Safety and Health Excellence Recognition 2025

A showcase of excellence in safety and health management practices from around the world

worldsteel ASSOCIATION

EMSTEEL

More details on the submissions received for the 2025 Safety and Health Excellence Recognition Programme are available on the worldsteel extranet.

The World Steel Association (worldsteel) is one of the largest and most dynamic industry associations in the world, with members in every major steel-producing country. worldsteel represents steel producers, national and regional steel industry associations, and steel research institutes. Members represent around 85% of global steel production.

Foreword

I am proud to recognise the commitment and efforts of our members towards safeguarding worker safety and health. This year's diverse, impactful practices were greatly appreciated by the judging panel, and this publication takes you through the best of those.

We see a rising trend in the use of AI, robotics, and technology as enablers to reduce risk. Members have showcased pioneering approaches to make these tools accessible to employees and contractors.

There was a significant focus on ergonomics and its impact on overall safety and wellbeing. worldsteel is hopeful of further improvement going forward as we navigate challenges together.

Congratulations to all participating members for their exemplary efforts towards making the steel industry a better place to work.

Shalini Kumari
Manager, Safety and Health
World Steel Association

Four categories and five recognised companies:

Safety culture and leadership

EMSTEEL

Occupational safety management

ArcelorMittal

Occupational health management

Esfahan's Mobarakeh Steel Company

Process safety management

posco

TATA STEEL
WeAlsoMakeTomorrow

Safety culture and leadership

EMSTEEL | Aman 2.0 - Achieving safety excellence | United Arab Emirates

Building on the success of the original Aman Project (2018–2019) - "Aman" meaning safety in Arabic - EMSTEEL launched Aman 2.0 on the 2023 worldsteel Day for Safety and Health at Work. This transformative programme established a robust framework that integrated advanced leadership, operational excellence, and digital safety tools to drive continuous improvement in safety performance.

Implemented in 2023–2024, Aman 2.0 enabled significant improvements in employee engagement, risk management, and compliance.

Key new initiatives:

A programme created to emphasise safety during post-COVID-19 operations, involving key leadership activities around six safety topics:

- Leadership and workforce engagement through visible felt leadership (VFL) events, multi-channel communication campaigns, and task-force-driven implementation.
- Strengthened safety governance, contractor safety, auditing, asset integrity, and process safety.
- Enhanced risk management through the Serious Injuries and Fatalities (SIF) Prevention Programme, alongside critical control verifications, and strengthened incident management.
- Updated life-saving rules, accompanied by training for over 3,000+ employees and contractors, together with the Just Culture Framework implementation.
- Digital safety enhancements through the mySHEQ platform for Management of Change (MoC) processes.
- Permit-to-Work (PTW) systems and energy isolation.

Key data highlights

Since the programme's launch:

52%
reduction in total recordable incident rate (TRIFR)

35%
increase in near-miss reporting (post-project)

31%
increase in hazard observations (from 17,500 in 2022 to 23,000 in 2024)

100%
increase in safety leadership training

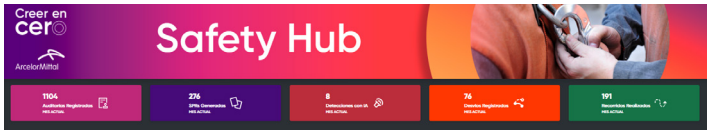
100%
compliance rate in independent 3rd-party safety audits and inspections

Occupational safety management

ArcelorMittal | Safety Hub | Argentina

Safety Hub enhances safety leadership by providing a 360-degree view of behaviour management and the conditions under which operations are carried out on the shop floor — with a strong focus on people's health and on intelligent systems that accelerate continuous improvement.

By centralising all safety-related information and tools into one platform, Safety Hub enables unified visibility and better, faster decision-making across all levels of the organisation.

