



Aerial Firefighting

THE SWISS ARMY KNIFE *of high-rise firefighting*

**Thomas Jonkers,
Inventor of Fire
Spyder™, discusses
how his creation is the
future of combatting
emergencies in
high-rise buildings**

**Could you please introduce
yourself and your role at Fire
Spyder™ ?**

My name is Thomas Jonkers, and I am the inventor of the Fire Spyder™, a privately developed and funded project. I have applied for patents in the US, UK, Europe, and China, which are currently pending approval. My

background is as a master mariner in offshore and marine dredging technology. During my work for a global salvage company, I dealt with fires and other emergencies at sea from an Operations Manager's perspective. I am an Affiliate Member of the Institution of Fire Engineers in the UK and a member of the Dutch Order for Inventors (NOVU). I am based in Singapore.

What is the Fire Spyder™?

Because of its multifunctional capabilities, I often refer to it as the Swiss Army knife of high-rise firefighting. The system consists of three main winches that deploy steel wires from the vehicle to pulleys anchored at the corners of the roof or, if necessary, to adjacent buildings and then back down to the vehicle. These wires are connected to a fire hose and nozzle assembly referred to as the monitor plate. A third wire from the central winch, also connected to the monitor plate, maintains constant tension within the system. As a result, the monitor plate can be quickly and stably winched to any position along the building façade, controlled by a joystick. Once positioned in front of the fire, the Fire Spyder™ can immediately begin exterior firefighting operations. By slacking the centre wire, equipment can be delivered precisely where it's needed.

What would a real-world tactical deployment for a high-rise building look like?

Upon arrival at the scene, a fire engine equipped with the Fire Spyder™ parks close to the target building. Firefighters then transport mechanical anchors and setup tools—each around 20-35 lbs (10-15kg) in weight—up to the roof using either the stairs or an elevator. At opposite corners of the rooftop, two mechanical expansion anchors, already fitted with lengths of chain, are rapidly drilled into the concrete. While this takes place, two drones each deploy a pulley rigged with a lightweight steel messenger wire to the anchor points.

Next comes the stage I call the “handshake.” Firefighters connect the rooftop anchor to the drone's pulley. Once this link is established, the drone releases the messenger wire, enabling the messenger winch on the ground to heave the heavier work wire up through the rooftop pulley and back down toward the base unit.

When the work wire is in place, its two ends are secured to the monitor plate, which by default carries a fire hose and nozzle. At this stage, additional equipment—such as hose packs, air bottles, or even a provisional standpipe—can be attached to the same lift. This single haul delivers essential gear directly to the operational floor. Immediately

afterward, the monitor plate ascends to the fire floor and begins its exterior firefighting function, while the support equipment staged below is ready for interior operations.

Could you name a few of those advantages in using this system?

One major benefit of the Fire Spyder™ is its exceptional reach. It can operate well beyond the range of conventional ladders—up to approximately 410 feet (125 meters). By comparison, the world's tallest fire truck ladders reach around 210 feet (64 meters) at most, and are often restricted by their size, weight, and the challenges of positioning in tight urban spaces. The Fire Spyder™, by contrast, is compact and offers far greater flexibility in placement, all while exceeding traditional reach capabilities.

“The process of developing Fire Spyder™ began two to three years before I built any models or prototypes.”

Another advantage is rapid water delivery. The system can deliver high volumes of water with sufficient pressure to buildings up to 410 feet (125 meters) tall in under



Thomas Jonkers
Inventor, Fire Spyder™

approximately 20 minutes, or to mid-rise buildings 65 – 230 feet (20–70 meters) in less than 9 minutes—an impressively fast response time for high-rise firefighting.

A persistent challenge in high-rise firefighting is moving equipment to firefighters positioned one or two floors below the fire floor. Carrying heavy gear up stairwells slows firefighters down and consumes valuable energy. The Fire Spyder™ addresses this with its winch-based lifting system, which can raise loads of over 1,000 kilograms directly along the building's exterior. With a lifting speed of more than 40 meters per minute, it can reach 80 meters in under two minutes. This greatly reduces firefighter fatigue and enables crews to focus on attack efforts rather than the demanding task of moving equipment.

What's next for Fire Spyder™?

I've done a proof of concept in Vietnam to demonstrate that the system works, but I would love to build a Minimum Viable Product and, with it, conduct further tests with professional firefighters. I'd like to explore how the system performs under real-world conditions. With more and more high-rise buildings being constructed around the world, the Fire Spyder™ will prove essential for effectively combating these extremely challenging emergencies.

When introducing a new innovation, there's often hesitation—people naturally tend to stick with what they know. My goal is to keep engaging with experts in the field, earning their trust and support so the Fire Spyder™ can grow through word of mouth. ■