Manufacturing Electronics with Virtual Reality

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DESCRIPTION

Companies that make electronic products are implementing virtual reality technologies to increase production efficiency. In the field of electronic manufacturing, phrases like digital design, simulation, and integration are typically used to refer to this technology. Using virtual reality technology, businesses may examine design objects at every imaginable scale, removing flaws in the product during the design phase. In light of the global market for electronic equipment's 5.2% annual growth rate, as reported by TBRC, virtual reality has a significant implementation window throughout the projection period.

Although Virtual Reality (VR) in the manufacturing industry is the first to allow designers to replicate their design prototype or model using cutting-edge VR software, Virtual Reality (VR) has been around for more than 50 years [1]. Plant managers are able to replicate assembly line setups and manufacturing processes using virtual reality, which enables them to spot potentially harmful circumstances. Virtual reality, or VR, is the use of computer technology to create a virtual environment that can be viewed in 360 degrees. VR immerses the user in the virtual environment, in contrast to conventional interfaces.

The use of computer technology to create a simulated environment is known as Virtual Reality (VR).The Head Mounted Display(HMD) is the element of virtual reality that is most easily recognized. Because humans are visual creatures, the most significant distinction between immersive Virtual Reality systems and conventional user interfaces is frequently the display technology [2].

The three basic types of virtual reality simulations are non-immersive, semi-immersive, and fully-immersive.

Non-immersive virtual reality

This category is typically overlooked when talking about VR despite its extensive use. The user of non-immersive VR technology is still conscious of and in control of their physical environment while a virtual world is created on a computer. Video games are a great example of non-immersive VR.

Semi-immersive

Can have semi-immersive virtual encounters to explore a partially virtual environment. Users can still feel as though they are in a separate reality when they focus on the digital image, but it also allows them to be aware of their near surroundings. Realism is produced through vertical reality depth, a term for 3D graphics utilized in semi-immersive technology [3]. This kind of VR is usually used for instruction or training, and it makes use of powerful computers, projectors, high-resolution screens, or hard simulations that only loosely match real-world physics in terms of appearance and feel.

Fully-immersive

Fully immersive virtual reality is the antithesis of non-immersive VR. It ensures a realistic virtual experience. we would feel as though we were physically present in the virtual world and that you were the subject of its events. Specialized equipment is required, such as VR glasses, gloves, and body scanners with sense detectors, to provide a realistic virtual experience [4].

Businesses can use virtual reality in production to maximize their floor space before physically moving the equipment.

Virtual Reality (VR), although not precisely a recent idea, has mainly remained in the shadows while awaiting sufficient advancements in hardware and software to enable it to realize its audacious potential. Most people consider virtual reality to be only an intriguing novelty that may be enjoyed in a store or computer lab at a university. It provides a modern-day equivalent of flat-screen monitors that can hang on the wall, a piece of technology that we now take for granted [5]. We often overlook the fact that for more than 25 years, "experts" in the field have projected that everyone would have access to such luxuries within ten years. Examining VR's benefits (and drawbacks) and possible uses makes sense now that the technology has truly started to emerge from the shadows.

Without ever physically producing it, a manufacturer can use virtual reality to put a tangible, interactive product in the hands of a buyer. This not only saves the manufacturer time and money, but also enables the manufacturer to see adjustments and implement them prior to actually manufacturing a substantial run of the product.

REFERENCES

1. Maalandish, M., et al., *IET Power Electron*. November. **2017**; 10(14): 1–11.
2. Rahim, AO., et al., *CPSS Trans Power Electron Appl*. **2020**; 5(2):191–200.
3. Alzahrani, A., et al., *IEEE Access*. **2019**; 7: 11707–11721.
4. Wang. Y., et al., *IEEE Trans Ind Electron*. **2019**; 66(6): 4387–4397.
5. Pires, VF., *IEEE Trans Veh Technol*. **2019**; 68(8): 7521–7530.