

Identifying potential areas or locations of leakage within an ammonia synthesis processing loop

How can Tracerco help optimise performance in my ammonia synthesis loop?

If you are trying to determine why the ammonia synthesis line is not performing as efficiently as expected, a series of tracer tests can be carried out for troubleshooting the different processing loops of ammonia synthesis and converter lines. Tracerco Diagnostics™ Leak studies have proven invaluable in identifying potential areas or locations of leakage within an ammonia synthesis processing loop, converter, quench lines or the feed/effluent heat exchangers. A Tracerco Diagnostics™ Leak study provides real time data and eliminates the need for the equipment to be offline or the unit to be shut down while searching for a potential leak.

What type of tracer materials are used to perform the testing?

The Tracerco team of experts will work with our customer to select a suitable tracer material that is compatible with the phase and process conditions. Radioisotope tracers can be in the form of solids, liquids, or gases and can be detected using sensitive detectors mounted externally to the pipe or vessel. Typical isotopes used for testing have short half-lives. Tracerco is licensed by various agencies worldwide to use radioisotope tracers at our clients' sites.

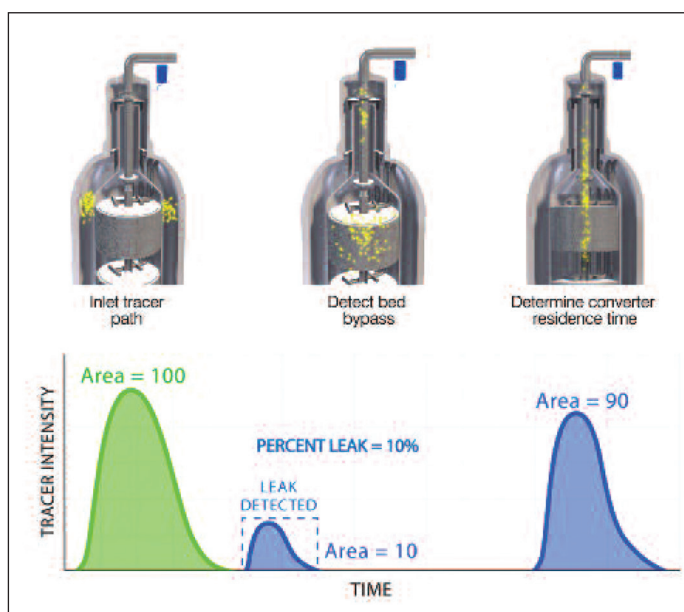
What preparation is needed to perform a Tracerco Diagnostics™ Leak study? How will the tracer be injected into the equipment?

The site requirements include a suitable injection point on the primary inlet line into which the pulse of appropriate tracer can be injected. The injection point can often be a bleeder on the inlet process line. Access to the inlet and outlet lines will be needed for detector placement via vessel platforms or scaffold. The detector and collimator are portable, but if working at high elevations, consideration needs to be given to safe lifting practices.

A good set of Process and Instrumentation Diagrams (P&ID) is needed prior to performing the leak test so the proper injection and detector positions can be determined.

How is a Tracerco Diagnostics™ Leak study performed and where will leaks be detected?

The standard technique to detect a leak throughout the loop is to inject a vapour tracer into the system and monitor for bypass with several sensitive tracer detectors. Injecting the tracer into the inlet and placing a sensitive tracer detector on the outlet will measure any tracer bypass which may be present due to a leak.



How safe is this procedure?

We offer the safest, highest quality and most accurate Process Diagnostics™ service available. Our procedures ensure we comply with regulatory requirements to protect all plant personnel. We segregate a small area around the injection point, but do not need to restrict access to the equipment being tested. Our crew members are always very willing to explain these procedures with everyone potentially affected and to be sure we do not block access to critical areas. There is no danger to plant personnel working around process equipment, as long as they stay out of the work area.

What about radiation protection?

Tracerco employs fulltime Radiation Professionals to ensure regulatory and license compliance. Tracerco is licensed by appropriate agencies worldwide. Most staff are trained to the Radiation Protection Supervisor (RPS) level.

Tracerco is licensed by multiple regulatory agencies to be able to provide products and services to our customers worldwide. Where we are not currently licensed we will work with local authorities to acquire temporary permissions. Based on regulatory and license conditions within each country, there will be limitations on what radiation isotopes can be used to perform tracer projects. A Tracerco representative can discuss any restrictions or limitations that may impact the feasibility of projects within different countries.

What information will the Tracerco Diagnostics™ Leak study provide?

After a Tracerco Diagnostics™ Leak study has been completed the lead crew member will leave a preliminary report with the customer before leaving the plant site. A formal report will be provided some time later.

A Tracerco Diagnostics™ Leak study using a range of vapour tracing technologies to isolate leaks within the ammonia converter or external feed/effluent heat exchangers has proven to help our customers solve critical operating and maintenance problems.

A few of the benefits include:

- Confirmation a leak is present within the converter
- Identify leaks that bypass only one bed in complex bed designs
- Identify residence time through the vessel
- Proper planning for any potential repairs needed
- Improve unit productivity

Our innovative work gives customers the insights they need to help solve their problems. To learn more, read our case studies at [tracerco.com/downloads/case-studies](https://www.tracerco.com/downloads/case-studies)