Soldering of satellite antennas

**Objective**
Soldering steel onto GPS body for phone antenna

**Material**
Thin copper foil 0.3mm (0.01 in) thick  
Ceramic body 12mm (0.47 in) long x 7mm (0.28 in) wide

**Temperature**
200º C (392º F)

**Frequency**
371 kHz

**Process Time**
5 seconds

**Equipment**
- Ambrell 2 kW induction heating system, equipped with a remote workhead containing (2) 33µF capacitors (for a total of 66 µF).
  - Two coils (one for each stage of process) designed and developed specifically for this application. The first stage uses a two-turn solenoid coil with a 15mm (0.6 in) ID and the second stage uses a plate coil, 25 mm (1 in) dia. with a 6mm (0.24 in) hole.

**Process**

**Stage 1:** A two-turn solenoid coil is used to heat the top end of a GPS antenna. Solder paste is used to solder the walking stick loop to the copper foil.

**Stage 2:** A plate coil is used to heat the bottom part of the GPS to solder a top hat to the copper foil and also the bottom part of the walking stick.

**Results/Benefits**
Induction heating benefits:
- increased production rate due to speed of heating
- higher quality vs. a soldering iron due to precision and repeatability
- cost savings due to reduced scrap and higher quality production

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