HLQ

INDUCTION HEATING EQUIPMENT

Induction Heating Tinned Copper Wire Ends for Stripping

A multi-turn coil and ceramic guide tube melt the tin on pre-tinned strands in 1–2 seconds, fusing the strands so the wire end strips more easily.



500 °F	1–2 s	4.5 kW	300 pF
260 °C strand temperature	per wire end	DW-UHF-4.5KW	remote heat station

01 The HLQ copper wire case

Objective: heat pre-tinned copper wires of various diameters to 500 °F (260 °C) to melt the tin and coalesce (fuse) the wires for easier stripping. A ceramic tube inside the multi-turn coil guides and centres the wire, preventing arcing in the coil.

Item	Case data
Material	Pre-tinned stranded copper wires of various diameters
Temperature	500 °F (260 °C)
Equipment	DW-UHF-4.5KW solid-state power supply; remote heat station with three 100 pF capacitors (300 pF total)
Coil	Multi-turn coil with ceramic guide tube
Time	1–2 seconds
Result	Works on a single multi-strand wire and on a dual multi-strand wire assembly
Test finding	Up to 20 kW at 400 kHz could not heat the small copper wires



Wire ends: fused (left) and loose strands (right).



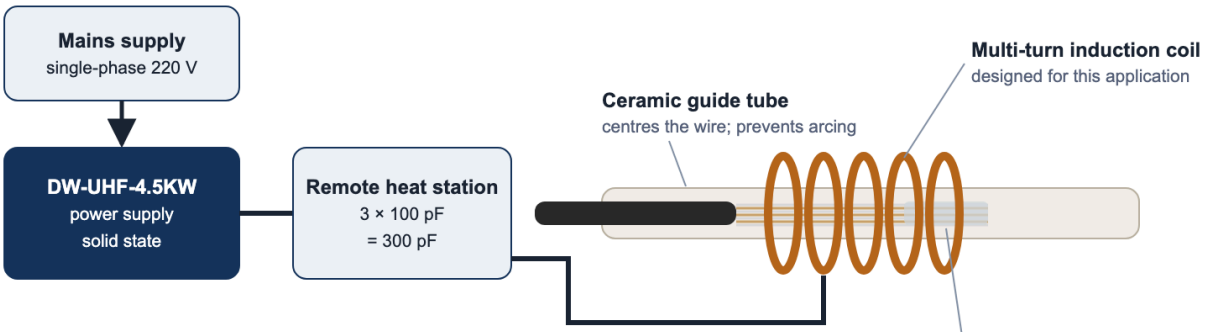
Multi-turn coil with ceramic guide tube.

02 How it works

Induction Heating Tinned Copper Wire Ends for Stripping

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A multi-turn coil heats the pre-tinned strands; the tin melts and fuses the strands so the wire strips more easily.



HLQ case data (original page)
Target: 500 °F (260 °C)
Time: 1–2 seconds
Works on single and dual multi-strand wires
Tin melting point ≈ 232 °C (physics)

Key finding of the HLQ test

Up to 20 kW at 400 kHz could not heat the small copper wires — the very fine strands need a much higher frequency.

Schematic, not to scale. Strand count and coil turns shown for illustration.

DW-UHF-4.5KW (published data)

Power	Max. current	Frequency	Supply	Duty cycle
4.5 kW	20 A	1.1–2.0 MHz	Single-phase 220 V ±10%	100%

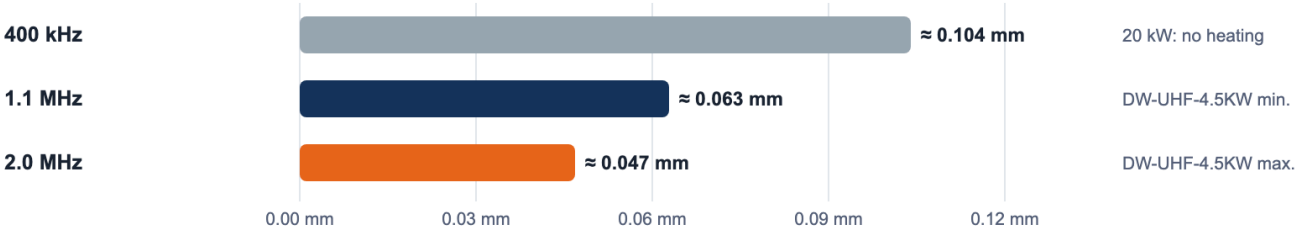
03 Frequency and related cases

Why Fine Copper Strands Need Very High Frequency

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Current penetration depth in copper (physics) and related HLQ small-wire induction cases.

