Brazing carbide insert to steel pipe gripper chuck

**Objective**
To braze carbide inserts into steel blocks in the assembly of pipe gripper chuck

**Material**
Steel blocks, 1” (25.0mm) wide X 3.5” (87mm) long and 2” (50mm) tall, toothed carbide inserts

**Temperature**
1450 °F (780 ºC)

**Frequency**
192 kHz

**Equipment**
- Ambrell EASYHEAT 4.2 kW 400kHz induction heating system, equipped with a remote workhead containing one 1.0μF capacitor
- An induction heating coil designed and developed specifically for this application.

**Process**
Blocks are fluxed and braze shims are sandwiched between the toothed carbide inserts and wells in the steel. A two-turn helical coil is used to heat the assembled part. A two-step heat profile flows the braze within 150 seconds per part

**Narrative**
Induction heating is proposed to replace a hand/flame process, delivering significant reduction in per-part cycles.

**Results/Benefits**
Induction heating provides:
- Direct heating of the part, saving energy
- Flameless process; doesn't 'blow' the braze
- Precise control of heat
- Process precision and repeatability for consistent results
- Easy integrated into automated process
- Even distribution of heating
- Reduced flame hazard
Testing configuration for feasibility

Block before braze (l), flame-processed (r)

Finished gripper block with clean, uniform braze