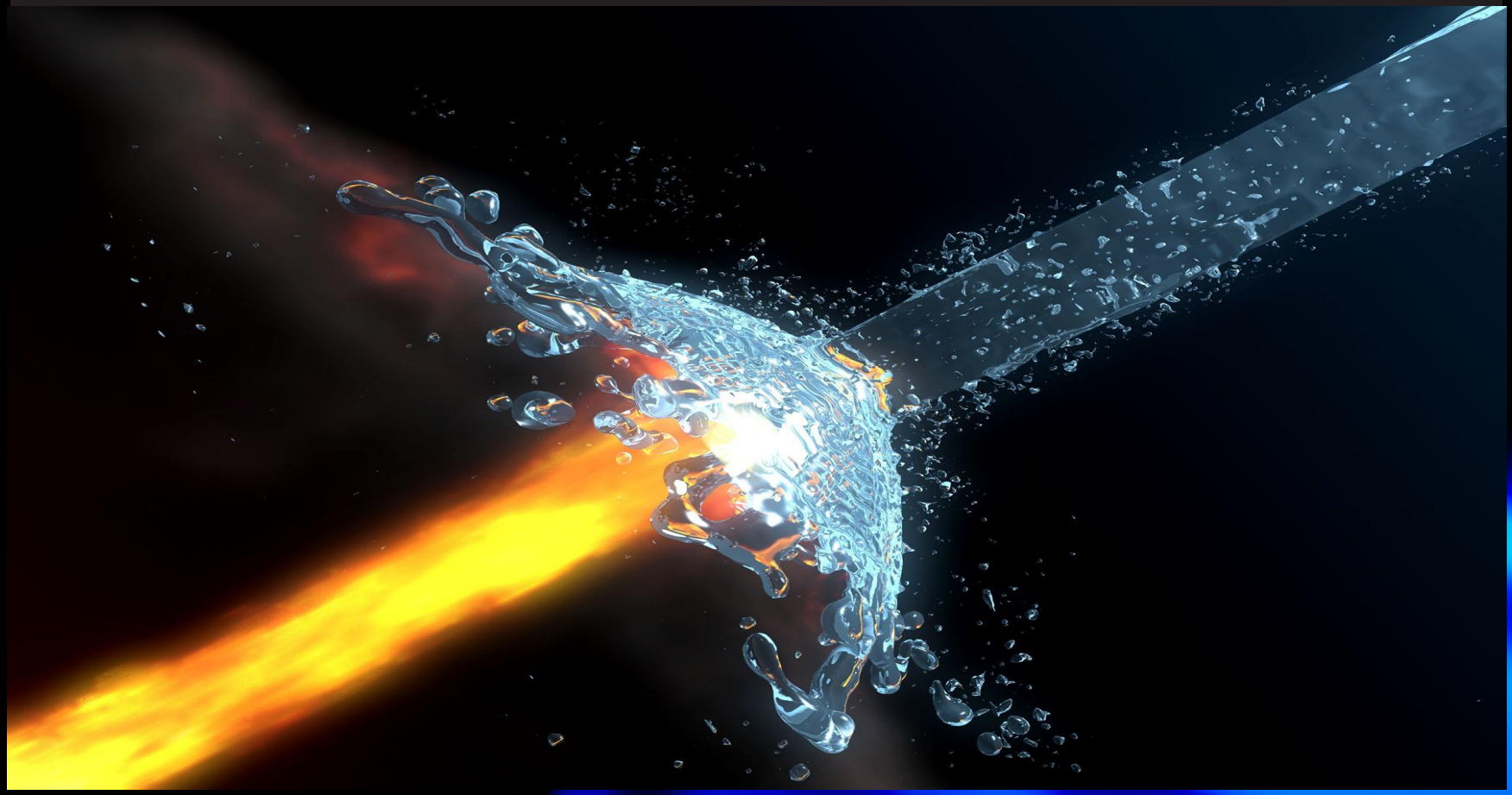
ANGUS FIRE

Coolfire

Quick response fire suppression system



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What is it?

