



FRANKE[®]
Elektrotechnik

Resonance Elimination Systems

YOUR VOLTAGE – OUR PASSION

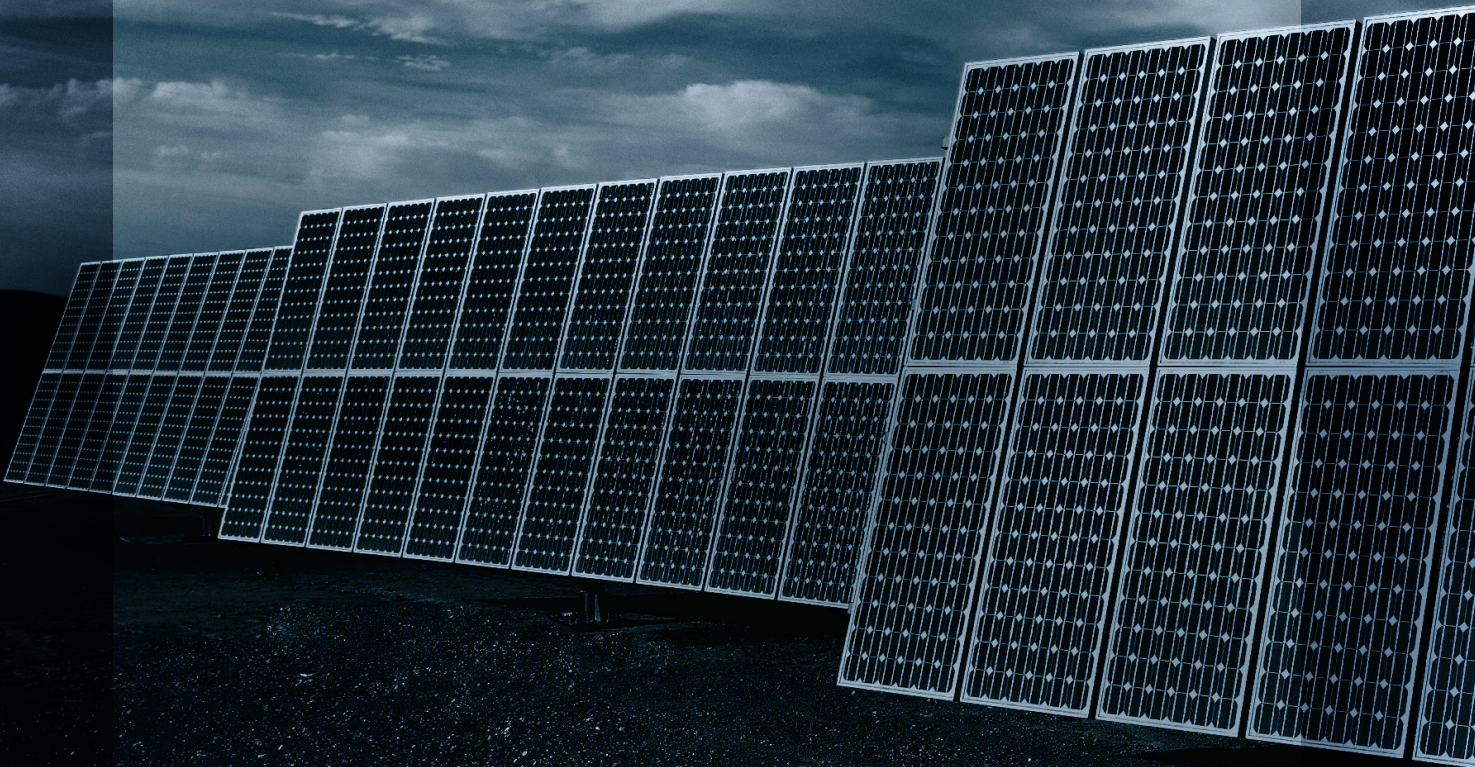
FE-RE

High-pass filter



MADE IN GERMANY

WE ARE DESIGNING, PLANNING AND
MANUFACTURING OUR PRODUCTS
IN GERMANY



High-pass Filter

The FE-RE product family is used when disturbances or resonances occur at higher frequencies unlike the case of classical higher-order harmonics. Using a usual LC absorption circuit, network resonances cannot be eliminated completely but only be shifted to another frequency. By the introduction of damping – e.g. a high pass resistor – resonances can be completely eliminated from the respective electrical systems. FE-RE systems are available up to larger units when attenuating the effects of commutation sags through high-power converters is necessary.

THE PROBLEM

Capacities spread around the power grid, e.g. long cable sections, input filters of inverters or compensation systems without choke, are forming together with the power supply transformer a resonance. If a source for a current is existing within the power grid close to this frequency, already a minor current can result in high disturbances of the voltage levels.

