minuendo®

Automating hearing loss prevention

Overcoming the problem of workplace hearing loss

Occupational noise-induced hearing loss (ONIHL) is the most common occupational disease in the world – and each case holds the potential to cause enormous individual suffering and distress.

The problem is particularly prevalent in sectors such as manufacturing and construction, where workers operate near loud machinery on a regular basis. In such harsh environments, a lax approach to adopting and using personal protective equipment (PPE) can lead to hearing damage – not just instantly, but also cumulatively over time.

However, recent advances in digital technology can eradicate this threat. Minuendo has automated the hearing loss prevention process, providing end-users with practical real-time guidance on noise exposure that helps them adopt safer behaviour in industrial and construction environments. This data-driven solution is simple to adopt and intuitive to use, continuously providing workers with tangible in-device information that encourages them to adopt safer actions. This digital insight also enables safety managers to build a long-term safety culture based on collaboration rather than coercion.

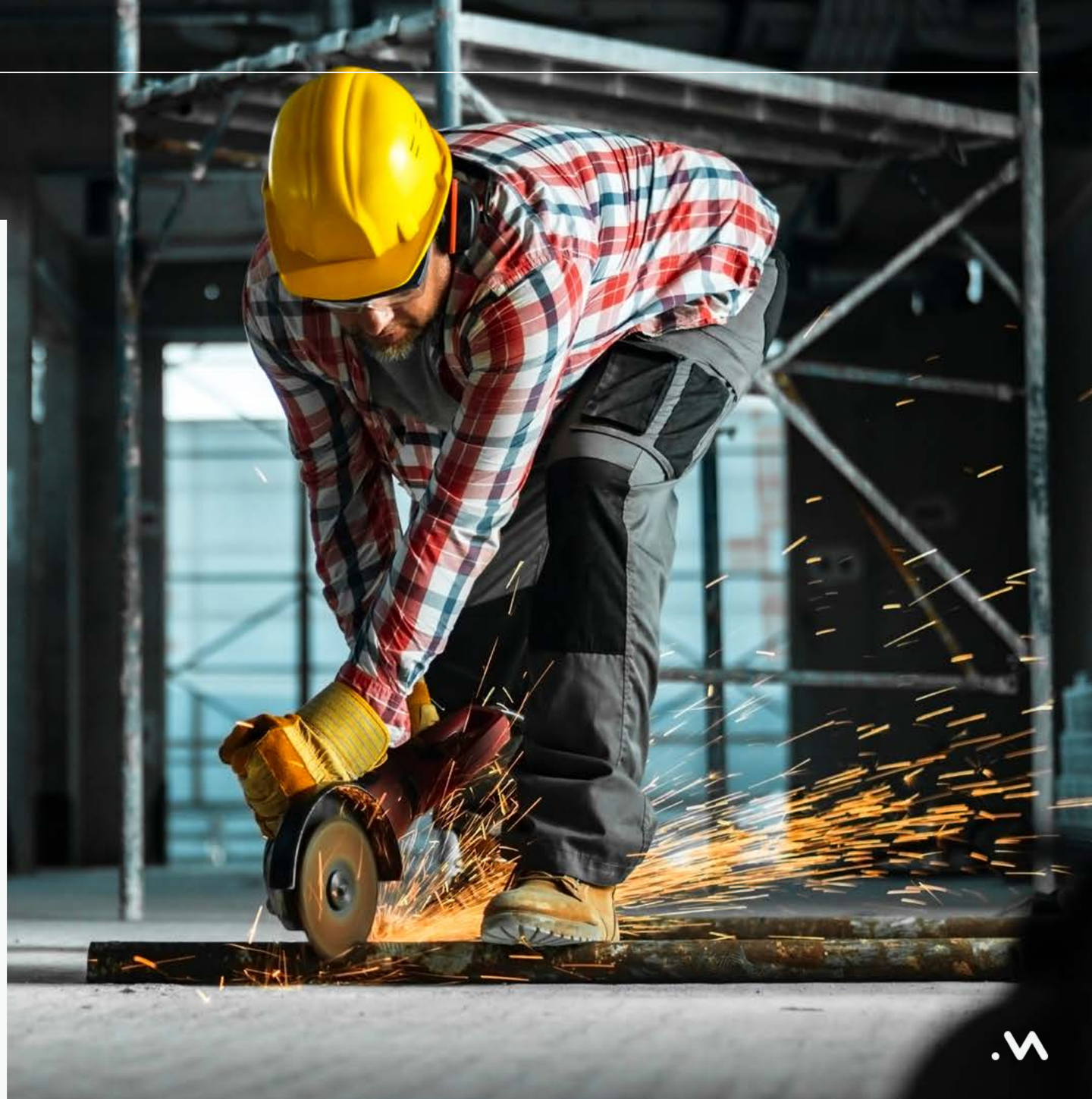
This e-Book provides a step-by-step guide to the automation of hearing loss prevention – a technology that is set to revolutionise occupational health in industrial and construction markets.

