

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

					8.05070204.1212.009.MP			
Змн	Лист	№ докум.	Підп.	Дата	Керування за принципом пасивності в електромеханічних системах з двигунами змінного струму. Реферат	Л.	Арк.	Аркушів
						7	13	
Розроб	Пушніцин Д.С.					НТУУ «КПІС» Каф. АЕМС-ЕП Гр. ЕП -51м		
Перевірив	Пересада С. М.							
Н. контр.	Пересада С.М.							
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