SUMMARY

The Master Thesis consists of 13 pages and encloses 42 figures, 5 tables, 89 references, 1 appendix.

In the Master Thesis a synthesis and research of field oriented control algorithms of induction and synchronous motors, as well as three phase bi-directional rectifiers control algorithms were carried out. The designed algorithms provide for mentioned motors asymptotical reference torque and speed tracking. The mains voltage oriented control algorithms provide asymptotic DC-link voltage tracking and no reactive power consumption of current first harmonic. The reaserches were caried out as a simulation in Simnon and MatLAB SimPowerSystems environments.

The control unit based on 32-bit ARM-microcontroller STM32F401 has been developed. This unit allows controlling AC and DC motors, as well as three phase bi-directional rectifiers.

PASSIVITY BASED CONTROL, INDUCTION MOTOR, SYNCHRONOUS MOTOR, BI-DIRECTIONAL RECTIFIER, CONTROL ALGORITHM, MAINS VOLTAGE ORIENTED CONTROL, CONTROL UNIT