DAS BOOSTGRID® - EIN QUANTENSPRUNG DER AC-ENERGIEÜBERTRAGUNG

1. State of Art - the AC-Grid

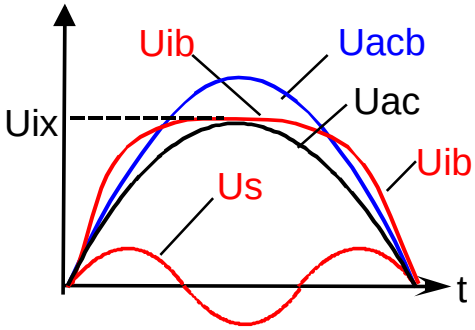
The electrical energy transmissions use since about 1 ¼ century sinusoidal voltages and currents (AC) and overhead lines or underground cables. Up to 8% of the energy is lost in the transmission, the financial- and space- efforts for the AC-transmission are rising continuously.

2. The BoostGrid – an advanced AC-Grid

The BoostGrid allows to conduct up to 25% more power whit an existing AC-grid, by using of the additionally **S- or H-Boosters**. The installed power of the S-Booster is less as 1% of the nominal AC-power and increases this power up to 25%, the conduction losses decrease by max. 25%. The **H-Booster** boost the AC-power by 33% and reduces the loses by max. 33%. The BoostGrid is redundant and - in case of Booster failure – the BoostGrid can be operated as a AC-grid. The transfer between the BoostGrid and the AC-Grid occurs without interruption of the energy supply.

3. The BoostGrid-Modes

ECO-Mode:	33% less conduction loss at 100% AC-power;
POWER-Mode:	33% more power with the nominally efficiency;
OPTIMUM-Mode:	25% more power AND 25% less transmission loss.



4. BoostGrid: Line-Voltage, Insulator-Voltage, Line-Current

Die BoostGrid-Voltage Uacb (Line to Line) is sinusoidal and without harmonics and his magnitude is higher as the magnitude of the AC-voltage Uac (Line to Line) – see Fig. The higher voltage transfers more AC-power whit the same line-current Iac. Die harmonic-voltage Us, injected by the S- or H-Booster, reduces the magnitude of the Insulator-voltage Uib (line to ground), so that the maximum insulator voltage Uix of the AC line is not exceeded. Der BoostGrid-Current Iacb is equal to the AC-Current Iac. As a result, the BoostGrid can be applied to existing AC grids, since the insulator voltage-maximum Uix and the line-current Iac remain unchanged. Accordingly the sinusoidally Boostgrid line-currents Iacb and the line to line voltages Uacb fulfil the Total Harmonic Distortion (THD) standard. Existing AC-components (transformers, switching devices, measuring devices, protection devices) can be used in BoostGrids, taking account of the boosted line-voltage.

5. BoostGrid: the Stray-Field (Smog), the Transmission- Losses, the "Smart-BoostGrid"

The stray-field (B Field) of the BoostGrid is in Optimum Mode equal to the stray-field of the AC-grid. In Eco mode, the Boostgrid current Iacb is smaller than the AC-current Iac, the stray-field is reduced by about 25% and the conduction-losses are halved. The H-Boosters are able to control the power flow, therefor is the Boost-Grid a HV-"Smart-Grid".

6. Der BoostGrid-Market, Payback-Time of the BoostGrid-Investment

Das BoostGrid is designed to **repower** existing AC-Grid and **to improve the profitability** of a new AC-Installations. It allows also reducing of stray-fields and conduction losses of existing or new AC-Installations.

The Payback-Time for a new BoostGrid-Installation is below 5 to7 years. Die Payback-Time for Repowering of an existing AC-Grid is in the range of 7 to 10 Years.

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