

**HLQ**

INDUCTION HEATING EQUIPMENT

Induction Brazing Copper Tube

Copper tube assemblies brazed in an inert atmosphere of 95% argon and 5% hydrogen: 1450 °F (788 °C) in 45 seconds with braze pre-forms – no flux and no acid wash clean-up.

**1450 °F**

(788 °C)

45 s

to temperature

400 kHz

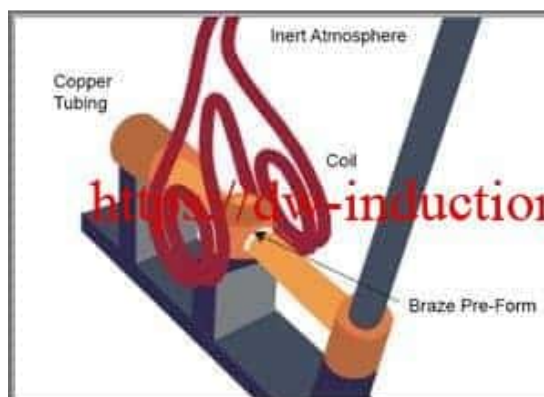
DW-UHF-10kW

No fluxAr / H₂ atmosphere

01 The HLQ copper tube brazing case

Research objective: heat a copper tube assembly in an inert atmosphere to 1450 °F within 45 seconds for brazing without flux or acid wash clean-up.

Item	Case data
Parts and materials	Copper tube assembly; braze pre-forms; temperature sensing paint (for profiling)
Temperature	1450 °F (788 °C)
Equipment	DW-UHF-10kW induction heating power supply; remote heat station with two 1.25 µF capacitors (cumulative 0.625 µF)
Coil	Specially designed four-turn split helical inductor
Frequency	400 kHz
Atmosphere	ABS Mark 2 containing 95% argon and 5% hydrogen
Result	1450 °F reached in 45 seconds to melt the braze pre-forms
Note	Heat conducts through the tube assembly, so subsequent joints on the same assembly need less time



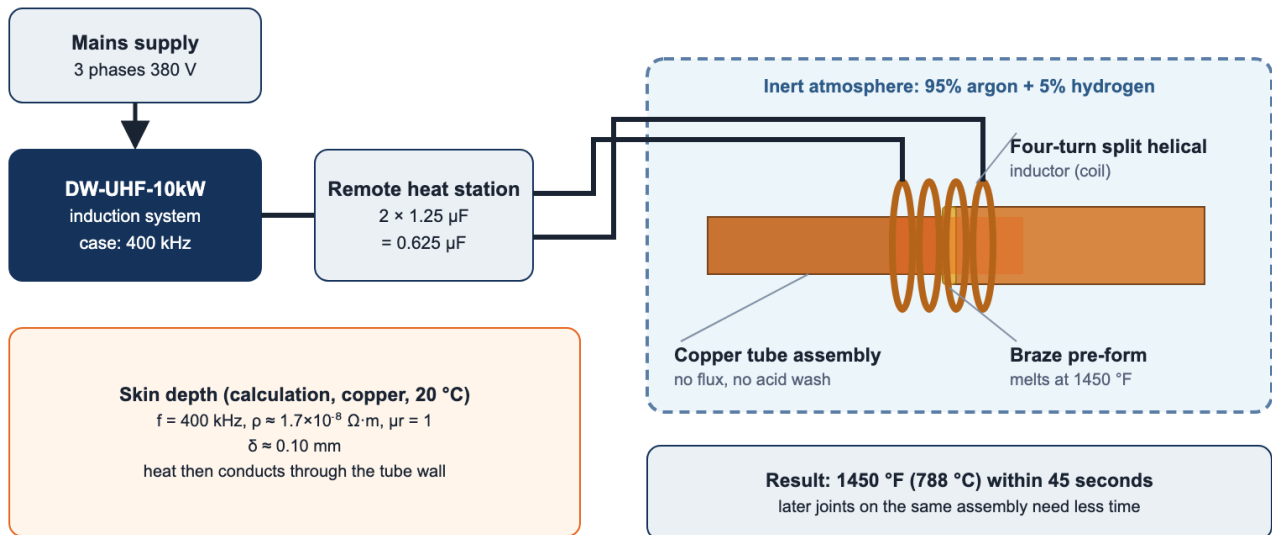
Copper tubing, coil and braze pre-form in an inert atmosphere (original HLQ drawing).