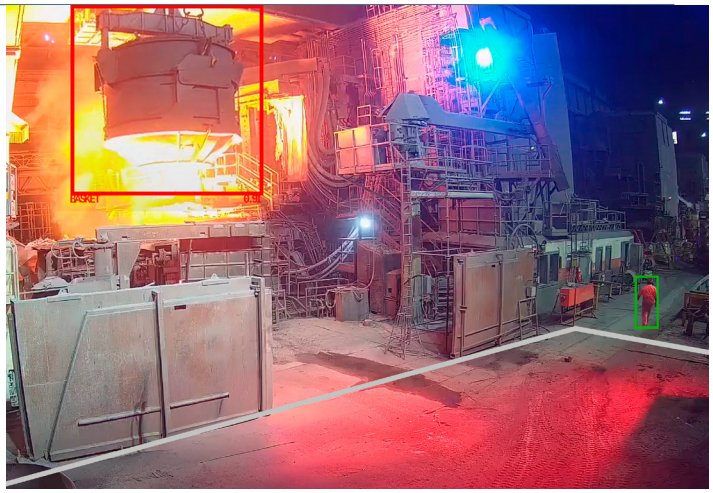


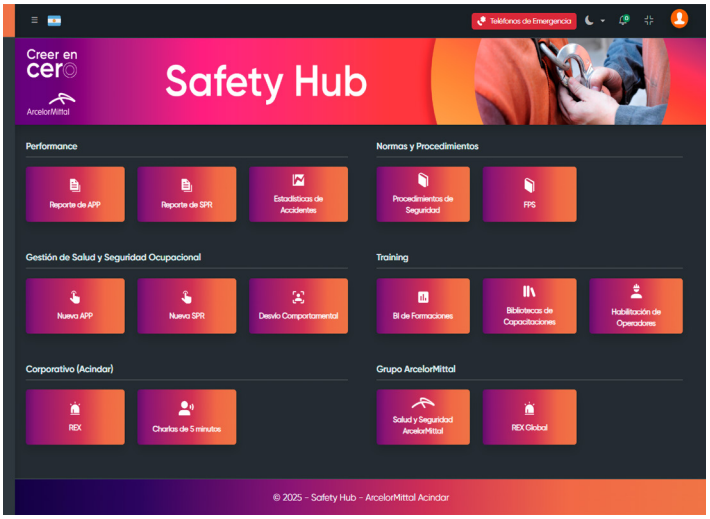
The system combines real-time computer vision, smart devices, and machine learning to detect unsafe behaviours, monitor high-risk tasks, and equip safety walkthroughs with digital tools that enable data capture, traceability, and analysis of observed risks.

Its true value, however, lies not in the technology itself, but in how people adopt it, shape it, and turn it into real impact on the ground.

This is why Safety Hub is supported by a disciplined culture of sustained evolution. Solutions are co-developed with teams from different sites, iterated until they work in practice, and then scaled across all plants. Not everything works at first — but feedback is quickly incorporated, and evolution is guided by usability and relevance.

We have no doubt that to achieve and sustain zero, we must adopt smarter tools every day that expand our capacity, increase productivity, and streamline decision-making. That's exactly what Safety Hub represents for ArcelorMittal.





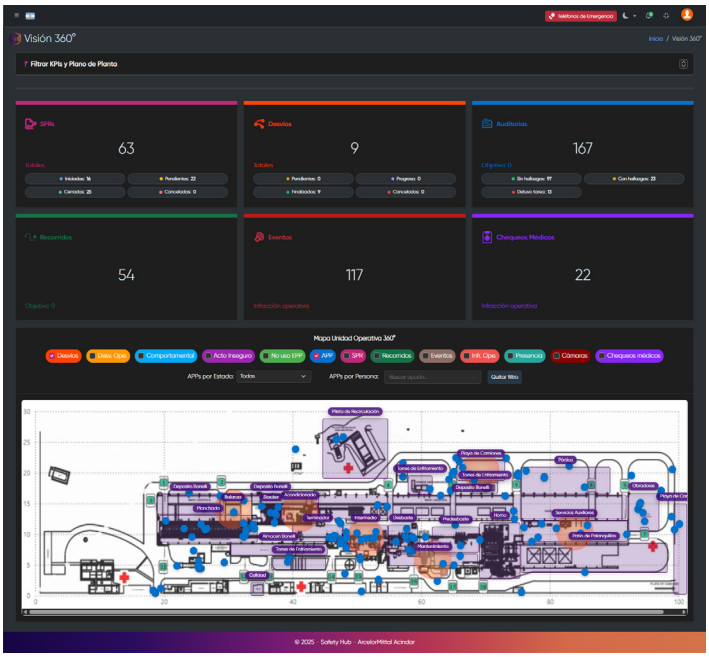
Key data highlights

8,760 hours
of continuous safety monitoring per year added by each AI-enabled camera

90%
Reduction of unsafe events within the first four months

Reduction
of time required to address safety events — from months to days, or even hours in some cases.

