## Induction Tempering a Spring

**Objective**  
Temper a spring by heating it to 300°C (570°F) in 2 – 4 seconds

**Material**  
Stainless steel AISI 302 springs- different length from 60 to 110 mm - outer diameters 8 mm.- wire diameter from 0.3 to 0.6 mm

**Temperature**  
300°C (570°F)

**Frequency**  
326 kHz

**Equipment**  
- Ambrell 2kW induction heating system
- remote workhead, two 0.33µF capacitors (total 0.66µF)
- multi-turn C-channel coil developed for this application

**Process**  
Springs are mounted on non-metallic mandrels to facilitate loading and unloading and are placed inside the coil (picture). Power is applied for 2 – 4 seconds, completing the tempering process. The C-channel distributes the heating evenly and enables the convenient staging and removal of the springs.

**Results/Benefits**  
**Efficiency:** Energy is applied directly to the springs only; surrounding air and fixtureing are not heated.  
**Precision:** temperature and duration of process are controlled  
**Convenience:** method integrates into a continuous process