

How to Select Induction Straightening Equipment

Handheld or large system? Start from the structure, steel grade and temperature limit; then size power and frequency by steel thickness, and check access, site utilities, duty cycle and a trial on the real structure.



25–60 kW

DWS-P handheld

25–300 kW

HLQ straightening systems

≤ 60 mm

steel thickness (large)

20–40 m

handheld cable reach

01 Handheld vs large systems

Parameter	Handheld (DWS-P)	Large systems	Engineering impact
Power	25 / 30 / 60 kW	25–50 / 50–100 / 100–300 kW	Thicker steel needs more power
Frequency	20–50 kHz	5–15 / 2–8 / 0.5–5 kHz	Lower frequency heats deeper
Thickness	Thin decks, bulkheads, frames	≤ 15 / ≤ 30 / ≤ 60 mm	Main sizing criterion
Mobility	Head 2.2–4.5 kg on 20–40 m cable	Portable / wheeled / crane assisted	Site work vs fixed station
Cooling	≥ 0.5 MPa, ≥ 30 L/min; internal chiller	10–15 / 20–40 / 40–80 L/min	Water supply planning
Duty / control	Published duty cycle 50%	PLC with logging / data monitoring	Throughput and records



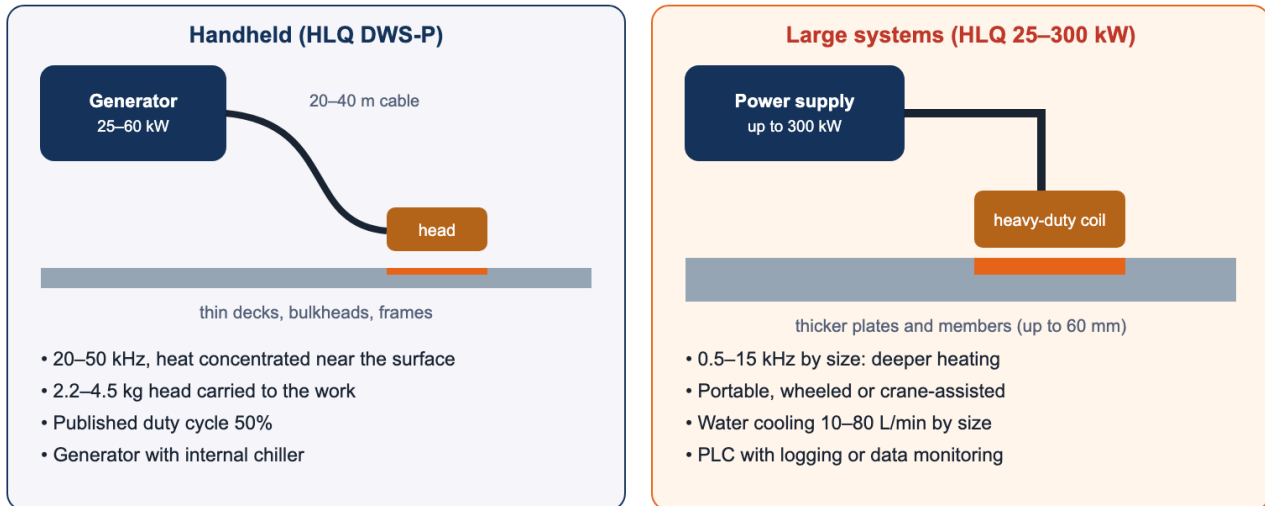
HLQ handheld induction straightening on a ship deck, and the HLQ handheld remote induction heater with generator, cable and heads.

02 Same physics, different scale

Handheld vs Large Induction Straightening Systems – Principle

HLQ

Same induction heating; different power, frequency, coil and mobility for different steel thicknesses and sites.



Lower frequency and higher power reach deeper into thick steel; higher frequency suits thin plate and a light, portable head.

