HLQ

INDUCTION HEATING EQUIPMENT

Induction Melting Silver — DW-MF and BF-Series Furnaces

IGBT induction furnaces for silver casting, jewellery alloys and precious-metal recycling. Fast melting, temperature control and electromagnetic stirring for even melt temperature.



≈ 962 °C	5–250 kg	15–160 kW	20–30 min
silver melting point	DW-MF published gold/silver range	DW-MF and BF series	per melt, hot furnace (DW-MF)

01 What is induction melting of silver?

A medium-frequency current in a water-cooled coil induces eddy currents in the silver charge and the crucible; electrical resistance turns them into heat and the silver melts. The magnetic force stirs the melt pool, helping flux and oxides float to the surface for cleaner castings. Silver melts at about 962 °C — below gold (1,064 °C) — and is about half as dense as gold.

Property	Silver	Gold (comparison)
Melting point	≈ 962 °C	≈ 1,064 °C
Density	≈ 10.5 kg/L	≈ 19.3 kg/L
Theoretical heat to melt	≈ 0.1 kWh/kg	≈ 0.06 kWh/kg
Engineering focus (HLQ)	Temperature and metal recovery	Purity and crucible contamination



Silver granules melting in a crucible.



Stirring the melt in a crucible.



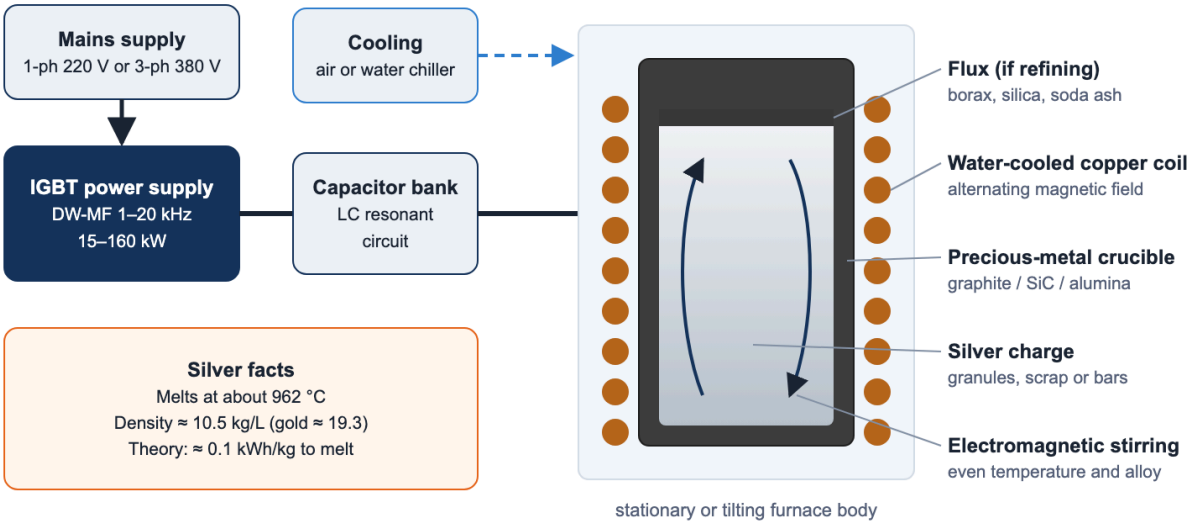
Crucible inside an induction coil.

02 How it works

Induction Melting Silver: How It Works

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The coil induces eddy currents in the silver charge and the crucible; resistance heating melts the silver.



Current penetration depth in solid silver at 20 °C (physics, ρ ≈ 0.016 μΩ·m)

20 kHz DW-MF max	11 kHz typical	8 kHz typical	4 kHz typical
δ ≈ 0.45 mm	δ ≈ 0.60 mm	δ ≈ 0.71 mm	δ ≈ 1.00 mm

Furnace types

Type	How it pours	HLQ example
Stationary	Crucible lifted out with tongs	DW-SGM (2–8 kg)
Manual / gearbox tilting	Handwheel or handle tilts the furnace	DW-TGM (2–8 kg); DW-MF furnaces
Electric motor tilting	Motor-driven tilt under PLC control	BF-15 to BF-70
Hydraulic tilting	Hydraulic cylinder	Larger DW-MF furnaces

