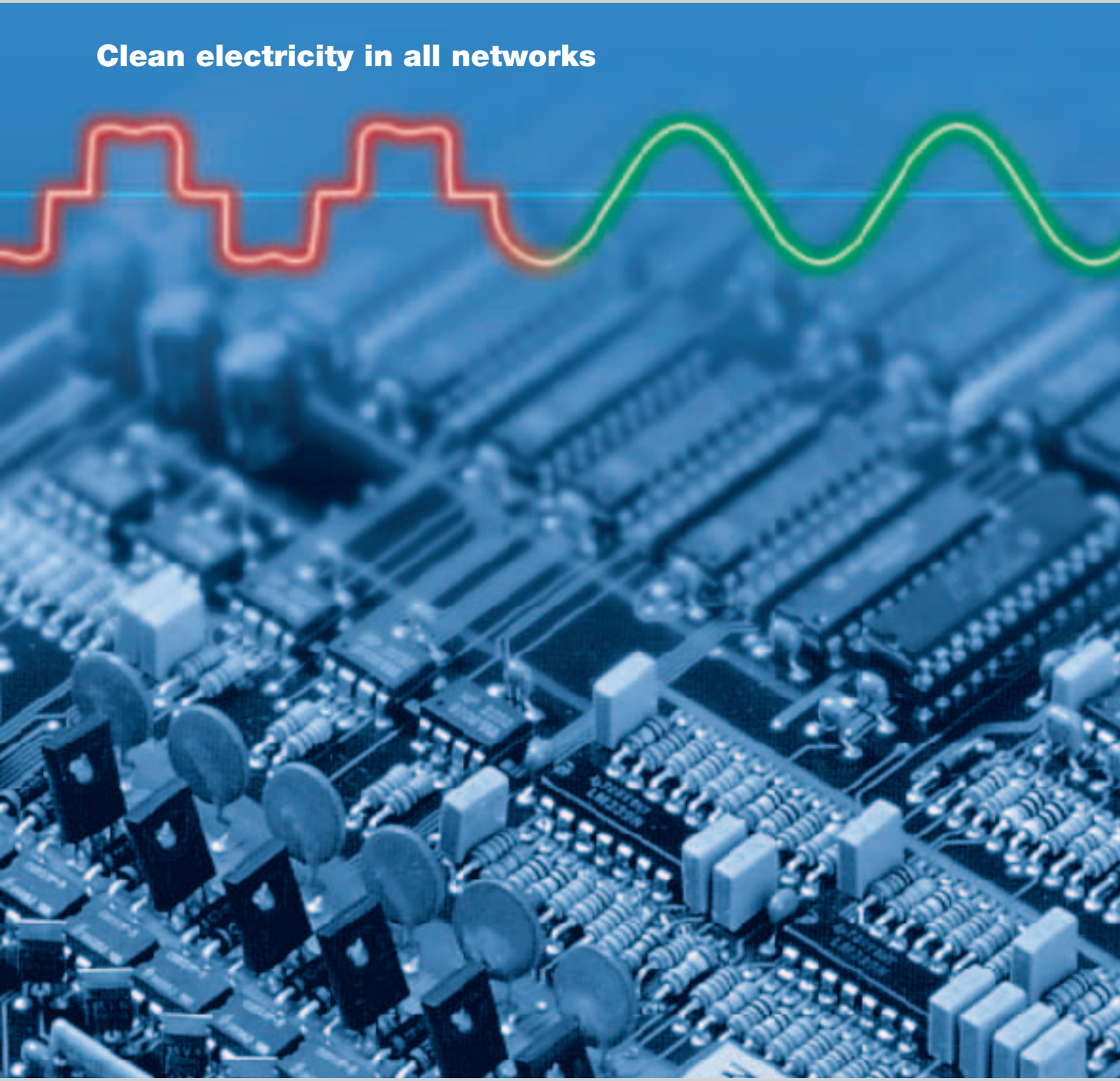
VA TECH

VA TECH ELIN EBG Elektronik

Mains Active Restoring System MARS

Clean electricity in all networks



The Power Drives Company

ELIN EBG Elektronik

Mains Active Restoring System MARS

In power supply networks, the quality of the voltage is becoming more and more of a determining factor. In particular, the harmonic content must be limited in accordance with the consumer. Active network filters with high dynamics are particularly suitable for this purpose. They can even be retrofitted to existing low- and medium-voltage networks, so that there is specific compensation of the harmonic oscillation at the desired mains points.