- Coolfire is an integrated water/abrasive cutting and fire suppression system
- It uses of a mixture of water and abrasive at 28 lpm or 56 lpm ejected at high pressure (~300 bar) to pierce quickly through all building, security and construction materials
- Once through, the system rapidly suppresses fire using a fine water mist
- Coolfire can be used safely in flammable atmospheres

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How it works

- Coolfire cuts a small diameter hole using a combination of water and abrasive
- As the hole is so small no oxygen is admitted to the fire area, which improves the firefighting efficiency and prevents 'backdraft' and 'flashover' dangers
- The smaller the openings to the fire area, th
the system operates

2.3mm

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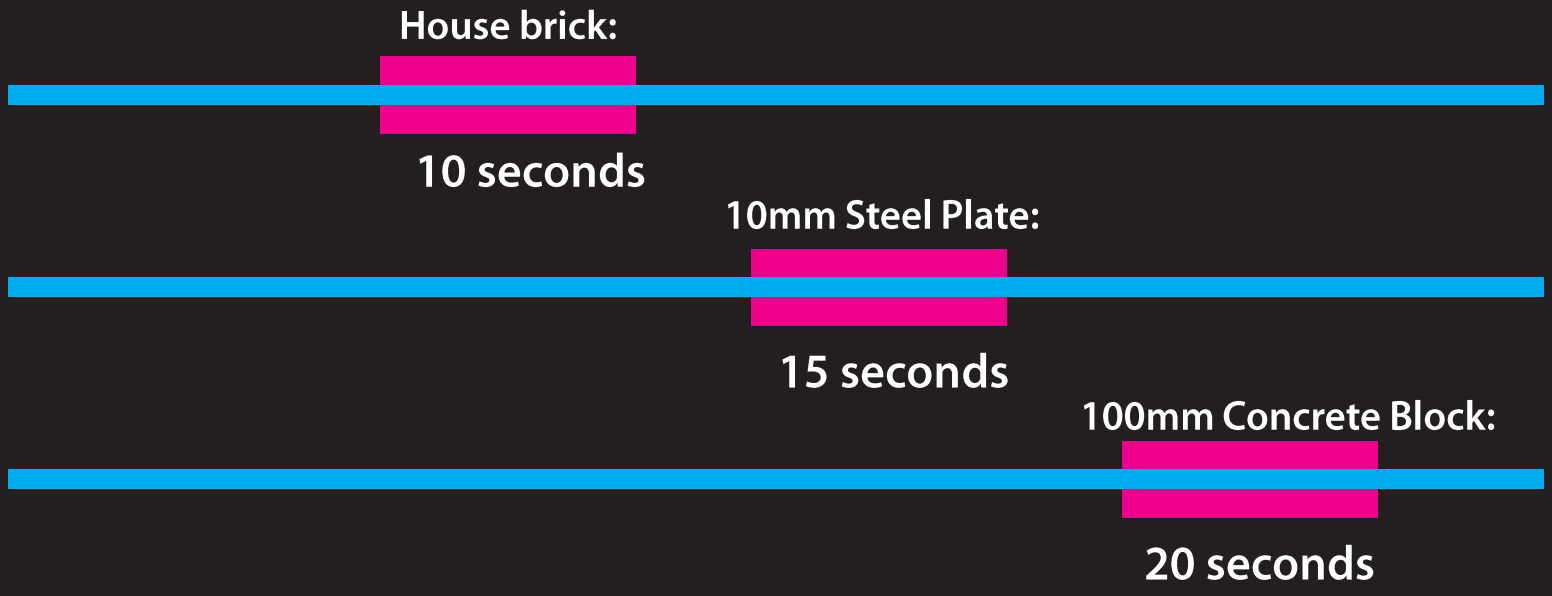
How it works

