Implementing a Corporate Heat Risk Prevention Program in a Railway Company

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BACKGROUND

Emerging occupational-health challenge

Extreme heat events are becoming more frequent, intense and prolonged.

Potential health effects

Dehydration, heat exhaustion, cardiovascular effects, reduced performance and heat stroke.

Highly diverse work environments

Outdoor railway operations, maintenance, workshops, stations, tunnels and mountain facilities.

A flexible corporate framework

Common preventive criteria, with the capacity to adapt measures to each activity.

2023

Royal Decree-Law 4/2023 introduced preventive measures for periods of high temperatures.

FGC then integrated heat risk into its corporate prevention system and subsequently updated the procedure.

Anticipate risk · define common measures · adapt work organisation

OBJECTIVES

1 Prevent heat-related risks

Define common criteria and guidelines for periods of high temperatures.

2 Protect health and safety

Reduce occupational heat exposure and safeguard workers' health.

3 Enable organisational adaptation

Adjust work organisation when environmental conditions require it.

4 Apply across the FGC Group

Ensure a consistent response, while allowing activity-specific instructions.

One corporate framework · adaptable to each activity

Preventive strategy

Weather monitoring

Predictive Meteocat warnings 3, 2 and 1 day in advance.

Technical controls

Adiabatic cooling, fans, extractors and regular maintenance.

Hydration

Drinking water available close to work areas.

Outdoor protection

Caps, breathable covering clothing and sunscreen.

Work organisation

Measures planned before the most adverse conditions occur.

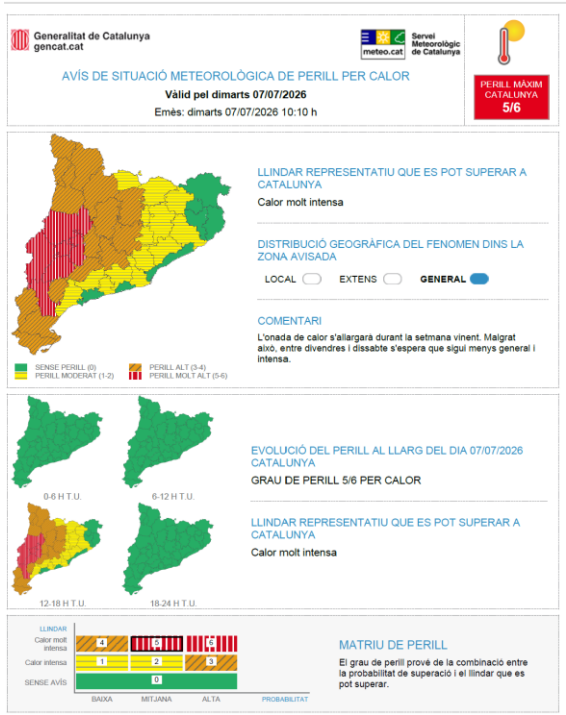
Coordinated model

Technical, organisational, personal and health measures combined.

MATERIALS AND METHODS

General organisational measures

- Rotate workers to tasks with a lower thermal load
- Schedule physically demanding tasks during cooler hours
- Temporarily adjust working hours when needed
- Avoid lone working and facilitate mutual observation
- Provide short recovery breaks every hour
- Limit strenuous tasks and use mechanical aids





Information, communication and training

Information

Heat-related risks, health effects, prevention and first aid.

Training

Protocols, preventive measures, symptom recognition and emergency response.

Essential message

Stop work, report symptoms and seek medical assistance if necessary.











Health surveillance and emergency response

1 Health surveillance

Identify people who may be especially vulnerable and assess the need for individual adaptations or additional measures.

2 Initial assistance

Ensure prompt assistance for anyone experiencing heat-related symptoms.

3 Emergency response

Activate emergency medical services whenever required.

Integration of heat risk into occupational risk management

1 Risk assessment

Include thermal environmental risk and occupational heat stress.