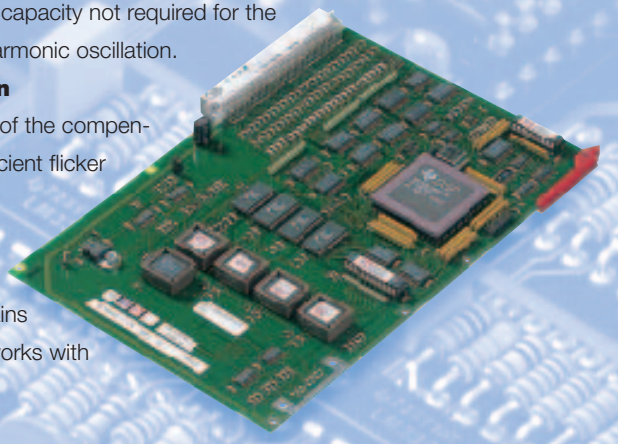
Based on the tested series of highly dynamic inverters called **IRIS** (IGBT negative-feed industrial power inverters), **VA TECH ELIN EBG Elektronik** has developed the active filter series **MARS** (**M**ains **A**ctive **R**estoring **S**ystem) specifically for this application.

MARS is an active filter that is used to compensate all kinds of mains feedback from any consumer in three-phase networks. Switched between the transformer star point and earth in a one-phase variant, it is used to compensate earth currents in order to guarantee the required grounding conditions.

PROPERTIES

- **High Dynamics**
  The current is measured every 10 µs, i. e. often enough to compensate virtually all harmonic oscillations.
- **Specific compensation of harmonic oscillations**
  The newly developed VA TECH ELIN EBG Elektronik control method **DHC** (**D**irect **H**armonic **C**ontrol) allows the free selection of individual harmonic oscillations and their specific compensation. As a result, the maximum filter effect is achieved with the appropriate filter capacity.

- **Independent filter capacity**
  The set filter function is independent of the mains quality and mains impedance.
- **Minimum mains feedback**
  Two parallel IGBT bridges with time-delayed clocking guarantee minimum mains feedback. Ripple control signals are not affected, potential resonance points are attenuated.
- **Compensation of reactive power**
  Compensation of the first harmonic – either capacitive or inductive – is possible to the extent of the capacity not required for the compensation of harmonic oscillation.
- **Flicker reduction**
  The high dynamics of the compensator guarantee efficient flicker reduction.



- **Easy mains connection**
  Depending on the capacity, the compensators are designed for 400 V 3AC or 690 V 3AC, and are already fitted with a mains coupling choke. They are connected to medium-voltage networks with a mains transformer of corresponding transmission.

