

变频器尖峰电压吸收器(VTA) Converter Spike Voltage Absorber

■ 产品概述(Product Introduction)

变频器驱动电机的电压是脉冲波形(PWM波形), 这种波形包含了丰富的高频成份。当变频器与电机之间的连线超过30米时, 高频驱动电压脉冲会对电机产生很多不良影响, 其中主要包括: 电机轴承寿命缩短, 电机定子绕组绝缘击穿等。例如, 对于额定电压380V的变频器, 脉冲电压的尖峰幅度可超过1200V, 这种尖峰电压每秒对电机冲击上千次, 很快就导致电机定子绕组的损坏。此外, 变频器的输出脉冲电压还会在电机的轴承中产生轴承电流, 轴承中长时间流过轴承电流, 会造成电机轴承的损坏。

The voltage of the converter driving the motor is a pulse waveform (PWM waveform), which contains rich high-frequency components. When the connection between the converter and the motor exceeds 30 meters, high-frequency driving voltage pulses will have many adverse effects on the motor, including: shortening the life of the motor bearing, insulation breakdown of the motor stator winding, etc. For example, for an converter with a rated voltage of 380V, the spike amplitude of the pulse voltage can exceed 1200V. This spike voltage impacts the motor thousands of times per second, quickly causing damage to the motor's stator winding. In addition, the output pulse voltage of the converter will also generate bearing current in the bearing of the motor. If the bearing current flows for a long time, it will cause damage to the motor bearing.



■ 产品应用(Product Application)

VTA尖峰电压吸收器是保护电机定子绕组绝缘和轴承的创新性产品。VTA并联安装在电机的电源输入端, 能够有效吸收变频器在电机上产生的尖峰电压和轴承电流, 极大地延长电机的寿命。

与传统的dv/dt滤波器或正弦波滤波器相比, VTA优点有:

- 1.与电动机并联安装, 简便易行
- 2.没有电压降, 不降低力矩, 也不影响变频器对电机的控制
- 3.体积小、重量轻, 性价比高, 特别是对于大功率电机, 优势更加明显
- 4.选用方便, 与电机的转速和载波频率无关, 不用与特定功率的电机配型
- 5.智能控制, 根据载波频率和电缆长度, 自动调节吸收功率, 确保效果最佳
- 6.内置保险, 故障时自动从系统中脱出, 同时, 面板上显示故障状态
- 7.全密封设计, 适应恶劣的工业现场环境

The VTA spike voltage absorber is an innovative product that protects motor stator winding insulation and bearings. HVT is installed in parallel on the power input terminal of the motor, which can effectively absorb the spike voltage and bearing current generated on the motor, which greatly extend the life of the motor.

Compared with the traditional dv/dt filter or sine wave filter, the advantages of VTA are:

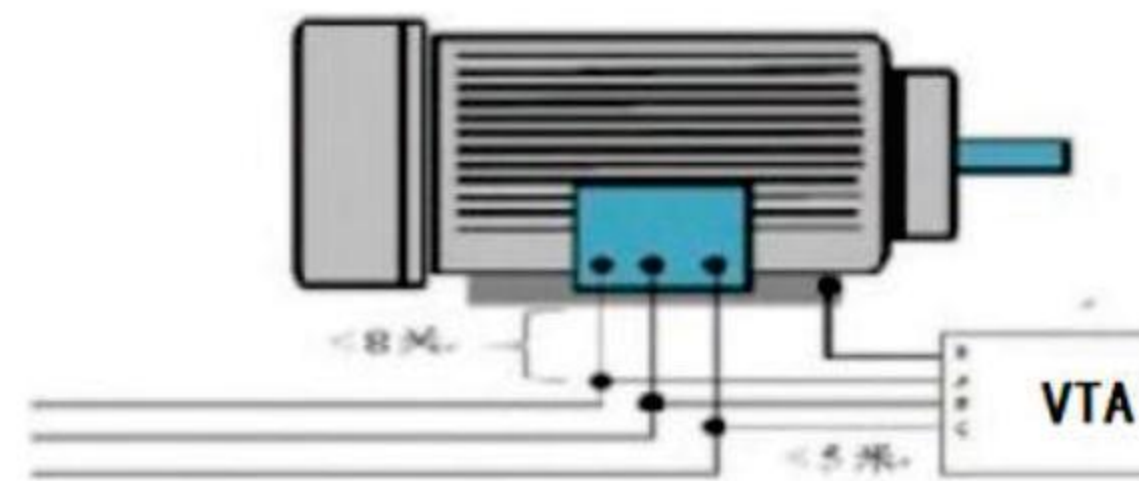
- 1.It is easy to be installed in parallel with the motor
- 2.No voltage drop, no reducing torque, and no effect on the control of the converter to the motor
- 3.Small size, light weight, and high cost performance, especially for high-power motors, the advantages are more obvious
- 4.It is easy to choose, has nothing to do with the speed and carrier frequency of the motor, and do not need to match the motor with a specific power
- 5.Intelligent control, automatically adjust the absorption power according to the carrier frequency and cable length to ensure the best effect
- 6.Built -in insurance, automatically remove from the system when faulty happens, at the same time, the fault state is displayed on the panel
- 7.Full-seal design adapts to the harsh industrial site environment

■ 产品特点 (Product Feature)