2 Dynamic response

Adapt measures to the intensity, duration and timing of each heat episode.

3 Contractor coordination

Integrate heat risk into coordination and contracting activities.

Prioritise measures that eliminate or reduce exposure at source

Roles and responsibilities

Senior management

Resources and compliance

Area managers

Apply measures and adapt conditions

Supervisors

Implement measures and inform workers

Prevention Service

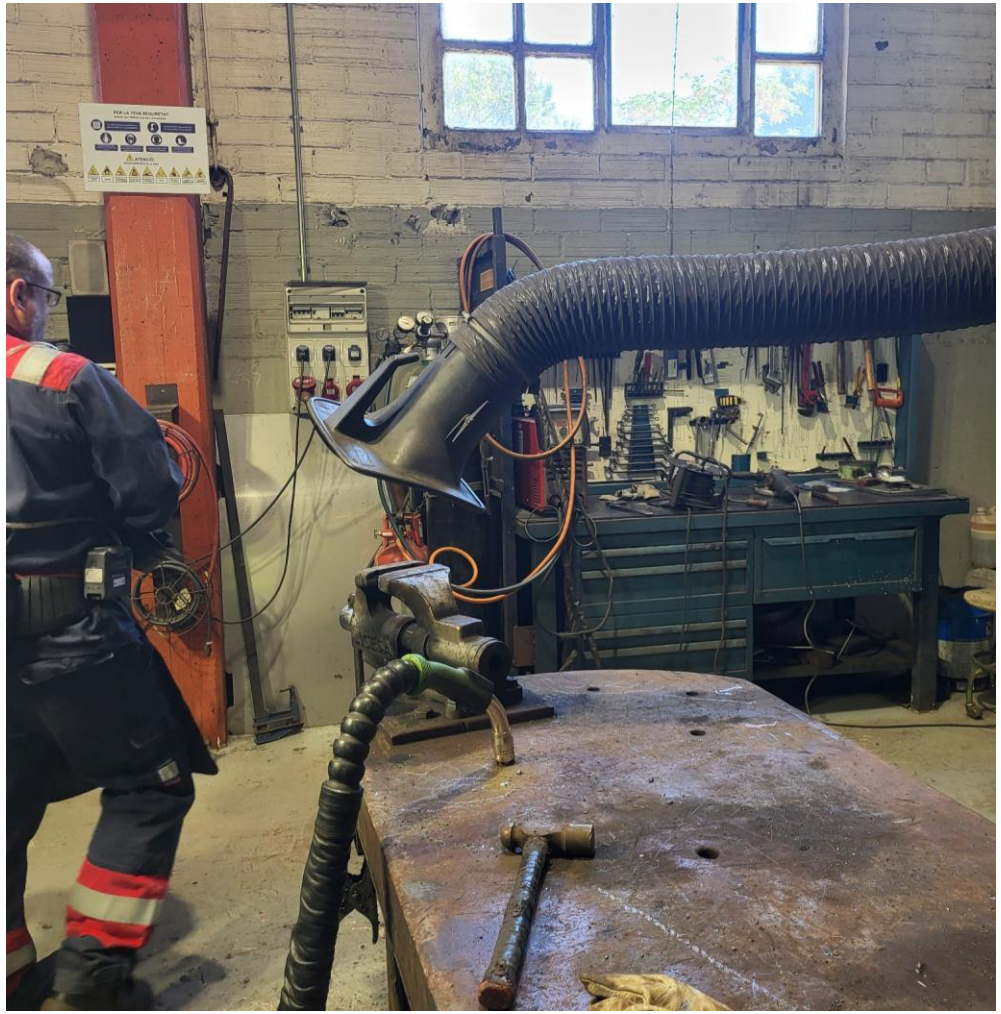
Assess heat stress, manage alerts and advise

Workers

Train, follow instructions and report symptoms

Shared responsibility across all levels

Specific application in rolling stock workshops



Two main workshops

Specific organisational measures for FGC workers in these areas.

