

# *Rico-Werk*

Three Phase Current Technology  
for High Voltage Supply  
in Electrostatic Precipitators



# Basic Knowledge about Single Phase and Three Phase Technology

**Single phase technology, the simple version to get high voltage for electrostatic precipitators:**

- Single phase transformer rectifier set,
- Available with various controller systems,
- Rippled direct current voltage for continuous and pulse modus.



**Three phase technology, the high end version, based on robust 50/60 Hz power connection, for high voltage supplies:**

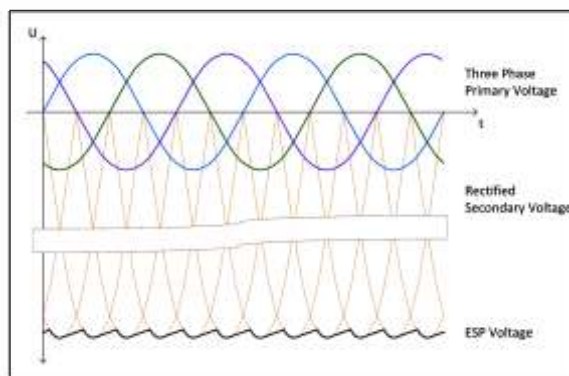
- Three phase transformer rectifier set,
- Available with high end controller for various regulation modes,
- Very smooth direct current voltage (less than 3 percent ripple in ESP load condition),
- Pulse modus and continuous modus.



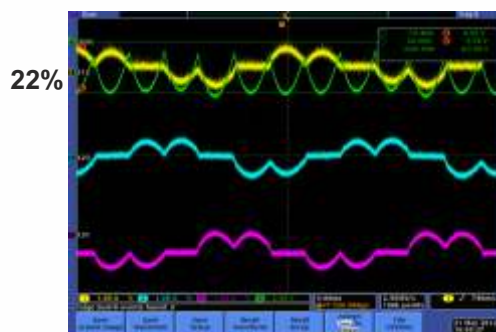
# The Transformer Rectifier Set



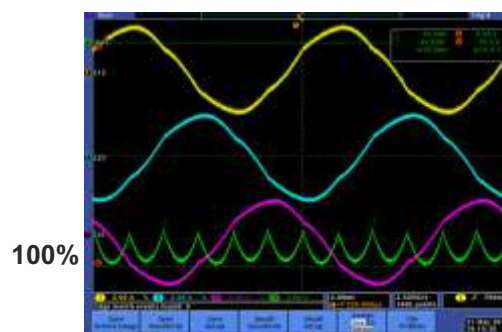
**Three phase current T/R sets from Rico-Werk combine robust 50/60 Hz technology ...**



**... with a high quality DC high voltage with a low voltage ripple ...**



yellow, blue, red: Input current; green: Output voltage



yellow, blue, red: Input current; green: Output voltage

**... over a wide voltage regulation range.**

# The Transformer Rectifier Set

**Symmetrical load** for all three phases of the supply grid.

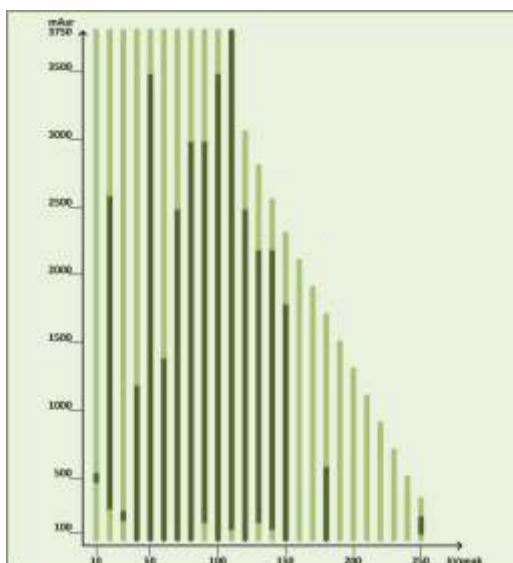


Short circuit voltage is 30% **with stability of output voltage** over a **wide load range** because of *Rico-Werk* controller technology: **Secure operation** in flash-arc situations.



**Compact construction** with transformer, rectifier and choke impedance within the hermetic tank.

**Maintenance free** because of hermetic tank with elastic cooling fins.



**Wide voltage, current and power ranges:**

every unit is tailor-made for customer's requirements.



# The Transformer Rectifier Set

High voltage output with **horizontal** or **vertical bushing**.

**Lightweight** because of aluminum coil technology.

**Conventional wiring** usable between switchgear cabinet and T/R set.



Grounding switch with **potential separator** (optional).



**Output voltage graduation** with input voltage tapping (optional).

Controller cabinet and T/R set as **compact unit** (optional).

**Environmentally compatible** isolation oil filling.  
(optional, e.g. MIDE<sup>®</sup>L 7131, BecFluid<sup>®</sup> 9902).



# The switchgear cabinet with Gamma or Gemini



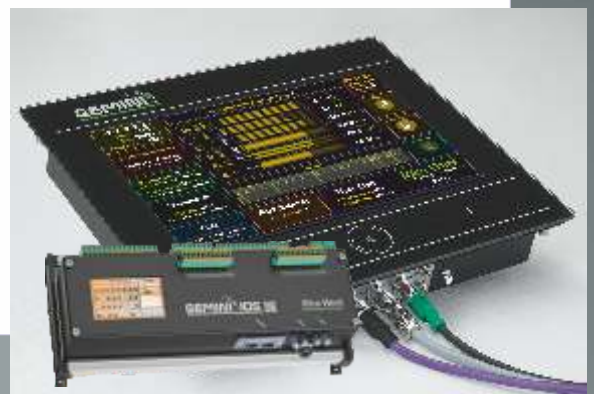
## Real Time Measuring Technology

The modern kind of control technology for the high voltage supply of your electrostatic precipitator (ESP).

Our systems, using the revolutionary control idea, always guarantee automatically the optimum operation of the electrostatic precipitator.

The modification of **program parameters is no longer necessary** in the following circumstances:

- Running up,
- Difficult operating conditions,
- Changing conditions,
- Changes in the waste gas conditions.



## Back-corona monitoring

Back-corona monitoring can be activated on demand. After activation, the system recognizes back-corona **precisely**. When necessary, the corona current can be limited. **Back-corona monitoring is also available in pulse mode. No additional parameter setting is required.**



## Functions

- The evaluation and processing of the measurement signals takes place **entirely in software. No additional hardware components are required.**
- All measured values correspond to the **actual value** with **class 2** precision.
- **Dynamic range** covers the entire measurement range. All limits are permanently 100% active.
- **Independent frequency setting** by synchronization signals is supplied through fiber optics.
- Separate power supplies are possible.
- **Pulse mode operation** can be fully redefined.
- **Plug & play technology** is using dynamic asymptote adaptation.
- **Short circuit monitoring operates without** checking for undervoltage.

## Our Systems

are used to permanently monitoring the target values:

- Primary voltage (rms values of all 3 phases),
- Primary currents (effective values of all 3 phases),
- Secondary voltage (peak value),
- Secondary voltage (average value),
- Secondary current (average value),
- Precipitator power.



# Certifications



## ISO 9001:2015

01 100 110258

01 100 110258 / 01

01 100 110258 / 02

## SCC\*\*

01 013 110258

## UL/CSA

U8 17 11 97828 002

U8 17 03 97828 001

U8 17 11 97828 003



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