02 How it works

Induction Brazing Copper Tube in an Inert Atmosphere

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A four-turn split helical coil heats the copper tube joint to 1450 °F (788 °C) in 45 s in 95% argon / 5% hydrogen – no flux.



Testing was done in an ABS Mark 2 containing 95% argon and 5% hydrogen gas (case).

Schematic; not to scale. Two $1.25 \mu\text{F}$ capacitors give a cumulative $0.625 \mu\text{F}$, as stated in the case.

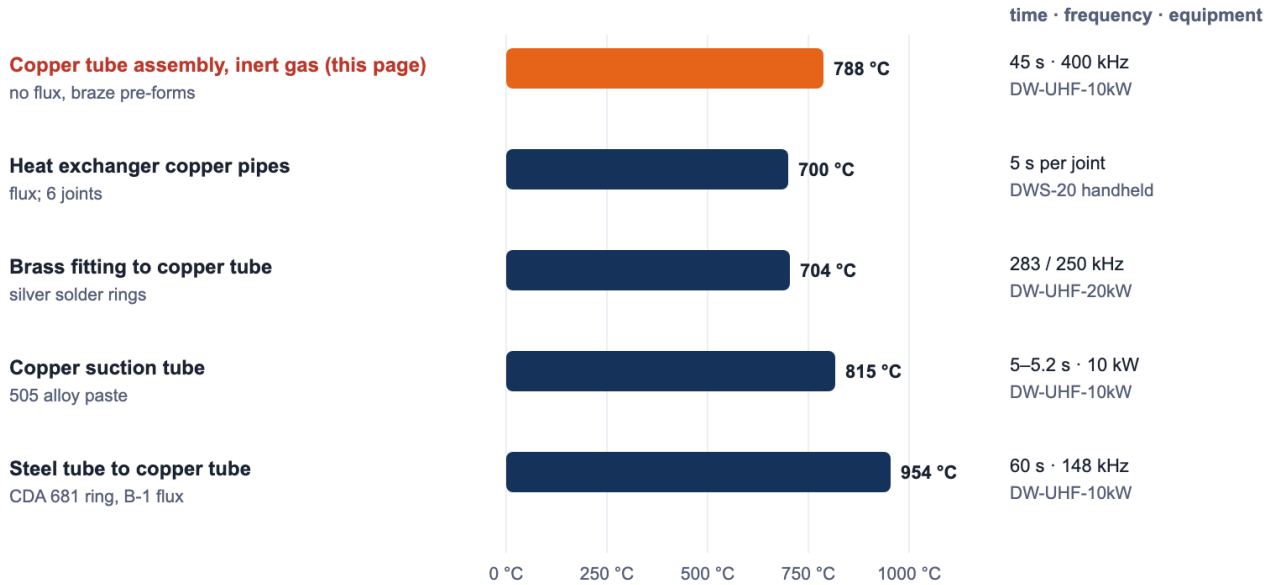
At 400 kHz the calculated skin depth in copper is about 0.10 mm (20 °C), so heat is generated at the tube surface and conducts through the wall to the pre-form. The argon/hydrogen atmosphere replaces flux, so no acid wash clean-up is needed.

03 HLQ copper brazing cases

HLQ Copper Tube Brazing Cases

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Published HLQ copper brazing data: brazing temperature, heating time and equipment. This page is highlighted.



°C from the °F values in each case (1450, ≈1292, 1300, ≈1500 and ≈1750 °F).

Sources: HLQ copper tube, heat exchanger, brass-to-copper, copper tubing and steel-to-copper brazing case pages.