- Coolfire can typically cut through a house brick in 10 seconds, 10mm steel plate in 15 seconds and a 100mm concrete block in 20 seconds



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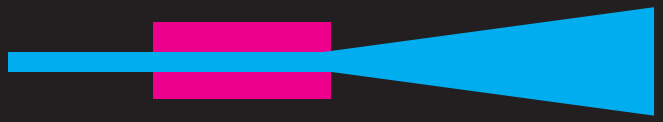
How it works

- Once Coolfire has cut through into a building, the abrasive is turned off and the high pressure of the water results in very high velocity (~200m/s) fine water droplets (~100µm)
- This causes a fine water mist with long range (>30m) to create a highly efficient cooling effect through inversion
- The tiny water droplets absorb heat rapidly turning in to Steam, thereby reducing the ambient temperature and lowering the Oxygen reducing the fire intensity.



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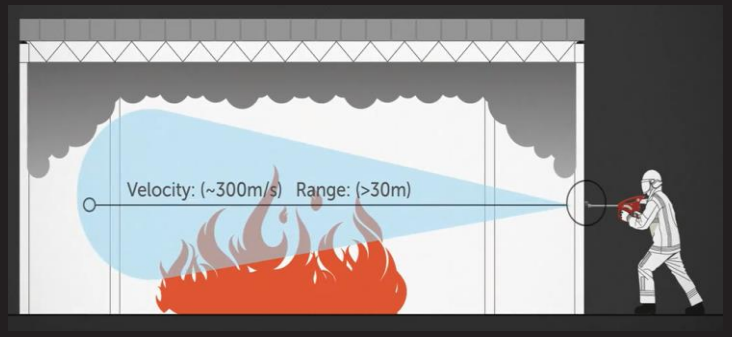
How it works

- Intensive water mist in the fire area results in a highly effective extinguishing process:
  - cooling of the gas in the area around the fire
  - cooling of fuel and potential pockets of fire
  - reduction of oxygen concentration
  - absorption of heat radiation
  - uses as little as 10 litres of water



In general, the greater the surface area of water (small droplets), the faster the water will absorb heat from the surroundings and evaporate. The greater the fire penetration, the faster the cooling.

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The concept – System Components

IT can be fitted to conventional fire tenders or light Vehicle, 4x4's :

The system comprises of:

1. High Pressure Water Pump
2. Abrasive Control Unit
3. Hose Reel and Umbilical
4. Application Lance

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The concept – pump unit

UHP Pump

Twin UHP Pump skid with Petrol engine drivers

The pump unit comprises a PTO, diesel or petrol driven pump(s), filters, variety of water inlet connections and pump priming tank.

- **Independent of vehicle/transport type**
- **Can be connected to existing riser/ ring main**
- **Minimal effect of hose length and height**
- **Can have additional hose lengths added**

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The concept – cutting agent unit

The cutting agent unit comprises lightweight composite cutting agent cartridge, gas actuated valves, electrics and proven Diajet ™ abrasive circuit.

- Independent of vehicle
- Easily removable for maintenance or service
- Fast reloading of cutting agent for extended cutting

