2025 Korea Aviation Safety Forum

2025 대한민국항공안전포럼

Status of Safety Culture Assessment in the General Industries in Korea

Dr. Hyuk-Seung YANG

Industry Committee Member , Korea Safety Culture Society

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KAU 한국항공대학교 Korea Aerospace University

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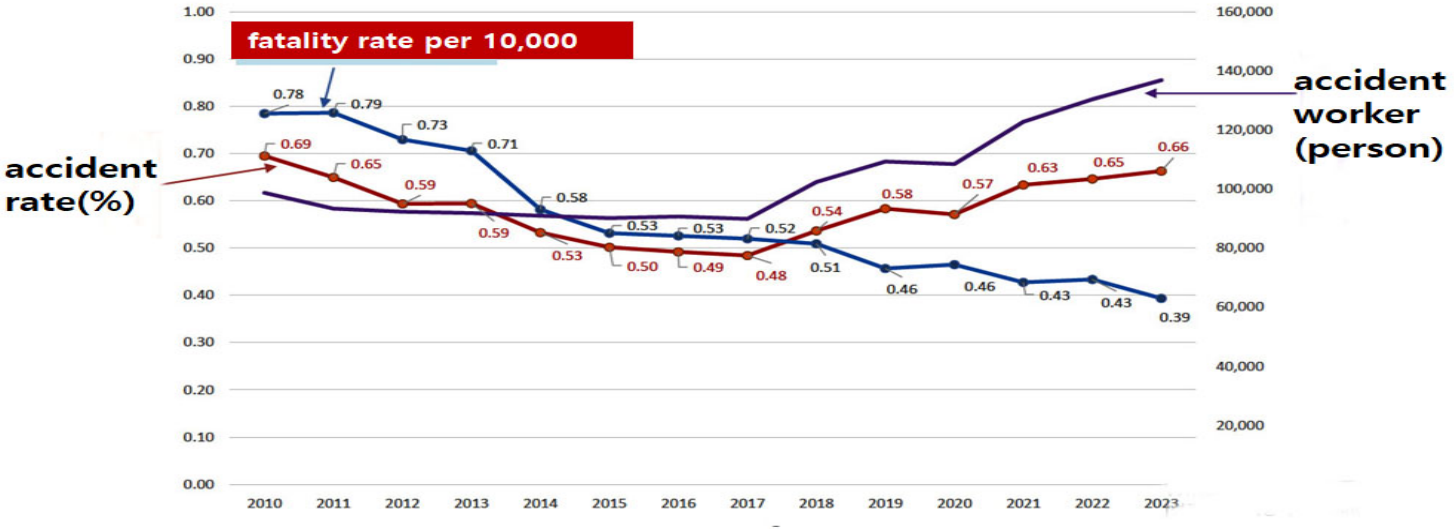
Characteristics of industrial accidents in Korea

- Illusion of a Decline
- Gap between Diagnosis and Reality
- Lack of Internal Capacity

01. Illusion of Decline

- South Korea's industrial accident rate (red line) gradually decreased after 2010, but has been steadily increasing since 2017. Naturally, the number of accidental deaths is also increasing.
- Conversely, the accidental death rate per 10,000 has steadily decreased since 2010, creating an illusion of a decrease in industrial accidents.



02. Gap between Assessment and Reality

The ARICELL plant was selected as an excellent workplace in the 2021 risk assessment.
Furthermore, it maintained its status in post-assessment reviews in 2022 and 2023.
As a result, the plant benefited from reduced industrial accident insurance rates.

Despite this, when a deficit arose, management reduced the safety and health budget to a minimum and also reduced the personnel in the department in charge.
In the end, a major accident occurred in 2024.

