

C115901 : MAJOR ELECTRICAL ENGINEERING

KEY WORD : DC-DC CONVERTER/PARALLEL CONVERTER

TORSAK PUANGMAHA : PARALLELING OF DC-DC CONVERTERS FOR INCREASED
POWER. THESIS ADVISOR : ASST.PROF.YOUTHANA KULVITIT,Dr.Ing., 141
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This thesis presents the design, construction and testing of three DC-DC converter modules and their paralleling to form a DC power supply which can deliver a maximum power output of 1.8 kilowatts and withstand output short circuit fault and whose output voltage can be varied between 24 and 30 volts. The inductor current in each module is controlled in order to provide output current sharing. Each module consists of an asymmetrical bridge converter. In normal operation, current programmed technique is used and the switching frequency is fixed at 45 kHz. when there is an output short circuit fault, hysteretic control is used to reduce the switching frequency to a submultiple of 45 kHz. The maximum efficiency of each module is 88% at an output voltage of 30 volts and an output current of 14 amperes. The load voltage regulation is 0.4% at an output voltage of 30 volts. The maximum difference between modular output currents is 0.4 ampere.