Penetration depth δ in copper at 20 °C (ρ ≈ 0.0172 µΩ·m)



δ = 503·√(ρ / f). When a strand is much thinner than about 2–3 δ, little power couples into it; raising the frequency shrinks δ.

Related HLQ small-wire cases

Tinned copper wire (this page)	Stainless cable stress relief	Coax wire soldering
Fuse strands for stripping	Ø0.64 mm and Ø0.46 mm cable	Centre conductor + shield braid
500 °F (260 °C) in 1–2 s	510–815 °C in 2–8.8 s (14 cm)	reached 500 °F in 10 s
DW-UHF-4.5KW, 300 pF	DW-UHF-4.5KW, 4.03 kW	DW-UHF-4.5kW, multi-turn coil

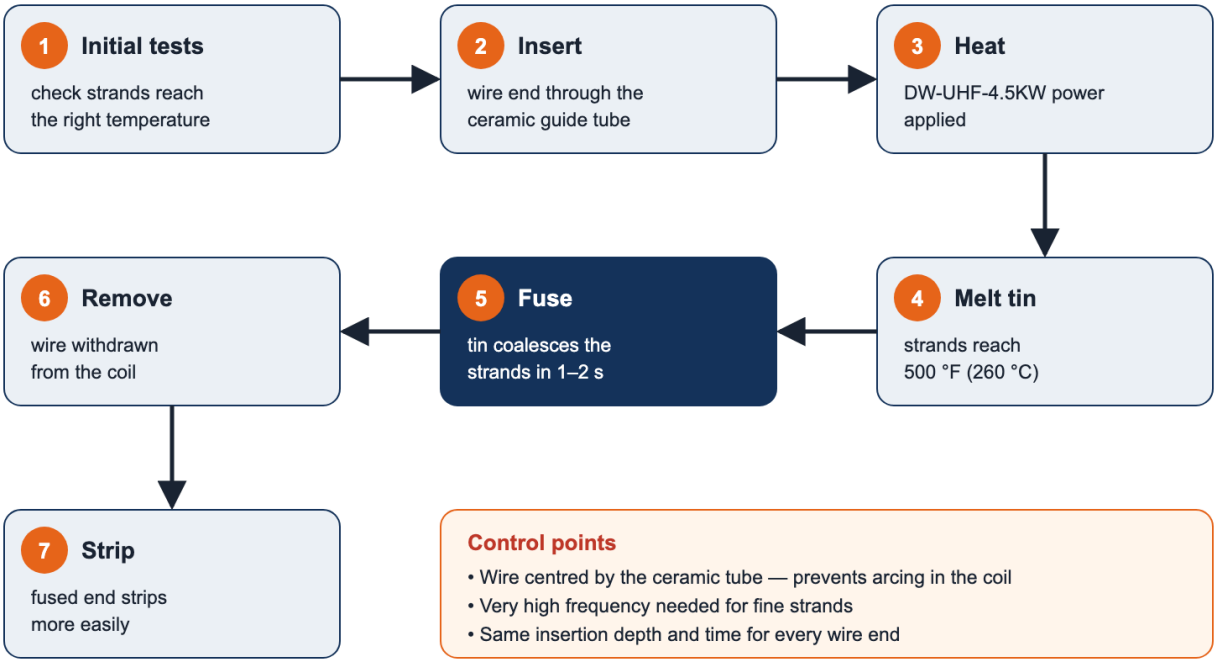
Sources: HLQ copper wire stripping, stainless steel wire cable and co-axial wire soldering case pages.