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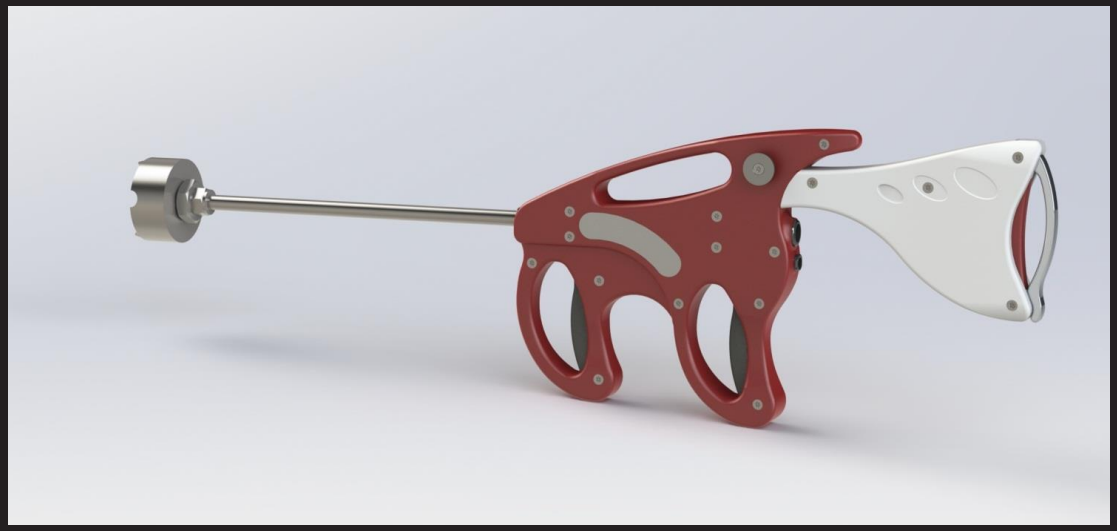
The concept – lance unit

The lance unit comprises carrying handle, water trigger, separate abrasive agent trigger, deadlock switch and combined standoff backwash plate.



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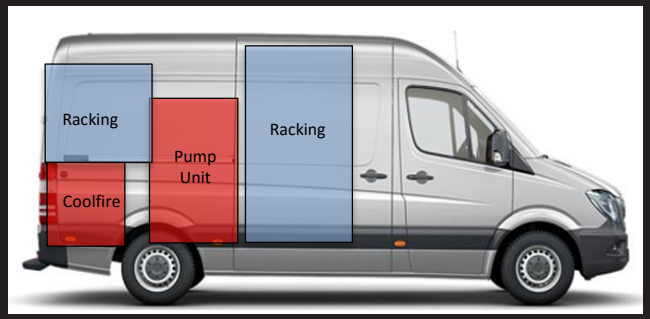
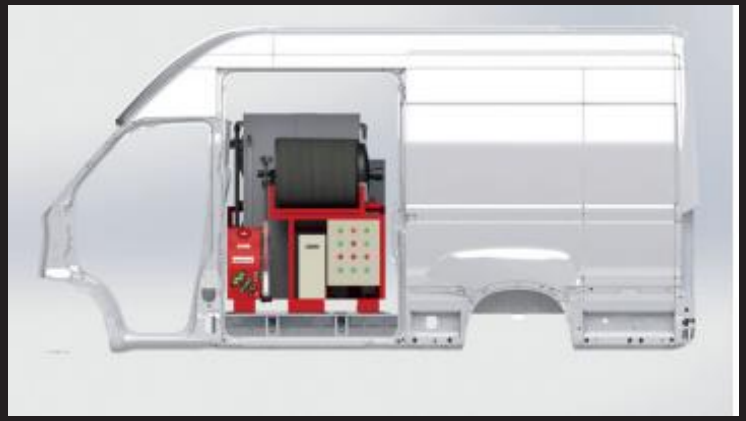
COOLFIRE vehicle options





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The benefits

1. Improved firefighter safety - fire can be fought from a safe position outside a building avoiding enclosed spaces
2. Risk of flashover is eliminated as there is no need to risk entering a burning building before it is safe to do so
3. Velocity gives extended reach into a building
4. The system only needs a water flow capable of being supplied by a normal household tap (~28 to 56 lpm)
5. Can be combined with positive ventilation to carry droplets through building
6. Modular, "plug and play" system can be serviced independently of the vehicle
7. Quick response suppresses the spread of fire, reduces rescue times, increasing surviability and offers rescue leaders more time to plan operations for optimum efficiency

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Mid and West Wales Fire and Rescue Service Demonstration of Coolfire

