



## SPOT ANNEALING MACHINE

### FOR HEAT TREATMENT OF TUBULAR HEATING ELEMENTS THROUGH FLOW OF CURRENT MANUAL POSITIONING



#### WATCH THE VIDEO

Our spot annealing machine is designed to anneal particular sections of heating elements after the elements have been reduced.

The key to the system is a temperature sensor system that measures the actual temperature of the elements as they are being annealed and then turns off the transformer when the appropriate temperature is reached. Unlike annealing machines that use time-based controls, this system is not affected by variations in tube materials or tube wall thickness.

The heat treatment pass by low voltage current flow from a transformer to a couple of electrodes.

The elements are hand-loaded into the machine.

The overall cycle time will depend upon the material and diameter of the element and also the length of the element or section being annealed.

Safety guards with automatic vertically sliding front door ensure a safe operation of the machine.



## Summary

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## MACHINE COMPOSITION

The machine is composed by the following components:

- Frame
- A 45 KVA transformer. The transformer is made of first quality, insulated and magnetic steel sheet, completely impregnated in epoxy resins and it is water cooled.
- Two pneumatically moved clamps (electrode-holder) connected to the transformer by impedance cables with the correct cross-sectional area. The cables are water-cooled. The electrode-holders clamps are mounted on a slide to allow variation of the distance between the axes from 80 to 140 mm.
- Counter electrode in copper, fixed to the frame and acts as element support.
- Device to cool the heating element by water jets when the flow of current cycle is over. The water used to cool the elements is the same used for cooling the cables and transformers. After being sprayed on the element (to cool it) the water is collected and drained out.
- Electrical cabinet complete of:
  - controls to set the closing of the electrodes
  - controls to set the time in periods (Hz) and the percentage of current used for the heat treatment
  - pyrometer with temperature sensor and control and visualization unit. This system for the control of the temperature is not affected by variations in tube materials or tube wall thickness.The preset temperature can be changed quickly using the operator interface, and the machine allows the operator to program the preset temperature in Celsius or Fahrenheit.





### ADVANTAGES

The temperature sensor system measures the actual temperature of the elements as they are being annealed and then turns off the transformer when the appropriate temperature is reached.



To reduce the changeover time for different element diameters, four-sided blocks are used as the clamping electrode.

A combined diameter change and length change can be completed in less than 5 minutes.

The machine can accommodate different element lengths by manually moving the element.



### TECHNICAL CHARACTERISTICS

Installed power	: KVA	45
Power supply (three-phase)	: V Hz	to be defined
Pneumatic supply	: Bar	6
Air consumption	: l/cycle	1,5
Water supply for cooling	: Bar	2
Water consumption	: l/min	2-3
Tube diameter	: mm	to be defined
Tube material		Copper – steel - stainless steel
Section of the element to be annealed	: mm	from 80 to 140
Expected cycle time	: sec	5-6



## AVAILABLE VERSIONS

**Mod. 148/01.000000** – as per technical characteristics

## OPTIONS

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### **Mod. 148/01.000010**

Set of upper and lower electrodes