04 Process workflow and station layout

Tinned Copper Wire Fusing for Stripping – Process Workflow

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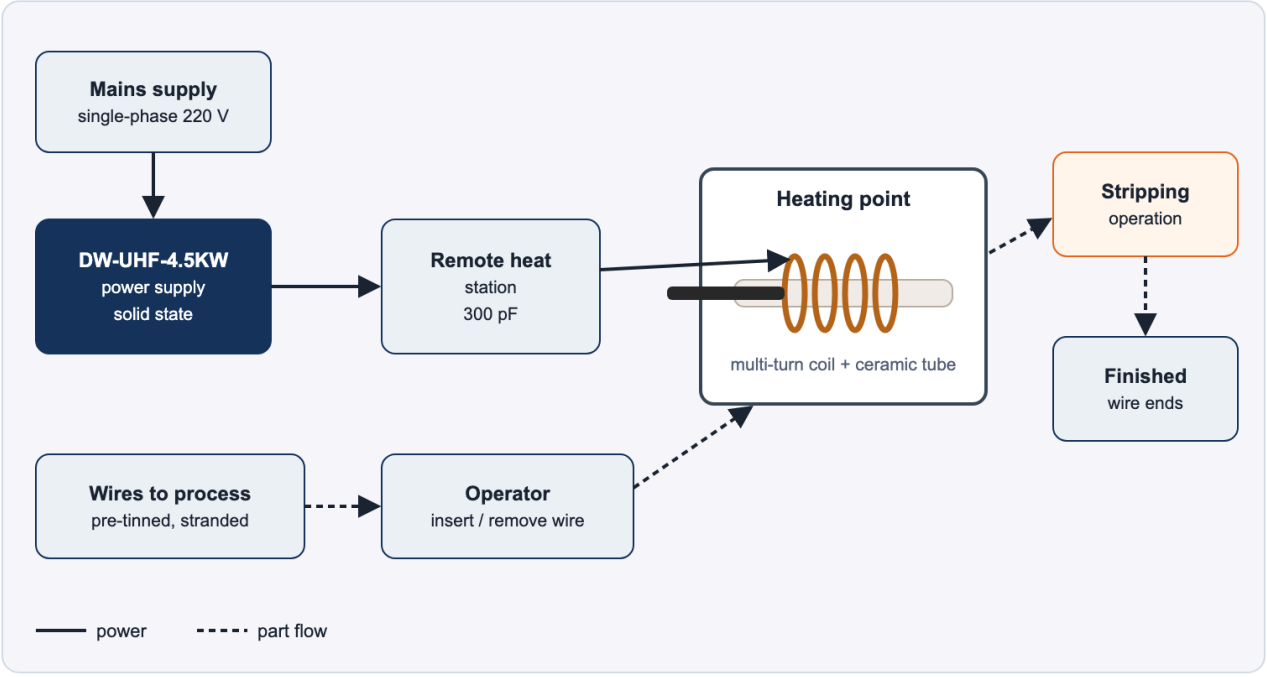
Sequence based on the HLQ copper wire case (1–2 seconds per wire end).



Wire End Fusing Station – Typical Layout

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Schematic, not to scale. Equipment names follow the HLQ case: power supply, remote heat station, coil, ceramic tube.



05 Problems, selection and limits

Problem	Likely cause	Solution
Strands do not heat	Frequency too low for fine strands	Use very high frequency (20 kW at 400 kHz failed)
Arcing in the coil	Wire touching or off-centre in the coil	Ceramic tube to guide and centre the wire
Strands not fused	Temperature or time too low	Confirm 500 °F in 1–2 s by initial tests
Inconsistent ends	Insertion depth varies	Same insertion depth and time every wire

Selection factors

Factor	What to confirm
Wire construction	Strand diameter, strand count, single or dual wire
Coating	Pre-tinned strands
Target	500 °F (260 °C) in 1–2 s
Frequency	Very high frequency for fine strands
Supply	DW-UHF-4.5KW: single-phase 220 V

Advantages and limitations

Advantages	Limitations
Heats fine strands in 1–2 s	Needs very high frequency
One system for single and dual multi-strand wires	Ceramic guide needed to avoid arcing
Non-contact heating	Strand size must be confirmed by test

06 Frequently asked questions

What does the process do?

It melts the tin on pre-tinned copper strands so the strands fuse, making the wire easier to strip.

What temperature is used?

500 °F (260 °C); tin melts at about 232 °C.

How fast is it?

1–2 seconds per wire end.

Which equipment?

A DW-UHF-4.5KW solid-state supply with a remote heat station of three 100 pF capacitors (300 pF).

Why not a lower frequency?

In the test, up to 20 kW at 400 kHz could not heat the small copper wires.

Why the ceramic tube?

It guides and centres the wire in the coil and prevents arcing.

Why choose HLQ

Fine-wire experience
Wire fusing, cable stress relief, coax soldering.

DW-UHF series
Very high frequency for small parts.

Tested solution
Initial tests confirm strand temperature.

Arc-free design
Ceramic guide tube in the coil.

Compact
Single-phase 220 V supply.

Flexible
Single and dual multi-strand wires.

Request a wire heating test

Send us wire samples or specifications and the target. We will propose the coil, power supply and test plan.

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Please include in your inquiry

- Wire construction: strand diameter and count
- Coating (tinned or bare) and insulation
- Target temperature and cycle time
- Production rate
- Available supply voltage