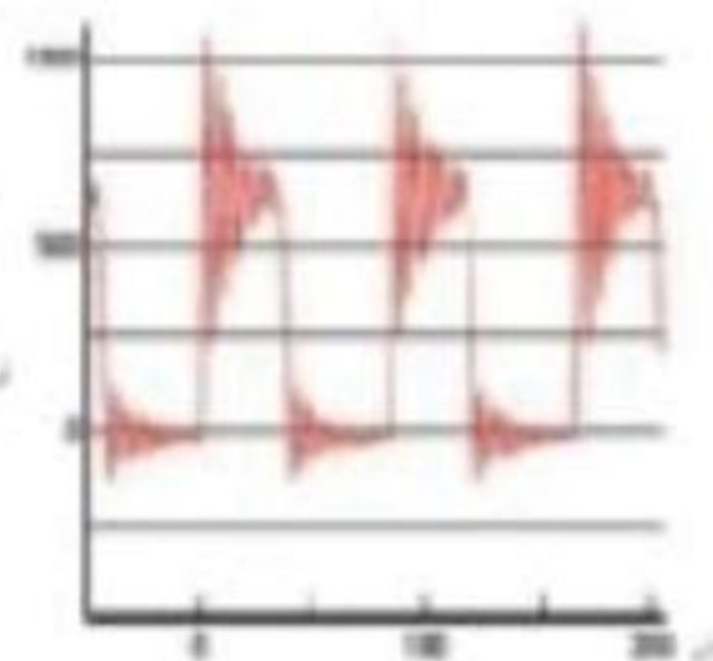
- 1.避免谐波烧掉定子绕组
- 2.快速降低电路尖峰电压
- 3.智能控制能量吸收阀门, 发挥最大吸收能力
- 4.IGBT技术控制尖峰电压能量吸收, 尖峰电压吸收干净彻底
- 5.轴承电流吸收电路, 大大延长轴承寿命
- 6.智能控制模块工作不用外接电源
- 7.工作状态面板显示, 随时了解工作状态
- 8.与电机并联安装, 接线简单

- 1.Prevent harmonics from burning the stator winding
- 2.Quickly reduce circuit peak voltage
- 3.Intelligently control the energy absorption valve to play the maximum absorption ability

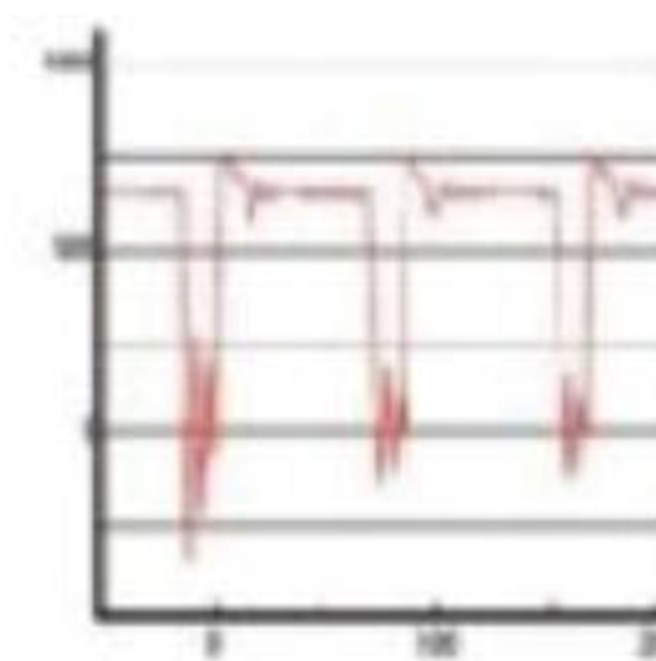
- 4.IGBT technology controls spike voltage energy absorption, by which spike voltage can be absorbed cleanly and thoroughly
- 5.Bearing current absorption circuit greatly extends the life of the bearings
- 6.Intelligent control module does not need external power supply
- 7.Work status panel display provide the working status at any time
- 8.Be installed in parallel with the motor make the wiring simple



VTA 变频器尖峰电压吸收器使用连接方法
Connection method of VTA



没有安装VTA时, 电机端的尖峰电压超过1200V (150米电缆)
Peak voltage over 1200V without VTA (with cables of 150m)



安装VTA后, 电机端的尖峰电压800V (150米电缆)
Peak voltage over 1200V with VTA (with cables of 150m)

VTA吸收尖峰电压效果
Effect of absorbing peak voltage by VTA

■ 技术规格(Technical Specification)

尖峰电压吸收原理 Principle of Absorbing Spike Voltage	实时检测尖峰电压, 将电能转变成热能, 耗散到空间 Detect the spike voltage in real time, convert electrical energy into heat energy and dissipate it into space
轴承电流吸收方式 Method of Absorbing Bearing Current	高频共模电流旁路网络 High Frequency Common Mode Current Bypass Network
额定电压 Rated Voltage	变频器的额定电压为400VAC、690VAC The rated voltages of converter are 400VAC and 690VAC
变频器载波频率 Carrier Frequency of Converter	小于12kHz Less than 12kHz
变频器最大频率 Maximum Frequency of Converter	1500kW
允许电机电缆长度 Allowable Length of Motor Cable	300m
工作时壳体温度 Shell Temperature during operation	小于90℃, 环境温度为50℃ Less than 90℃, and ambient temperature is 50℃
绝缘电阻Insulation Resistance	≥100MΩ
抗电强度Dielectric Strength	导电部分与外壳承受2000VAC,时间60s,无电弧击穿 The conductive part and outer shell withstand 2000VAC for 60s, no electric arc or electric breakdown
使用环境Operation Environment	-10 ~ +50℃, 最高海拔3000米, 最大相对湿度95% -10 ~ +50℃, maximum altitude 3000m, relative maximum humidity 95%

备注: 如有超出上述参数, 请于我公司联系。Remark: Customized if necessary .