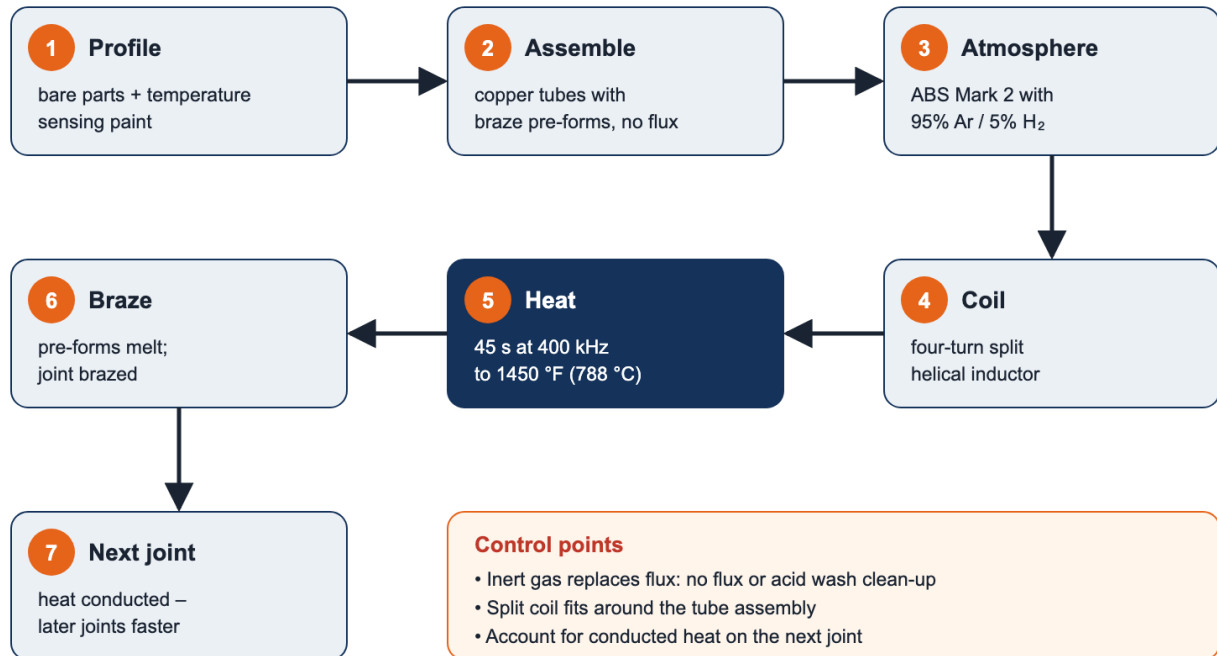
Case	Temperature	Time	Equipment
Copper tube assembly, inert gas (this case)	1450 °F (788 °C)	45 s	DW-UHF-10kW, 400 kHz
Copper suction tube	≈ 1500 °F (815 °C)	5–5.2 s	DW-UHF-10kW
Heat exchanger copper pipes	≈ 1292 °F (700 °C)	5 s per joint	DWS-20 handheld

04 Process workflow and station layout

Copper Tube Induction Brazing – Process Workflow

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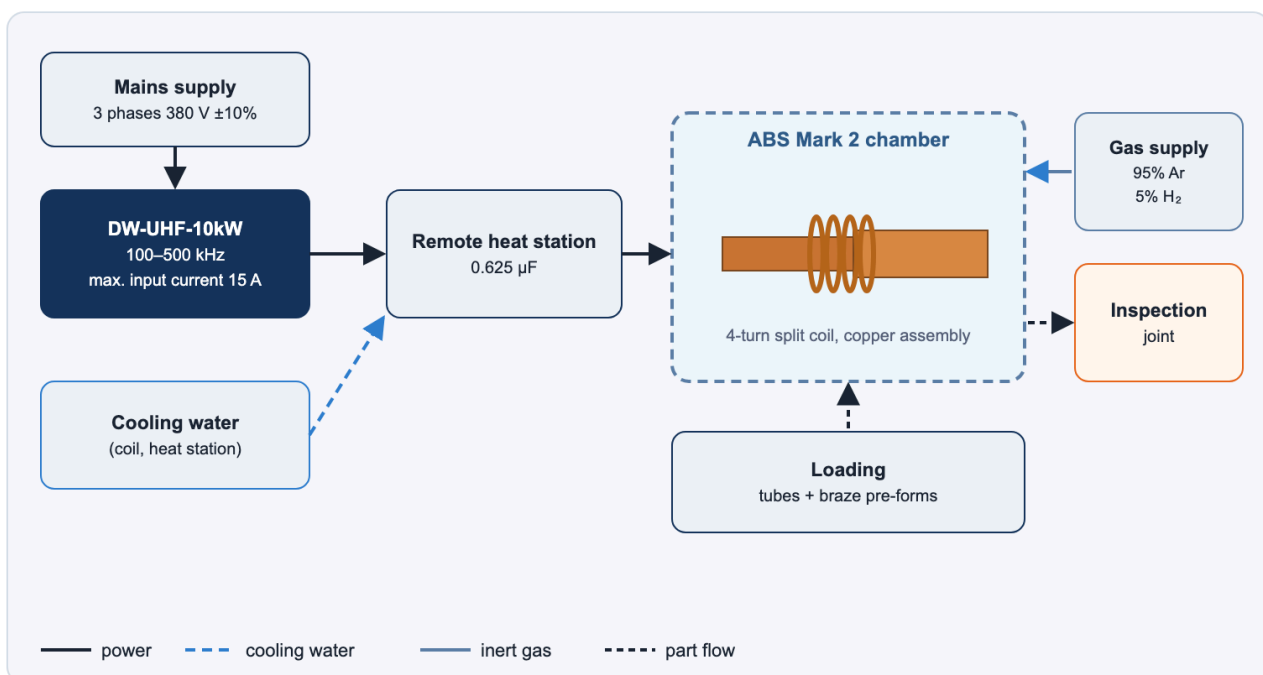
Sequence from the HLQ copper tube case (DW-UHF-10kW, 400 kHz, inert atmosphere, no flux).