Scheduled recovery breaks

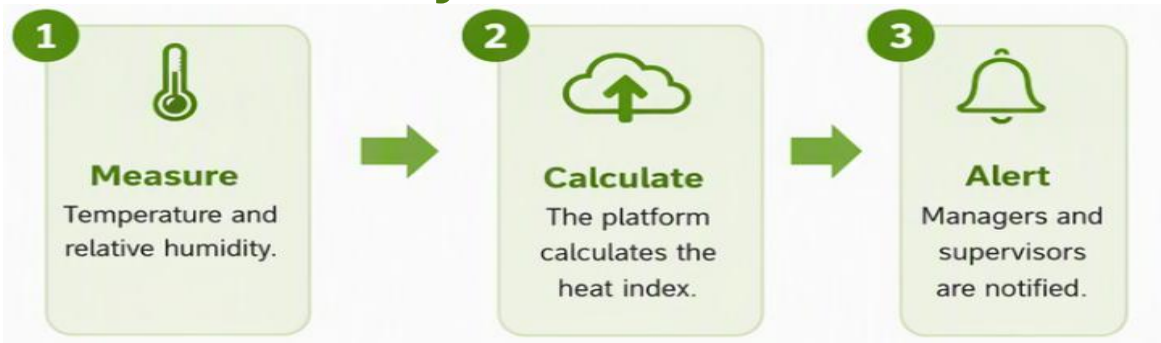
Sufficient breaks are included within working time to allow thermal recovery.

Objective activation

Based on real-time environmental data, not only perception or weather-alert colour.

MATERIALS AND METHODS

Monitoring and activation of recovery breaks





Activity / PPE	Heat-index range	Work per hour	Recovery per hour	Action
Routine tasks	33°C ≤ HI < 37°C	50 min	10 min	Continue with recovery
	37°C ≤ HI < 40°C	45 min	15 min	Continue with recovery
	40°C ≤ HI < 55°C	35 min	25 min	Continue with recovery
	HI ≥ 55°C	—	—	Stop work
Welding PPE	30°C ≤ HI < 34°C	50 min	10 min	Continue with recovery
	34°C ≤ HI < 37°C	45 min	15 min	Continue with recovery
	37°C ≤ HI < 52°C	35 min	25 min	Continue with recovery
	HI ≥ 52°C	—	—	Stop work
Tyvek PPE	31°C ≤ HI < 35°C	50 min	10 min	Continue with recovery
	35°C ≤ HI < 38°C	45 min	15 min	Continue with recovery
	38°C ≤ HI < 53°C	35 min	25 min	Continue with recovery
	HI ≥ 53°C	—	—	Stop work

General rules for recovery breaks

1 Cool recovery areas

Breaks in cool, shaded or air-conditioned areas.

2 Acclimatisation

After at least one week in similar or more extreme heat conditions.

3 Additional protection

Non-acclimatised workers: +5 minutes per break. Vulnerable workers: individual assessment.

Hydration break every 30 minutes

Drink water, preferably cool

Recovery and hydration are complementary measures

RESULTS

126

alerts generated

Across different workshop locations

2–7 p.m.

main alert period

Most warnings occurred in July afternoons

1

welding suspension

Heat index reached 40°C on a high-humidity day

Main alert pattern

Train-roof work beneath the workshop roof while Tyvek protective clothing was being worn.

The system translated environmental data into timely activation of recovery breaks.

CONCLUSIONS

1

A corporate prevention model

Weather monitoring, technical measures, organisational adaptation, information, training, health surveillance and emergency response.

2

A common framework for the Group

Anticipates risk, adapts work to changing conditions and defines clear responsibilities.

3

Operational prevention in the workshops

Environmental monitoring, alerts and objective scheduling translate the procedure into practice.

4

A shift from reaction to prevention

Anticipation, environmental data and dynamic adaptation protect health and support sustainable activity management.

Anticipate · monitor · adapt · protect

Thank you!