

Certify Fall Protection Systems to Mitigate Risk and Liability in Steel Production Environments



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Hazards are ever-present in the steel plant environment, and a heightened awareness and emphasis on safety is a necessary priority for our industry. This monthly column, coordinated by members of the AIST Safety & Health Technology Committee, focuses on procedures and practices to promote a safe working environment for everyone.

Most steel mills were constructed 25 to 30 years ago — some dating back more than a century. While production methods have evolved, the reality of work at height has not. In steel facilities, maintenance and operations routinely place workers in elevated positions, often in harsh and demanding environments.

Workers access, operate and maintain cranes, furnaces, ladles, casters and mill equipment. They service roof-level mechanical systems, support truck loading operations, and maintain water and wastewater treatment systems. Each of these activities introduces fall hazards — frequently in high-heat, high-vibration or highly congested structural conditions.

Fall protection systems in these environments are not optional safeguards. No matter how old a fall protection system is, its sole purpose is to save a falling worker. And like any engineered system, they must be verified, tested and maintained to perform as intended.

That is why system certification, and periodic recertification, are critical in steel production environments.

Installation Alone Does Not Guarantee Performance

A fall protection system can be well-designed on paper yet fail to perform in the field. The following is a list of commonly observed failures and concerns noted during

recent inspections of engineered fall protection systems at several steel producers throughout the United States:

- Unable to locate system design records, fall clearance or fall arrest load calculations.
- Inappropriate horizontal lifeline cable (HLL) cable swaging/clamping.
- Incorrect HLL saddle clip spacing or installation.
- Component deterioration/damage (i.e., HLL cables with broken strands, corrosion, bends, damaged/deployed shock absorber).
- Incorrect HLL cable tensioning and sag.
- Personal protective equipment (PPE) or components not compatible with the overall system.
- Anchorages improperly designed, installed or maintained.
- Structural support differs or has changed from assumed conditions.
- Swing fall and clearance calculations misapplied.
- Workers are not trained on proper use.

Steel facilities introduce additional complexity:

- High-heat environments or moisture/chemical exposure

Comments are welcome.

If you have questions about this topic or other safety issues, please contact safetyfirst@aist.org.

Please include your full name, company name, mailing address and email in all correspondence.

that degrade common engineered fall protection system components.

- Vibration from heavy equipment.
- Congested structural framing.
- Limited access for inspection.
- Hazardous materials or objects located below.
- Evolving production changes that change requirements for worker access and tasks.

Certification bridges the gap between design intent and real-world performance.

What Certification Means in a Fall Protection Context

Certification is a quality-oriented process that verifies and documents that a system meets defined performance objectives. In the context of fall protection, this process extends well beyond equipment inspection.

OSHA regulations do not provide specific certification requirements, but they do indicate that a personal fall arrest system must be “designed, installed and used under the supervision of a qualified person (29 CFR 1910.140(c) (13)(ii)), which can be confirmed and documented by system certification. Specifics about how to certify a system are found in the ANSI/ASSP Z359.6 Standard - “Specifications and Design Requirements for Active Fall Protection Systems,” and include evaluation of:

- Alignment With Owner’s Performance Requirements.
 - Fall protection policy.
 - Hazard identification process.
 - Task-specific requirements.
- System Suitability.
 - Most effective solution for hazard.
 - Fall arrest vs. restraint decisions.
 - Clearance and swing fall calculations.
- Structural Capacity.
 - Anchorage strength verification.
 - Connection details.
 - Support member analysis.
- Installation Conformance.
 - Review of shop drawings and submittals.
 - Observation during installation.
 - Load testing where required.
- Procedures and Training.
 - Use procedures.
 - Rescue procedures.

- Authorized user training.
- Competent person designation.
- Documentation
 - As-built drawings.
 - Equipment specifications.
 - Inspection logs.
 - Certification records.

Certification is not simply confirming that an HLL is intact. It verifies that every element of the system — from anchorage to training — functions as a complete and reliable system.

Why Certification Is Especially Important in Steel Facilities

Steel production environments present conditions that challenge fall protection systems in ways rarely seen in commercial or light industrial settings.