03 Models and published capacities

Silver Melting – HLQ Models and Published Capacities

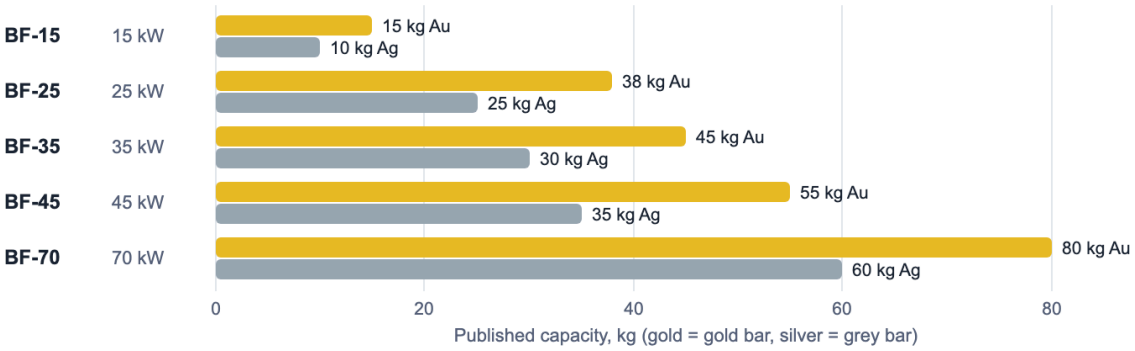
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Maximum melting ability as published on HLQ DW-MF and BF-series PLC furnace pages.

DW-MF medium-frequency furnaces · 1–20 kHz · gold/silver capacity, kg

DW-MF-15 15 kW 5 or 10 kg	**DW-MF-25** 25 kW 10 or 20 kg	**DW-MF-35** 35 kW 20 or 30 kg	**DW-MF-45** 45 kW 40 or 50 kg
DW-MF-70 70 kW 60 or 80 kg	**DW-MF-90** 90 kW 80 or 100 kg	**DW-MF-110** 110 kW 100 or 150 kg	**DW-MF-160** 160 kW 150 or 250 kg

BF-series PLC furnaces · electric motor tilting · 7-inch PLC touchscreen



Silver (10.5 kg/L) is about half as dense as gold (19.3 kg/L): the same crucible holds fewer kg of silver than gold.

BF-series PLC furnace (published data)

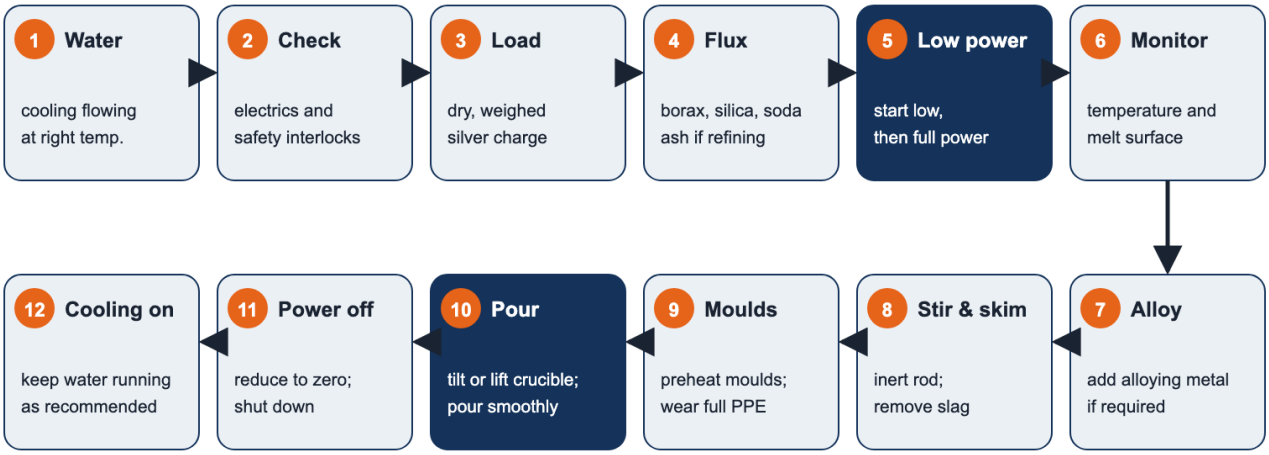
Model	Output power	Silver	Gold	Weight
BF-15	15 kW	10 kg	15 kg	285 kg
BF-25	25 kW	25 kg	38 kg	295 kg
BF-35	35 kW	30 kg	45 kg	295 kg
BF-45	45 kW	35 kg	55 kg	300 kg
BF-70	70 kW	60 kg	80 kg	310 kg

04 Process workflow and workshop layout

Induction Silver Melting – Process Workflow

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Steps from HLQ precious-metal furnace procedures (gold smelter and BF-series PLC furnace pages).