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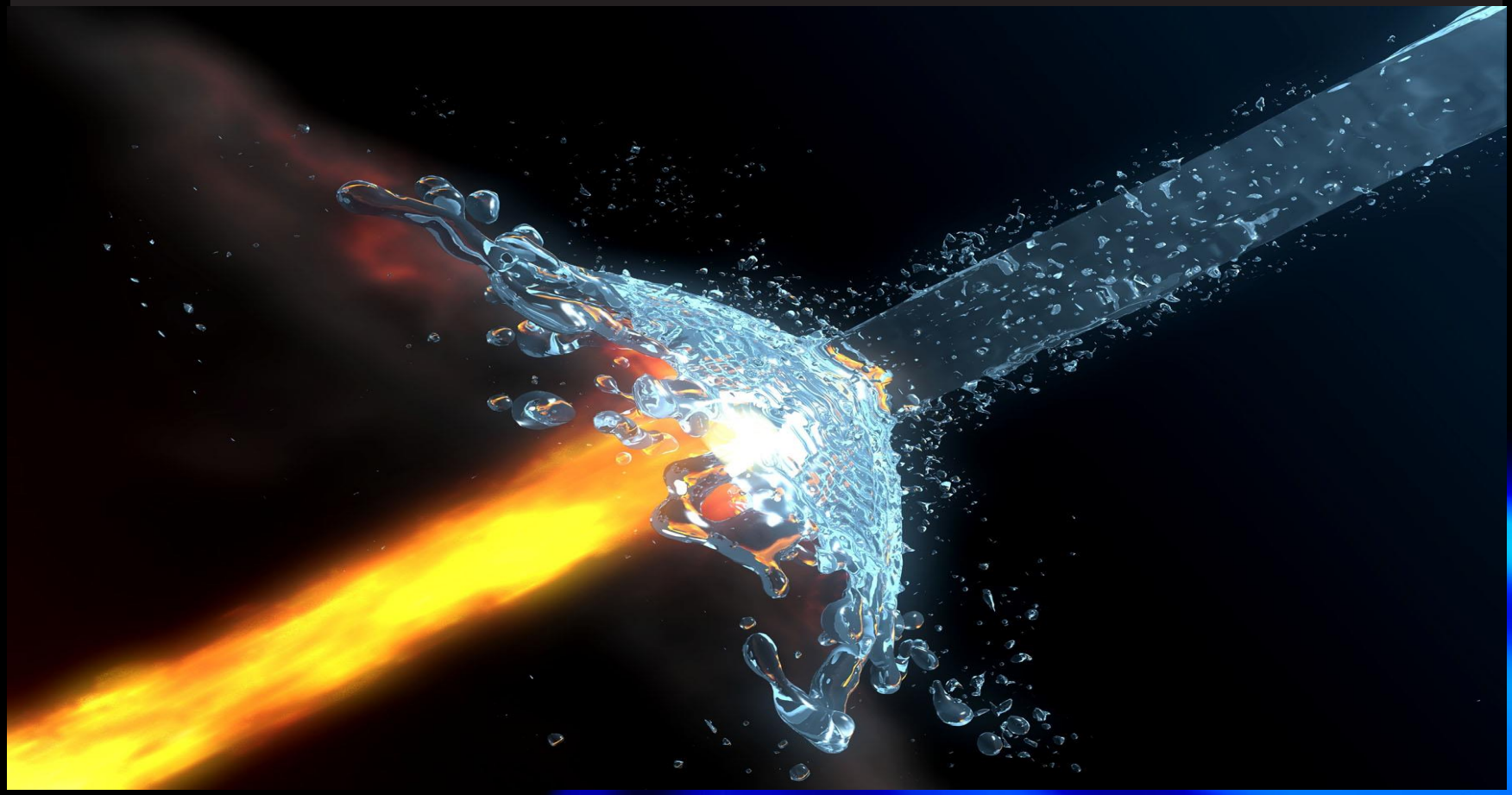
Questions?



Angus Seminar

Presenters: Martin Hough & Charlie King

Far East Seminar

September 2015

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The Next Generation of Fire Fighting Technology