Inert-Atmosphere Copper Brazing Station – Typical Layout

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Schematic, not to scale. DW-UHF-10kW, remote heat station, split coil inside the gas chamber, gas supply and cooling water.



05 DW-UHF series

Model	Power	Max. input current	Frequency	Supply
DW-UHF-4.5KW	4.5 kW	20 A	1.1–2.0 MHz	1-ph 220 V
DW-UHF-6.0KW	6.0 kW	28 A	300–1100 kHz	1-ph 220 V
DW-UHF-10KW	10 kW	15 A	100–500 kHz	3-ph 380 V
DW-UHF-20KW	20 kW	30 A	50–250 kHz	3-ph 380 V
DW-UHF-30KW	30 kW	45 A	50–200 kHz	3-ph 380 V

All DW-UHF models: 100% duty cycle (HLQ model table).

Copper brazing jobs and power supplies (HLQ cases)

Job	Power supply	Frequency	Time
Copper tube assembly, inert gas	DW-UHF-10kW	400 kHz	45 s
Copper suction tube	DW-UHF-10kW	–	5–5.2 s
Brass fitting to copper tube	DW-UHF-20kW	283 / 250 kHz	–
Heat exchanger copper pipes	DWS-20 handheld	–	5 s per joint

06 Frequently asked questions

What was brazed?

A copper tube assembly, using braze pre-forms.

Why an inert atmosphere?

To braze without flux or acid wash clean-up.

What atmosphere was used?

An ABS Mark 2 containing 95% argon and 5% hydrogen.

What temperature and time?

1450 °F (788 °C) within 45 seconds.

Which equipment and frequency?

A DW-UHF-10kW at 400 kHz with a 0.625 µF remote heat station.

Which coil?

A specially designed four-turn split helical inductor.

What do I send for a quote?

Assembly drawing, filler, atmosphere, cycle time and output.

Why choose HLQ

No flux

Inert-gas brazing.

No clean-up

No acid wash.

45 s

To 1450 °F.

Split coil

Fits tube assemblies.

Copper experience

Tubes, exchangers, fittings.

Full range

DW-UHF and DWS handheld.

Request a copper brazing test

Send us the tube assembly, filler and required atmosphere and cycle time. We will propose the coil, heat station and power supply.

Email

sales@dw-inductionheater.com

Tel / WhatsApp / Telegram

+86 131 5596 5571

Website

dw-inductionheater.com

Factory address

Jiangbei Village, Wusha Area, Chang'an Town,
Dongguan City, Guangdong Province, China
523859

Please include in your inquiry

- Tube assembly drawing
- Filler (pre-forms, paste, rings)
- Flux or protective atmosphere
- Cycle time and parts per hour
- Available supply and cooling water