WHITEPAPER

fresh perspectives on safety management

Behavior-based safety, psychological safety, safety-II and safety differently

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rethinking workplace safety

Traditionally, improving health and safety has focused solely on reducing accidents. As you look to improve the long-term sustainability of your business, the drive to create a safe yet productive working environment might prompt you to look beyond this reactive approach.

Modern perspectives on health and safety question the fundamental concepts that were once considered self-evident, encompassing aspects of behavioral psychology, leadership, and examples of best practice.

As the world explores fresh perspectives on occupational health and safety – and asks what role employees can play in this process – AMCS takes a look at the new safety management concepts driving change in occupational health and safety.

In this whitepaper, we introduce four new approaches to safety management: Behavior-Based Safety, Psychological Safety, Safety-II and Safety Differently.

Discover the similarities and differences behind these concepts and learn how they encourage employees to contribute to the shared quest of making workplaces safer. Armed with this information, you will be equipped to cultivate safety leadership rather than process management and ready to create the kind of supportive and sustainable safety culture that powers continuous success.

the role of safety in a changing world of work

Occupational safety is commonly understood as the absence of danger; a state in which as little as possible goes wrong. To achieve this, organizations have largely focused on analyzing accidents and hazardous situations – the more serious the accident, the greater the adjustments made to improve occupational health and safety.

Over time, however, a growing number of experts have argued that this concept of safety is too narrow and short-sighted. They are convinced that a reactive approach, concentrating solely on accidents and incidents, is not sufficient to create a safe work environment over the long term.

Instead, modern concepts such as Behavior-Based Safety, Psychological Safety, Safety-II and Safety Differently provide new, pioneering ideas and, in conjunction with traditional safety strategies, work to provide a more holistic view of modern safety management.

behavior-based safety: the human factor in safety

Ensuring safety by encouraging the right behavior

Almost anyone can make a mistake, no matter how well trained or diligent they are. In fact, the UK's Health and Safety Executive estimates that human failure contributes to almost all accidents and exposure to substances hazardous to health.[1]

That's why Behavior-Based Safety (BBS) puts behavioral psychology at the heart of safety management. With human behavior as the linchpin of success, it seeks to change how employees act, but also – crucially – how they think and talk about safety, as well as their attitudes to reporting safety-related incidents.

In fact, many factors can encourage unsafe behavior and people often behave unsafely simply because it is the easier option. For example employees might climb scaffolding without safety equipment because they want to hand some thing over quickly. Or they might not put on safety gloves because they left them in the room next door.

In order to break these kind of workplace habits, BBS explicitly encourages and reinforces safe behavior through positive feedback. This not only promotes specific behaviors (such as putting on PPE) but also influences all dialog and action concerning occupational health and safety.

BBS in practice: Observing together, changing together

In principle, BBS follows a simple credo: If you want to change behavior, you must first define it. This involves evaluating data on safe behavior in everyday work. What do employees regard as significant risks? What safe behavior have they identified from themselves and their colleagues? Research suggests that coming together to discuss and define risks integrates employees in the evaluation process and turns them into safety experts who can implement improvements with little effort or expenditure.[2]

In order to establish BBS you will need to identify clear goals and criteria. Ultimately, all BBS strategies follow a similar pattern that can be summarized in five specific steps:

1. **Define behavior:** What behaviors contribute to safety in the company? The focus is on safe behavior – not workplace accidents or rule-breaking.
2. **Observe behavior:** Once defined, it is important to objectively record and measure this behavior.
3. **Give feedback:** All feedback must be either positive (to reinforce a behavior) or constructive (to teach a safer behavior). All feedback must also be behavior-specific.
4. **Set goals:** Employees should set behavior-related goals that they can achieve – such as always donning PPE before climbing scaffolding.
5. **Provide positive reinforcement:** It is crucial to systematically acknowledge safe behavior. Positive reinforcement is not a friendly pat on the shoulder every now and again, but rather a clear expression of the company's appreciation for

behavior-based safety: the human factor in safety

Continued

its employees' efforts in relation to occupational health and safety.

The more detail you can include on these core elements of observation and reward, the easier it is to plan specific measures and monitor their success over the long term. In this way, integrating concepts from the field of behavioral science in order to change everyday workplace practices helps to establish a new, sustainable safety culture in your company, little by little.

The process of encouraging small behavioral changes and promoting shared responsibility ultimately creates greater "safety awareness". Employees at companies that implement BBS programs not only modify their day-to-day behavior, they also report becoming aware of unsafe situations more often – both at work and at home.

