Controlling Reactive Power Between 2-100%

1Sec Response Time

Power Quality Products

Magnetic Controlled Reactor (MCR)

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Magnetic Controlled Reactor

MCR System

MCR (Magnetically Controlled Reactor) is basically an **SVC** (Static Var Compensator) system component. Power variations in SVC systems are controlled by systems such as **TCR** (Thyristor Controlled Reactor), **TSC** (Thyristor Switched Capacitor) and MCR. The MCR system, when used with passive harmonic filter banks (**Capacitor banks**), can compensate both in the **inductive region** and in the **capacitive region**, and it can also compensate in the inductive region when used alone due to its **low harmonic distortion**.

MCR Highlights

Main Features

- Reactive Power compensation
- Power Factor compensation
- Voltage Regulation
- Reducing grid losses
- Increasing transmission capacity
- Remote monitoring and control with **inavitas VVMS**

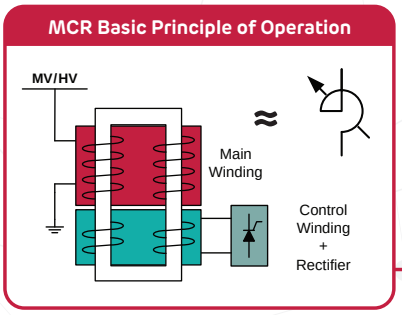
Advantages Over Similar Systems

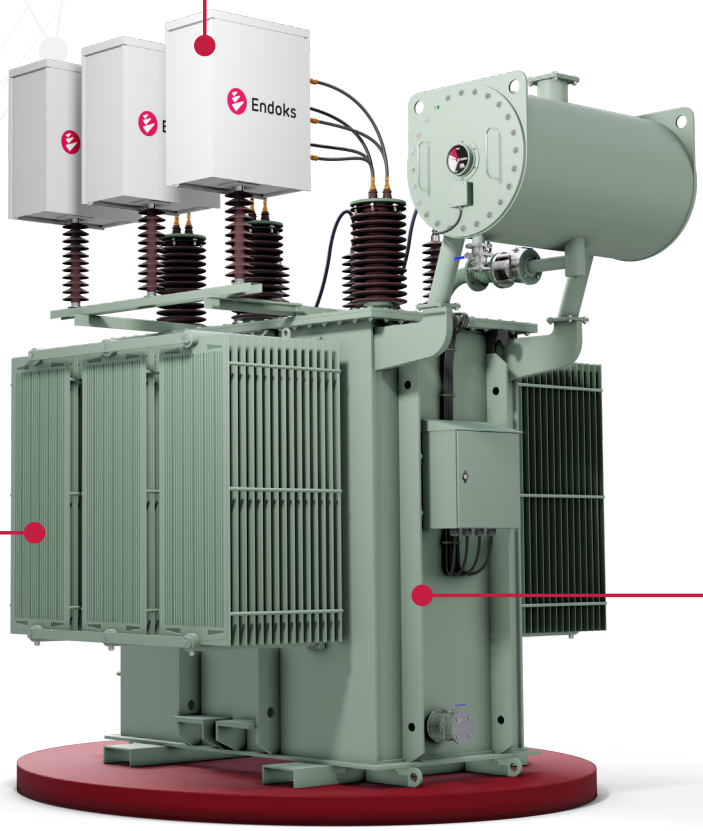
- Initial installation cost is lower than other active compensation systems.
- Maintenance costs are low and easy to maintain, they need little installation space.
- Unlike systems with shunt reactors, it does not give gradual power output, it can give the desired instantaneous reactive power exactly and has low harmonic distortion. <3%
- The MCR control system calculates and adjusts the output with a closed loop control algorithm.
- The MCR system can operate in Reactive Power Compensation Mode, Voltage Regulation Mode and Constant Reactive Power mode.
- Power settling time is **1-2 second** in reference changes.
- It can give **instantaneous output between 2% and 100%** of its power according to the need.

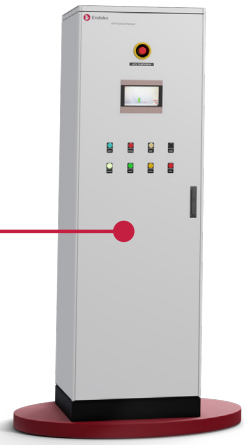
MCR System Components

1 Thyristor Boxes

The thyristor power stage driving the control winding of the MCR is inside the thyristor boxes. The thyristor box consists of thyristor modules, diode module, snubber circuit and driver board. The driver board drives the thyristors with the trigger signals coming from the control panel via fiber optic cables and passes the required current through the control winding.







2 Control Panel

All controls of the MCR system are carried out in the control panel. The control panel consists of control electronics, SCADA and HMI sections. The current and voltage information of the grid is measured by the control electronics and power calculations and control operations are carried out here. Control electronics and SCADA can communicate with Modbus TCP. Status information, operating information, fault or alarm information, instantaneous current, voltage and power information about the system can be monitored and control settings can be made at the same time on the HMI screen on the control panel. Additionally, control and monitoring can be provided from a remote center via a modem connected to SCADA.

3 MCR Reactor

It is basically a reactor consisting of a main winding wound on a magnetic core and control windings. By passing control current through the control windings, the inductance of the reactor is changed so that the current through the main winding can be increased or decreased. The main windings are connected directly to the medium voltage. The control windings are connected to the thyristor box.

Reference Projects

9 Distribution Companies

108 Distribution Stations

Remote Monitoring with inavitas VVMS

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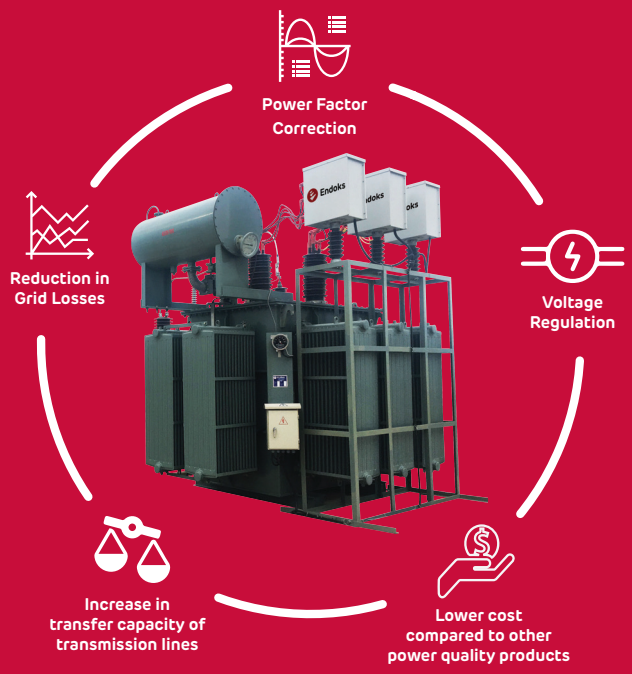
Application Areas

- Transmission and Distribution Grids
- Mining Industry
- Cement Industry
- Railway Electrical Grids



Endoks

Ankara / Türkiye
Brisbane / Avustralya

+90 (312) 256 00 86
+61 404 573 970

info@endoks.com
www.endoks.com