
بسم الله الرحمن الرحيم

Induction Heating Cooker Design

by

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INDUCTION COOKER PENEFITS

1-high efficiency

2-precise control

3 -low pollution properties

4 -speed of transferring heat to the food

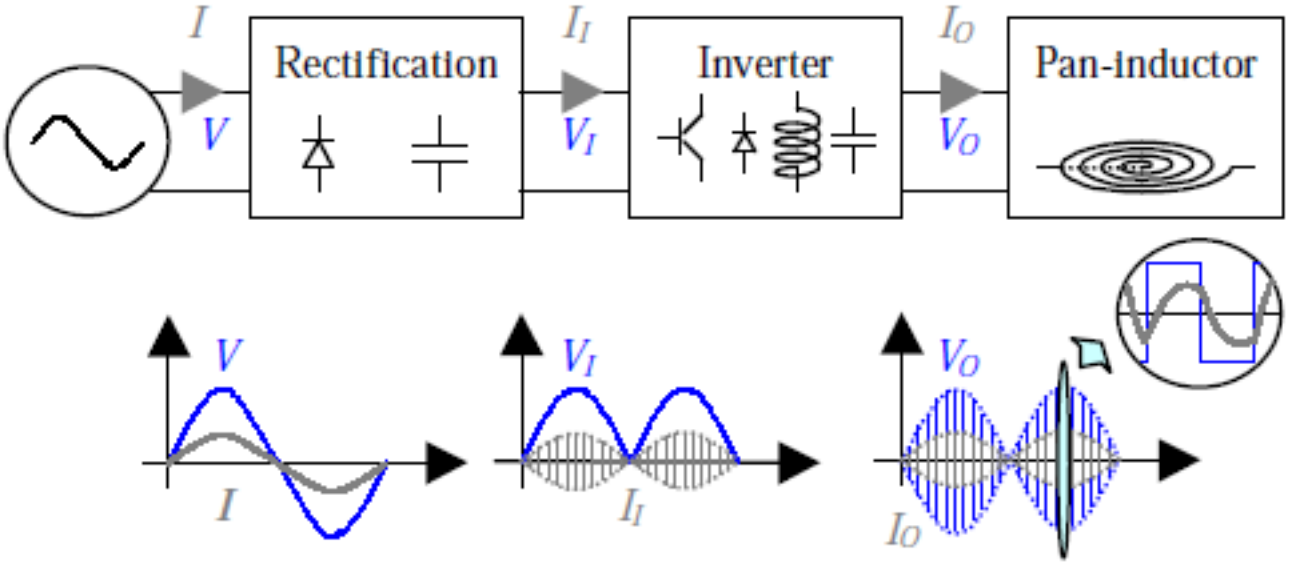
5 -high amount of heat transfers to the load in the range of 10kw\cm2

Types of induction cooker

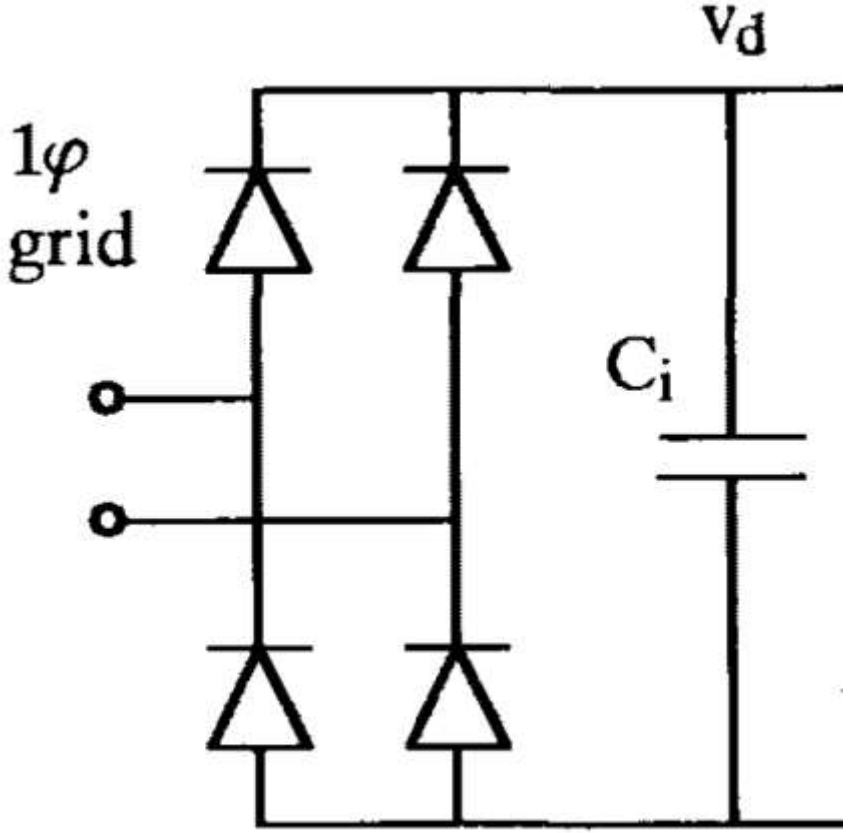
1. **Low-frequency models** use 50 Hz/60 Hz power supply and their structure is simple, but they are noisier and less efficient than high-frequency models. Furthermore, special cookware must be used, and while the induction cooker is on, the cookware cannot be moved because it sticks to the cooker's surface by magnetic force.
2. **High-frequency models** use a rectifier-inverter to step up the 50 Hz/60 Hz frequency up between 22 kHz and 100 kHz. Their structure is complex, but regular cookware made of enamel-coated iron, stainless steel and other materials can be used with these ranges. Unlike low-frequency cooker, they produce little noise and the cookware does not stick to the surface due to magnetic force.