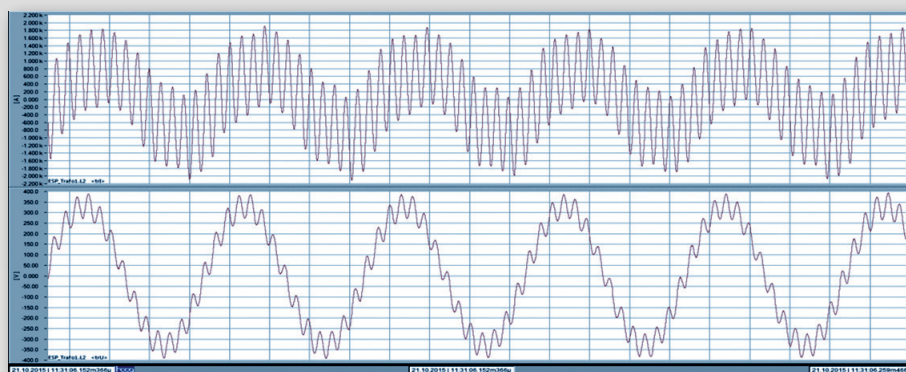


Image 1

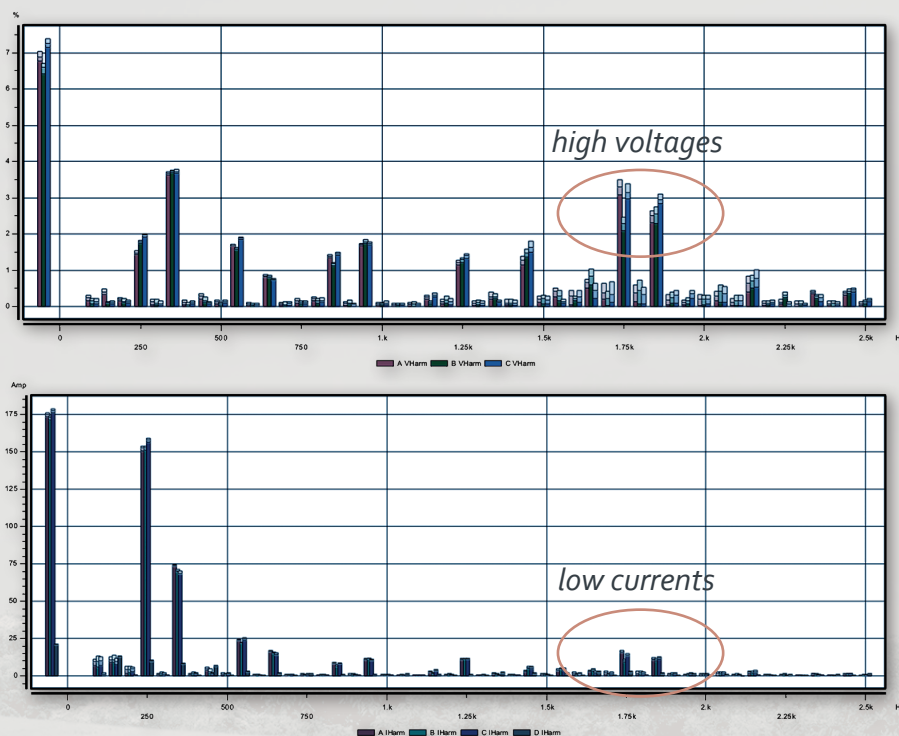
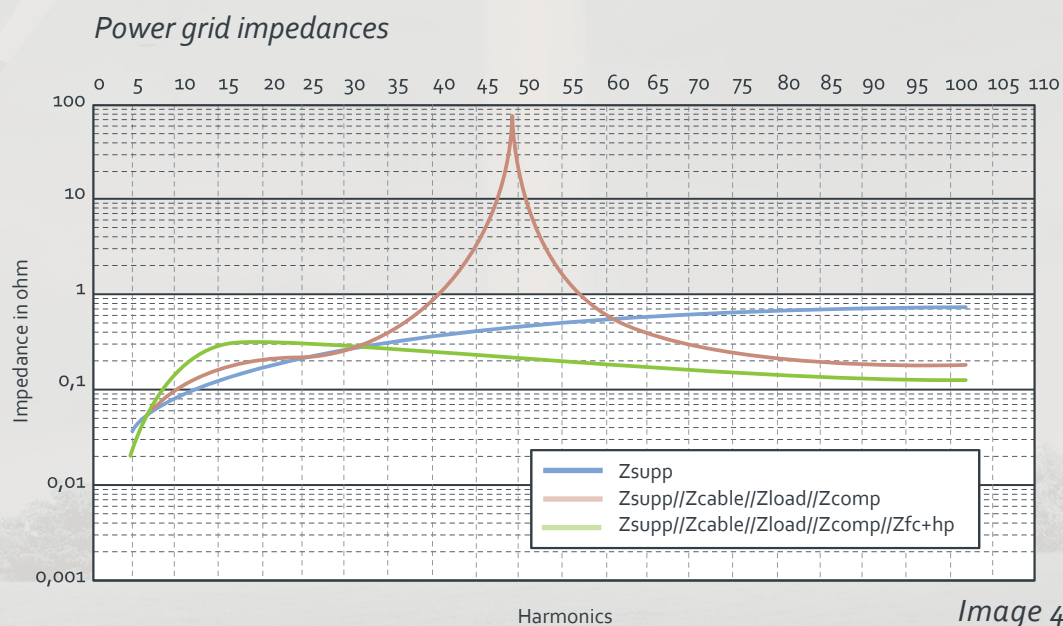
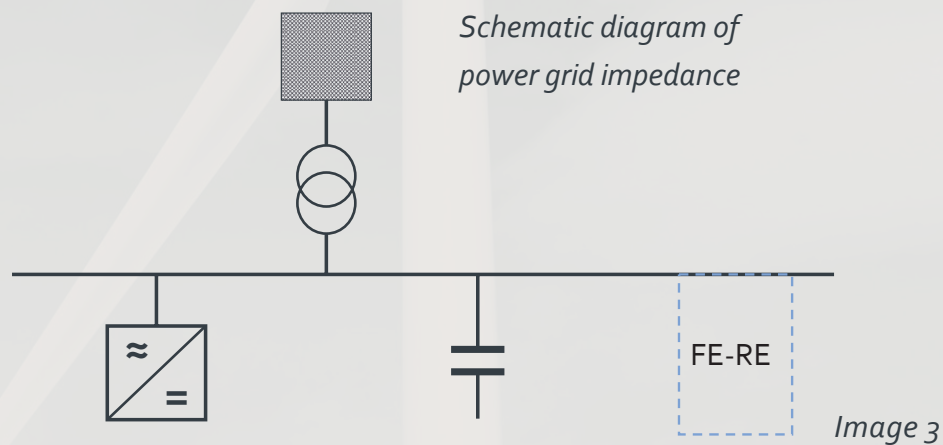


