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INDUCTION HEATING SOLUTIONS
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APPLICATIONS LABORATORY
THE LAB
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Annealing Tungsten Rods

Objective: To heat customer-supplied rods of various diameters (0.14 inch to 0.49 inch) to 4,170 °F (2,300 °C) at 2-4 feet per minute.

Equipment: Ambrell EKOHEAT 40 kW, 50-150 kHz induction heating system with a workhead and coil specifically designed for this application.

Material(s): Tungsten and Molybdenum; Tests were run in an atmosphere of Nitrogen or Hydrogen to avoid oxidation of the materials.

Temperature: 4,170 °F (2,300 °C)

Frequency: 100 kHz

Testing: A multiple turn induction heating coil was designed for heating the various rod diameters. An optical pyrometer was used to measure the temperature of the part inside the induction coil. Initial static tests were conducted, then dynamic tests were run to confirm the results of the static tests. The results and timing met the client's requirements.

Benefits:

- **Speed:** Induction achieved the client's heating time requirements.
- **Repeatability:** With induction you can expect the same result every time, leading to enhanced quality.
- **Versatility:** The rods were fixed lengths and were fed individually through the induction coil. The EKOHEAT power supply automatically adjusted output to this varying load in the coil, which allowed for an uninterrupted process.
- **Expertise:** The client took advantage of THE LAB's expertise to prove out their process in a way that met their time, quality and budgetary requirements.

The tungsten rod during heating.