For these reasons, the high-frequency variety has gone main stream.

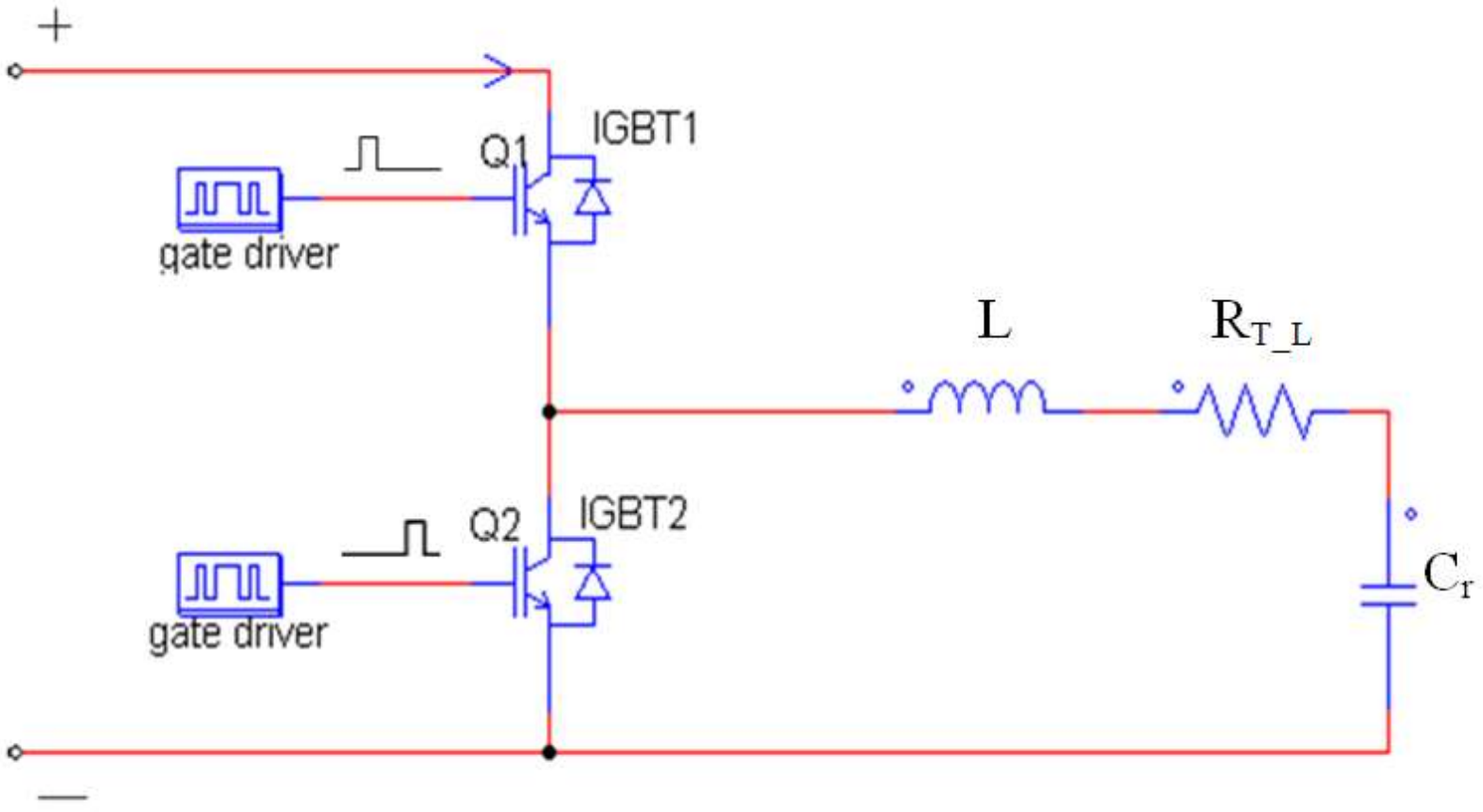
