

# City Talk



## UTILITIES RAISE GAME TO GET AT PRECIPITOUS PIPES

I have recently suggested that drones are the most modern method for inspecting building facades and their ancillaries, such as gas pipes.

I have since learned there have been a lot of advances in the area of inspecting and repairing gas pipes that overcome barriers to drone applications.

As an example, Towngas has been using drones to inspect gas riser leaks since 2015, but under the Civil Aviation Ordinance's chapter 448G that limits the use of large drones and flying heights, newer technologies have been developed to provide alternative means that are even more effective.

Since 2019, the most advanced way of inspecting gas riser leaks in buildings is by remote cameras.

A digital camera with a powerful 125x zoom lens allows remote inspections from the street level.

It is used in tandem with a laser methane gun that has a 200-meter range.

The laser gun can accurately measure the amount of methane present outside a riser to allow technicians to pinpoint the areas of leakage.

We can imagine how much easier and safer it would be to place the camera and laser set on a tripod at the roadside.

With gimbals, the camera and laser gun set can steadily and accurately follow the length of the riser, and the data is fed into a laptop for detailed analysis.

With help from artificial intelligence, the riser's condition can be accurately determined.

Towngas has its own grading system for the degrees of corrosion in gas risers.

Zero indicates no rust, one spots of rust, two larger patches of surface rust, and three some delamination of surface protection (probably leading to leaks), requiring immediate attention to prevent gas leaks.

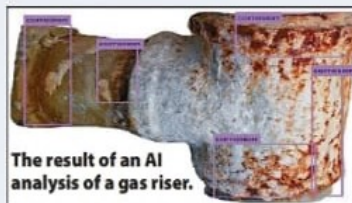
Following a detailed examination through the camera and laser methane gun system, technicians can then closely identify the actual point of leakage.

If it is in the branch pipe that connects the riser to a gas meter, that short lateral pipe can be repaired by inserting a stainless-steel sheath to extend its lifespan.



### Nuts and bolts

Edmund Leung



The result of an AI analysis of a gas riser.

Only when corrosion is excessive would there be a need to replace the pipe.

For repairs to corroded risers, a riser robot has been developed.

It can travel vertically along the riser to the exact spot of the corrosion, and cameras can monitor repair work, which can range from reconditioning and applying anti-corrosion paint to the pipe surface, to wrapping that pipe section by mechanical means using a PVC sleeve grouted with expansion foam.

This is called a smart jacket.

Extensive development of these methods of repair has ensured that such repairs will not only be effective to stop corrosion but also robust enough to last a few more decades before the need to completely replace the riser.

For repairs in less accessible locations, such as risers in lightwells, a specially designed small size detector, comprising a high-resolution camera and a detector of combustible gas, can be lowered from the roof.

This method takes inspiration from fishing from a well, hence its name, mini fishing inspector.

Such a device can also detect leaks in close quarters and minimize the need to erect scaffoldings.

These are just a few examples of progress made by public utilities to serve users, providing extremely high levels of safety, speedy inspections and timely repairs, without a need for scaffolding.

We must praise the engineers for developing such high-tech and reliable devices.

**Veteran engineer Edmund Leung Kwong-ho casts an expert eye over features of modern life**