Function

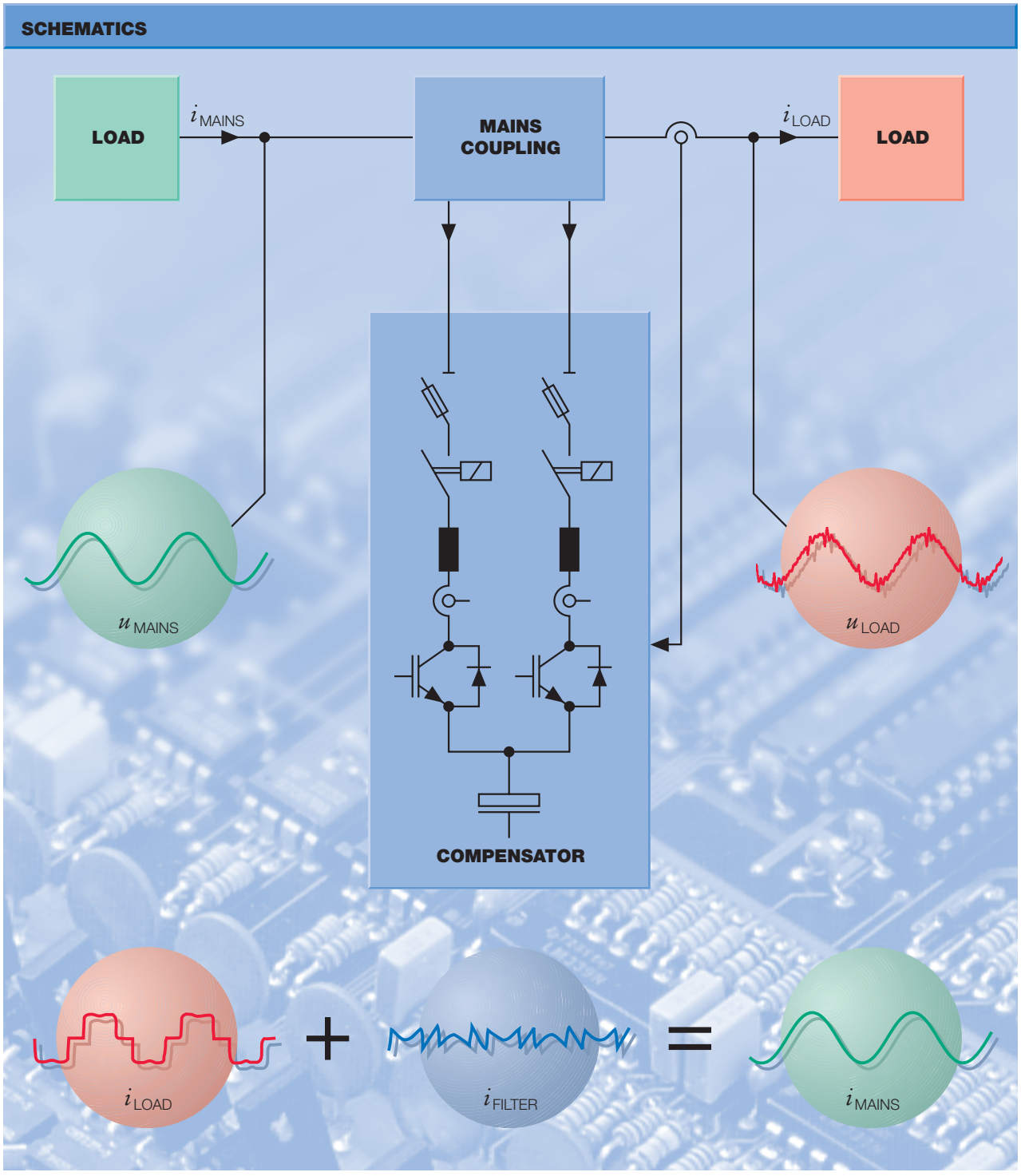
The load of a non-linear consumer or group of consumers is freed of interfering current shares by feeding diametrically opposed current shares. As a result, the undesired harmonic components and/or reactive power loads are eliminated or reduced accordingly at the switching point.

In addition, no capacitors are switched on or off. Instead, precisely the required compensation currents are produced using an extremely fast impulse inverter based on IGBT.

The entire control system is based on state-of-the-art signal processors.

The implemented software guarantees the perfect function and allows you to parametrize the compensator locally, and to change the parameters later.

An overload of the device is not possible, it continues to work at the set limits without tripping.



Mains Active Restoring System MARS

The product range

TYPE	MARS	E2x12_	E2x22_	E2x33_	E2x44_	E2x66_
Terminal voltage	[V]	400 ± 10%	400 ± 10%	400 ± 10%	400 ± 10%	690 ± 10%
Mains frequency	[Hz]	50 ± 10%				
Current eff.	[A]	350	630	950	1270	1110
Capacity	[kVA]	240	440	660	880	1320
Overload	[%]	120 for 60 s pro 10 min				
Dimensions W x H x D	[mm]	1600x2020x500	2000x2020x500	2800x2020x600		3200x2020x600

Other voltages, frequencies, and capacities available on request.

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