Induction cooker components



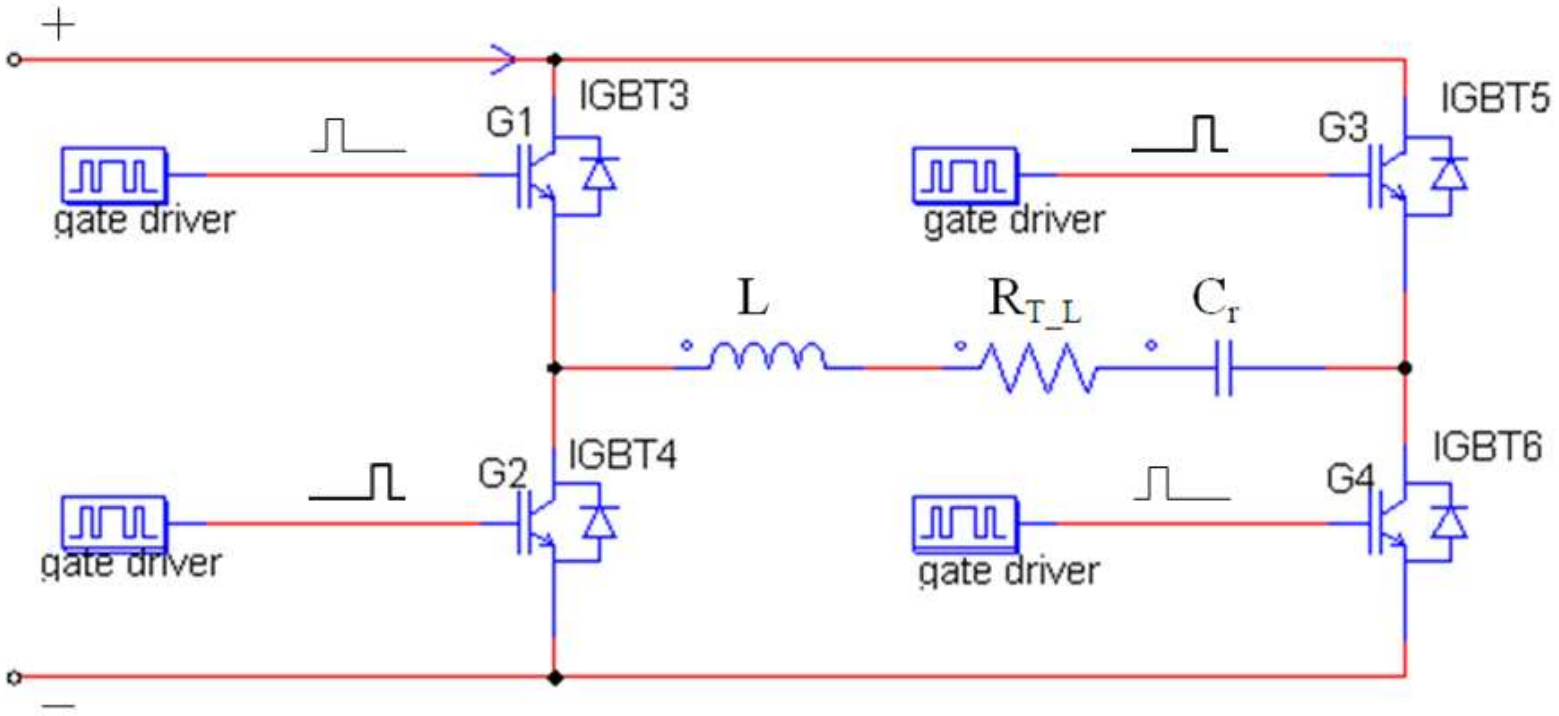
Part1 : Rectifier
Full wave bridge rectifier



