

Ultra PCCS (Power Condition Control System) is high-efficiency equipment that receives power supply from the power company and creates optimal conditions for consumers to use as a Power Conditioner.

Ultra PCCS (Power Condition Control System) realizes the following Power Factor Compensation function

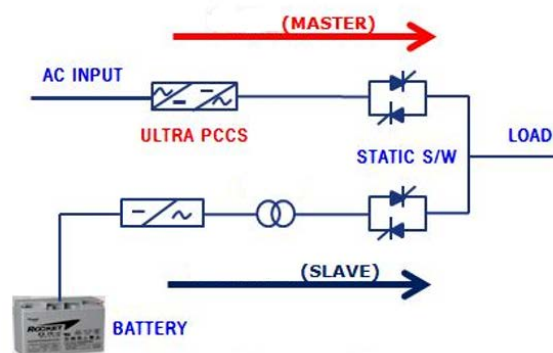
- ① (PF 0.988 - 0.99) Output supply of rated voltage
- ② DIP SAG compensation
- ③ (protects momentary power failure) Power Supply Adjustment
- ④ (saves power) Dimming Control
- ⑤ (intensive power-saving) Remote Control (Smart Grid)
- ⑥ Ultra PCCS (Power Condition Control System) is the world's first developed equipment that realizes the above six functions at the same time. Functional effects of MSF (Magic Six Functions) are as follows:

Power Factor Compensation function (PF 0.988 - 0.99)

- a) Responds to the target power factor (PF 0.99) within 8ms.
- b) Adjusts Surface Factor and actuality Factor's simultaneous compensation
- c) Does not use condenser & reactor which are for control use or power factor use
- d) Does not use discharge resistors & reactors for discharging condenser
- e) No danger of fire due to overheat of the condenser
- f) Materials for Power Factor Correction (capacitors, reactors, and reactor discharge resistance) changes are not needed. Additional maintenance costs does not occur.
- g) Power Saving by reducing power loss
- h) Removes voltage-hunting which is caused because of a low power factor load
- i) Eliminates the risks fundamentally of all the accidents that occurs through improving power factor
- j) Prevents penalty of low factor load and leads high power factor load's intensive
- k) Reduces transmission equipment failure rate and improves system operation efficiency
- l) Reduces costs of base power fee and Peak
- m) Increases transformer spare capacity and increases equipment's lifespan
- n) Reduces power accident and distribution system's heat generation
- o) Reduces accident damage by reducing Transient when power accident happens
- p) No power loss due to the condenser and the reactor
- q) Power factor improvement of 99%, more than 90% removal of reactive power, more than 20% - 30% in current reduction ratio.

Output voltage supply

- a) Keeps output voltage as rated voltage even when the +20% overvoltage flows in
- b) Keeps output voltage as rated voltage even when the -50 overvoltage flows in
- c) BATTERY BACK UP TIME not to use does not exist.
- d) BATTERY replacement and maintenance costs will not occur
- e) 0.5% voltage stability of the existing power supply AVR UPS and more stable
- f) Fully respond to the Transient with 8ms fast response speed
- g) SETTING ⑦ is available according to field operation condition and SETTING voltage remains the rated voltage even supply voltage fluctuations
- h) Prolongs load equipment's lifespan through supplying rated voltage
- i) Prevents malfunction of due to voltage fluctuations
- j) Prevents equipment damage due to overvoltage
- k) Reduces poor quality products and improves quality
- l) Prevents mechanical stops of FA, OA, electronic door openers, high-pressure mercury lamp , variable speed motor which uses inverters
- m) Reducing energy losses by supplying rated voltage Improves quality by preventing malfunction of inspection equipment
- n) Dualization with UPS and other existing power supply's power is possible.
- o) Configuration is available that fixes disadvantages of momentary power failure compensation device (DVR) and uninterruptible power supply (UPS) which are responsible for semiconductor equipment and automation equipment
- p) Costs not much and does not need much of Installation space as it is NO Transformer & NO Battery System



DIP SAG compensation (protects momentary power failure)

- a) Fully compensates DIP SAG which is occurred between 20% and 50% of power company's supply
- b) Prevents CHATTERING which is occurred between 40% and 50% of power company's supply
- c) Prevents severe power accident through preventing CHATTERING
- d) Prevents HALT of load facility through preventing momentary power failure (momentary voltage drop -50%)
- e) Prevents secondary power accident such as circuit breaker TRIP through preventing inrush current which occurs after DIP SAG
- f) Prevents power outage accident of plant-wide factory due to DIP SAG
- g) When momentary voltage drops due to lightning, it is possible to compensate up to-60%
- h) Prevents mechanical stop of inverter which is for controlling MOTOR.

☞ Large scale of power outage happened in petrochemical plant, which is at Yeosu Industrial Complex, South Korea in 2006, 2008 and 2011. On 19th of January 2011, Korea Electric Power Corporation (KEPCO) insisted that that "recently occurred power outage accident as long as accidents in 2006, 2008 at Yeosu petrochemical industry is because each demanding company did not equipped the protection facility for preventing momentary voltage sags" Korea Electric Power Corporation (KEPCO) has also added that one thousand and five hundreds of momentary voltage sag accidents happened in last three years. (Seoul, Yeonhap News) Reporter KO, Hyeong-Gyu. uni@yna.co.k

Power Supply Adjustment (Power Saving)

- a) How to apply at consumer when there's lack of power supply in power company
- b) Leads to 3-8% energy saving by adjusting 5% of power at substation
- c) when applied in bulk at power company substation, power outage happens in some parts of area
- d) ULTRA PCCS conducts 8% power supply adjustment
- e) leads power saving at complex load at consumer of 3-15%
- f) No power outage during power supply adjustment
- g) can make profits by power saving contract with power company
- h) Smart grid feature is based application (the smart grid is not complete as its applicable range is limited but can be overcome with ULTRA PCCS)