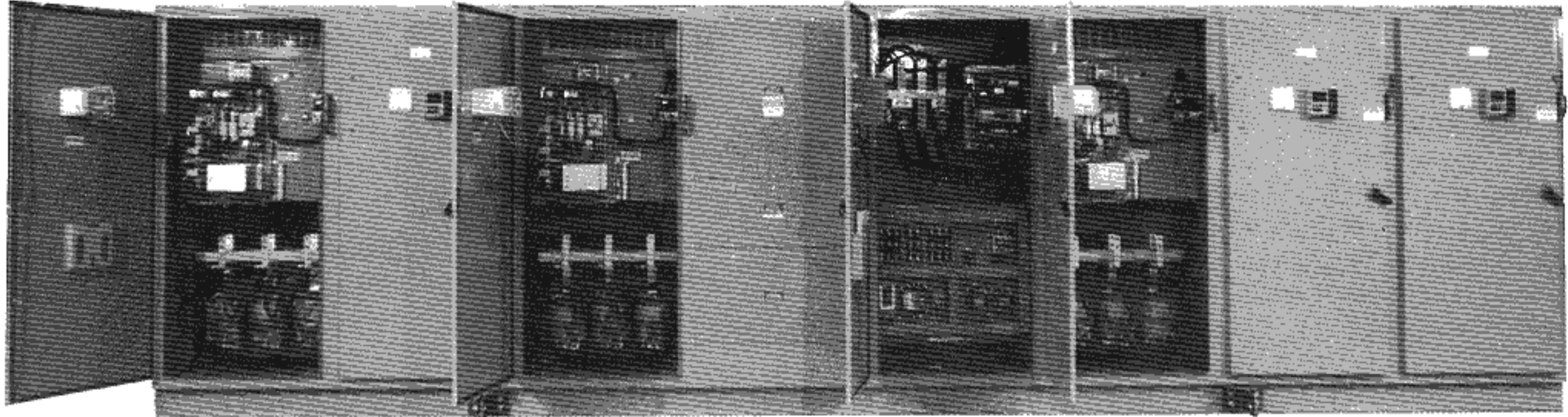


AC POWER CENTERS



Sealed NEMA 12 Multi-Zone Power Center for high temperature requirements

SPANG AC Power Centers are packaged control systems designed to match the characteristics of specific heating elements and process requirements. Available in both single and multiple zone configurations, these power centers are easily customized and equipped with the level of control, instrumentation and indication needed. Where required, SPANG dry-type transformers can be included for load matching either as an integral component or for remote mounting.

STANDARD FEATURES

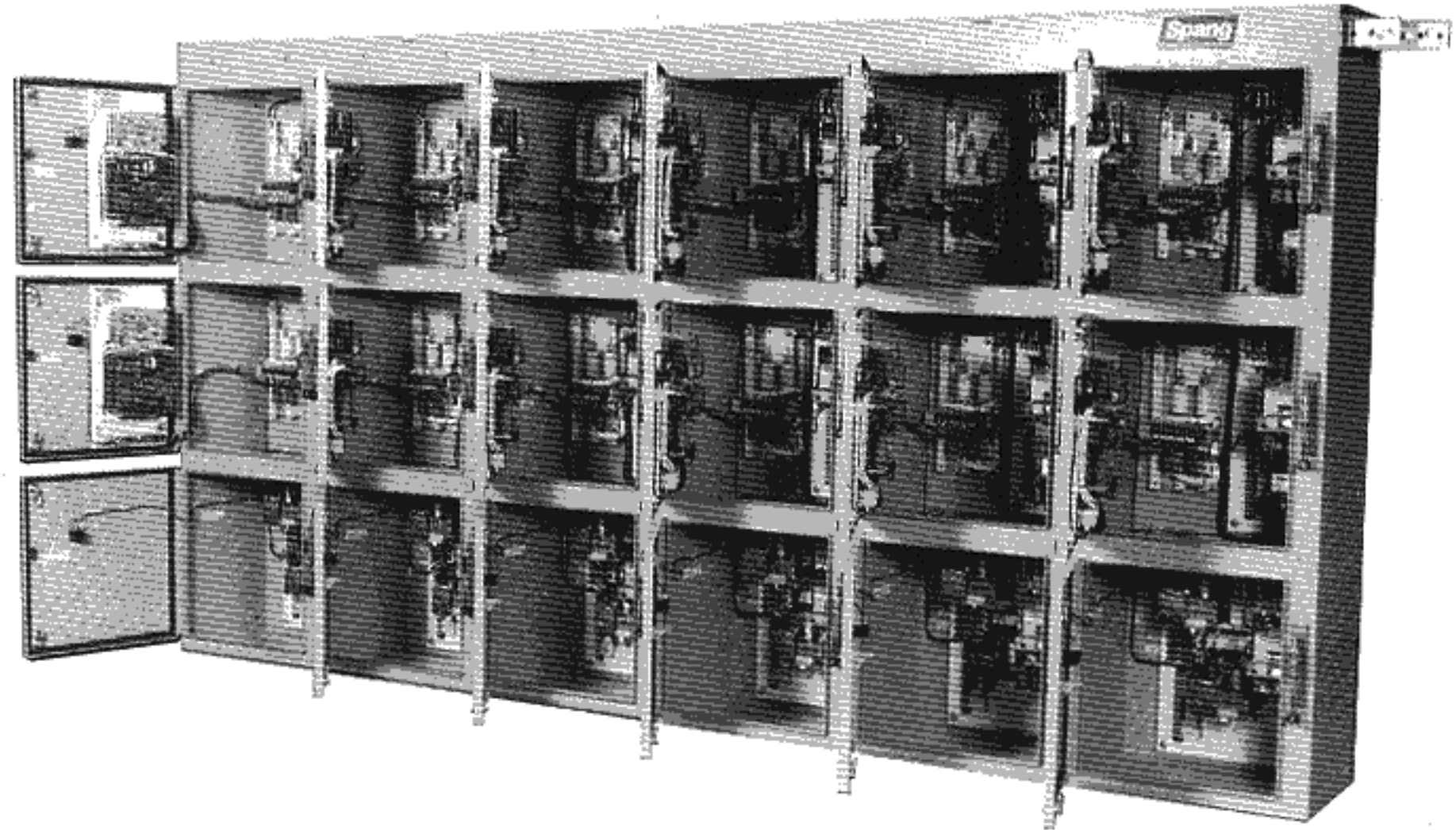
SPANG Power Centers provide packaged power for easy application to your electric heating need. These centers feature:

