

Automotive Companies' Response to Evolving Vehicle Safety Requirements

Martin Friedrichsen*

ABSTRACT

According to the World Health Organization (WHO), approximately 1.2 million people worldwide lost their lives in road traffic accidents in 2023, representing about 2% of all global deaths. Considering underreporting in certain regions, the actual figure is likely higher, underscoring the urgent need for systematic and coordinated global efforts to enhance road safety. Against this backdrop, the WHO has set a global target to reduce road traffic fatalities and serious injuries by 50% by 2030, which requires collaborative efforts from all stakeholders. Among them, auto manufacturers play a central role by continuously advancing vehicle safety technologies and standards to mitigate fatalities and injuries from traffic accidents. Today, the automotive industry faces the complex challenge of continuously improving vehicle safety performance while simultaneously responding to rapidly evolving consumer demands, including advanced driver assistance systems (ADAS), connectivity, digitalization, electrification, comfort, and personalization. However, these emerging demands do not necessarily lead to improved road safety; rather, they introduce new complexities and potential risk factors from a traffic safety perspective. At the same time, manufacturers must contend with increasing pressures related to social and environmental sustainability, intensifying global competition, and a landscape of non-harmonized NCAP protocols, each defining its own test scenarios and evaluation criteria in line with regional traffic and regulatory contexts. In this multifaceted environment, Audi is enhancing existing safety technologies while developing next-generation solutions, such as Giga Casting for vehicle lightweighting, a scalable, innovative E/E architecture enabling 48V systems, and R290 refrigerant-based cooling technology supporting decarbonization efforts. These innovations are pursued with an integrated approach that holistically supports overall vehicle safety performance. Moreover, in response to the rapid advancement of autonomous driving technologies, Audi is focusing on next-generation interior and exterior safety systems that accommodate novel seat arrangements and occupant postures. Through these efforts, Audi is advancing vehicle safety while proactively integrating rapidly evolving consumer, societal, and environmental demands into next-generation vehicle platforms and safety-focused design strategies. These initiatives are expected to meet the current multifaceted requirements while contributing to the global goal of reducing road traffic fatalities and injuries.

* AUDI AG