The shortcomings of existing PPE solutions

Much existing hearing protection such as earmuffs are cumbersome and uncomfortable – and rely too much on the end-user to execute individual judgement around frequency and consistency of use. These standard devices also provide little or no real-time information about the benefit being derived from their adoption. Users have no way of knowing what level of protection they receive or their level of exposure to damaging noise. Also, earmuffs or earplugs can overprotect, isolating workers by reducing their ability to have face-to-face conversations with those around them. This inability to communicate, combined with poor situational awareness, increases the threat of accidents.

Traditional PPE also fails to provide the safety manager with any meaningful information. With highly mobile end-users often working out of sight in dynamic noise environments, the safety manager has little idea whether PPE is being worn consistently or correctly, or that adequate protection is being maintained. This lack of clarity and insight can result in compliance failures, and that in turn runs the risk of future occupational noise-induced hearing loss claims.

In truth, traditional PPE has many shortcomings. And that is where Minuendo comes in. We provide an opportunity to automate and integrate the hearing loss prevention process in a simple manner providing clear benefit for end-users and safety managers alike.



Minuendo’s DNA

Minuendo was founded in 2018 by a team with extensive experience in acoustics, hearing protection and product development. Our mission from the start was to deliver category-defining hearing protection products that users found comfortable and enjoyable to wear.

Our unique approach to hearing loss prevention is based upon knowledge and expertise gained in the music industry as a provider of lossless earplugs. These innovative devices feature unique acoustic filters providing the highest quality sound with no loss for pro-musicians and live music lovers all over the world.

Key to the performance of the earplugs is a patented membrane that provides lossless sound quality, allowing full-fidelity music to be enjoyed across an adjustable range, without causing any hearing damage. The same earplug technology can be deployed in industrial and construction markets, providing hearing protection with no loss of situational awareness, and enabling communication with colleagues nearby. This level of auditory performance, combined with advances in areas such as cloud communication and data analytics, enables Minuendo to provide an automated hearing loss prevention solution that both protects and connects.

How the technology works

For the end-user, the foundation of the Minuendo solution are the smart alert earplugs that continuously monitor noise levels. In-device alerts immediately advise workers when they need to act due to unsafe noise levels, by physically moving further away from a piece of equipment or process being performed by a colleague, or whether additional protection is needed. The earplug continuously collects the noise level and provides other usage data such as when and how well the earplugs have been fitted.

Once the earplugs are docked, data is then transferred to Minuendo's secure cloud platform, where it is analysed, and actionable insight is created. Personal guidance is calculated for users experiencing high levels of daily noise exposure, with timely notifications supported by reminder emails and text messages. Unlike other digital solutions that that rely on end-users deciphering the data for meaningful outcomes, the Minuendo solution provides straightforward suggestions that can be adopted to improve personal safety and lower the risk of noise-induced hearing loss. It is about empowering end-users to change their safety behaviour.

Automating the process means the safety manager receives digestible data on the adoption and use of hearing protection and only needs to intervene when required. Most modern factories or construction sites contain numerous sensors from which there is a risk of information overload. With the Minuendo solution, notifications can be set at specific levels to reduce the level of unwanted email or SMS, so that safety managers can focus their limited resources on the highest priorities.

