The energy efficiency system

EMU® Ecovolt®

ENERGIESEE Gruppe
Max-Planck-Straße in 6-8 in 50858 Köln
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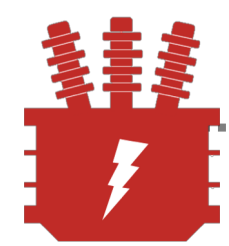
Supply structure

3 - 8 % savings potential

1 Power dissipation at main transformer

- Utilisation of only 40 – 60 %
- Losses during power transmission
- The frequency of alternating current/ alternating field
- Magnetic properties of the transformer sheet
- The own power requirement accrues on the meter



Main transformer/
local grid transformer

Meter

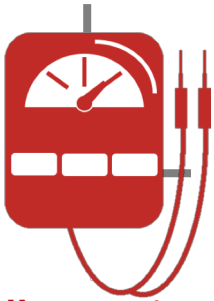
Maindistribution

2 Voltage drop

Losses because of too long cable paths and because of small crosssections

Monitoring-System (optional)

- Permanent control over the EMU® ECOVOLT® system
- Transparent overview of real savings processes



Measurement
technology

Positive effects through the utilisation of the EMU® ECOVOLT® system:

1 Power dissipation at the main transformer is reduced by the installation between the main and sub-distribution. The system reduced the active, reactive and apparent power. The amperage decreases and this leads to less loss in the transformer (decrease of copper losses).

2 Voltage drops occur on each passive component when current flows through it. According to the VDE Association for Electrical, Electronic and Information Technologies, hereby thermal losses of 3 to 5 % occur because cables are too long and cable cross-sections are too small. Losses because of too long cable paths and small cross-sections are compensated by the decentralised installation of the system. Short wires lead to lower loss and fewer harmonics.

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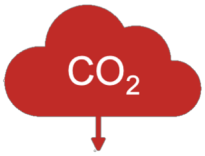
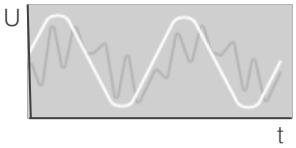
Process

5 - 10 % savings potential

6 **Reduction of CO2**

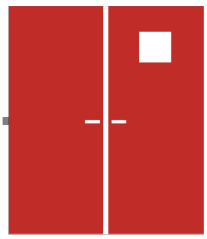




3 **Harmonics**
- Loaded neutral conductor
- Voltagedistortion
- Use of power electronics
- Heatingproblem

4 **Voltage management**
- Too high voltage from electricity supplier
- Overlapping in voltage area

EMU® ECOVOLT® Anlage

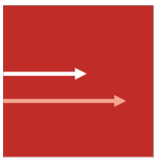


Subdistribution

Increase of
- Power factor
- Efficiency
- Quadratic mean

Reduction of
- Harmonics
- Circuit feedback
- Voltage drop
- Power dissipation at transformer
- Reactive power

5 **kW peak load**
- Higherwear
- Higher energy consumption in partial load area
- Increase of reactive current



7 **Service life of equipment**
- Wear of equipment
- Frequent maintenance of machinery

Positive effects through the utilisation of the EMU® ECOVOLT® system:

3 By means of the installation between main and sub-distribution and because of a special wire-wrap technique (filter, detuning and zig-zag wrapping effect), harmonics and grid feedbacks are reduced in a large part.

4 Voltage management energy-efficiently regulates too high voltage and variations in voltage. Hereby, the input and output power of the equipment is decisive.

5 Voltage management limits the kW peak load (signals of peak load alerter) and by the active SPS, the equipment is regulated in such way that the input and output power is optimised.

6 The system reduces CO2 emissions and greenhouse gases.

7 By means of reduction of peak load, the service life of equipment increases and maintenance intervals are extended.

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Equipment

2 - 6 % savings potential

Inductive consumers

- ☐ Pumps
- ☐ Hydraulic press
- ☐ CNC-mills
- ☐ Compressors
- ☐ Mixing and stirring systems
- ☐ Fans and air conditioners
- ☐ Cooling systems
- ☐ Synchronous generators
- ☐ Food cutter machines
- ☐ Washing systems
- ☐ Conveyor belts
- ☐ Stamping machines
- ☐ Printing machines
- ☐ Hydraulic lifts
- ☐ Rolling mills
- ☐ Turbines
- ☐ Saws
- ☐ Milking systems
- ☐ MRI X-Ray units
- ☐ Frequency converters

Ohmic consumers

- ☐ Furnaces
- ☐ Lightbulbs
- ☐ Ironing systems
- ☐ Extruder systems
- ☐ Heating and baking ovens
- ☐ Saunas
- ☐ Melting systems
- ☐ Hot water tanks
- ☐ Coating systems
- ☐ Radiant heaters
- ☐ Soldering bolts
- ☐ Rotisseries
- ☐ Hot plates
- ☐ Heating tapes
- ☐ Heat exchangers
- ☐ Infrared heaters

Capacitive consumers

- ☐ Laser systems
- ☐ Lighting systems (LED)
- ☐ Computers
- ☐ Power adapters
- ☐ Screens
- ☐ Cash systems
- ☐ Solariums
- ☐ Microwaves
- ☐ Robot systems
- ☐ Electronics
- ☐ Measurement systems
- ☐ Ultrasonics
- ☐ Dental and laboratory technology
- ☐ Precision technology
- ☐ Soldering technology

Measurement of grid quality + EMU® ECOVOLT® system savings potential

Supply structure
Process
Equipment

= 8 – 15 %

Energy-saving potential

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