Shared Responsibility

One important aspect of BBS is moving away from assigning blame and issuing punishments. Instead, employees should be encouraged to act autonomously, observing and analyzing their own mistakes, and admitting when problems arise. This state of shared responsibility can only be achieved when employees do not fear negative consequences and, ideally, feel that their feedback is valued.

psychological safety: corporate climate as the foundation of health and safety

Regarding mistakes as part-and-parcel of business

The BBS approach rests on the idea that employees can make a valuable contribution to occupational health and safety by reporting and analyzing mistakes. This is why handling mistakes in a constructive manner should be a core element of any safety management strategy since employees will only openly address their mistakes if they do not fear sanctions.

The notion of Psychological Safety also deals with this topic. Largely defined by American scientist, Amy Edmondson, of Harvard Business School, Psychological Safety is described as a positive corporate culture in which employees feel safe and secure enough to take interpersonal risks. It is key to a culture of failure: If employees feel psychologically safe, they know that they can speak openly about mistakes without being judged or sanctioned for them by their colleagues or superiors.

Failure is a source of valuable data.
Amy Edmondson

Psychological Safety as a condition of better workplace safety

Awareness of the concept of Psychological Safety grew through Project Aristotle, a study conducted by Google in 2016. It aimed to discover what separated high-performing teams from the rest. The results showed that a team's diversity, size and number of university graduates barely played a role in how successful it was. Instead, the most important factor was actually the level of psychological safety.[3]

In management circles, Psychological Safety has already become a significant and widely known concept resulting in reduced turnover and increased engagement. However, achieving psychological safety is not just a factor in efforts to achieve higher productivity – it can also serve as an important element of an improved occupational health and safety strategy.

In truth, psychological safety is a key precondition of physical safety. In the previous chapter, we looked at how BBS can integrate employees in occupational health and safety concepts. Psychological Safety offers a similar approach in this regard, but takes another step further back. It starts by considering how to create an environment in which employees are open and trusting enough to engage in safety-related processes and discussions.

In practice, psychological safety helps to make it easier for employees to talk about things that are not going well, from system errors and aberrant behavior to technical problems, excessive workloads, and gaps in knowledge. In one study, Amy Edmondson investigated why different hospital wards recorded different error rates. Her research identified a positive correlation between psychological safety and error rates – not because staff who felt psychologically safer made more mistakes, but because they reported them more often.

psychological safety: corporate climate as the foundation of health and safety

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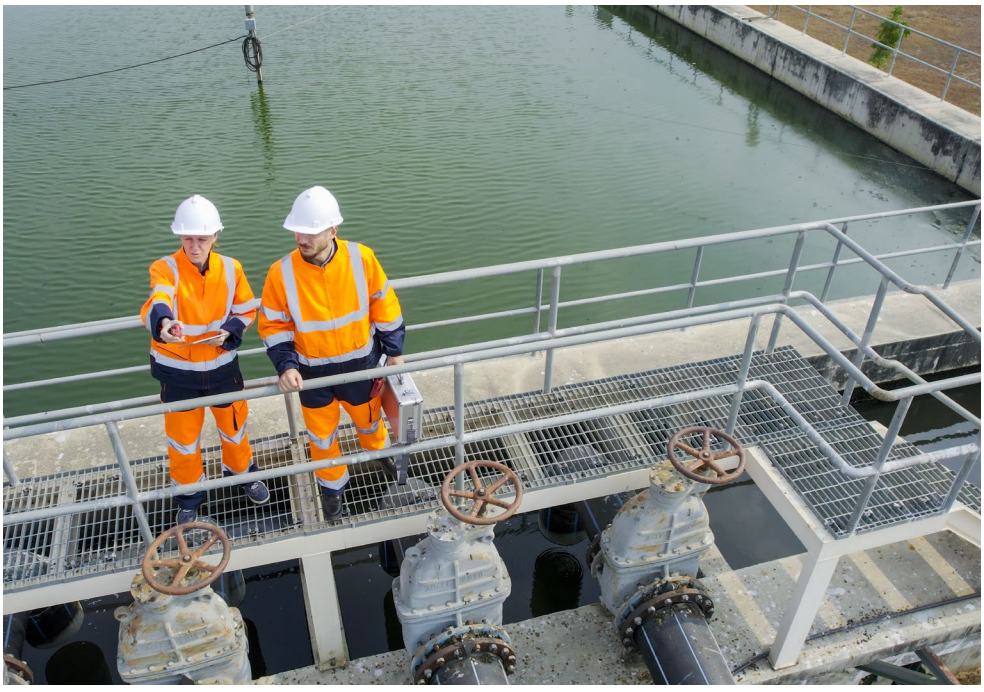
This illustrates the benefits that the Psychological Safety concept offers for occupational health and safety. When employees feel that even critical feedback is appreciated, they communicate more openly regarding problems, errors and doubts. From a company's perspective, this makes it possible to rectify problems and issues more quickly. This is another instance in which occupational health and safety can benefit from a participative element.