ARICELL Risk Assessment Report

인정심사 결과서 (2021)
Accreditation Review Result

사후심사 결과서 (2022)
Post-Audit Result

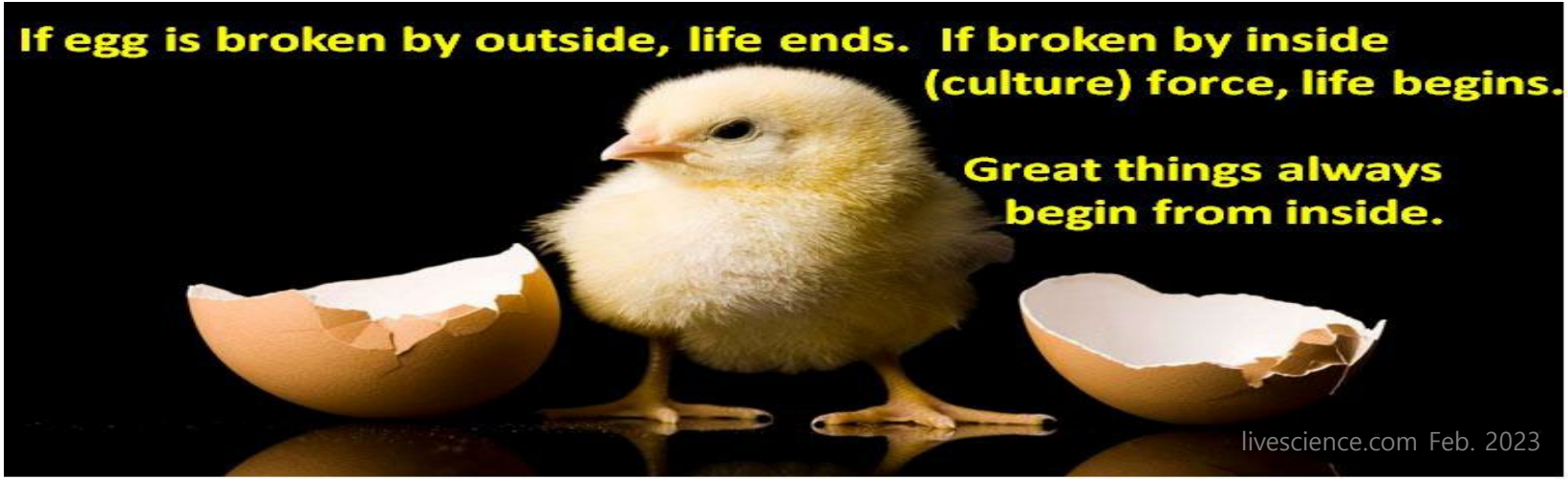
사후심사 결과서 (2023)
Post-Audit Result

[에코저널, 2024.06]

03. Lack of Internal Capacity

Just as a new life, a "chick," is born from the inner strength of the egg, not from external forces, it has been confirmed that safety must also be strengthened through internal capabilities.

As a result, the Serious Accident Punishment Act (SAPA) and the promotion of a safety culture are being recommended as important policy tools, and safety culture measurement and maturity assessment are gaining prominence.



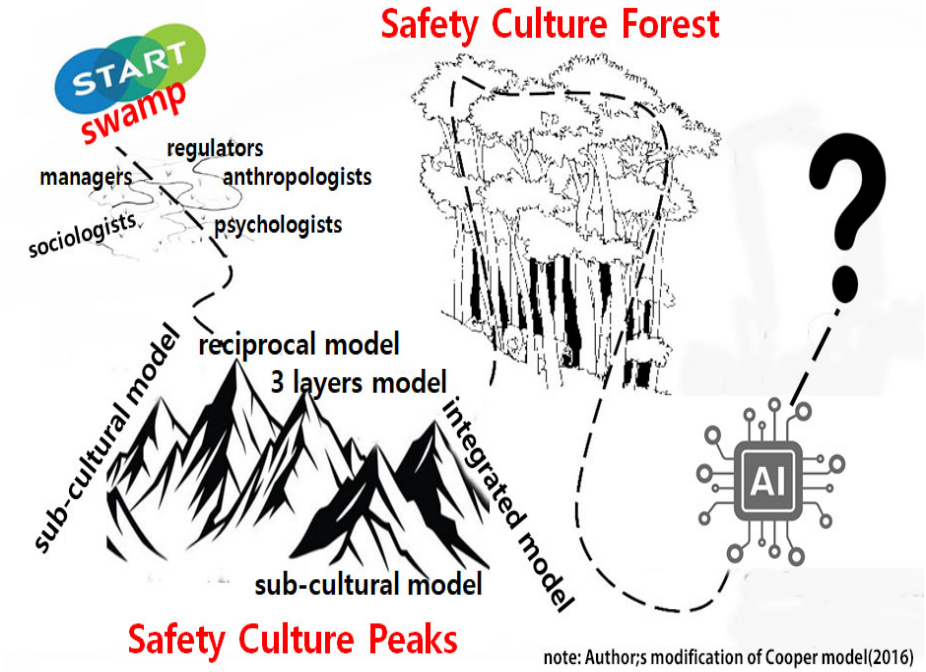
02

Tools for Assessing Korea's Safety Culture

- Diversity of Measurement Tools
- Living in a Different Era
- KSCI
- Safety Culture Assessment Case

01. Diversity of Measurement Tools

There is a safety culture forest today, and there is no perfect assessment tool that is suitable for all organizations.