Sources: HLQ handheld remote induction heater page (DWS-25P / 30P / 60P) and HLQ induction straightening heating machines page (small / medium / large).

Schematic, not to scale.

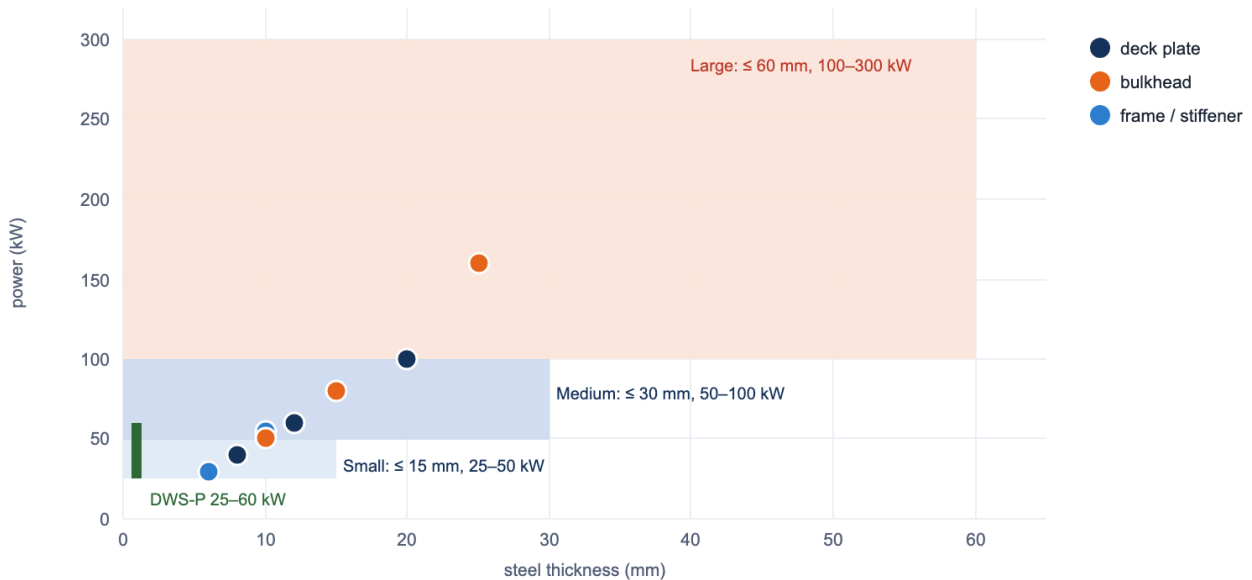
Both heat local zones that contract on cooling and pull distorted steel straight. Handheld units use higher frequency and a light head for thin plate; large systems use more power, lower frequency and heavy-duty coils for thick steel.

03 Power vs steel thickness

Induction Straightening Power vs Steel Thickness – HLQ Data

HLQ

HLQ reference settings (points) with HLQ system thickness capacities (bands) and handheld power range.



Points: HLQ published reference settings (deck 8–20 mm, bulkhead 10–25 mm, frame 6–10 mm). Bands: HLQ straightening system table.
Reference values for starting a trial; confirm on the actual structure and within the approved temperature limit.

Application	Thickness (mm)	Power (kW)	Heating time (s)	Max. temp. (°C)
Frame / stiffener	6	30	30–45	600
Deck plate	8	40	45–60	650
Bulkhead	10	50	60–75	680
Deck plate	12	60	70–90	700
Bulkhead	15	80	90–110	720
Deck plate	20	100	120–150	750
Bulkhead	25	160	180–210	780

