

Chapter 4

Virtual Reality Training for Technicians and Factory Workers for Skill Development in Automotive Sectors

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ABSTRACT

This chapter explores an overview of using virtual reality (VR) to train technicians and factory personnel in the automotive industry. It also shows how immersive virtual reality technologies can simulate real environments, providing a safe, controlled area for the skills to be developed and practiced on. VR enables workers to prac-

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tice how to operate complex machinery, perform repair procedures, and work on assembly lines without risking injury to themselves or damage to equipment—often at a fraction of the cost of training the old-fashioned way. This can allow industrial corporations within automotive design and restoration to boost their performance and security. The chapter continues explaining how useful it is to implement VR to engage employees with the application, where it may even enhance learning, reduce training time, and increase the general output quality of the workers.

INTRODUCTION

The best jobs in the entire industry, driven, technically competent technicians and assembly workers have never been in more demand in the rapidly-evolving automotive industry, reliant on their expertise to create an efficient and dependable range of vehicles. Automotive technologies are evolving, and hence, the workforce in the automotive industry has to adapt to the ever-expanding complexity in automotive systems, machinery, and assembly processes. For any years, the traditional training, which has on-the-job learning and instructor-led sessions, used to be a good approach. However, they present significant challenges, including risk, inefficiencies, and a lack of real-world interaction. Such demands are driving the high demand towards effective, safe, and scalable training solutions to augment the skill of the automotive technicians and factory workers. Training comes with its own pain points that cannot be overlooked by organizations that want to be successful. One solution that has been trending for the past few years is immersive training with virtual reality (VR)(Garcia et al., 2019).

Virtual reality is a modern technology that represents actual surroundings in a completely interactive virtual environment. It has a reality feature through which users are able to interact with 3D models and environments that provide experiences that are real and hyper-realistic. This immersive quality is one of the key reasons that VR is a revolutionary training method in industries as diverse as automotive manufacturing and maintenance, among others. In the auto industry, VR allows technicians and factory floor workers to train in inline environments that can mirror on-the-road situations, such as malfunctions and assembly of complex auto parts. Such depth of immersion may allow for significant hands-on lessons without the built-in dangers (or costs) of traditional methods—tangible prototypes, equipment, or materials(Naranjo et al., 2020).

VR technology has enormously exciting capabilities for skills development, and the automotive sector is on the council already. Factory workers and automotive technicians may need to learn. managing accurately functioning machinery and systems, maintaining cleanliness classes, and following layered systems while meet-

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