11 Magnetically Controlled Rectifiers

11.1 Types 24V to 220V/10A to 400A

11.1.1 General and Application

Magnetically controlled rectifiers have been used in power supply systems for more than 40 years.

A brief introduction to the new magnetrically controlled rectifiers (see Fig. 11.1)\(^1\) now follows. The main advantages of these rectifiers are

- insensitive to mains power line input distortion,
- good current waveform factor,
- low disturbance feedback to mains power line (to draw a sinusoidal current from the mains with low conducted EMI),
- very high input power factor,
- low inrush current,
- good dynamic response,

Fig. 11.1. Magnetically controlled rectifier e.g. type LGDM-IU 48 V/100 A (left) with battery cabinet (right). (Photo by courtesy of Gustav Klein GmbH & Co. KG)

\(^1\) Source: Gustav Klein GmbH & Co. KG.
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- short circuit proof,
- low radio interference and
- high MTBF.

The magnetically controlled rectifier unit is very often used in unmanned mains-independent power supply stations with transmission systems.

11.1.2 Modes of Operation

The rectifier unit can be used in the rectifier mode (see Sect. 3.1), standby parallel mode (see Sect. 3.3) or changeover mode (see Sect. 3.4).

11.1.3 Survey Diagram of the Power Supply System

Figure 11.2 shows a basic survey diagram of a power supply system with magnetically controlled rectifiers.

During normal operation with mains supply available both rectifiers supply the communication system and the battery with float (trickle) charging in parallel mode.

On power failure the battery is discharged and takes over the supply of the communications system without interruption. The voltage relay is deenergized and so the diode (5) bridged (see Fig. 11.2).

![Survey Diagram of the Power Supply System](image)