Part 2 : Invertor
1-half bridge



2 – full bridge

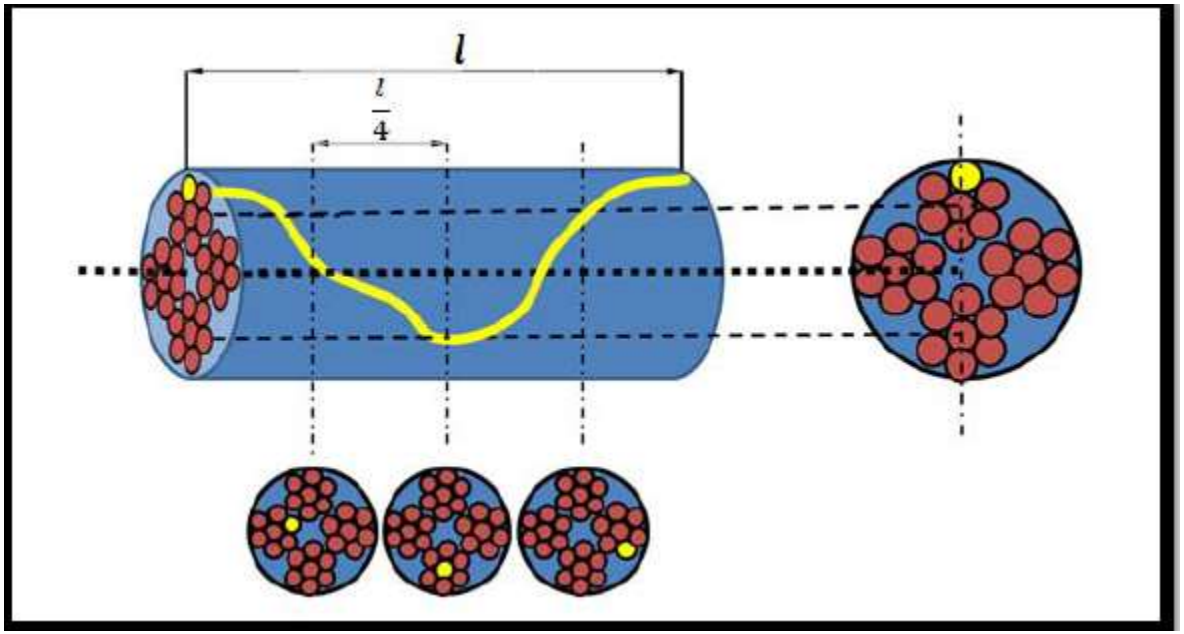


Part 3 : Coil

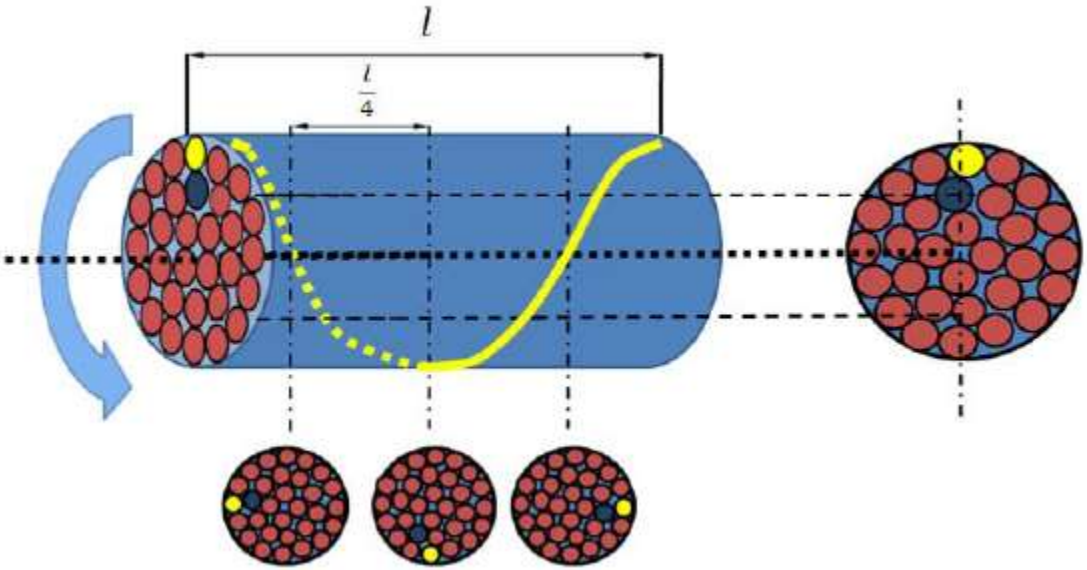
Types of wires used in cooker coil:

