Summary

In the near future, Vector will move to a different plant in a new building. At the time of our internship, the holding company has approved the development of a new building and an option on a parcel has been signed. This means that the location and dimensions of the parcel are known and the building has yet to be designed. With this move, the opportunity for Vector arises to become a model-Eurodrive, a model plant within the SEW-Group.

One of the main subjects of the reorganization involved, considers the internal logistics. Because the so-called production islands are configured for an optimal assembly process, there are lots of storages spread throughout the building. And all these storages need to be filled up every once in a while. This is both done by means of the daily delivery of SEW goods (this considers most of the parts) and with an internal Kanban system.

Our assignment consists of listing the internal transportation processes and creating a List of Requirements for the future AGV-system.

In part I of this report an analysis has been made about the internal transport processes of goods at Vector. Using the "delft system approach" (see ref. [1] in Dutch or [2] in English) these processes are visually mapped out. First, the present situation is thoroughly studied and exposed per department. From here the bottlenecks and unnecessary processes are defined and an optimal solution is created. To this theoretical optimal situation stick a few practical obstacles, like necessary changes at the holding company, required investment and the technical feasibility. Therefore, using a common sense approach, a vision on the future processes in the new assembly plant has been developed, which is referred to as the feasible situation. This situation is explained rather extensively, because it is the starting point for part II of this report. The most important changes compared to the present situation are centralizing of the storages, orders will be picked by dedicated order pickers and tablets will mainly be transported by means of AGVs.

In part II we started with analyzing where and why an AGV-system could be inserted in the new parts supply process and formulated the boundary conditions for the automated system. It is reviewed for every transport process within the primary production process what would be the requirements for automating this process, followed by and an advice on how to do it in the future. Our vision is described in short hereafter.

The loading and unloading of the trucks will be performed manually. Transport from truck to storage facility will be on a roller conveyor. The orders are still picked on tablets, though on a central location, next to the storages. Full tablets are buffered until an AGV is available to bring the tablet to the right production island. The transport to the fill and test station will be performed by AGV as well. From the fill

and test station the products will still be transported through the paint shop by an overhead rail system. After finishing the products, they are transported to the packaging station by means of a conveyor. The carriers are loaded manually at the expedition.

The boundary conditions are the basis for the List of Requirements that's set up in part III. Finally, the impact of carrying out the AGV project is sketched for both Vector and SEW.

It turns out that our solutions has little or no impact on SEW, but of course the local impact of automation is far more radical. For starters a lot more information is required and adjustments of the workstations, which will all have a number of destinations should be made. Centralizing the storages will have an enormous impact on its own. There will be cables in the floor and special safety features because there are people working near the AGVs. The people will need to be trained for working in such an automated environment and the floor might constantly need to fulfill certain specifications. On the plus side, the availability of the workstations will increase, since the workers don't have to leave them in order to pick their own parts. Furthermore the production environment will have a more open layout, since most of the conveyors between them will vanish.