Managers in particular can contribute to creating a psychologically safe environment by showing themselves to be approachable, creating open spaces for discussion, and explicitly asking for input from their employees. At the same time, small gestures can also play a role in making a workplace safer – as Amy Edmondson explains: *"Any time you ask a genuine question – and I mean a question where you are hoping for an answer – and then pause long enough to listen, you have impacted the safety climate just a little bit."*

Psychological Safety

A team offers psychological safety for its members when they feel that they do not need to fear any attacks on themselves, their identity, their status, their career or their general employment relationship from within the team. This feeling of safety is particularly important in situations where team members display learning behavior, such as by asking for help, acknowledging their mistakes and gaps in their knowledge, requesting feedback, trying new things or expressing different opinions on work topics.



safety-II: a second view on occupational health and safety

Safety-I: Safety by preventing accidents

For a long time, safety in the workplace meant the absence of dangers and unsafe situations. Over time, however, an increasing number of people came to regard this interpretation as too narrow-sighted to ensure long-lasting, future-proof occupational health and safety. Safety-II therefore presents a radical new way of thinking, significantly shaped by scientist Erik Hollnagel.

Alongside the term Safety-II, Hollnagel also introduced the term Safety-I in order to illustrate the differences with more traditional safety concepts. Consequently, the classic Safety-I approach assumes that the root cause of accidents and incidents can be identified as malfunctions in specific processes. An important element of this approach is the notion that all adverse outcomes can be traced back to a causal error.

With this in mind, the foremost goal in the Safety-I approach is to avoid such errors in the first place. As a result, occupational health and safety systems following the Safety-I approach are often reactive by nature: When a problem occurs, efforts begin to find the cause and then rectify it to minimize future risks. However, such a strategy can only function properly under specific conditions:

- All work processes must be established and understood and their outcomes must be predictable.
- Errors must occur so rarely that there is enough time to analyze and remedy them.
- Malfunctions must be identifiable and distinct from normal conditions.

Safety-II: Safety in complex systems

In reality, systems, processes, technologies and associated human behaviors are becoming increasingly complex and cannot always be classified using the simple cause-and-effect relations outlined in Safety-I. Hollnagel therefore proposes supplementing the concept of safety with a second approach: Safety-II addresses the issue of why, despite all the uncertainties, changes and goal conflicts, in most cases everything works well. This approach places an emphasis on human performance variability. It asserts that it is precisely this adaptability that enables people to react to changed requirements, something that is even more important in complex, less predictable systems. In order to improve occupational health and safety, it is important to support this adaptive element.

Safety-II therefore concentrates not on rectifying errors but on ensuring that everything is working as well as possible by empowering people to react efficiently and constructively to unexpected occurrences. It draws on the concept of Resilience Engineering, which instead of relying on incident analysis and accident probability, encourages an organization to structure its processes in a robust, flexible manner and proactively solve problems.

As a result, processes are not defined as cause-and-effect mechanisms but are instead perceived as complex systems in which deviations constantly occur. In the context of Safety-II, then, human behavior represents an important resource that can create flexibility and compensate for deviations. For this reason it is crucial to analyze functioning processes to understand the compensatory mechanisms at work, the characteristics of successful systems and adaptations, and what lessons can be learned and applied to future situations.

safety-II: a second view on occupational health and safety

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It is important not to assume, however, that Safety-II can simply replace Safety-I. Analyzing sources of error also contributes to better health and safety in the workplace. Nevertheless, Safety-II contributes a decisive perspective. It argues that errors should be analyzed and rectified – but that's not all.

Situations in which everything works well must also be analyzed and lessons learned. In statistical terms, Hollnagel suggests that for every 10,000 successful outcomes (that is, situations in which safety was ensured), one failure (accident) occurs. With this in mind, the Safety-II perspective can vastly improve our understanding of and methodological approach to occupational health and safety.