- Modular construction adaptable to multiple zone control.
- Modular and construction for placement near your element loads. No need for long runs of bus bar or heavy cable.
- Centralized temperature indication and instrumentation in a remote cabinet or can be included as part of the Power Package.
- Proper matching of the element to the power source. No mismatching of transformer and power controller.
- Maximum utilization of power controller (no need for vernier taps on silicon carbide transformers).
- Simplified installation; need only to connect line source and load.
- Unitized cabinets; no need for separate enclosures for transformers and controllers.
- Accepts any current output from your preferred temperature indicator/controller.
- Proportional regulated control provides precise temperature regulation in accordance with your temperature controllers signal.
- Line/Load isolation through use of isolation transformers.
- Transformer Inrush Protection (T.I.P.) on all SCR Power Controllers operating into power transformers.
- Current Limiting protection on all SCR Power Controllers, operating into changing loads.
- Choice of synchronous firing, phase angle firing, or automatic power factor firing Silicon Controlled Rectifier (SCR) Power Controllers or Saturable Reactor with SCR driver power controllers.
- Choice of single phase, three phase or two phase control to match your element loads.

Power Centers for Nichrome Elements

Nichrome heating elements represent a nearly pure resistive load displaying relatively little change in resistance with age or temperature. Typically, the change is on the order of 5 to 25%, depending on the alloy, from cold to operating temperature. Also, nichrome elements are often designed to operate from line voltages. Consequently, there is no need for a power transformer.

Power modulation in these systems is generally accomplished through zero crossover fired SCR Power Controllers. The controllers are either sized to handle the higher current of the elements cold resistance or equipped with current limiting circuitry. Where voltage-matching transformers are required, components and firing circuitry are configured to optimize size, cost, and controllability of the system.



Options:

- Temperature indicator/controller.
- Temperature recording.
- Power transformer.

