SUMMARY

The purpose of the master's thesis *Production lines optimization in Stoneridge Electronics AS* was to optimize production lines Video Switch (G53) and Cab Input and Output Module (CIOM).

Stoneridge Electronics AS is a part of the international group Stoneridge Inc. The company focuses on the development and manufacturing of electronic equipment and systems. Main markets are automotive industries. Estonian factory is located at Tänassilma, Harju County, Estonia and the production started in year 1999. Production facility in Estonia has production facility, R&D, sales and engineering support teams.

The thesis focused on the production lines G53 and G54 optimization by rearranging the lines close to each other. Purpose of the thesis is to reduce workforce by 1 operator. Therefore, production line G54 operator is able to manage G53 and G54 at the same time. The project is carried out by observation of the main versions of the products – CIOM /2 and VS /1.

First part will give an overview of literature and methods used. This chapter consist different methods used in mapping the production lines current situation and methods how to improve and optimize the lines to increase efficiency. Company's basics of cost efficiency, the A3 report and spaghetti diagram methods are described.

The following chapter gives an overview of the products, CIOM and VS, and production lines, G53 and G54. The chapter consist production lines current system mapping, including overview of *takt* time and cycle time and spaghetti diagram analysis. Furthermore, the ESD requirements and employee training and skill matrix are described.

Third chapter focuses on production lines optimization and analysis. The author of the thesis made a suggestion of the rearranged layout. After rearrangements one operator is able to manage both lines at the same time. Therefore, lines can be operated by two shifts and 2 operators. The cost and waste is eliminated by the optimization.

Fourth chapter is based on *takt* time and cycle time calculations and analysis. The analysis of current situation and suggested future change shows that improvement of cycle time can be done. According to the calculations cycle time for G54 I shift for producing CIOMs and VSs at the

same time, operator is able to finish the cycle, finishing 3 products, in 124 seconds. The cycle remains 124 seconds for 3 products until 72 VS are produced and after that operator turns back to previous cycle time. Labor productivity by optimizing the layout and improving the cycle time will increase 8,4 % in I shift and 31,1 % in II shift. Furthermore, work element labor summary analysis is made. Moreover, an overview and comparison of the calculations made are included. Also, two main points of the optimization outcomes are brought up.

The objectives of the thesis were met. Production lines G53 and G54 optimized layout proposal was based on the spaghetti diagram, *takt* time and cycle time analysis. Labor productivity calculations and analysis showed a positive outcome from the production lines rearrangements. After the project implementation, production lines can be run by two operators instead of three. The project next step is to start the process change request (PCR) towards Volvo.