Fire Damage Assessment Solutions

A FULLY INTEGRATED APPROACH

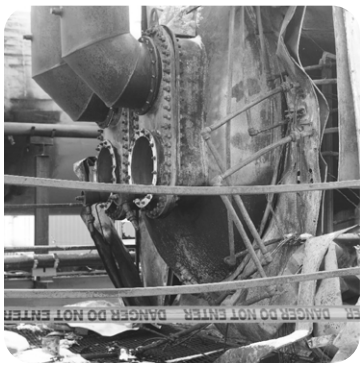
A HIGHER LEVEL OF RELIABILITY®

ACUREN

In the unfortunate circumstance your infrastructure has been exposed to fires, we can help. Acuren has the capability to perform fire damage assessment on fixed equipment that has been exposed to elevated temperatures.

What is a Fire Damage Assessment?

Fire damage assessment typically includes a visual examination, insitu-metallography, and hardness testing.



Visual examination is performed by a competent engineer with experience in fire damage assessment. The hot zones of the fire are identified based on physical observations (e.g. charring, coating degradation, deformation/distortion, etc.) and locations are selected for insitu-metallography and hardness testing. Additional nondestructive testing is performed to aid in component evaluations.

Fitness for service evaluations performed in accordance to API 579/ASME FFS-1 (Level 1, 2, 3) will determine if equipment is acceptable for continued use or must be repaired/replaced.

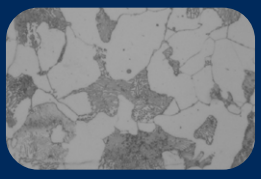
IN-SITU METALLOGRAPHY

In-situ metallography is used to determine if the microstructure of the metal components has been altered when exposed to elevated temperatures. A "replica" of the affected component's microstructure is obtained on-site, which is later analyzed using an optical microscope (typically in a lab setting) by an engineer.

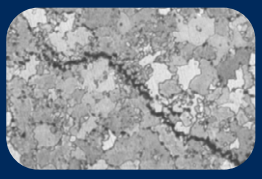
When exposed to elevated temperatures, metals undergo various metallurgical changes that can be viewed under a microscope. These microstructural changes can result in altered material properties, such as loss of strength and/or loss of ductility, or possibly in the formation of cracks.

Carbon and low alloy steels when exposed to elevated temperatures may undergo microstructural changes such as carbide spheroidization, graphitization, decarburization and, in more advanced stages, creep damage may occur.

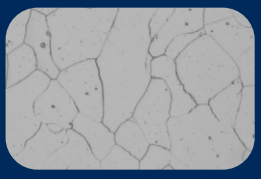
Replica location shown with arrow



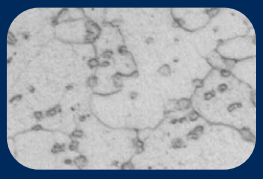
Typical microstructure for a mild carbon steel; ferrite and pearlite



Creep cracking



Decarburization

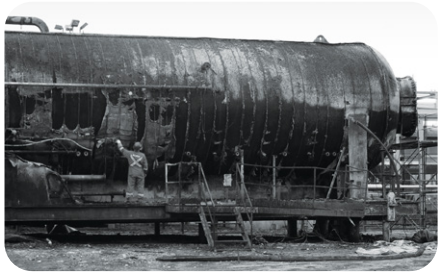


Carbide spheroidization

VISUAL INSPECTION

Engineers are responsible for overseeing assessments of equipment exposed to fires.

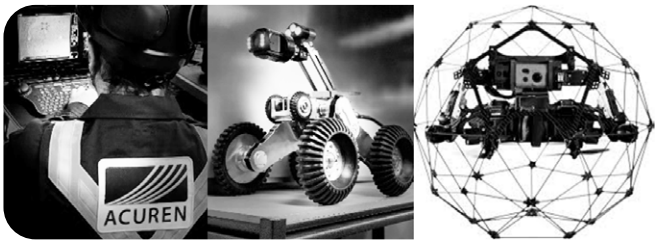
Experienced visual inspectors aid our Engineers in performing inspections of infrastructure to determine if equipment is suitable for service and whether repairs or replacement will be required. Certifications may include: API 570 (Piping), API 510 (Pressure Vessels), National Board Commission In-Service or Repair Endorsements (Boilers and Pressure Vessels), CWB or CWI (structural) and others as required by local jurisdictions.



The damage sustained to infrastructure can be catastrophic during a fire event

REMOTE INSPECTION

Using drones and robotic systems can allow a safe initial inspection where existing infrastructure is unsafe to use for human access. Inspection of equipment can be performed using remotely operated inspection systems (ROIS) or remotely operated vehicles (ROV).



NONDESTRUCTIVE TESTING (NDT)

NDT commonly used in fire damage assessment as follows:

- **Hardness Testing:** determine material softening or hardening
- **In-Situ Metallography:** to determine any microstructural changes
- **Laser Scanning:** high resolution scanner to quantify deflection and distortion, out of roundness
- **Magnetic Particle Testing (PT), Liquid Penetrant Testing (PT), Eddy Current Testing (ET):** to detect surface cracking
- **Ultrasonic Testing (UT):** various methods, to quantify thickness or locate volumetric defects
- **Moisture Detection Imaging (MDI):** can be used to determine if insulation is wet, following fire suppression

Acuren technician preparing the surface of equipment exposed to fire to obtain a "replica" for in-situ metallography

ALTERNATIVE ACCESS & INDUSTRIAL SOLUTIONS

ALTERNATIVE ACCESS METHODS:

Existing infrastructure may be deemed unsafe for direct access to components. Where scaffold or other means of access are not practical, Acuren utilizes alternative methods such as Rope Access or V-Deck to allow for safe access to perform assessments.

INDUSTRIAL SERVICES:

Qualified and competent industrial services division that can assist with removal, replacement and repair of infrastructure that has suffered damage due to fire including:

- Rigging and removal
- Insulation and fireproofing removal/repairs
- Repairs/replacement: welding, fabrication, pipefitting
- Pressure cleaning and blasting
- Coatings removal and recoating
- Electrical and instrumentation

WHY ACUREN?

- A fully integrated approach, combining Engineering, Inspection, NDE, industrial trades and rope access services.
- Acuren leads the industry as the one true supplier that can be the single turnkey vendor to execute comprehensive fire damage solutions.
- Acuren solutions aids Owners by **reducing their risk** to exposure to potential hazards.
- Our team approach can provide rapid assessment of infrastructure to **reduce downtime** of equipment exposed to fires.
- Reliable partner that values safety as paramount.
- Field Engineers/Inspectors are backed by Acuren's Materials Testing Laboratories to validate material properties.

BEYOND INSPECTION

"Acuren bent over backwards, provided extremely fast turnaround, had all safety protocols in place, and we were extremely happy with the service. We were able to return the equipment to service safely, with minimal impact to Operations."

~ Upstream Owner Asset Integrity Specialist

VIEW OUR BROCHURES

ACUREN

CONTACT OUR EXPERTS TODAY

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