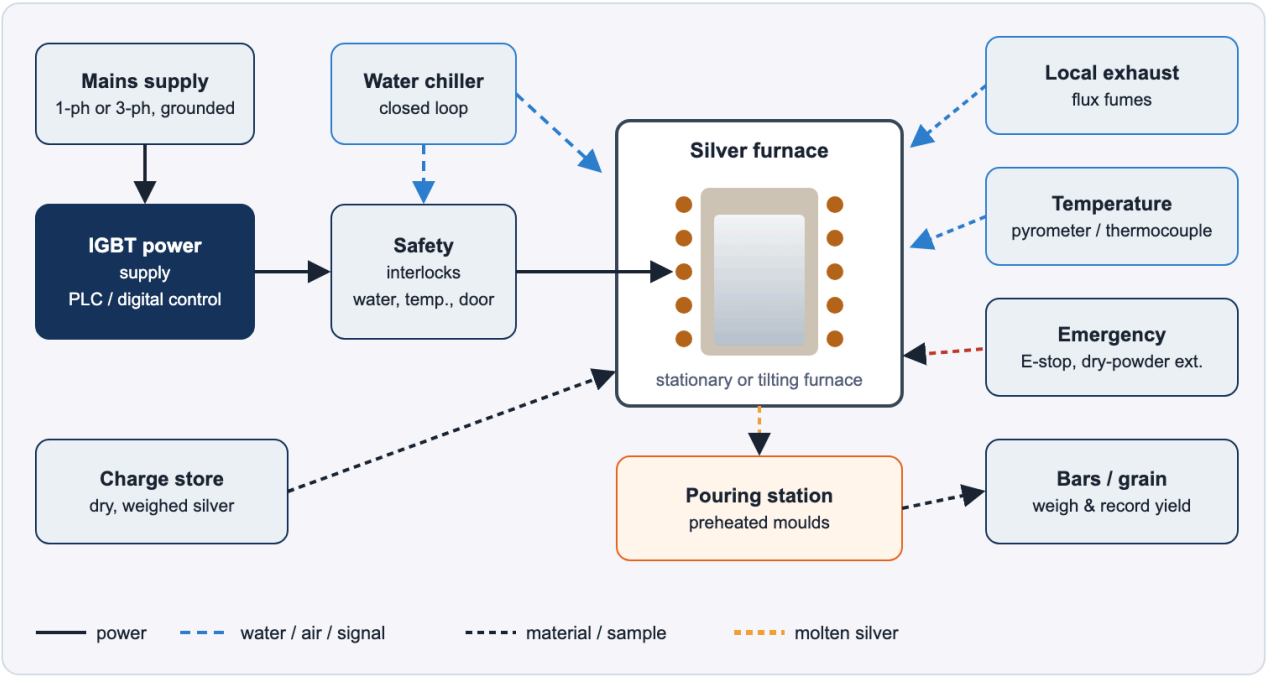
Control points

- Never introduce wet tools, moulds or scrap into the melt; control charging to avoid eruptions and splashing.
- Provide local exhaust where fluxes or other metals may fume.
- Keep an accessible emergency stop, dry-powder extinguishers and clear evacuation routes.

Silver Melting Workshop – Typical Layout

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Schematic, not to scale. Shows the equipment and safety items named on HLQ precious-metal furnace pages.



05 Common problems and selection guidance

Problem	Likely cause	Solution
Splashing or eruption	Wet tools, moulds or charge	Dry charge; preheat moulds; controlled charging
Crucible over-filled	Gold kg rating applied to silver	Size by volume: silver ≈ 10.5 kg/L
Metal loss / low yield	Overheating, no recovery records	Control temperature; record energy and yield
Contamination	Crucible shared with other metals	Dedicated precious-metal crucible
Flux fumes	Refining fluxes	Local exhaust
Cooling alarm	Low water flow or temperature	Check chiller; keep water running after shutdown

Advantages and limitations

Advantages	Limitations
No open flame or combustion gases	Needs reliable power and cooling water
Stirring helps flux and oxides float	Capacity figures need checking by volume
Precise, repeatable temperature control	Frequency under load must be confirmed per model
One furnace melts silver, gold, copper and alloys	Dedicated crucibles recommended per metal
PLC control and records on BF series	Higher investment than gas furnaces

06 Frequently asked questions

At what temperature does silver melt?

About 962 °C.

How much silver can a DW-MF furnace melt?

Published gold/silver capacities range from 5 or 10 kg (DW-MF-15) to 150 or 250 kg (DW-MF-160).

Which models have PLC control?

The BF series (BF-15 to BF-70) with a 7-inch PLC touchscreen and electric motor tilting; silver capacity 10–60 kg.

How long does a melt take?

On DW-MF furnaces, 50–60 min for the first (cold) melt and 20–30 min once the furnace is hot.

Which frequency?

DW-MF supplies run at 1–20 kHz, typically 4, 8, 11, 15 or 20 kHz depending on the application.

Can I use the same furnace for gold?

Yes — the furnaces are rated for gold and silver; use dedicated crucibles to avoid cross-contamination.

Why choose HLQ

DW-MF series
15–160 kW, 1–20 kHz, 100% duty.

BF PLC series
7-inch PLC touchscreen; motor tilting.

Small melters
DW-SGM, DW-TGM, M.MF.ML001.

Protections
Over-voltage, over-current, water, over-heating.

Multi-metal
Silver, gold, copper, brass, aluminium, steel.

Crucible options
Graphite, SiC, alumina.

Request a silver furnace proposal

Tell us the silver batch weight, batches per day and power supply. We will recommend the furnace, crucible and tilting method.

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Factory address
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Please include in your inquiry

- Silver or silver alloy, kg per batch
- Batches per day and target melt time
- Single-phase or three-phase supply
- Stationary, manual or PLC tilting
- Cooling water availability