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This paper presents a hybrid on-line UPS system (H-UPS). The system is based on an on-line (double conversion) UPS, consisting of two controlled energy storage systems. The first one is a static energy storage system based on supercapacitor bank. The second energy source is adjustable speed generating system supplying DC link voltage. A control concept of the UPS operation, according short and long failure of the supply utility voltage is developed. The 5 kW H-UPS is designed, built and tested.

The control unit is built using DS P processor based on Shark from Analog Devices. The design and system stability tuning is achieved using PSIM software. Laboratory tests confirm high quality of the produced AC voltage during transients (voltage failure) and during steady state operation without external supply voltage.


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