

Hydro-Electric Power Station

During scheduled 5-year maintenance of the main water feed pipes between the dam and turbines at Cruachan Hydro-Electric Power Station, a system had to be developed to provide remote worker safety.



Problems

- Maintenance engineers are lowered into the 12-foot wide pipe in a small cradle to inspect the internal condition.
- The pipe drops approximately 1,300 feet down from the dam to the turbine hall and is buried underground.
- Health & Safety guidelines stated that the personnel in the pipe had to be aware of any fire alarm being activated within the power station complex.
- It would have been prohibitively expensive to run a cable harness all the way down the pipe to provide communications.

Solution

EMS provided a simple yet very effective radio signalling solution.

An I/O unit was installed to the existing fire alarm system. This sends the signal through a directional aerial up the pipe to the cradle. In the cradle a sounder strobe was fitted providing the engineers with an audible and visual indication of any alarms.

A pager was also supplied that would vibrate in the foreman's pocket.

A callpoint was installed in the control room, which gives the operators the option to manually evacuate the pipe if necessary.

The technical challenges of this simple application were quite significant. The signal had to propagate to all parts of the 1,300-foot underground pipe, passing through steel, concrete and rock.

The system has successfully provided remote alarm monitoring along the entire length of the pipe, helping to protect the inspection team.