Easy access to reliable data helps safety managers build necessary reports in a timelier manner and achieve KPIs. Moreover, historical data can inform investigations into whether noise-related hearing loss has been suffered in an occupational or recreational setting.

Minuendo delivers a win-win solution – providing end-users and safety managers with the ultimate protection and connection.

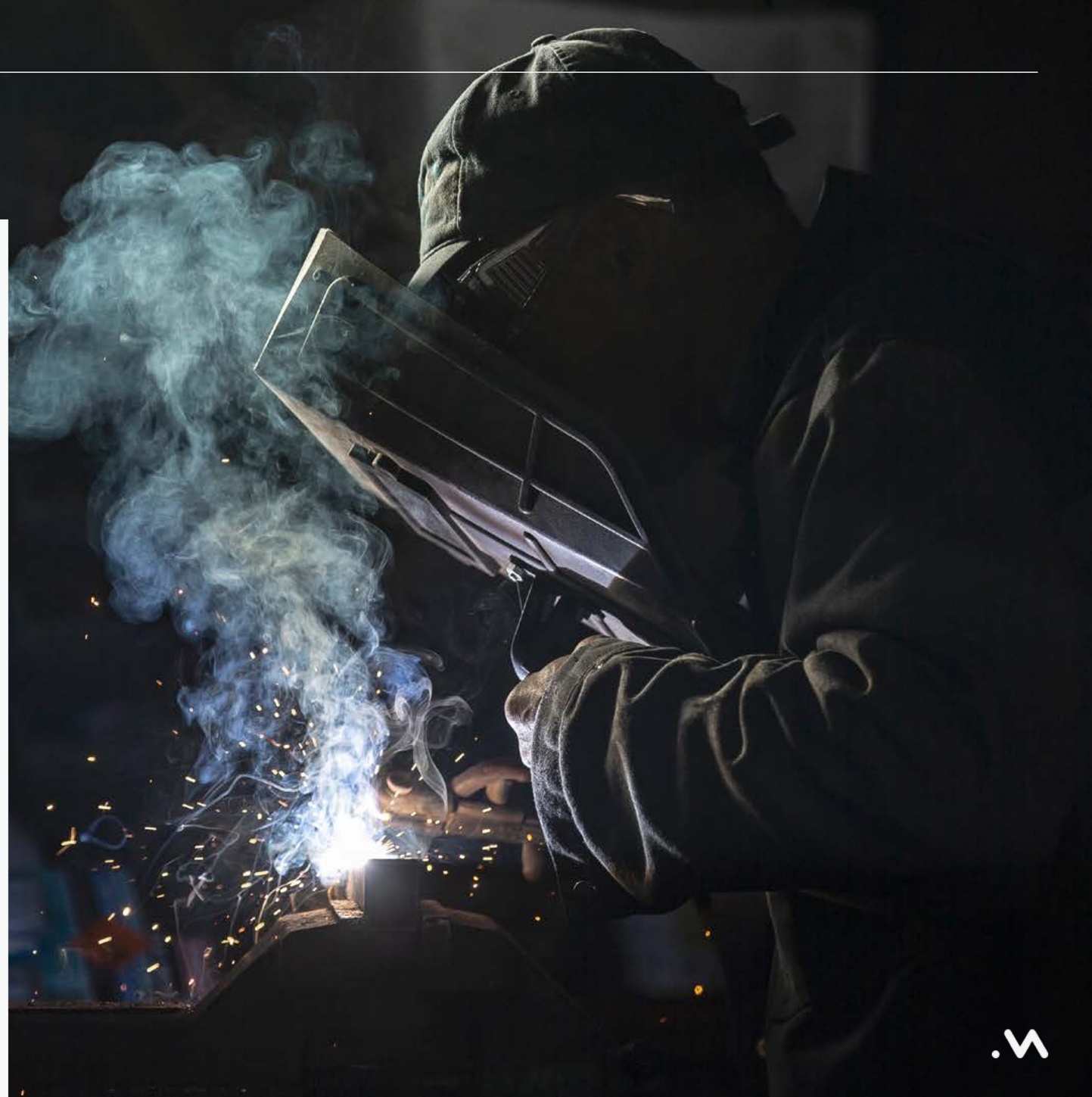
