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基于IGBT并采用自校正算法的ASVG装置的研制

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摘 要：针对国内外研制的静止无功发生器(ASVG)的现状，介绍了一种基于IGBT智能模块并采用自校正算法的ASVG装置的研制理论和方法.在系统结构的实现上，该装置的主电路采用基于IGBT的智能模块IPM构成三相桥三电平变流器；控制器采用双CPU结构，以DSP(TMSF240)作为主控制器，其任务是采样、计算和实时控制；以80C196作为辅助控制器，专门处理外挂键盘输入、数据显示查询及与上位机通信.在装置的控制策略上，采用电流间接控制和基于自适应的自校正PID调节算法，以实现装置的动态无功补偿.实验结果表明，该装置响应快，精度高，结构简单，易于维护.

关键字：ASVG; IGBT;控制器;自校正PID

Study on the equipment of ASVG based on IGBT and adopting self-regulating PID arithmetic

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Abstract: According to the fact that ASVG is based on GTO, this paper describes the equipment of ASVG based on IGBT and adopts self-regulating arithmetic. On the structure of system, the three-level converter of three phase bridge of the equipment in main circuit is built with IPM module based on IGBT, and its controller is made up of double CPU. DSP(TMSF240) acts as main controller to deal with sampling, calculating and controlling on-line, and 80C196 acting as assistant controller is used to deal with the input of keyboard , display of data and communications with the host computer.On the control strategy of system, the indirect-control of current and self-regulating PID arithmetic based on adaptive control are adopted to realize the function of reactive power dynamic compensation. The results show that the equipment has good response and wonderful precision, the whole structure of circuit is simple and easy to be maintained, and it will have bright future in the engineering application.

Key words:ASVG; IGBT; controller; self-regulating PID

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