1 platform
All safety activities in one platform: AI detections, shop floor audits, unsafe conditions, safety walkthroughs, medical checks, pre-use inspections, critical tasks, incident reports and more.



Occupational health management

Mobarakeh Steel Company | Ergonomica AI – Intelligent ergonomic risk detection and prevention system | Iran

Musculoskeletal disorders (MSDs) are a leading cause of absenteeism in the steel industry, driven by poor postures, repetitive tasks, and manual handling. Conventional ergonomic tools - rapid entire body assessment (REBA), rapid upper limb assessment (RUPA), National institute for occupational safety and health (NIOSH), Ovako working analysis system (OWAS) - are slow, expert-dependent, and unsuitable for large-scale prevention. To address this challenge, Mobarakeh Steel Company created Ergonomica AI - an intelligent, non-intrusive system that automates ergonomic risk detection.

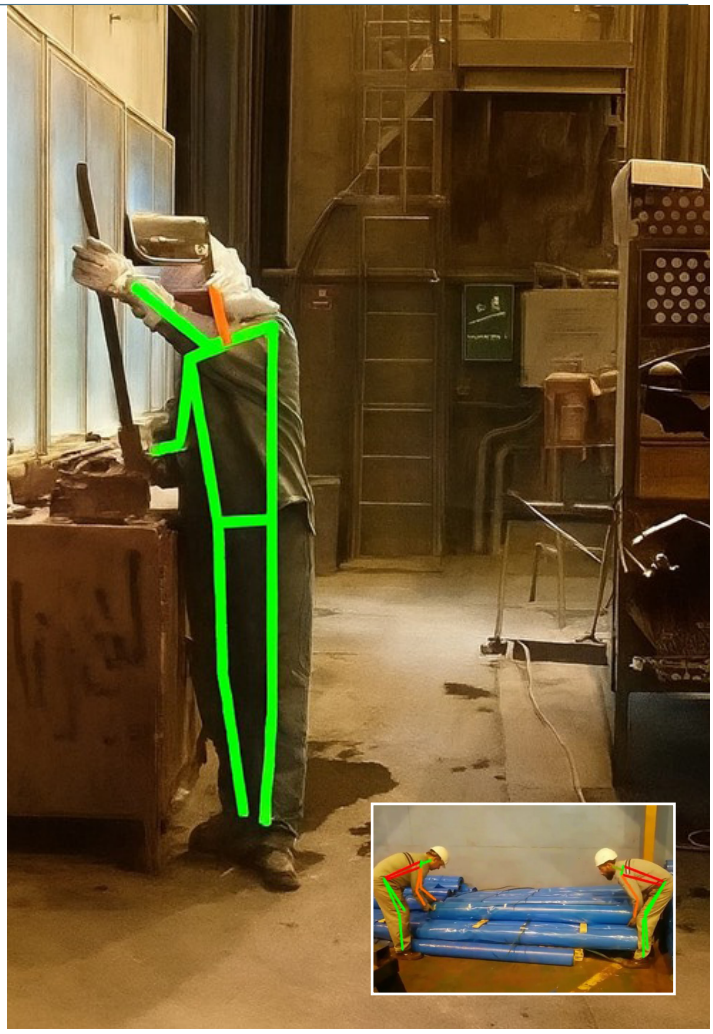
Using standard CCTV or mobile video, Ergonomica analyses 135 anatomical keypoints per person, applies validated ergonomic models, issues alerts, and stores data for dashboards and preventive action.

Unlike traditional methods, the system allows simultaneous multi-person evaluation without wearables, thereby embedding continuous vigilance into daily operations. A dedicated Ergonomics Laboratory complements deployment with physical, cognitive, biomechanical, and work physiology assessments.