Supporting safer behaviour

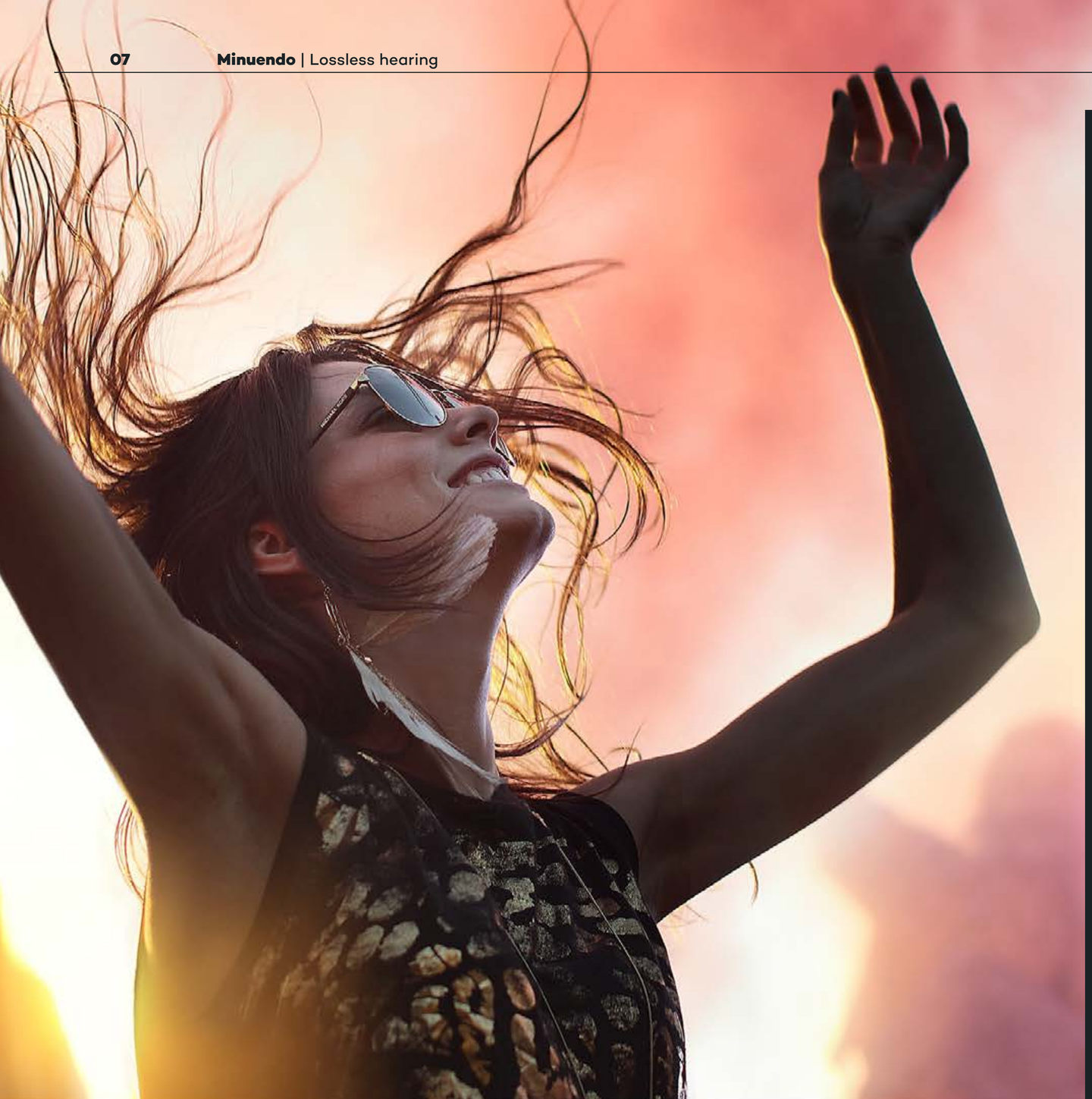
In recent years, the industrial and construction sectors have been transformed by digital technologies, with advances in areas such as automation improving efficiencies and lowering costs. Traditional PPE, however, has failed to embrace the pace of technological change, with equipment such as earmuffs representing something of a blunt instrument when it comes to preventing hearing loss.

