

Non-intrusive inspections

No exposure of people to confined spaces

Partners



Challenge

Many visual inspections in confined spaces can be performed by robots, which are operated remotely by an inspector. This makes the inspections more effective and economical, but most importantly safer. Pilots must demonstrate the usefulness of this concept. In order to perform an internal inspection of tanks, vessels, pipes, heat exchangers, fireplaces and chimneys, inspectors are often forced to enter a confined space, with all the safety risks this entails. These risks can be avoided by having the inspection carried out by robots equipped with high-speed or 3D cameras. There are different types of robots, for example flying robots (drones) or robots that move on wheels (crawlers). The inspector operates the robot remotely and looks at the images afterwards in a quiet environment. Together with the possibility of zooming in, this considerably improves the quality of the analyses.

Results

Three pilots were carried out with a flying drone, while one used a crawler. The conclusion was that visual inspections can be carried out by robots. In order to actually perform the inspections, the following arrangements still need to be made:

- Implement technical improvements regarding position determination and exposure of inspection sites
- Permission must be obtained from the government to fly drones on the site

Within a period of one to three years, we hope to be in a position to carry out the following inspections with robots as standard:

- Visual inspections
- Wall thickness examination
- Cleaning for investigative purposes



Benefits

- A drastic reduction in the safety risk
- Increased integrity, through increased quality of inspections and analyses
- Cost savings due to the removal of the need for scaffolding
- Shorter lead times, because the confined space does not have to be made safe