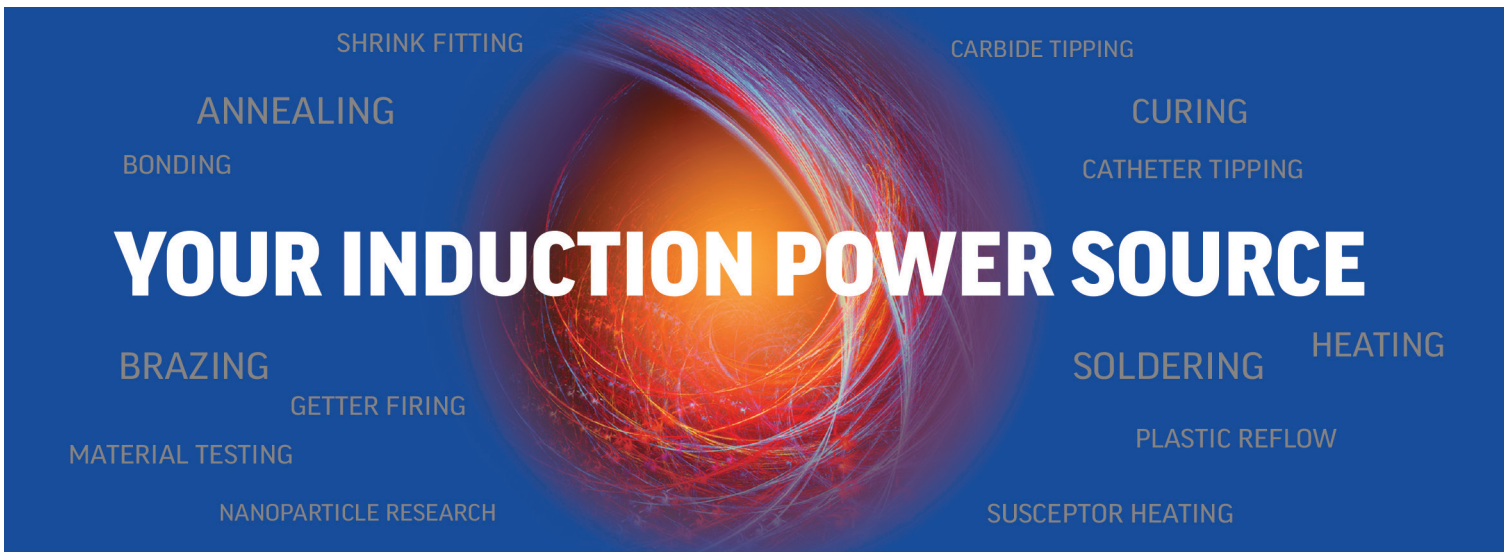
UltraFlex
POWER TECHNOLOGIES

EFFICIENT POWER FOR **INDUCTION HEATING**



WHY WE ARE SO PASSIONATE ABOUT INDUCTION HEATING

- Helps reduce energy consumption
- Allows for tailored custom heating solutions
- Allows for fast and controllable process
- Improves product quality through repeatability
- Increases productivity and efficiency
- Is quieter and cleaner than other heating methods
- Requires very low maintenance
- Requires less floor space

LET OUR INNOVATIVE TECHNOLOGY HELP YOU BREAK FROM THE PACK

- Configurable to your requirements and process
- Power supplies are highly customizable
- Power supply can be placed away from the work area
- Is easy to integrate into a fully automated production
- Single power supply can support different heat processes and applications
- Expert technical and application support
- Customized packaging and solutions for OEM customers

LET US HELP YOU CREATE AN INDUCTION POWERED SOLUTION

- A free application review by our team will help you identify if induction heating is the best solution for you
- Send your samples to our lab for testing and analysis
- Let us design a custom heating solution with the help of our experienced engineers

UltraFlex
POWER TECHNOLOGIES

10 Colt Court
Ronkonkoma, New York 11779
Tel: 631.467.6814
sales@ultraflexpower.com

ultraflexpower.com

UltraFlex POWER TECHNOLOGIES

EFFICIENCY OF INDUCTION HEATING

A Comparison of Efficiency and Power Consumption for Induction Heating versus other Heating Methods

UltraFlex Power Technologies often has customers who ask about the potential power savings for using Induction over other common heating methods. The following provides a guide for potential power savings that customers may see.

Heating by Induction has minimal wasted heat, with direct transfer of energy to the part being heated. This high efficiency results in significant power savings.

---

1. A 1998 study conducted by Lawrence Berkeley National Laboratory for the Department or Energy, found induction cooktops to transfer 84% of the power to the load vs. only 71% for electric coils and 40% for gas.

Type of Heating Element	Efficiency Factor
Electric – Induction	84.00%
Electric – Radiant*	71.00%
Gas	40.00%

Efficiency Chart Source: US Department of Energy (1998)

**Electric radiant efficiency varies depending on size of heating element relative to part size. If the element is larger than the part to get sufficient power, the efficiency will be much less.*

---

2. UltraFlex's testing and research is comparable to these results. Below is our more conservative estimate of the efficiency of power delivered to the desired load vs. heat transferred to other parts and environment for a variety of heating methods.

