

5. CONCLUSION

At the beginning of this thesis, the objectives of this thesis were defined specifically. The main objective of this thesis was to use the 3D manufacturing simulation software named Visual Component 4.2 (later upgraded to version 4.3) to create a virtual model. Virtual models have been the building blocks and most essential components in the development of digital manufacturing. Technologies of Industry 4.0 like simulation, digital twins, VR completely depend on creating the virtual model of the real-time environment. A case study has been conducted in The Robotic Demo centre of Tallinn University of Technology which serves as a real-time physical base for this thesis. 3D models from visual components themselves and 3D models developed in other software were integrated to create a realistic virtual model of the real-time environment. The visual component was chosen as the software for this thesis, and it can be concluded that it has provided many significant advantages: a vast number of 3D models for the simulation along with many other opportunities: creating new components, offline programming, simple interface, and its academy to help the users with different real use cases.

The result of the case study shows that the virtual model development of the real environment is a great asset in many ways. It provides an opportunity to describe the layout to people who have never seen the physical environment and the possibilities of fully immersive Virtual Reality can make anyone feel like they are present within the physical environment. Ideas about any changes in the layout can be implemented very easily without any risk of damage to the physical layout. The developed virtual model has been able to visualize the "what-if" scenarios of the physical layout. This virtual model could be used to test and analyze any changes in the layout of the demo centre without interrupting the current layout. As the new robot and new components are being added in the demo centre, first testing them in the virtual model will provide the optimistic idea for the layout planning while new components are added.

Using Visual Component Experience, the result of the case study i.e., developed model can be used by students, representatives from companies and other universities to view the demo centre in the conditions like COVID-19 lockdown, physical distancing, and when the demo centre cannot be viewed physically. It can be used to train and teach the students about the VR setup and application.