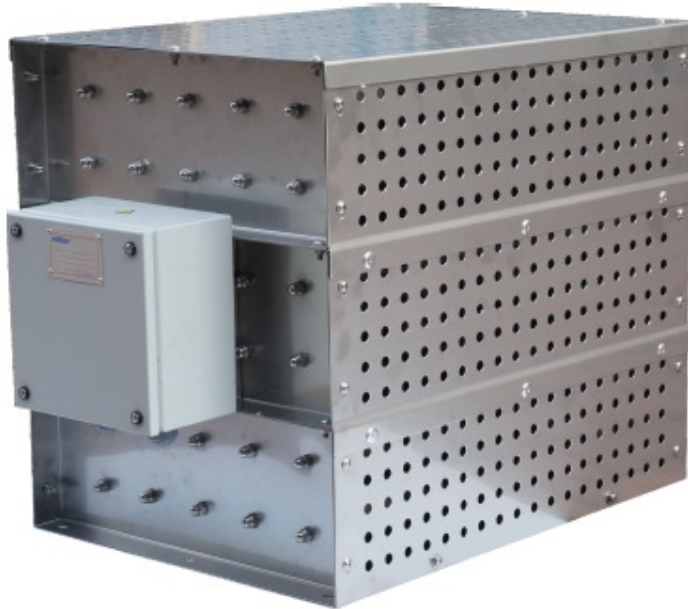


Dynamic Breaking Resistors



Speed of three phase asynchronous squirrel-cage motors and three phase synchronous motors are generally controlled by motor drives where frequency of the drive output determines the motor speed, and it can be adjusted without dependence on the voltage magnitude.

When the motor serves as a generator (rotating at speeds higher than the synchronous speed), the generated energy by the motor increases the voltage in the DC bus of the motor drive. In order to limit this increased voltage to protect the equipment, DC bus voltage must be limited under a critical value.

As feeding this energy back to grid is not an economical method due to need of expensive power electronics and control equipment in most cases, this excess energy is converted into heat through a brake chopper and a braking resistor. Hilkar's external braking resistors provide compact and economical solution for dissipating the excess energy produced by the motor. Hilkar provides dynamic braking solution with any duty cycle for various applications with power ratings from a few watts to many megawatts.

Advantages

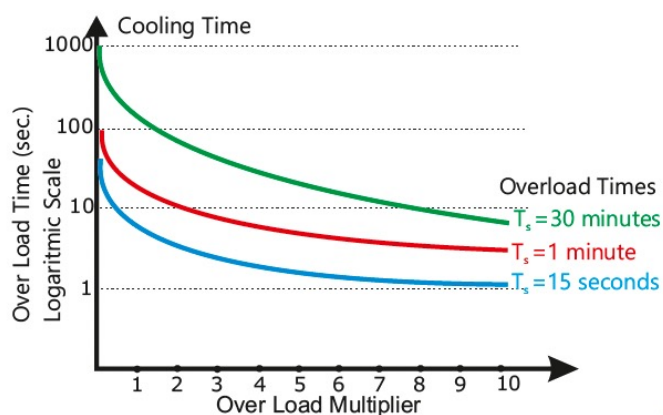
- Manufactured for any power rating and duty cycle
- Open type or enclosed construction
- Custom designs are available in addition to standard modules
- Suitable for any brand and model of Variable Frequency Drives (VFDs)



For high continuous powers and areas where space is a limitation, fan cooled braking resistors are also manufactured especially for marine, mining, and traction sectors

Enclosure Options

- Aluminum heat sink enclosed
- Hot dip galvanized steel enclosed
- Stainless steel enclosed



Application Tips

Remark:

Ohmic value of resistors for braking purposes should not be less than VFD manufacturers' catalog values. If this minimum catalog value is violated, it can cause equipment damage. If the chosen ohmic value is much larger than inverter catalog's recommended value, braking time gets longer. Braking time is determined by the inertia and speed of rotating parts.

Remark:

If braking time is unknown or close to total cycle time, as a safety tolerance, the resistor continuous watt rating should be chosen the same as the motor's power rating.

- Aluminum heat sink enclosed
- Continuous Power (W): From a few watts to many megawatts
- Cooling : Natural cooling or forced cooling
- Protection Degree : IP20 and others

Relationship between Over-Load Multiplier / Cooling time / Over-Load Time can be seen in the following graph.

