

SUMMARY

During the process of our work we have been able to get to know different theoretical aspects. These aspects could probably be developed more specifically including relevant examples to give an even better understanding of those topics. The first big aspects being covered being the definition of modelling and simulation and their importance in the world of engineering and manufacturing. Some other key technological aspects have been covered enabling to know more about those technological aspects and their uses. This was the case for the pick and place process that was something new and not studied in classes. This was also the case when getting to know one of the main type of robots used for this type of process, the delta robot. For both of those topics it was necessary to understand how they work and get to know their benefits and challenges in the use. As we are in a society where digitalization is very present, we also have to introduce topics such as digital-twins and 3D visualization that are linked to the manufacturing of the present and are also future challenges. Both of those topics could be studied for much longer and deeper to get a better knowledge of the used technologies. We could probably also use more examples to better illustrate those principles. When getting to the part of analysis it was also necessary to introduce a quite new topic for me that was the KPIs and how they are used, their purpose and their usefulness. This topic could be improved with introducing real cases to explain how those indicators are working with those cases.

The study case of our study has been quite challenging in some different ways. We needed to learn new concepts in the use of the software Visual Components that were not studied in class. This has been demanding quite a lot of time as some concepts were quite complicated. However, we have been able to do dimension and model a functional model that could be improved in the future. The main concepts that we had to learn about, were regarding the product types, assemblies, process statements. We could further improve the model using the robot programming possibilities using the software. This would require us to learn more about the robot programming possibilities. Our model could also be improved further with the complexification of the model by the addition of different components. The main problem with the simulation that was also highlighted is the problem with the end effector of our delta robot. This will be the first problem that would need to be solved. Then we could add some precision in the tasks of the different process nodes of our simulation.

Despite all of these small issues and improvement suggestions we have been able to recognize. We can have some use of all the different statistics that we were able to collect. We were able to see the impact of having two parallel lines instead of one and what we could expect as result if we solve the problem with the end effector. All of

these has also led us towards thinking on how to implement new features for the future as the implementation of VR related tools that would enable the development of this project for educational purposes regarding some technological aspects as the pick and place process and the delta robot. We could also think to integrate this system in a larger project that would simulate a whole manufacture. We could also try to develop the digital-twin of such system that could be useful for the company that would use it. On a personal level, this work has been quite challenging in different ways as it was necessary to research new aspects, learn new features on a software that we were introduced in class, and think of different further development possibilities.