Name	Developer
Loughborough Safety Climate Assessment Toolkit (LSCAT)	Loughborough University, Health & Safety Executive (UK), and Offshore organisations
HSL Safety Climate Tool (HSCST)	**Health and Safety Laboratory, UK**
Hearts & Minds Programme / Toolkit	Energy Institute, UK
Safety Culture Maturity Model (SCMM)	**The Keil Centre, UK**
Safety Climate Survey Tool (SCT)	**Health and Safety Executive, UK**
Transport Canada Culture Evaluation	Transport Canada
HRMI Safety Culture Inspection Toolkit	Her Majesty Railway Inspectorate, UK
RSSB Safety Culture Improvement Toolkit	Railway UK, Railway Australia
Safety Culture Toolbox	EuroControl, EU
Commercial Aviation Safety Survey (CASS)	Federal Aviation Administration (FAA), USA
Safety Culture Assessment (SCA)	**California Natural Resources Agency, USA**
Korea Safety Culture Index(KSCI)	Ministry of Employment & Labor
Safety Culture Maturity Assessment	Korea RMS

02. Living in a Different Era

In the past, safety culture assessments were primarily conducted at global and large corporations. In addition, the purpose of the assessments was to "show-off".

We live in a different era: It is an era in which we need to reveal a culture in which safety is managed mainly by science and people, not by “show-off”.

03. KSCI

Ministry of Employment and Labor

The Ministry of Employment and Labor developed and introduced the Korean Safety Culture Index (KSCI) (December 2023).

- Previously, there was a program to improve the level of safety awareness (KOSHA-Care) of KOSHA, but there were too many questionnaires (144 items) and they were complicated, so they were not used well.
- Therefore, it is developed to measure the level of safety culture and identify factors for improvement.

The KSCI is available in basic and extended version.

- Basic version (5 scales, 18 items)
- Extended version (5 scales, 48 items)

  - Scale: leadership, behavior, support, training, communication

고용노동부 보도자료

보도시점 2023. 12. 3.(일) 12:00 (2023. 12. 4.(월) 조간)

한국형 안전문화 평가지표(KSCI) 시범 적용

- 기업들이 스스로 사업장의 안전의식 및 문화 수준을 측정하고, 안전시스템 및 문화를 개선하려는 노력을 촉진하는 수단으로 활용 기대

고용노동부(장관 이정식)는 기업이 스스로 **사업장 내 안전문화를 측정**할 수 있도록 「**한국형 안전문화 평가지표**(Korea Safety Culture Index)」(이하, 'KSCI')를 개발하고 있으며, **12월 4일부터 전국 200여 개 기업을 대상으로 시범 적용**한다고 밝혔다.

중대재해를 감축시키기 위해 정부의 법·제도 혁신, 기업의 안전투자 확대 노력 등을 추진하고 있다. 그러나, **사망사고의 획기적 감축**은 사회 전반적인 **안전의식과 문화가 튼튼하지 않으면 불가능**하다.

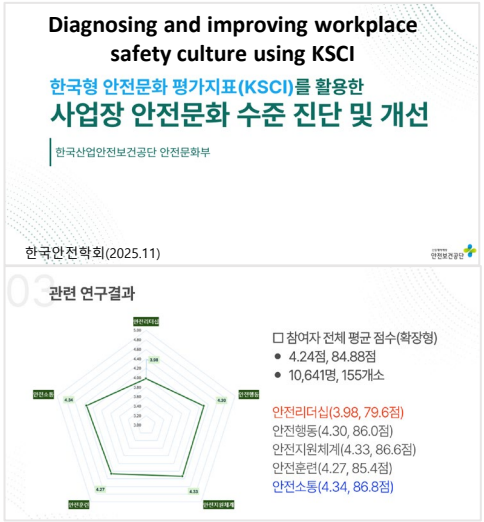
안전의식과 문화 정착을 위해서는 기업 스스로 자신들의 수준을 파악하고, 개선하려는 노력이 중요하다. 그러나, 안전문화 수준 측정 자체가 어렵다고 한다. 컨설팅받기도 어렵고, 「**안전의식 수준향상 프로그램**(KOSHA-Care)」은 **문항이 많고(144개) 복잡**하여 많이 활용되고 있지 않다('23.10, 290개소).

04. Safety Culture Assessment Case

The current level of safety culture assessment differs from the maturity of safety culture in Western countries.

- KOSHA's safety culture score can be the benchmark's guideline.
- The lower the response rate, the higher the positive response rate of survey participants
- Safety culture scores are reflected in subcontractor evaluation criteria, leading to overestimation.
- It is necessary to secure an in-house safety culture assessment tool.