Image 2

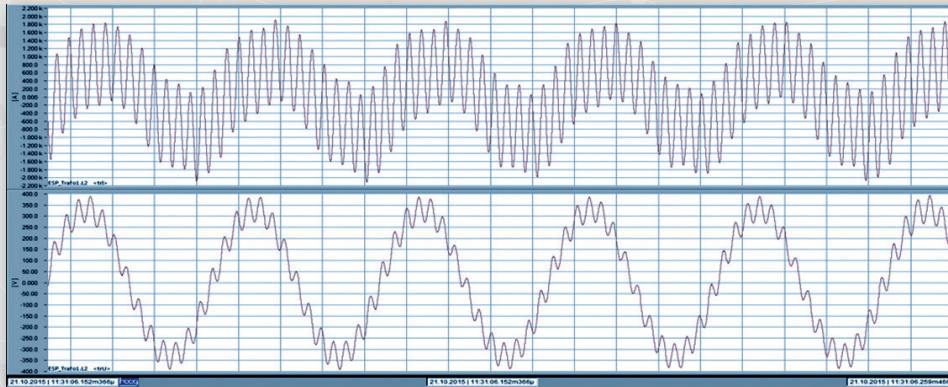
Example for distortions of current and voltage due to resonance

THE SOLUTION

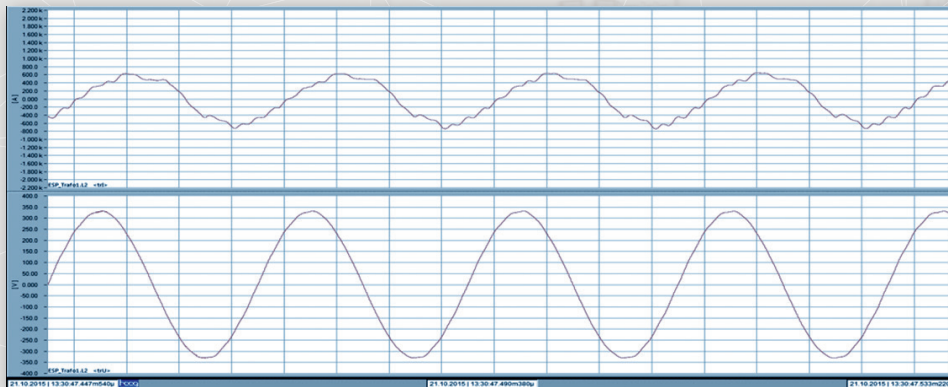
By using a damping high pass filter in parallel to the power grid (see image 3) the resonance can be eliminated effectively, as shown in image 4. The red graph shows the power grid impedance from the point of view of a low-voltage distribution of a power grid with 50 MVA short-circuit capacity, a 630 kVA transformer and a capacity of 100 μF . The green graph shows the same power grid after adding a FE-RE-filter with 25 kvar capacitive reactive power.