Comparison of safety-I and safety-II, based on hollnagel, 2013

	SAFETY-I	SAFETY-II
DEFINITION OF SAFETY	A state where as little as possible goes wrong	A state where as much as possible goes right
SAFETY MANAGEMENT STRATEGY	Reactive – responding when something happens	Proactive – attempting to anticipate events and developments
EXPLANATION FOR ACCIDENTS	Accidents are caused by failures, malfunctions and errors (deviations).	Situations in which accidents occur are based on similar mechanisms (deviations) to situations in which everything works well.
VIEW OF HUMANS	Liability	Resource

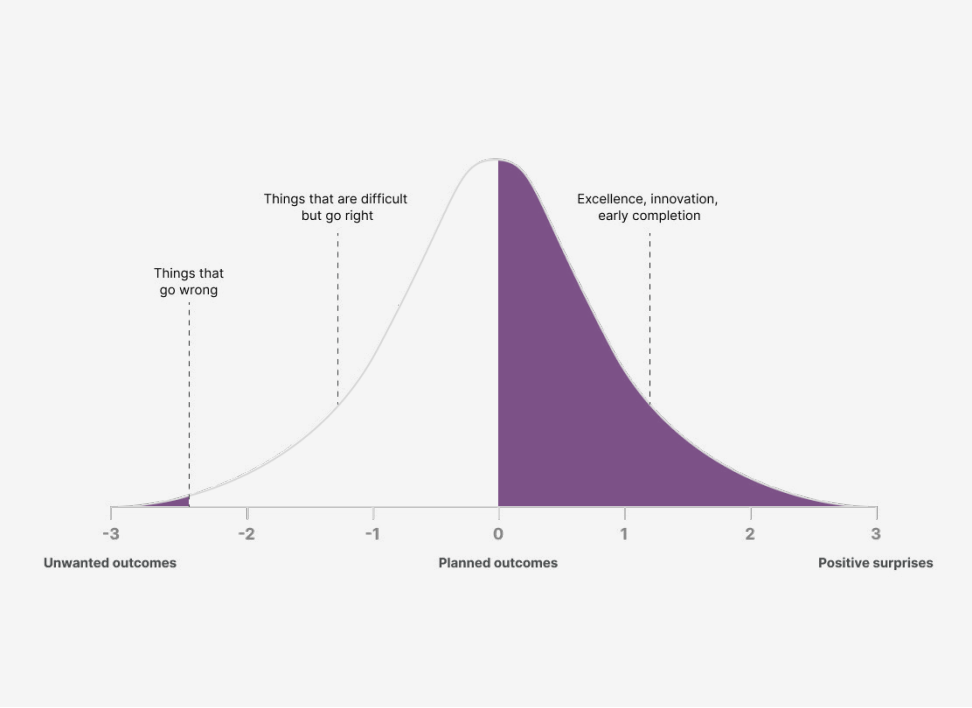

Figure 1: probability distribution and occupational health and safety, according to Hollnagel 2015

safety differently: less bureaucracy, more responsibility

How companies reduce health and safety efficacy

If a company has already implemented comprehensive occupational health and safety concepts and only experienced moderate success, what else can it do? Australian researcher Sidney Dekker examined this very question and produced a simple answer: It might be time to hand over some responsibility to employees. Dekker's arguments and theories helped to shape Safety Differently, an umbrella term for a different understanding of occupational health and safety and the title of a movement within the profession.

Building on the theoretical foundation of Safety-II, Safety Differently also criticizes the fact that many companies' understanding of safety is characterized by only three main principles:

- Employees are regarded as the cause of safety problems and accidents because they are responsible for errors and do not obey the specified rules.
- Companies try to influence and improve their employees' behavior by introducing strict codes of conduct and regulations.
- The success of occupational health and safety is measured by the absence of negative incidents.

This approach results in a system of control and conformity. It also results in increasing bureaucracy, which in many cases impairs the efficiency of the company overall. Employees are repeatedly subjected to new regulations and protocols made up of procedures that might not apply to their daily work at all. According to Dekker, this approach leads to a situation in which employees mentally check out from the topic of occupational health and safety and no longer recognize its relevance to their work.

Managing Change

Safety Differently recognizes that working environment and conditions change all the time. Organizations should therefore work to build a safety culture where employees are prepared to handle surprises and variations.