Organization	No of survey subjects	Response rate(%)	Score	Assessment method	Scale	No of items	Self-developed	Assessment cycle
KOSHA	10,641	-	4.24	Survey	5	18/48	○	1st
A-Telcomm.	-	-	3.5	Survey + Interview	8	39	○	1st
B-Electric	2,985	52.7	3.8	Survey	12	-	Commercial	Annually
C-Metal	1,058	81	2~3	Survey + Interview	12	-	Commercial	3-year
D-Power	2,718	20	4.2	Survey	7	48	Commercial	Annually
D-Power(Contrac.)	1,119	74	4.6	Survey	6	63	Commercial	Annually
E-Motor	1,004	70.8	3.06	Survey	5	40	Commercial	1st
F공사	1,880	35	3.8	Survey	5	41	○	Annually



03

The Future of Aviation Safety Culture Measurement

- Future Developments
- Measurement for Reporting Culture
- Measurement for Just Culture

01. Future Developments

- **Digitalization and AI-Powered Safety Management:**
  Future safety systems will increasingly rely on data analytics, AI, and machine learning to identify trends, predict hazards, and manage risks dynamically. Organisations will need to invest in digital infrastructure and develop data competencies across the workforce.
- **Adapting to Emerging Risks:**
  New technologies, such as unmanned aerial systems, urban air mobility, and cybersecurity threats, will introduce risks that challenge traditional safety models. Proactively identifying and mitigating these risks will require adaptive, forward-looking strategies.
- **Embedding Safety Culture Beyond Compliance:**
  The challenge remains to move beyond policy documents and ensure safety culture is lived and felt across all levels of the organisation. This includes fostering leadership engagement, empowering frontline staff, and measuring cultural health through surveys, feedback, and behavioral indicators.
- **Balancing Safety with Business Pressures:**
  As industry faces increasing demands for efficiency, cost-cutting, and sustainability, organisations must guard against the erosion of safety standards, ensuring that safety remains a non-negotiable core value.

02. Measurement for Reporting Culture

As artificial intelligence (AI) technology evolves, the level of intelligence generated from data centers is increasing.

However, securing reliable data is difficult without a mature "reporting culture," a sub-culture of safety culture.

Therefore, the development of tools to rigorously measure reporting culture is urgently needed.

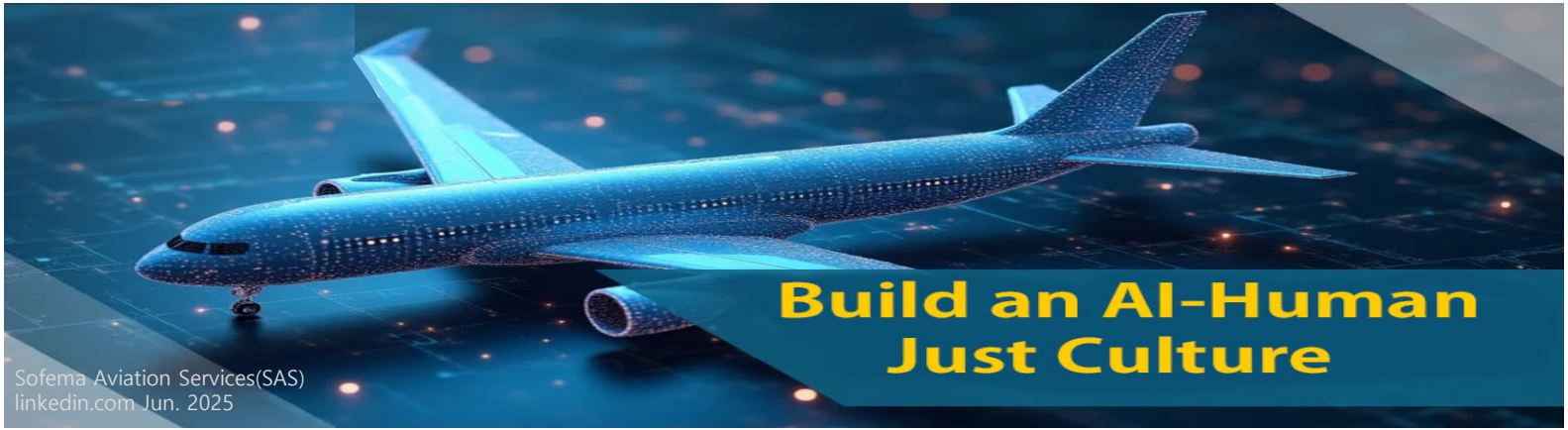
The Global Emergency of 'AI Reporting Culture'
linkedin.com Jul. 2025

03. Measurement for Just Culture

The introduction of intelligent assistants (IAs), which partially replace human activities, is expected to bring about significant changes in aviation operations.

Intelligent assistants are likely to be utilized to support aviation personnel in cockpits, air traffic control centers, and airports.

Therefore, in order to promote a safety culture, it is important to develop indicators that evaluate the effectiveness of a “fair culture” between humans and intelligent assistants.



04

Concluding Remarks

The safety success of future airlines hinges on the adoption of artificial intelligence.

However, the biggest obstacles to AI adoption are people and culture, not technology.

In safety management, employee willingness to embrace new AI technologies and a collaborative culture are crucial.

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Thank you!