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INDUCTION HEATING SOLUTIONS

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APPLICATIONS LABORATORY
THE LAB
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Brazing a Steel and Carbide Assembly

Objective: To braze a steel and carbide assembly to create a mining bit for the oil and gas industry; the client is replacing their torch process with induction

Equipment: Ambrell EASYHEAT™ 6 kW, 150-400 kHz induction heating system with a workhead and coil specifically designed for this application

Frequency: 235 kHz

Material: Steel, carbide, silver braze alloy and black flux

Temperature: 1382 °F (750 °C)

Testing: A custom-designed double position multi-turn helical coil was built to generate the required heat for the application. Temperature indicating paint was then applied to the part, which dissolves when the part reaches the target temperature. Two rings were inserted into the bore and one ring was placed on the outside of the carbide tip. Heating was then conducted, which took 90 seconds, and the application's viability was proven.

Benefits:

- **Repeatability:** The client can expect the same result every time with an Ambrell induction heating system, increasing quality when compared to inconsistent torch heating
- **Speed:** The client requested a system that would meet their time objectives which the EASYHEAT easily did, boosting the client's throughput when compared to torch heating
- **Safety:** Induction has no open flame, a large advantage when it comes to safety and introducing unnecessary heat into a work environment

Two steel and carbide assemblies after brazing.