11,400 liters (8.7 to 11.4 metric tons, 2,300 to 3,000 gallons) of water / fire retardant per load.
- A CH-54 Skycrane can hold up to 10,000 liters (about 10 metric tons / 2,650 gallons) of water / fire retardant in its belly tank.



CH-47 Chinook. Source: Wildfire Today



CH-54 Skycrane. Source: AirMed&Rescue

Smaller helicopters also serve in firefighting roles. For example, the Bell 205 can carry up to 1,200 liters (1.2 metric tons / 317 gallons) of water.

At least 20 large helicopter deliveries per hour (one every three minutes) would be needed to keep up with the firefighting airship's maximum water discharge rate of 200,000 liters (52,800 gallons) per hour onto the fire.

Fixed-wing firefighting aircraft fly considerably faster than airships. Even the slow-flying CL-415 firefighting aircraft, with a water capacity of about 6,000 liters (6 metric tons / 1,585 gallons), has an operating stall speed of about 67 knots (77 mph, subject to aircraft weight, configuration, and atmospheric conditions), which is still quite fast relative to an airship's cruise speed (Note that the official world speed record for an airship, set in 2004, is only 62.1 knots / 71.46 mph). On final approach to the drop zone, the fixed-wing aircraft pilot may not have a clear downward view of the airship, making the water drop quite hazardous because of the speed difference and close proximity needed for an accurate air drop.



CL-415. Source: Skies Magazine

Water resupply from a helicopter or passing fixed-wing aircraft will be quite a dynamic event for the airship, as large volumes of water repeatedly are dropped into the collection basin on top of the hull and water missing this target impact the upper hull.

Regardless of the water resupply vehicle, the ability to keep up with the airship's maximum 200,000 liters (52,800 gallons) discharge rate seems doubtful.

In 2002, Gagliano said it would be at least three years before these airships are out fighting fires. More than two decades later, no firefighting airship prototype has flown. Gagliano was correct, that the economics of operating a fleet of firefighting airships will be challenging.



*Another firefighting airship concept based on a hybrid airship hull.
Source: JSPompier78 (2007)*

For more information

- Don Chaikin, et al, "Airship Fights Forest Fires," Popular Mechanics, pg. 21, June 2002:
https://books.google.com/books?id=ANEDAAAAMBAJ&pg=PA21&dq=airship&hl=en&sa=X&ved=2ahUKEwji2u3EjLL_AhVrJkQIHQeGBE04HhC7BXoECAMQBg#v=onepage&q=airship&f=false
- Duncan Graham-Rowe, "Wet Zeppelin," New Scientist, 22 June 2002:
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<https://www.newscientist.com/article/dn2425-gigantic-airships-aim-to-damp-forest-fires/>
- “Giant Blimps Could Rain Over Wildfires,” ABC News, 27 June 2002:
<https://abcnews.go.com/Technology/CuttingEdge/story?id=97958&page=1>
- “An airship to fight forest fires,” (in French: “Un dirigeable pour combattre les feux de forêt”), JSPompier78, posted on 19 November 2007: (No longer available at the original web link)
<https://lynceans.org/wp-content/uploads/2025/08/Un-dirigeable-pour-combattre-les-feux-de-foret.docx>

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 - Aerosmena firefighting A20 and A200
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