Extreme Heat

In meltshops, casting and ladle metallurgy furnace (LMF), cable systems may be exposed to radiant heat. Elevated temperature cycling can embrittle cable jackets and compromise system integrity long before visible failure occurs.

Heavy Loads and Crane Traffic

Overhead crane maintenance platforms often rely on HLLs mounted within congested structural framing. Misplaced anchor points can create dangerous swing fall conditions or reduce fall clearance below acceptable limits.

Operational Changes

As production demands shift, platforms may be modified, new equipment installed or crane paths adjusted. These changes can unintentionally alter fall distances or introduce new hazards not considered in the original design. Certification identifies these risks early — before they result in injury.

The Role of Recertification

Certification is not a one-time event. Steel facilities experience personnel turnover, changes in maintenance procedures, equipment upgrades, structural modifications and aging, as well as environmental variations. A system that was appropriate five years ago may no longer meet current needs — even if the equipment components are in working order. Periodic recertification, reviewing the hazards and system being used to protect workers ensures that:

- Anchorages remain structurally sound.
- Equipment components remain compatible.
- Clearance calculations remain valid.
- Rescue procedures remain practical.
- Training records remain current.

ANSI standards (Z359.0) define certified as having documentation that a system meets the requirements of the applicable standard. Without documentation, compliance — and confidence — cannot be demonstrated. Regular recertification strengthens both safety performance and organizational accountability.

Beyond Compliance: Reliability and Risk Management

Many organizations pursue fall protection certification to align with industry standards. In steel production environments, the value extends beyond compliance. Certification provides:

- Increased reliability and resilience of installed systems.
- Clear documentation for insurance and regulatory review.

- Reduced liability due to effort and documentation.
- Increase the useful life of the systems.
- Early detection of system failures.
- Improved worker confidence.

Most importantly, system certification reduces the risk of catastrophic failure. A fall protection system is rarely called to save a life. But when it is, it must perform flawlessly.

Engineering Safety Through Verification

Steel producers routinely invest in commissioning process equipment, electrical systems and structural components. Applying the same rigor to fall protection certification recognizes these systems for what they are: engineered systems intended to preserve life.

Properly designed systems can only function if they are installed correctly, certified thoroughly and maintained intentionally. No matter how old a fall protection system is, its purpose remains unchanged: to save a falling worker. Certification ensures it can. ♦

Did You Know?

TMS International Celebrates 100th Anniversary

Founded in 1926, TMS International announced it is celebrating its 100th anniversary this year.

The company said it will celebrate its anniversary at multiple trade shows and host celebrations at some of its facilities.

“To mark 100 years of existence is an extraordinary achievement and shows the resilience and excellence of TMS. The company has overcome the Great Depression, World War 2, 9/11, the Great Recession, COVID-19 and more, and every time we have emerged stronger,” said Joel Hawthorne, TMS president and chief executive officer.

“By focusing on people, investing in communities and solving customer problems, TMS has built a strong foundation for growth, becoming a premier industrial and environmental services leader,” Hawthorne continued.

The company’s name took several decades and owners to get to what it is today. It was founded by Lithuanian immigrant David Coslav, who got his start processing scrap iron and steel in McKeesport, Pa., USA. The city had one of the largest tube mills in the world, National Tube, in operation at the time which gave it the nickname “The Tube City.” This nickname is what inspired the original company’s name, Tube City Iron and Metal.

In 1928, the company moved to Glassport, Pa., USA. In 1987, the company was passed on to David’s grandson, I Michael Coslav, and renamed Tube City, Inc.

In 1936, Hugh Nelson and Jack Kaiser-Nelson created the company International Mill Service (IMS) in Cleveland, Ohio, USA. In 2004, Wellspring Capital Management LLC bought out IMS and got a majority interest in Tube City from Blue Point Capital. Later that year, Tube City and IMA combined to make Tube City IMS Corp.

In 2014, the company was bought by The Pritzker Organization of Chicago, Ill. Two years later, Tube City IMS Corp. was finally renamed TMS International Corp. What was once a one-person operation is now an international organization with more than 4,200 employees at more than 70 worldwide locations, the company said.