Challenging zero harm and shifting focus away from minor incidents

Safety Differently argues that there is insufficient evidence that preventing minor accidents actually decreases the risk of major ones. It questions the value of zero harm policies and their focus on eliminating small cuts, bruises and bumps. Rather, Safety Differently suggests devoting resources to better understand how and why major accidents happen and to mitigate the underlying serious risks – both the identified and the unidentifiable ones.

Controlling for an unidentified risk? In Safety Differently, this is not strange but a normal situation. In other words, Safety Differently aims to "enable people to achieve outcomes across varying conditions."[4]

Traditionally, safety success is built on historical incident data, as well as on obliging people to stick to the rules put in place by managers. Safety Differently brings a new perspective to organizations who invested in traditional zero harm strategies and eventually saw their results plateau. Building on core elements – decentralizing and devolving power, decluttering, analyzing work as done versus work as imagined – the concept aims to build systematic, mutual trust between the workforce and leaders. While Safety II and Safety Differently are rather recent concepts and sometimes criticized for not yet being scientifically proven, they illustrate that fostering trust is undeniably linked to better safety performance.

EHS software as a driving force for modern occupational health and safety

New ideas and perspectives offer huge potential for occupational health and safety. In many cases, traditional and modern approaches complement one another, so it can be useful to regard traditional safety management as a foundation upon which to establish a broader perspective, but the question remains how to integrate new approaches into existing structures. This is where another aspect of modern occupational health and safety comes into play, namely EHS software.

Creating a strong Safety-I foundation

At the fundamental level, EHS software is designed to structure and automate traditional occupational health and safety (Safety-I). Many legal obligations and ISO standards were developed from a Safety-I-based perspective so meeting these obligations and obtaining certification according to international standards ensures that a company is legally compliant and competitive. Of course, these tasks should not be abandoned in favor of new perspectives.

Fortunately, EHS software simplifies traditional occupational health and safety processes, such as by automating incident management and automatically updating legal registers and safety data sheets. In addition to providing decentralized data recording and centralized data analysis, EHS software can also clearly display all occupational health and safety activities, linking them to the people responsible – whether employees, managers, specialists, auditors or executives. In most cases, software can complete bureaucratic processes like generating evaluations and reports in just a few clicks.

Aside from their use in traditional safety management, however, software solutions can also provide meaningful support in relation to Behavior-Based Safety, Psychological Safety, Safety-II and Safety Differently.

EHS software for Behavior-Based Safety

Setting targets, systematically tracking them, adapting them and making them transparent for employees – these are all areas of BBS in which a software solution can save time and effort. A central goal of BBS programs is to involve employees and encourage them to reflect on the topic of occupational health and safety. No EHS software can do the thinking for you, but they can support the most important elements of just about every BBS program, namely observations, identifying safe behavior, feedback and data management.

Observations
EHS software can enable employees or external stakeholders to enter their observations using simple forms wherever they are working. This might involve apps, terminals or desktop access, but if management provides this type of easy-access tool and motivates employees to report safe and unsafe behavior, it sends a message – that occupational health and safety is a top priority in our company.

Identifying safe behavior
In addition to flagging flaws in daily activities, a team can also identify positive, desired behaviors. Software solutions make it easy to record this safe behavior, which can then be tracked in the form of KPIs. This ensures that statistics outlining the success of the BBS program can be viewed and made available at any time. It is also possible to define and track specific targets, such as “increase the number of safety meetings and BBS observations by 20 percent” using corresponding KPIs in the software.

Feedback
EHS software can inform the responsible person when feedback is required. It can also send status updates to the people who submitted BBS reports. This ensures that everyone knows what is going on and that no report is overlooked.

EHS software as a driving force for modern occupational health and safety

Continued

Data management
Software solutions bring their strengths to bear when it comes to managing data. BBS observations generate vast quantities of information that need to be tracked, visualized and evaluated. Cloud-based software can store limitless data and process information in a structured way. Such solutions offer dashboards that display the most important KPIs and thus help to assess success and performance. In this context, it is also crucial that the software ensures data anonymity to reduce mistrust on the part of employees. Examples of data generated in a BBS system include: the number of observations; the proportion and number of safe behaviors recorded; the number of feedback messages issued following observations, and the number of supporting behaviors from managers.

