

# The Integration of Inspection + Testing

## The Components of an Effective Ammonia Refrigeration System Evaluation

Inspection and testing  
work together to provide an  
effective evaluation.

FACT

### Goal

A complete evaluation that provides definitive information on the entire system and meets standards and regulatory requirements.

### Strategy

Create a process that leverages the efficiency of inspection + the strengths of testing.

**Inspection** is an evaluation and assessment of equipment, a component, a system, or a portion of a system using human senses such as [vision](#), [hearing](#), [touch](#), [smell](#) or a combination thereof.

**Testing** is a procedure that commonly employs [instruments](#), [devices](#), and/or [gauges](#) to determine the operational status of equipment, a component, or a device in the refrigeration system.

**I** Inspections identify potential areas of weakness in your system.

**T** Testing validates weakness on suspect areas detected by inspection. *Satisfies IIAR-6 requirement to test when the state of a component cannot be determined by visual inspection.*

**T** Testing reveals and validates weakness *that cannot be found with inspection.*

### Results

#### Optimized Efficiency

1

Annual inspections and periodical testing to validate findings and find concealed issues, ensures the best use of evaluation resources.

#### Controlled Costs

2

Unnecessary spending is eliminated as a result of replacing dated procedures (such as removing insulation or making decisions based on how a component looks).

#### Managed Risk

3

Issues in your system are identified so maintenance and replacements can occur prior to failure.

#### Informed Decisions

4

Budgeting and planning for mechanical integrity can be justified and prioritized with qualitative and quantitative data.

#### Regulation Compliance

5

Evaluation requirements for PSM and RMP programs, the ANSI/IIAR Standard 6-2019 and codes are met.

#### Example Scenario #1 Test to validate weakness

##### 1 Inspection performed

- 2 Biological growth found on piping jacketing.  
Likely that water is trapped in the insulation.  
The state of the piping is unknown.  
(Cannot be determined by visual inspection)

##### 3 Testing performed

- 4 ✓ Extent of moisture is determined.
- ✓ Presence of corrosion is confirmed.
- ✓ Pipe wall thickness is measured.



#### Example Scenario #2 Test to determine state

##### 1 Inspection performed

- 2 Corrosion on bare piping is found.  
Likely the pipe wall is thinning.  
The thickness of the piping is unknown.  
(Cannot be determined by visual inspection)

##### 3 Testing performed

- 4 ✓ Pipe wall thickness is measured.



#### Example Scenario #3 Test to reveal concealed weakness

##### 1 Inspection performed

- 2 No visual indication of piping degradation at common failure point.  
Passes inspection.

##### 3 Testing performed

- 4 ⚠ Insulation contains moisture.
- ⚠ Pipe is corroded.
- ⚠ 2" sched 80 pipe wall thickness measures as .10, 46% of nominal.

