

Questacon

Carry the Flame



Centenary of Federation

A torch that can burn in rain, hail and shine. A breathtaking design for an event to involve a Nation – truly Australian.

WHAT'S THE PROBLEM?

The Olympic Torch showcases the host nation to the World. It was important that the torch was impressive, functional, environmentally friendly and safe for the many who ran the Sydney 2000 Olympic Torch Relay.

A GREAT AUSSIE SOLUTION

The Sydney 2000 Olympic Torch is unique in design and showcases Australian science and technology innovation. The designers of the torch, Blue Sky Design, were inspired by the Sydney Opera House and the boomerang. More than 12 000 torches were engineered and manufactured by G.A. & L. Harrington Pty Ltd.

Environmentally friendly in its design, the Olympic Torch uses a new burner with a highly efficient flame and emits virtually no smoke or toxins. Weighing less than 1 kg, the torch is designed to operate in rain and hail of up to 50 mm per hour, winds of up to 65 km per hour, and temperatures between -5 and 45 degrees Celsius.



The Sydney 2000 Olympic Torch was the most reliable in Olympic history, because the combustor produced two flames. If the large flame at the top went out, a small back-up flame within the combustor reignited it. The fuel and combustion systems were designed and developed by the Departments of Mechanical and Chemical Engineering at Adelaide University and by Fuel & Combustion Technology Pty Ltd.

Another torch was designed to burn underwater!

The Shell Questacon Science Circus travelled alongside the Torch Relay from June until September.

HOW DOES IT WORK?

The fuel canister contained a mixture of 65% butane (cigarette lighter fuel) and 35% propane (BBQ gas), which burnt with a bright yellow flame and no visible smoke. The fuel supply lasted 20 minutes, enough time for runners to complete their 500 to 1 000m leg of the relay, whilst minimising fuel wastage.

Each runner flipped the switch at the bottom of their torch 15 seconds before their leg of the relay. This opened the on/off valve and released the fuel from the canister. The liquid fuel travelled along the brass fuel pipe and through a gauze filter. It then passed through the orifice, where it vaporised (turned into a gas). The 15 seconds allowed a pool of gas to accumulate, so the torch was ready to light when the previous runner arrived with the flame.

When the torch was alight, the gas passed through the heater coil at the base of the flame before release. This improved the efficiency of the torch by ensuring that the fuel was fully vaporised before being burnt.

FURTHER INFO, FACTS & FUN

- The Shell Questacon Science Circus travelled alongside the Torch Relay from June until September 2000 and visited 140 community celebration sites around the nation. Presenters performed interactive science shows to audiences at these sites, explaining the science behind sport and the Olympic Torch. These shows also provided thousands of Australians with the rare opportunity to hold the Torch.
- The Sydney 2000 Olympic Torch Relay was the longest in Olympic history, travelling over 27 000 km in Australia alone, with over 11 000 different people carrying the torch.
- The pilot flame is a vortex of fuel and air. It has proved so successful it is in the process of being patented and may be used for camping stoves.
- It is the first Olympic torch that isn't straight and the first one that wasn't round (ours was elliptical). It is the second longest and second lightest torch of the summer Olympic games.
- For further info on the Sydney 2000 Olympic Torch, check out:
<http://www.anc.net.au/science/slab/torch/default.htm>
<http://www.tec.adelaide.edu.au/>

For more info on great Australian Science check out:

Questacon's Innovative Australians <http://www.questacon.edu.au/innovaus>

CSIRO's Australia Advances <http://www.csiro.au/promos/ozadvances>

The Australian Academy of Science's Nova <http://www.science.org.au/nova>

The Australian Science Archive Project <http://www.asap.unimelb.edu.au/>