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(57) Abstract :
TITLE: Multiport High Gain Power Converter with Active Power Decoupling and its Operating Method Thereof ABSTRACT A single-phase multiport high gain converter with active power decoupling (101) comprising at least two DC ports (104 and 108) for receiving and delivering DC power; at least one AC port (106) for receiving and delivering AC power; at least one ripple port (110) for receiving and delivering ripple power; an active power decoupling unit (112) to compensate double frequency power ripple at the DC ports (104 and 108); a plurality of switches (S1 through S6) receiving power from at least one of the DC, AC, and ripple port (104, 108, 106, and 110) and processing the power; and a modulation scheme unit (114) to generate a modulating signal for operating the plurality of switches (S1 through S6) to control voltages and powers in at least one of the DC, AC and ripple port (104, 108, 106 and 110), wherein the modulation scheme unit (114) alters the modulating signal by determining DC offset (Doft1), AC voltage gain (MU), load angle δ, power factor angle Φ, ripple voltage amplitude (ML), phase shift angle (β) to achieve high voltage gain for both the AC and DC ports and further to eliminate double frequency power ripple at the DC ports (104 and 108).

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