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## High & Low Voltage compensations system for Submerged Arc Furnace

Here are some conclusions of LV compensation for furnace operations and production performance:

SAF secondary LV compensation is applications of LV compensation technologies to the secondary LV side of Submerged Arc Furnace. That is to apply modern control and conductor technologies to connect big capacity, big current super low voltage capacitors to the compensation device of SAF secondary side. Big reactive power will flow through LV power capacitor circuit, and will not flow through conductors and transformers and power grid of the before compensation points, as the power factor improved, active output of transformer will improved also, and inactive losses of transformer and conductors are reduced greatly.

The compensation system is not only just for compensations but also to help the power factor of SAF working above 0.9, and can reduce inactive losses of conductors and primary side voltage, diminish harmonic waves, keep 3 phases in balance, improve output of transformer. The design we made is single phase dynamic compensations, which helps diminish imbalance of 3 phases, to keep the meet of SAF power center with furnace hearth center, enlarge smelting pool, heat concentration, improve materials surface temperature, speed the reactions, and to aim at product quality and production improvement and energy saving.

The secondary LV compensation is not only reduce losses of primary power grid supply but also helps furnace power factor over 0.92, and reduce inactive loss of conductors, improve transformer output, and to make sure more active power delivery to electrodes.

Above all, LV conductors compensation have more advantages than the others. It works at the end of conductors, which not only improved HV side compensation power factor (if had any), but also compensated conductors inactive loss between transformer and electrodes, and as output of transformer active power improved, then energy saved.

HV compensation can be applied for power supply grid.

HV compensation is kind of power compensation which install to transformer input lines, in order to improve power factor and better the performance. It can help to reduce primary power grid losses. However, HV compensations have nothing to do with SAF energy costing and productivity. It can improve power factor of HV power grid up to 0.95. And it also compensate HV grid and transformer losses. That's all.