



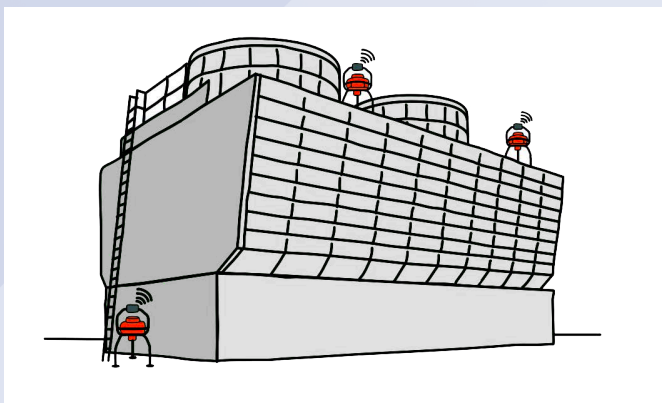
## Case Study

# Detective Wireless

Wireless communication protects workers working at heights

## > The Client

In process plants, workers are often required to work at heights (on tall towers and storage tanks). Providing adequate protection from gas hazards may be more difficult, but with wireless area monitoring it is hassle free. In this application note we look at how Crowcon's Detective+ area monitor with wireless module is able to protect workers against gas hazards while working at heights.



## > Requirement

Cooling towers are tall structures (built in wood or concrete, with a large mechanical fan (or fin fan) on top. Plant water, hot from being used as a cooling agent in the production process, enters the cooling tower. The fin fans create an upward draft which draws air up while plant water cascades down. The contact of ambient air and water facilitates heat transfer, and cooled water is collected at the bottom of the tower. The cooled water goes back into service.

While the size of cooling towers varies, they must be tall for effective heat transfer. When maintenance work is required on the fin fan, a worker will have to scale a tall ladder at the side of cooling tower. While at work, the workers may not be aware of potential gas hazards nearby, so it is important to have adequate area monitoring and alert systems.

## > Approach

Crowcon's Detective+ is ideal for temporary area monitoring while workers carry out a repair. Detective+ is portable and can be easily deployed to provide fence line monitoring during shutdowns or turnaround. If working on a cooling tower fin fan, Detective+ units can be connected to other units (up to 70m away) via Detective Wireless modules, which eliminate the need for cabling between units.



Detective Wireless uses the proven Ricochet mesh network. Should wireless connection between two devices weaken, the network will automatically re-route communications via alternate RICOCHET enabled devices and so 'self-heal'. In essence, this creates a mesh type network allowing a more robust and efficient wireless network.

## > Outcome & Benefits

During repair work on cooling tower fin fan, engineers working on the upper deck can be alerted as soon as any gas hazards are detected on ground level and vice versa. The audible alarm and light sequence is faster on the Detective+ unit which detects gas, while the sequence on other units in the network is slower. This differentiates the unit nearest the gas from the rest, so everyone is alerted to the location of the hazard.

Furthermore, the Detective Wireless module is able to relay alerts to the control room via a Detective+ unit located just outside. Detective+ with Detective Wireless module allows for quick deployment while maintaining high levels of protection for workers. In addition to gas alert signals, Detective Wireless will transmit other faults e.g. loss of signal, or "battery low" alarm.

In this modulated alert mode, the beacon and lights will flash for 3 seconds followed by a 5 second pause which will be repeated until a user acknowledge the alarm. In conclusion, workers working at heights can be alerted to any gas hazards on the ground by using a Detective+ area monitor with Detective Wireless modules.

The same alarm can be relayed to the control room by having a Detective+ next to it. This configuration is easy to deploy and does not require any additional hardware, providing customer a simple yet effective solution.



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