PPE

From Football Field to Factory Floor: Game-Changing Upgrades for Protective Headgear

James Langford | Jan 19, 2023

The inspiration for American industry's *first safety helmets*, developed more than a century ago, came from the battlefields of World War I.

Today, the latest innovations in protective headgear are being adapted not from the military but from professional sports, where a growing body of research links repetitive head injuries to potentially severe disabilities.

Concern about the long-term health of celebrity athletes, underscored in initiatives such as the ***NFL's partnership*** to study and reduce on-field head impacts, has heightened awareness of the risks posed by traumatic brain injury in workplaces far outside American sports arenas.

At the same time, statistics are showing that a high number of such injuries occur in U.S. workplaces, prompting demand for safety helmets that provide more than the minimum protection required under ***federal Occupational Safety and Health Administration rules***.

"Everybody has watched a football game and seen a player take a hit to the head," explains Nora Kirby, national account manager at PIP, a safety equipment manufacturer. "Athletes have experienced serious physical challenges because of these head injuries, bringing to light that this is a topic that needs to be considered not only in the sports arena but the everyday workplace environment."

Her company's newest safety helmet, the ***Traverse***, incorporates state-of-the-art features and meets not only U.S. standards for ANSI Type II hard hats but also many clauses of ***Europe's EN 12492*** guideline for mountain-climbing helmets as well.

"We now know that repetitive head injuries can cause long-term brain damage and early death," Kirby says. "Advancements in understanding the impacts of these injuries translates into the marketplace and the workforce."

PIP's Traverse helmet, above, meets not only U.S. standards for ANSI Type II hard hats but also many clauses of Europe's EN 12492 guideline for mountain-climbing helmets. | Image courtesy of PIP

To shop for PIP helmets, click here.

Traumatic brain injuries, in fact, killed 2,210 construction workers over a seven-year period, the ***National Institute for Occupational Safety and Health*** found in a mid-2010s review. The fatalities made up 25 percent of all construction-related deaths in the period.

"Construction overlaps into the industrial market because these workers are building factories and other structures for the industrial market," Kirby explains.

There are financial risks, too. The costs for failing to comply with federal head-protection requirements can be significant for all businesses. OSHA assessed $2.9 million in penalties on the ***construction industry*** in the 12 months through September 2022 and more than $150,000 on ***all other sectors***.

Of particular concern in industrial workplaces such as factories, machine shops and shipyards are blows to the side of the head from slips, trips or falls and angled impacts, which weren't the focus of traditional hard hats.

Those were designed instead to protect the crown, or very top of the head. Designated Type I helmets in the American National Standards Institute guideline referenced in OSHA's rules, they meet the minimum requirement for U.S. safety headgear.

Type II helmets, developed over the past several decades, are built to cushion the front, back and sides of the head in addition to the top. In much the same way, Europe's EN 12492 requires impact protection over a helmet's entire surface, while the rule for industrial headgear, EN 397, covers only the crown.

The latest and most advanced industrial safety headgear on the market, however, can provide features in addition to those required under the ANSI Type II standard.

The upgrades that set it apart include chin straps that keep helmets from falling off wearers' heads during slips, trips or falls, integrated accessories such as eyewear and face shields and Multi-directional Impact Protection System (MIPS) technology.

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> John Britt
> PIP

MIPS, developed by the Stockholm-based company of the same name, protects users from oblique impacts, which are far more common than direct impacts, whether due to falling objects striking a worker or slips, trips and falls where the worker's head collides with a wall or the ground.

"Truly, angled impacts are one of the biggest concerns," says PIP Global's John Britt, product sales manager for PPE. "They are responsible for the majority of head-related injuries in industry and construction."

Oblique impacts cause rotational acceleration, or movement of the brain inside the head, potentially leading to serious brain injury, according to MIPS, which sells its technology to athletic and industrial safety helmet producers.

Essentially, ***MIPS adds*** a low-friction layer between sections of energy-absorbing padding, making those sections mobile and allowing the wearer's head to move as much as 10mm to 15mm upon impact, the company says. Helmets equipped with MIPS mimic the human body's own protective mechanisms, which allow the brain to move slightly inside the head in the same situation.

The padding itself, whether expanded polypropylene (EPP) or expanded polystyrene (EPS) foam, is another pivotal step forward. Also used in the auto industry, the foams compress on impact to absorb shock.

Integrated accessories, meanwhile, keep workers from having to search for add-on PPE and lower the likelihood that users will simply go without, behavior that studies have shown occurs more frequently when gear is inconveniently stored or uncomfortable.

"There have been a lot of advances, and a lot more are coming to make helmets lighter weight but still strong enough to help minimize the force when you take a hit," Britt says.

What features does your company require in safety helmets? Tell us in the comments below.