The time for change has come, though. Tech-savvy end-users in industrial and construction markets are demanding better-performing solutions that look good and work well. They want to adopt hearing loss prevention technologies that can be operated simply and instinctively, with the feel of a consumer device that could be worn in both occupational and recreational environments.

Minuendo meets each of these requirements. Earpieces are ergonomically designed, with a broad range of ear tips for great fit, providing maximum end-user comfort across the day. The natural-sounding hearing protection technology allows end-users to maintain situational awareness, encouraging collaborative working in a team.

Most importantly, continuous monitoring and noise exposure alerts help workers take personal responsibility for their hearing in the most comprehensive and sustainable manner. It enables end-users to make informed decisions which then inspires behavioural change. That personal empowerment delivers safer and improved health outcomes over the long term, representing the true power of Minuendo in action.





Recreational versus occupational

More than one billion young people worldwide aged between 12 and 35 are predicted to be at risk of noise-induced hearing loss due to unsafe listening practices. Increasingly, organisations will need to prove that damaging noise exposure did not occur at work. Failure to do so could have a financial and reputational impact.

Data-driven hearing protection provides the most effective means of managing and proving occupational health compliance. Our solution provides safety managers with access to historical data that can be used to inform any investigations into whether noise-related hearing loss has been suffered in an occupational or recreational setting.

Indeed, Minuendo makes the lives of safety managers easier on several fronts. The number of sensors used in today's automated workplaces has increased exponentially, posing the threat of information overload. The data provided by our technology can be quickly and easily digested via intuitive dashboards and can be seamlessly integrated into existing software systems to extract additional value. Adopting the technology also improves outdated and ineffective risk assessment procedures based upon techniques such as noise-mapping. Our automated approach continuously monitors actual exposure, providing safety managers with personal risk indications for the entire working period.

Ultimately, all safety managers have a duty of care to their colleagues who work in noisy environments. Minuendo supports this responsibility by putting the power of data at your fingertips.

Why Minuendo has the answers

It is now worth providing a re-cap on how Minuendo offers the opportunity to automate and integrate the hearing loss prevention process.

- Lossless earplugs provide the end-user with natural sound, maintaining directivity, situational awareness, and ability to communicate with co-workers
- Noise exposure smart alerts provide real-time feedback when to take action – in the field, when it is needed most
- Fit-test feedback to ensure that end-users wear the earplugs correctly
- Easy to combine with earmuffs and other PPE, including the possibility of using under communication-linked muffs
- Digital solution encourages safety behaviour improvement that maximises user ownership of hearing health
- Light-touch overview for safety managers based on easily accessible data
- Promotes a collaborative rather than coercive approach to hearing loss prevention

A passion for better hearing protection

Occupational noise-induced hearing loss remains an all-too-common affliction suffered by workers in industrial and construction markets.

Traditional PPE fails to provide any context around an individual's exposure to excessive noise, and this lack of feedback often results in inconsistent usage that fails to provide adequate protection.

Minuendo overcomes these challenges with the development of a solution that provides continuous guidance for end-users. This support is delivered in the form of simple suggestions and practical advice that underpins safety behaviour change.

The solution encourages a more collaborative and inclusive approach to hearing protection for safety managers that doesn't require their constant overview.

In short, Minuendo offers a truly automated and integrated approach to hearing loss prevention - setting new standards in industrial and construction applications.

For more information on Minuendo's automated approach to hearing loss prevention, visit our website at www.minuendo.com, email us at hello@minuendo.com or call our head office in Norway on +47 46298152