EHS software for Safety-II and Safety Differently

Positive KPIs
When working with the Safety-II concept, EHS software allows companies to define their own, specific occupational health and safety KPIs. This makes it possible to supplement traditional KPIs – such as accident frequency rate and accident-free days with worker safety initiatives and positive behaviors. It should be as easy as possible to compare and draw relationships between the different types of KPIs. Having traditional metrics alongside practices inspired by new approaches may help employers understand what makes the working environment safer.

Proactive health and safety
Crucially, EHS software can help companies understand how current occupational health and safety conditions can be improved and help them instigate proactive measures. It can also highlight the areas in which they have already achieved success and the reasons behind this.

EHS software for Psychological Safety

Reporting failures – transparently and impactfully
EHS software can offer a great advantage in terms of transparency by enabling all staff members to see the measures that are taken to mitigate risks and improve safety. Process flowcharts can visualize the if-then relationships and show that each report triggers a corresponding action. This promotes trust and motivates everyone to play their part, whether that's submitting reports or actively ensuring proper precautions are in place. If each reported observation triggers a corresponding process, a common sense in relation to safety culture will evolve.

Over time, leadership can illustrate that taking the interpersonal risk of reporting failures or concerns has a tangible, positive impact. Software can further serve as a source of motivation, by providing status updates and organizing feedback. Dashboards that display an overview of reported errors and resulting improvements send a clear message: "We don't point fingers when people make mistakes and, together, we are determined to improve occupational health and safety in our company."

EHS software as a driving force for modern occupational health and safety

Continued

Anonymous reporting
To reduce people's unwillingness to report, EHS software also offers options for anonymous reporting. By offering the choice to report anonymously, you can gain a vital indicator on whether employees really feel safe to speak up about concerns and self-made errors.

The connecting element: Safety leadership
Health and safety officers who recognize the potential of modern safety approaches often spend time trying to persuade executives and company management to contribute to a healthy safety culture. It is vital, however, to integrate all employees in occupational health and safety.

Clearly, no software will ever replace the human component when it comes to establishing values and culture. The true value of a software solution therefore lies in its ability to save everyone involved both time and effort. By overcoming the bureaucratic barriers to participation, EHS software lightens the load on health and safety officers, in turn allowing them to reclaim time spent on administrative tasks and invest it in safety leadership.

people-centered approach to safe and sustainable workplaces

Sustainable safety and realizing the potential of people

The approaches to occupational health and safety presented in this whitepaper sometimes feature very different priorities and strategies. Despite this, all four perspectives agree on one thing, namely their perception of people as a driving force for better occupational health and safety.

They call attention to the fact that occupational health and safety cannot be achieved solely by protecting against technical faults and injuries. More than just assessing risk and optimizing processes, the way in which your company handles errors can have a fundamental impact on the atmosphere between employees and managers and the efficacy of feedback.

In fact, modern safety management is defined by a new perspective on people and their ability to participate actively in occupational health and safety. This does not negate the fact that people make mistakes, however, modern approaches are based around the belief that rules and sanctions are counterproductive. Instead, they regard employees' behavior and their ideas as the starting point for new occupational health and safety strategies.

None of the approaches outlined in this whitepaper seek to break with traditional, tried-and-trusted methods altogether. On the contrary, they regard Safety-I as the foundation for modern occupational health and safety – only questioning methods when health and safety stagnates or is perceived as an impediment to productivity.

Above all, modern occupational health and safety, and the approaches presented in this paper, can be regarded as part of a quest for what AMCS calls 'performance sustainability' – the ability to improve performance, protect people, and power growth sustainably.

Proactive health and safety is an important part of this movement, realizing the benefits of both traditional Safety-I and modern health and safety through the application of EHS technology. EHS software, for example, automates key Safety-I processes while also facilitating the data analysis that supports modern safety approaches, thereby setting the course for new forms of leadership with people at their heart.

Over the long term, perceiving occupational health and safety as a shared responsibility and making employees an active part of occupational health and safety strategies not only eliminates time-consuming bureaucracy, but it can also boost the sustainability of your business and turn your workplace into better a space for all employees.

about amcs

Sustainability that means business

AMCS is the market leader in Performance Sustainability, enabling you to boost sustainability and profitability at the same time. With AMCS, you can achieve sustainable growth and transparent social responsibility while also safeguarding the environment and reducing operational risks.

The AMCS Performance Sustainability Suite is an operating system for business executives, managers, and frontline employees that provides end-to-end value and powers strategic decision making.

Ensuring our enterprise software and SaaS solutions deliver digital innovation to the emerging circular economy around the world.

Learn more at **www.amcsgroup.com.**

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