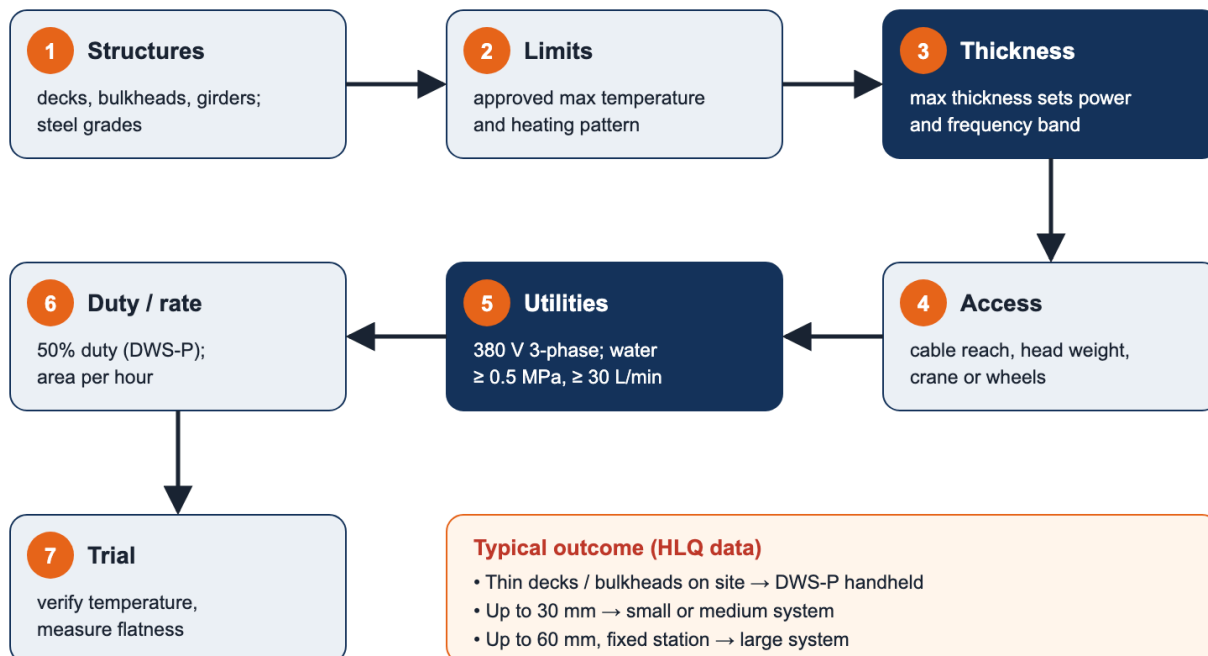
HLQ reference settings for ship structures; settings above 650 °C are not for bridge members (FHWA limit 1200 °F for carbon steels). Confirm class society limits for ships.