CASE STUDY



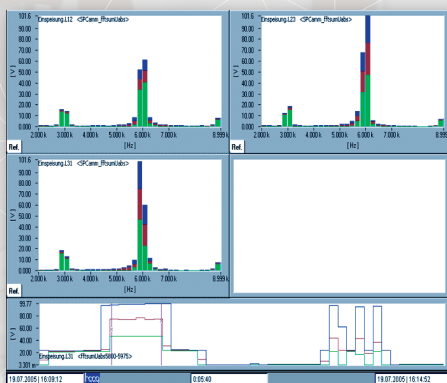
without FE-RE



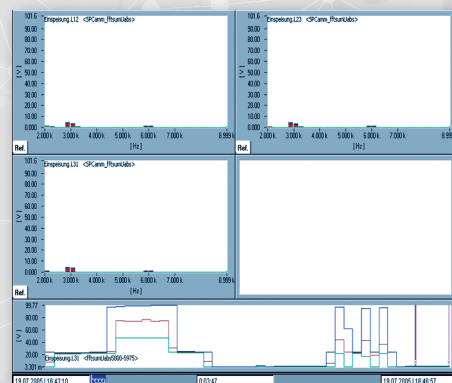
with FE-RE

Variation in time of current and voltage from an actual measurement.

without FE-RE



with FE-RE



Spectrums of current and voltage from an actual measurement.

RANGE OF TYPES

FE-RE-SG

Compact floor-mounted appliance for damping of resonances with higher frequencies

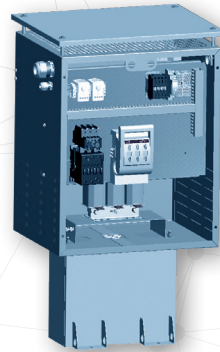
Dimensions W x D x H = 522 x 424 x 959 mm

FE-RE-SG-400/50-25-H11-0,35

FE-RE-SG-440/50-26-H11-0,35

FE-RE-SG-690/50-35-H11-0,7

FE-RE-SG-480/60-30-H11-0,35

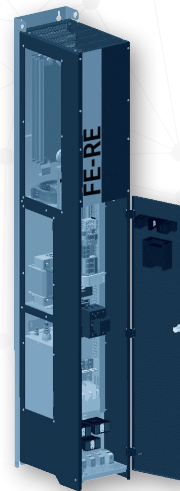


FE-RE-MOD

Module for installation in a control cabinet

Dimensions W x D x H = 228 x 450 x 1512 mm

Same range of types as RESI-SG



FE-RE-EMV

Installed in Rittal VX25-Control cabinet, for damping of resonances and switching frequencies in power grids with high-power inverters.

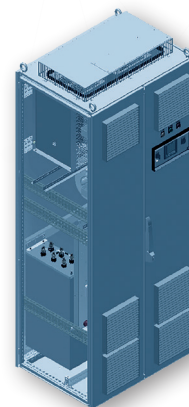
Dimensions W x D x H = 810 x 610 x 2100 mm

(645 mm deep with ventilation grills)

FE-RE-EMV-400/50-1x40

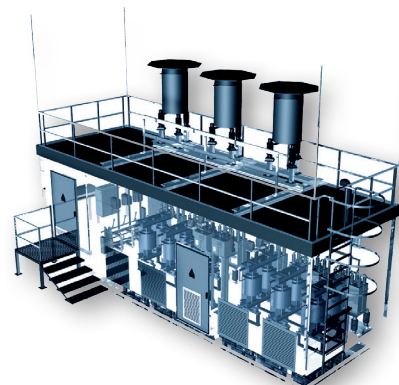
FE-RE-EMV-400/50-2x40

FE-RE-EMV-400/50-3x33,3



FE-RE-HV

For damping of resonances and switching frequencies in medium- and high-voltage power grids (> 1kV)



Other designs on request

(different voltages, with cooling unit, for outdoor installation, ...)



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Technical modifications and errors excepted.