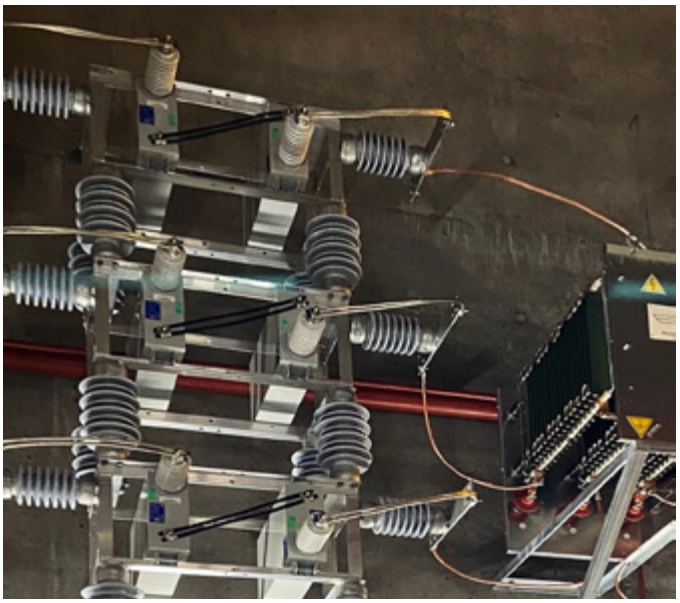
TRAMO

HARMONIZER
POWER QUALITY SOLUTIONS

ZnORC filter for MV and HV

- **Effective filtering of supra harmonics**
- **Effective damping of energization transients**
- **Preventing ferro resonances**
- **Cost optimized design**
- **Compact lay-out**



BACKGROUND

The efforts in conversion of energy generation to clean energy change the characteristics of electrical power systems and affects the power quality of the transmission and distribution networks. Some of the drawbacks of the distributed generation are increased risks for

- High frequency disturbances (supra harmonics)
- High frequency transients
- Ferroresonances

Common consequences of these disturbances are

- Transformers failures
- Cable ends failures
- PT and CT failures

That finally results in

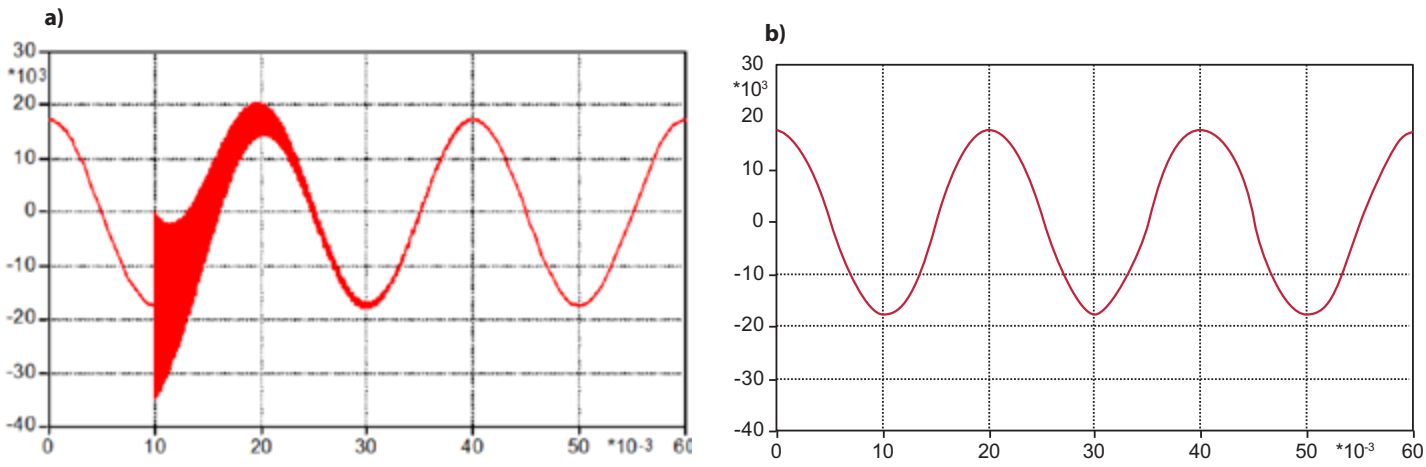
- High maintenance costs
- Costs due production interuptions

HARMONIZER SOLUTION

In order to meet the challenges of ensuring trouble-free operation of electrical power systems, a damping ZnORC filter has been developed for medium- and high-voltage networks. The filter consists of a combination of specially designed passive components – ZnO non-linear resistors, resistors and capacitors.

The ZnORC filters offer possibilities to meet the requirements of today's and tomorrow's grids of improved damping of ferroresonances and transient overvoltages and thus protect the network and equipment from troublesome service interruptions and equipment failures

An example of simulations' results showing damping of voltage transients due to energisation of long cables is shown below.



Energization of a cable a) without ZnORC, b) with ZnORC

MADE IN SWEDEN BY TRAMO ETV 100% PREMIUM QUALITY

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OUR OFFER

TRAMO ETV provides assistance in all stages of a power quality project. From data collection and power quality measurements to system simulations, recommendations for corrective actions, filter and filter component design, preparation of technical specifications, and trough to commissioning and verification testing.

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