1 – Solid wire
2 – Hollow wire
3 – Foil wire
4 – Litz wire
5 – Twisted wire

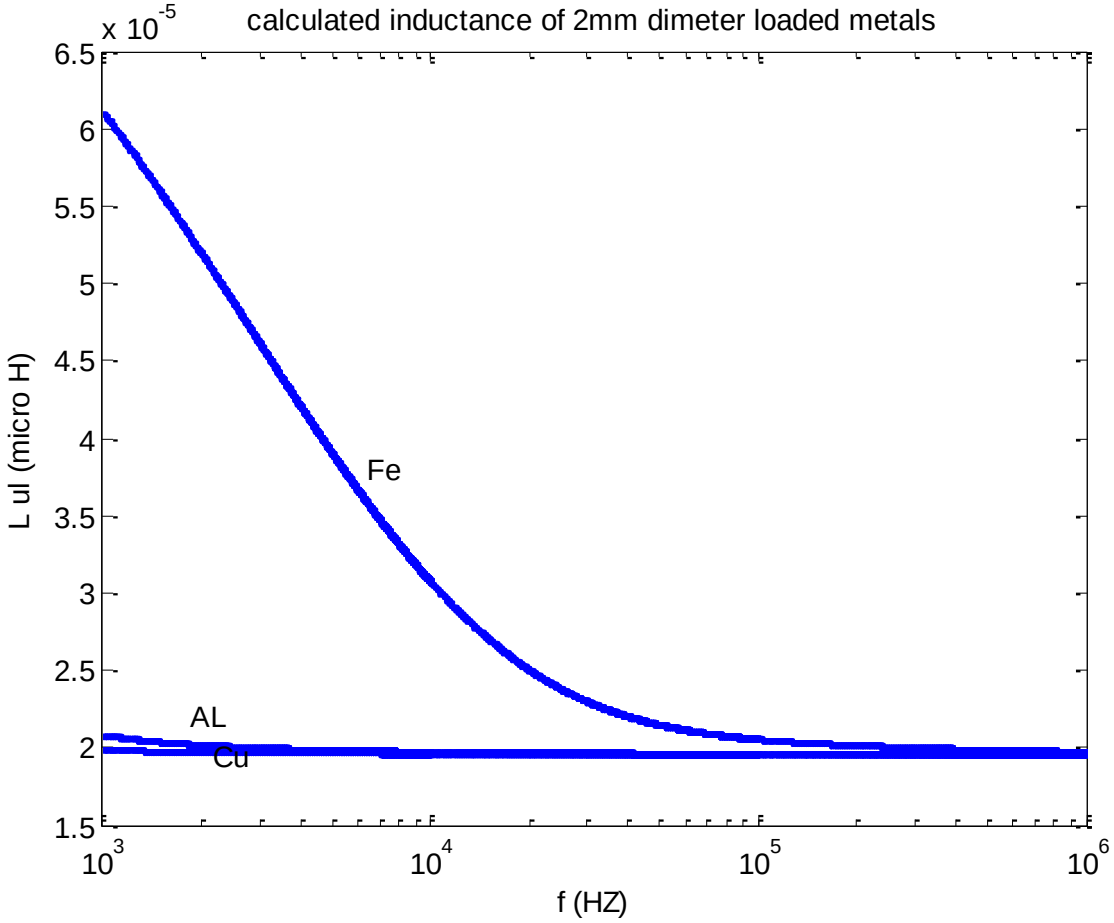
Litz wire



Twisted wire



Relation between inductance & frequency



Relation between resistance & frequency