# The Role of Virtual Reality in Process/Equipment Design By Lee Ryan

## Aim of the Project

The aim of the dissertation was to explore the role of Virtual Reality in Process/Equipment design. This dissertation looked at how VR was implemented within industry, and to gain valuable opinions of industry professionals.

#### Background

Virtual reality was first invented in 1968, it is essentially a computer technology that can include a headpiece hand equipment that provides a 3D dimensional reality seen with the head equipment (Kavanagh *et al.* 2017).



Figure 1: VR Engineering Training (O'Quigly, 2021).

Virtual Reality is used for training in the engineering industry. it can be used to create simulation environments to get one ready for real life situations in the workplace as seen in figure 1 (Balasubramanian, 2024). VR's impact on the manufacturing industry is pivotal. The layout of the process and equipment is the biggest factor regarding success (Gong *et al.* 2019).



Figure 2:VR Process Designing (Mujber et al, 2004).

## **Audi Production Line**

Audi firstly implemented VR for the assembly line, specifically for the interior door panel of the cars. With this process Audi implemented automotive robots in the production line to allow the panel to be installed.

The results of this study are presented through a series of graphs and visual representations, created from the responses gathered in the survey. These graphs highlight key trends, patterns, and insights derived from participant feedback, providing a clear overview of the data. The findings illustrate significant relationships between variables and offer a deeper understanding of the research topic.



Figure 18: Audi VR (Audi, 2022)

After the implementation of VR in the Audi production process Audi increased production efficiency by 20% as well as increasing sustainability and reducing costs.

#### **DHL Picking Process**

DHL implemented VR into their picking process by using VR glasses. The glasses scanned barcodes and advised staff where to put the packages. This improved the picking process efficiency by 15%. Training became 4 times faster. The VR within DHL enhanced cross team collaboration across all sites (DHL, 2024).



Figure 20: DHL VR Process (DHL, 2024).



## Results













# Conclusion

- Benefits Time efficiency & innovation
- Challenges Cost
- Recommendations to overcome challenges
  Increase funding.
- Will VR become standard tool Majority of respondents report "Yes".
- Future of VR Most agree Design, Layout, Equipment design tool.