

## GENERAL INFORMATION

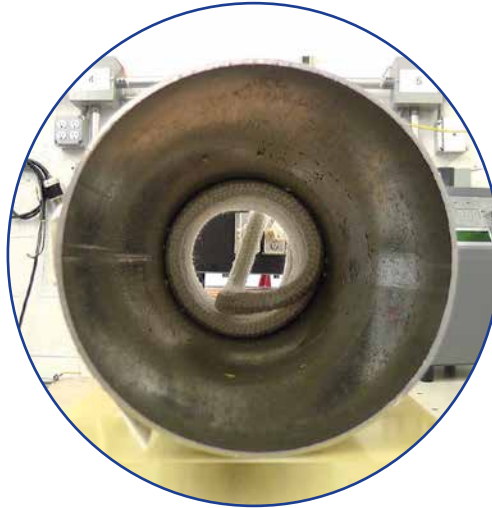
### What is Induction Preheating?

Induction preheating is a process where materials or workpieces are heated by induction prior to further processing.

The reasons for preheating vary. In the cable and wire industry, cable cores are pre-heated before insulation extrusion.

Steels strips are preheated prior to pickling and zinc coating. Induction preheating also softens metals before bending, and prepares tubes and pipes for welding.

Mobile preheating solutions facilitate onsite repairs of bearing assemblies.



*Induction preheat steel tubing*

### Materials

Various

### Benefits

Efficient method of applying localized heat directly to the part, often resulting in significant energy savings

Short Cycle Times

Power on demand

Small footprint for equipment, allowing easy integration into existing or planned production lines

### Typical Applications

Pre-Weld Heating (to speed up the heat process)

Heating cables prior to the extrusion process

Heating pipes prior to the galvanizing process

Heating pipes prior to the coating process

Heating painted sheet metal prior to the forming process

Heating bands for vulcanizing

Heating boring starter rings for sintering

## APPLICATION QUESTIONS FOR PREHEAT

### For all parts and assemblies used in the application, please identify:

**Composition:** Identify the compositions of the parts being preheated.

**Geometry:** Identify the shapes and dimensions of the parts being preheated.

Identify the temperature that the part needs to reach.

### Drawings and/or Photos:

If available, provide drawings and/or photos of the parts.

### Process Type:

Identify if the process is standalone, or integrated into an existing process.

### Production Rate:

Identify the target production rate, in parts per hour.

Identify the number of operating shifts.

### Part Feeding

Identify if parts are fed manually or automatically.

For parts that are fed manually, identify the estimated load and unload times.

For parts that are fed automatically, describe the part feeding system.

### Options

Identify if an induction coil required. If yes, identify if the coil is a new design, or existing.

Identify if temperature control and/or monitoring is required.

Identify if flexible leads are required (needed if the coil position will move).

Identify if a water cooling system needed, or is this already available.

### Other Requirements

Identify the options for Power in the facility. Identify any space constraints for the equipment. If possible, provide the space footprint.

### Current Process

Identify the current process being used.

If the current process is induction, identify what equipment is used.

Identify the key drivers for purchasing new equipment.

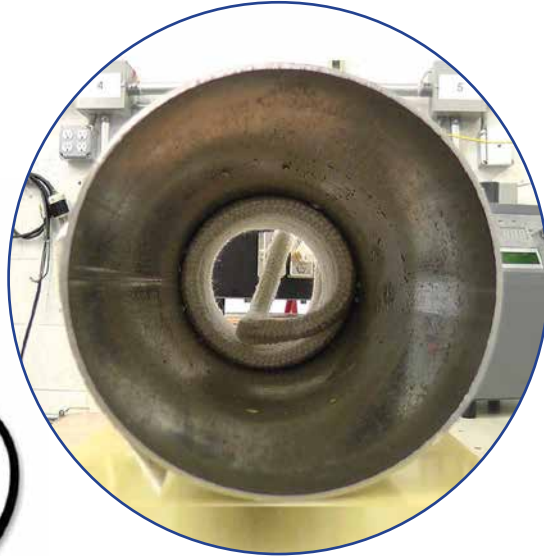
*Ultraflex offers complimentary testing! If you would like to send samples for further review and testing, contact [sales@ultraflexpower.com](mailto:sales@ultraflexpower.com).*

## INDUCTION PREHEAT OF STEEL TUBING

Using a 7-turn induction ID Coil, heat a 4.3" ID Steel Tube to 700°F in under one minute using the UPT-S2 and HS-4 Heat Station.

### Equipment

UltraFlex UPT-S2  
HS-4 Heat Station



### Temperature

700 °F (371°C)

### Frequency

66 kHz

### Process:

The UPT-S2 Power Supply was connected to the HS-4 Heat Station. The custom-designed and manufactured Induction Coil was attached to the Heat Station.

The Induction Coil was placed inside the steel tubing.

The Power Supply was turned on.

At approximately 25 seconds, the Tempilaq 650 indicating liquid (gold) "flowed", indicating that 650°F had been reached.

At approximately 35 seconds, the Tempilaq 700 indicating liquid (beige) "flowed", indicating that 700°F had been reached.

At approximately 55 seconds, the Tempilaq 750 indicating liquid (blue) "flowed", indicating that 750°F had been reached.

### Materials

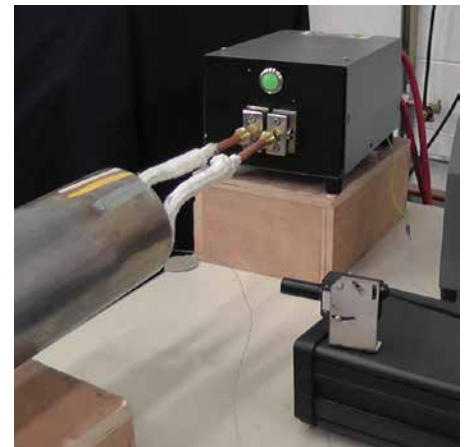
- 4.5" Steel Tube
- 7-Turn Induction Coil, designed and manufactured by UltraFlex Power Technologies for this specific application.
- Tempilaq 650, 700, 750, used to confirm when desired temperature has been met.



*UPT-S2, HS-4 and Induction Coil are set up*



*Induction Coil is placed inside Steel Tube*



*Infrared Temperature Monitor is used to check temperature*