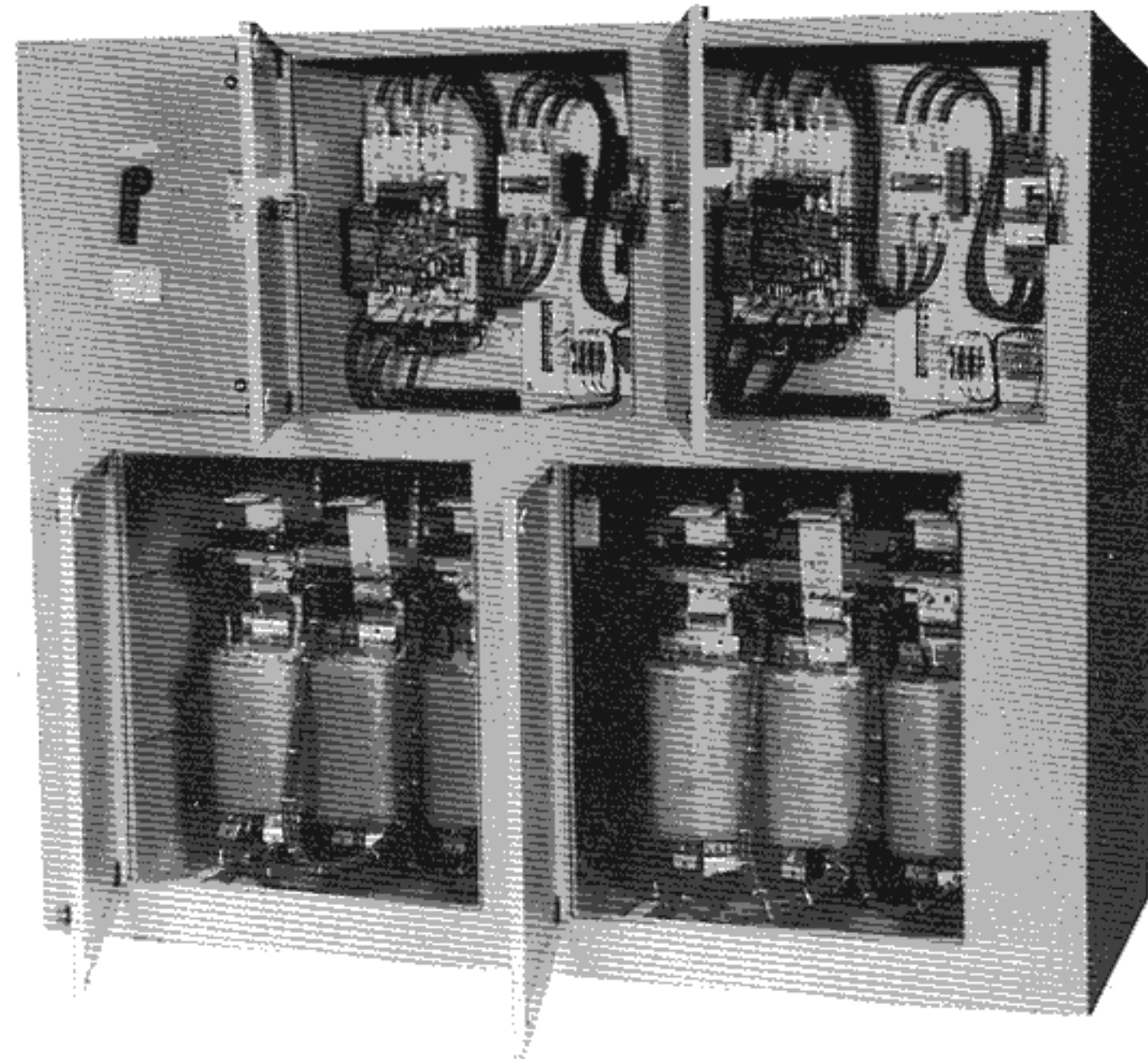
TO ORDER, SPECIFY:

- Input voltage, frequency and phase.
- Load kw, voltage and current.
- Desired options or special features.

Power Centers for Molybdenum Elements

Molybdenum elements exhibit a dramatic change in resistance with temperature. Typically, the resistance may increase as much as 20 times from cold to operating temperatures. In addition, molybdenum elements generally operate at low voltage (around 35 to 50 volts). SPANG Power Centers for molybdenum applications incorporate RMS current limiting circuitry and a soft-start ramp on the SCR Power Controller.

SPANG Power Centers for molybdenum applications incorporate a step-down transformer to match the incoming line voltage to the element's operating voltage and a phase angle fired SCR Power Controller with RMS current limit and soft-start ramp circuitry to prevent excessively high start-up currents.



Options:

- Temperature indicator/controller.
- Temperature recording.

TO ORDER, SPECIFY:

- Input voltage, frequency and phase.
- Load kw, voltage and current.
- Desired options or special features.

Power Centers for Tungsten Elements

Tungsten elements have a cold to operating temperature resistance change similar to that of molybdenum. Power Centers for the elements provide the same RMS current limit and soft-start circuitry to eliminate low-temperature current surges. Although tungsten elements may be designed for use at line voltage, a step-down transformer can be included for those applications where the element's operating voltage is lower than the line.