04 Selection workflow and site layout

How to Select Induction Straightening Equipment – Workflow

HLQ

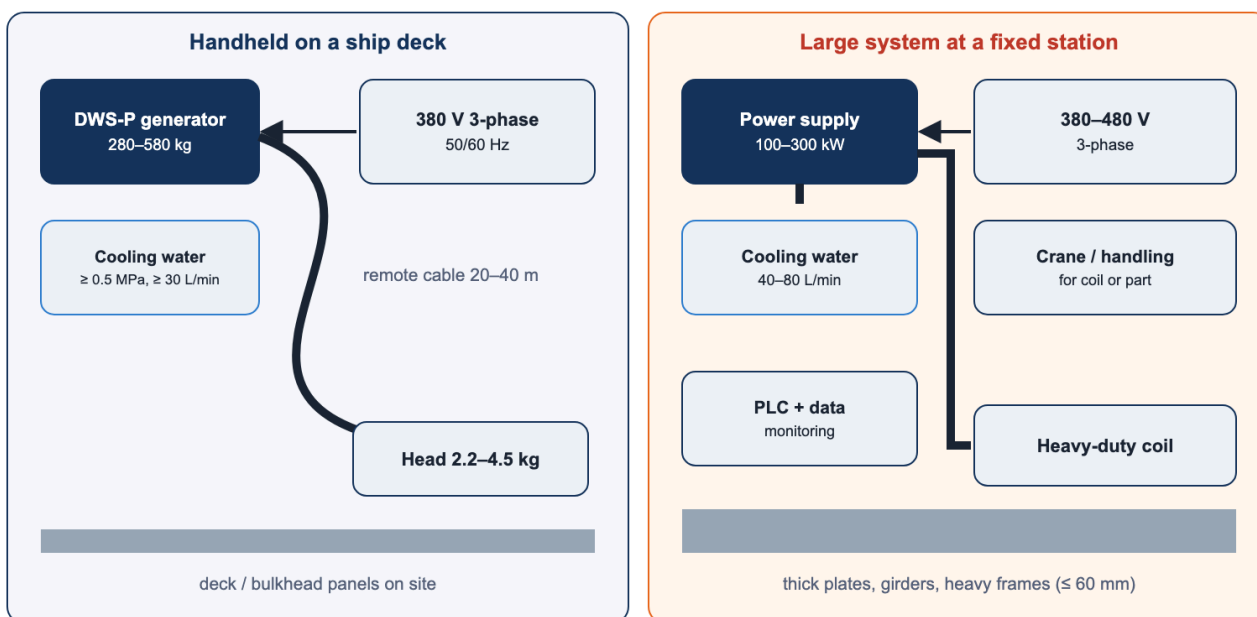
Selection steps based on HLQ equipment data and heat-straightening temperature limits.



Site Layout – Handheld vs Large Induction Straightening Systems

HLQ

Schematic, not to scale. Where the equipment stands and what each setup needs.



Data: HLQ DWS-P handheld page and HLQ induction straightening machines page (small 10–15, medium 20–40, large 40–80 L/min cooling water).

05 Throughput, duty and limits

Handheld model	Avg. useful power (example)	Idealized time per m ²	Idealized area rate
DWS-25P	5 kW	≈ 369 s	≈ 9.7 m ² /h
DWS-30P	6 kW	≈ 308 s	≈ 11.7 m ² /h
DWS-60P	12 kW	≈ 154 s	≈ 23.4 m ² /h

HLQ calculated example assuming 50% utilization and 40% coupling; not a measured straightening rate.

Bridge steel	Max. heat-straightening temperature
Carbon steels	1200 °F (≈ 650 °C)
A514, A709 Gr 100 / 100W	1100 °F (≈ 593 °C)
A709 Gr 70W	1050 °F (≈ 566 °C)

Iowa DOT provisions citing FHWA-IF-08-999. Ships: IACS Rec. 47 line-heating provision; confirm with the class society.

06 Frequently asked questions

Handheld or large system?

Handheld DWS-P for thin decks and bulkheads on site; small, medium or large systems for steel up to 15, 30 or 60 mm.

How much power do I need?

HLQ reference: about 40 kW for 8 mm deck plate, 100 kW for 20 mm, 160 kW for 25 mm bulkhead.

Which frequency?

20–50 kHz handheld for thin plate; 0.5–15 kHz systems as thickness increases.

What site utilities are needed?

380 V 3-phase and cooling water; DWS-P needs ≥ 0.5 MPa and ≥ 30 L/min.

What limits the straightening temperature?

The steel: e.g. 1200 °F for bridge carbon steels; the equipment can reach more.

Why run a trial?

To confirm settings, temperature and flatness on the real structure.

Why choose HLQ

Full range

25 kW handheld to 300 kW.

Long reach

20–40 m cables.

Light heads

2.2–4.5 kg.

Thick steel

Up to 60 mm.

Reference data

Deck, bulkhead, frame.

Limits first

Honest selection.

Get an equipment recommendation

Send us the structures, steel grades, thickness range, approved temperature limit, site power and water. We will recommend handheld or system equipment and a trial plan.

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Please include in your inquiry

- Structure type and access
- Steel grade and thickness
- Approved temperature limit
- Area per shift
- Site power and water