Examples Stated Power vs. Delivered Power			
Type	**Input Power (kW)**	**Efficiency**	**Delivered Power (kW)**
Induction*	2.8	90%	2.52
Electric – Radiant	2.0	55%	1.1
Gas	3.5	50%	1.75

** Into a magnetic steel load below curie.*

---

3. If we "normalize" the above data, to show delivered power of 1.0 kW for all methods, we see the difference in required input power. We can then easily calculate the power savings of other Induction vs Electric and Gas.

Required Input Power for 1.0 kW Delivered Power and Associated Power Savings				
Type	**Input**	**Efficiency**	**Delivered Power (kW)**	**Delivered Power (kW)**
Induction	1.11	90%	1.0	–
Electric – Radiant	1.82	55%	1.0	29%
Gas	2.00	50%	1.0	44%

4. For batch heating processes, the efficiency can be even greater since you only spend energy with Induction Heating when you need to heat. There is no wasted energy with Induction Heating versus keeping furnaces and ovens running or delays in pre-heating ovens.

References:

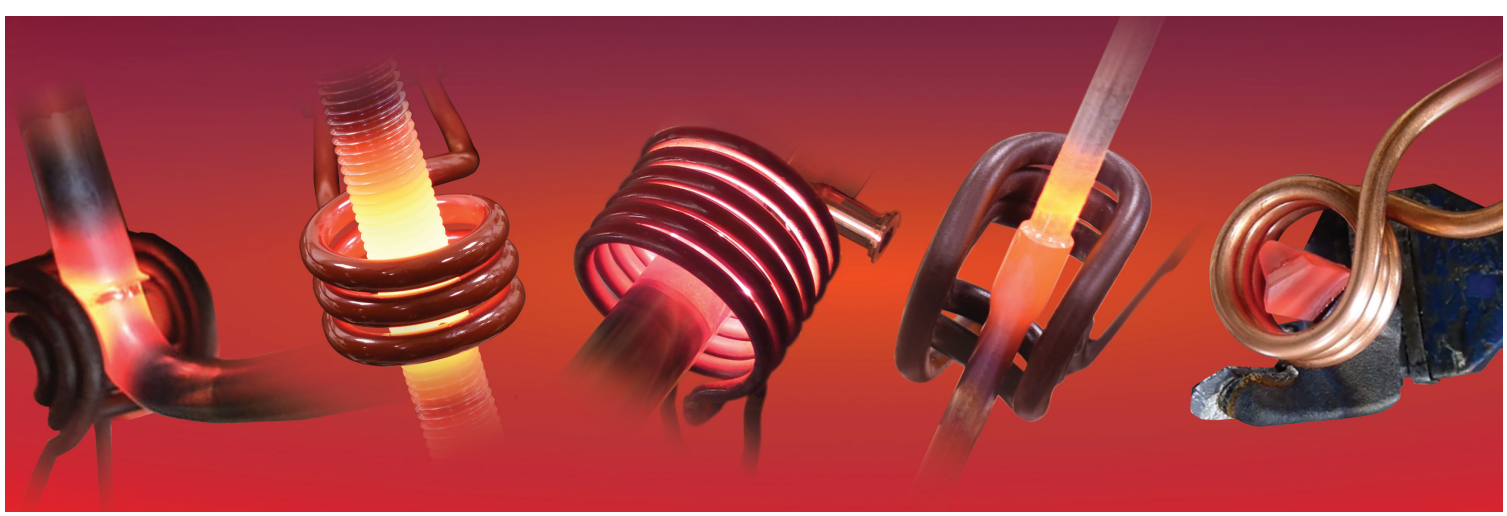
Berkeley, Lawrence. "Technical support document for residential cooking products, volume 2: Potential impact of alternative efficiency, Levels for residential cooking products." n.d.

UltraFlex POWER TECHNOLOGIES

EFFICIENT POWER FOR **INDUCTION HEATING**

APPLICATIONS

- ANNEALING
- BONDING
- BRAZING
- CARBIDE TIPPING
- INDUCTION CASTING
- CATHETER TIPPING
- CRYSTAL GROWING
- CURING AND COATING
- INDUCTION FORGING
- HARDENING WITH INDUCTION
- MATERIALS RESEARCH AND TESTING
- INDUCTION MELTING OF METALS
- NANOPARTICLE RESEARCH
- PLASTIC REFLOW AND HEAT STAKING
- INDUCTION PREHEAT AND POSTHEAT
- INDUCTION SHRINK FITTING
- INDUCTION SOLDERING
- SUSCEPTOR HEATING
- WIRE HEATING
- OTHER APPLICATIONS



UltraFlex POWER TECHNOLOGIES

10 Colt Court
Ronkonkoma, New York 11779
Tel: 631.467.6814
sales@ultraflexpower.com

ultraflexpower.com