

REDUCE TRANSFORMER INRUSH CURRENT

with

Joslyn's Independent Pole, Point On Wave, Synchronous Closing Controls

The **TRANSMASTER™** electric furnace switch is engineered for a SAFE, MAINTENANCE-FREE electric furnace transformer switching. The **TRANSMASTER™** switch can also be provided with independent pole, point on wave, synchronous closing control, which will substantially reduce the inrush current magnitude and transients associated with transformer switching.

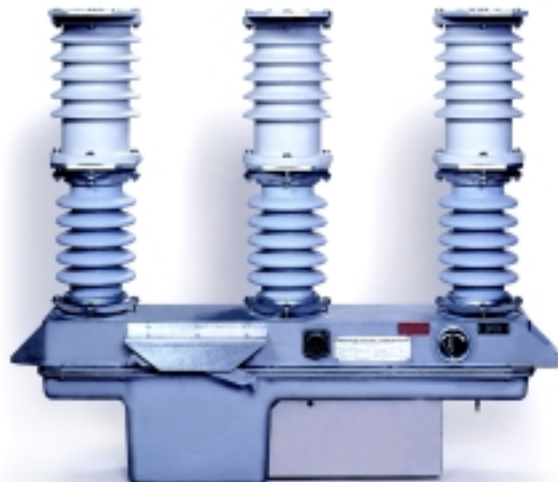
APPLICATION

When an electric furnace switch is called on to close, a “random closing” occurs, which can energize the transformer at any point on the voltage waveform. This produces high magnitude transient inrush currents rated **1000%** of full load current.

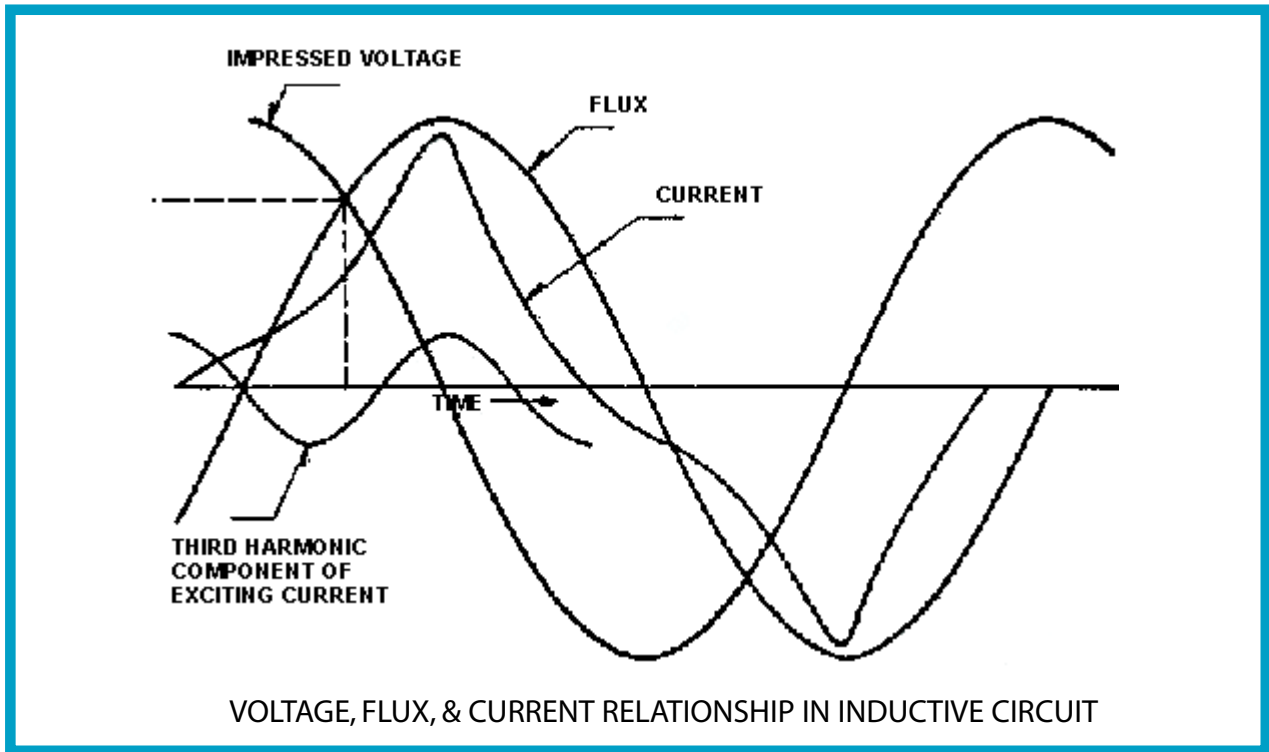
These high magnitude transient conditions can cause problems on the system such as overvoltages and significant electromechanical forces on the transformer bushings, windings, and insulation, which reduce equipment life and increase maintenance. The same stress must also be absorbed by all other components of the furnace system.

The point on wave control is designed to energize the transformer at the optimal point on the voltage waveform which provides **BENEFITS:**

- **LONGER EQUIPMENT LIFE**
Reduces mechanical forces on the transformer bushings and windings, resulting in lower total ownership cost
- **REDUCED MAINTENANCE COSTS**
Minimal wear on components decreases maintenance requirements
- **INCREASED SAFETY**
Less electrical stress on transformer interwinding insulation
- **INCREASED RELIABILITY**
Reduces stress on all other components of the furnace



15KV **TRANSMASTER™** ELECTRIC FURNACE SWITCH



OPERATION

The independent pole, point on wave, synchronous closing control design is a controlled method of energizing a transformer. Each phase of the transformer is closed independently, synchronized with the occurrence of peak voltage.

In an inductive circuit the voltage and current are 90° apart; switching at peak voltage corresponds to a natural current zero point. Transformer current and flux are normally in phase so the voltage and flux are 90° apart as well.

Without synchronized closing, energizing an electric furnace transformer results in core saturation. During saturation, a small increase of flux leads to a large increase in current. Therefore, minimizing the flux will minimize the inrush current.

Closing at peak voltage will minimize the transient flux generated by the system, therefore reducing inrush current from a theoretical maximum of 8-10 pu to 2-3 pu.

SPECIFY **TRANSMASTER™** FOR YOUR APPLICATION!



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