SUMMARY

The aim of this Master thesis was to create an energy efficient, horizontally mounted intelligent residental ventilation unit with heat recovery, which follows all applicable regulations and guidelines.

In the first chapter was a market research done and description of main differences between ventilation units. Based on the results of market research, the basic parameters were formulated on which to proceed a modelling new ventilation unit.

In the second chapter the focus was on the components of the ventilation unit. Possible solutions were analyzed and critical properties were identified. Also, various regulations, on the basis of which components should be used, was introduced. Finally, a justified choice was made for all the main components.

Then, was introduced hardware and software that was used in the ventilation unit. Examples were given of how to manage the ventilation device intelligently and how the products already in the market are kept up to date. In addition, the software capability and the possibility of connecting different pre or after heater calorifiers with the ventilation unit.

The following chapter focused on prototype testing and the presentation of a designed model. Critical analysis of the results of made measurements was performed and specific features that should be taken account in the design phase were outlined. Thorough conclusions were made out of prototype testing, which allowed to start working on final product. The final model shows layout of the major components and describes what solutions were used to model ventilation unit accordingly applicable regulations. Finally, was shown followed specifications to prepare a safe device.

In the future, more detailed prototype should be produced, which helps to decide whether designed ventilation unit during this Master thesis can be used to start serial production.