Options:

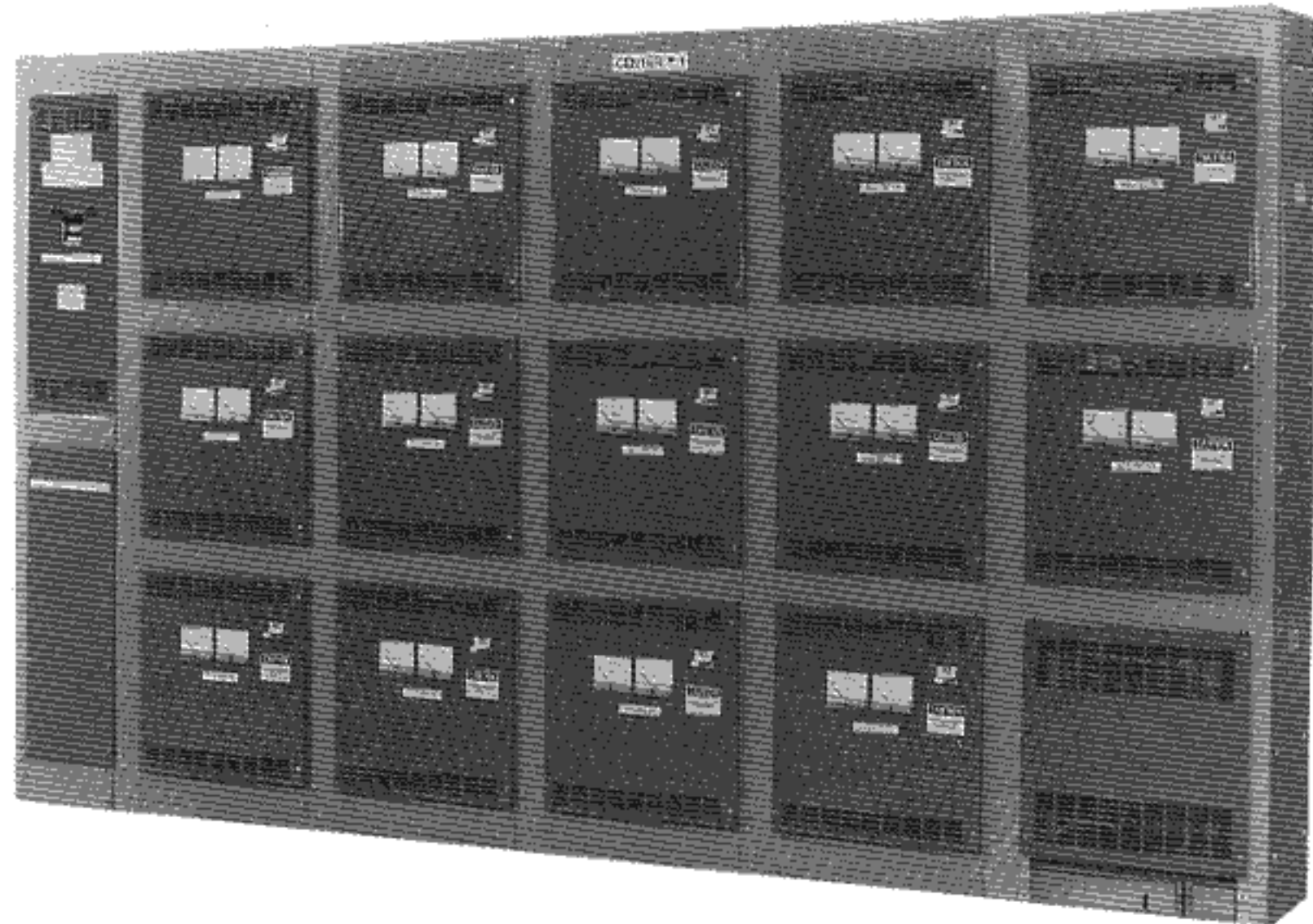
- Temperature indicator/controller.
- Temperature recording.
- SPANG Step-Down Power Transformer.

TO ORDER, SPECIFY:

- Input voltage, frequency and phase.
- Load kw, voltage and current.
- Desired options or special features.

Power Centers for Infra-Red Elements

Infra-red heating elements are generally designed for line voltage and available with either tungsten or nichrome filaments. Each filament type requires different features in the power controller to operate reliably. Power supplies for tungsten elements must be designed with currently limiting start-up circuitry and longer ramp time. Nichrome filament power controllers are usually oversized to compensate for cold resistance in-rush current.



Options:

- Temperature indicator/controller.
- Temperature recording.

TO ORDER, SPECIFY:

- Input voltage, frequency and phase.
- Nominal load voltage. Load kw, voltage current.
- Load type (tungsten or nichrome).
- Desired options or special features.

Computer Control

Computer control provides real bottom-line advantages for your operation and fast payback on your investment. Improvements in productivity, quality, and energy efficiency along with a reduction in waste and reject rates are just a few of the immediate benefits.

With computer control, you can automatically retrieve and set process profiles, quickly revise process parameters, and monitor real-time data. A PC-based system can also centralize control of a number of power centers, collect and store process performance information, and generate reports for trend analysis and statistical process control.

SPANG offers a level of computer integration to match your process requirements and investment plans. Configurations range from PLCs for control of logic functions and data acquisition of individual or multiple rectifiers to complete process or batch automation using host PC networks.