The results have been striking. In 2024, major MSD-related sick leave days decreased from 2,697 to 1,553 - a 42.41% reduction, equal to 1,144 fewer days and savings of more than US$122,400*. Average assessment time dropped by over 80% (25 minutes → <5 minutes), while the number of evaluations increased tenfold.

Over 2,400 employees engaged in participatory ergonomics, leading to workstation redesigns, tool modifications, and workflow adjustments.

By integrating AI-driven surveillance with human-centric ergonomics, Ergonomica reduces risks to as low as reasonably practicable (ALARP) levels while fostering a culture of shared responsibility - offering a scalable and transferable model for the global steel industry.



Key data highlights

42.41% reduction
in MSD-related sick leave days (2,697 → 1,553; −1,144 days)

US$ 122,400*
direct cost savings in 2024 (based on internal financial records)

80% faster
Assessment speed reduced from 25 minutes to 5 minutes

10× increase
direct cost savings in 2024 (based on internal financial records)

* Equivalent to 5.51 billion Iranian rials (IRR)

Process safety management

POSCO | Development of blast furnace camera image processing technology to secure worker safety | South Korea

Depending on the operating conditions inside the blast furnace, the tuyere may be damaged by the molten iron and slag. When damaged, large amounts of cooling water may flow into the blast furnace, worsening its operation, or blast furnace gas could leak and poison workers.

In the worst-case scenario, an explosion may occur in the tuyere, causing the molten material inside the blast furnace to erupt, which could potentially lead to fatalities and production decreases.

POSCO has installed cameras that can monitor the tuyere, with workers watching the video from the main control room. However, since workers cannot continuously monitor the tuyere camera, some changes in the tuyere system may go undetected. To address this problem, POSCO developed a technology utilising AI image processing and tuyere cameras to determine abnormalities in the injection through the tuyere. Additionally, the technology automatically recognises any blockage of unreduced materials at the front of the tuyere and prevents collision by properly reducing the ores.

Workers are immediately notified if there is a risk of a tuyere bending, allowing them to quickly respond to potential problems such as gas leaks and tuyere damage.

Key data highlights

1 minute
Detects tuyere tip blockage after a one-minute delay and automatically performs N_2 purge

Only AI knows
Only AI can quantitatively identify if a tuyere is bending

ZERO
0 risk of delayed detection of tuyere bending or blockage, which may lead to tuyere failure

+235 hours
Time saved due to prevention of impaired tuyere repair and recovery

Tata Steel Limited I Preventing loss of containment (LoC) of hot metal through safety instrumented system in rail-based hot metal transport I India

In integrated steel plants, torpedo ladle cars (TLCs) are used to transport thousands of tonnes of hot metal daily over extensive rail networks. Any derailment of a filled TLC can cause catastrophic loss of containment, hot metal–water explosions, serious injuries, and major business disruptions. Historically, derailments occurred mainly due to manual errors in track 'point setting'.

To address this high-risk scenario, a safety instrumented system was developed and deployed across the rail network. Key interventions included:

- Replacing lever-operated switches with one-touch push buttons. Limit switches provided on rail tracks ensure tracks are aligned properly during point setting through feedback.
- Installing proximity sensors for automatic correction of incorrect point settings. Proximity sensors on tracks sense the direction of moving TLCs, comparing them with the existing track route setup. If points are incorrectly set, an audio-visual alarm is generated. If a TLC moves further, the point position is corrected to prevent the point bursting.
- Integrating optical sensors (installed on both ends of point on tracks) to prevent point changes during TLC movement and enhancing visibility of fouling marks to avoid side collisions.

This multi-barrier solution, combined with workforce engagement, has not only ensured personnel safety but also resulted in the following benefits for the organisation:

Key data highlights

Zero derailments
in FY25 due to point burst or side collisions

112 points
across a 62 km hot metal rail network

US$ 1,588,140*
Annual savings from elimination of derailment-related business

1 patent
granted by the Government of India for this innovation

* Equivalent to 140 million Indian rupees (INR)

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