Melting of Ni based alloy samples

Objective  Superheating molten metal for different sample mass

Material  Ni based alloy between 10 – 18g (0.35 – 0.63 ounce),

Temperature  2642 - 2912 °F (1450 – 1600 °C)

Frequency  268 kHz

Equipment  • Ambrell 10 kW induction heating system, equipped with a remote workhead containing two 1.5μF capacitors for a total of .75μF
• An induction heating coil designed and developed specifically for this application.

Process  A single-position 9-turn helical coil is used to generate the required heating for the application. The 16 gram slug of steel is placed into the coil and supported with a ceramic rod. When the sample is melted the part changes shape to an inverted tear drop.

Narrative  • The customer is looking for repeatable superheating of the molten metal for different sample mass. They currently hold parts on a copper hearth with a central hole.

Results/Benefits  Induction heating provides:
• Hands-free heating
• Involves no operator skill required for manufacturing
• Even distribution of heating
• Fast, controllable temperature ramp
• Consistent results.
Ni based sample prior to melting

Ni based sample being heated to melting point

Sample reaching melting point