Bushfire Protection System

Climate change has challenged home-owners to face the reality of increasingly frequent - and intense - bushfires. To avoid major loss of life, the advice from the fire service, police and planners is to evacuate. Take what you can, leave your house, and hope fire fighters can cope. And often, they can't cope.

In Australia and many other countries, rural residents rely on tank water. The project aims to protect the house from bushfire when we are told to evacuate. There is a likelihood of losing both mains electricity and mobile phone coverage in a major fire. We have limited water to fight fires and do not have ‘off the grid’ solar power available. Your situation might be different of course, you might even have the luxury of a piped, good pressure, water supply.

Concept

Use a deep cycle battery and 12 volt pump to spray water around the house. Since a small pump has limited capacity, use a micro-controller to sequentially control a number of spray or sprinkler lines. A number of ‘triggers’ are built into the controller, the idea being that the system can be waiting while actively monitoring for a trigger to start the pumping. The triggers utilise temperature and smoke sensors programmed to automatically start the pump at critical thresholds:

• high temperature

• sudden rise in temperature

• heavy smoke

• elevated temperature plus smoke

As well, the system can be started by

• a start switch (‘start and run’ switch)

• mobile phone switch linked to the system via the home WiFi and thus the internet.

If the WiFi is unavailable the sensors will still work automatically. The mobile phone app also reads the temperature and smoke, allowing monitoring from many kilometres away – provided the WiFi is working and the internet is available. Phone towers have been disabled in past major bushfires.

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