

Induction PWHT for Oil & Gas Pipelines

Field post weld heat treatment of girth welds, tie-ins, hot-tap fittings and station piping with air-cooled MYD induction systems — recorded to code, powered from site generators.



Ø500–1200 mm 6 channels

line pipe ≈ 10–30 kW

±3 °C, recorded

40–120 kW

6 MYD models

No water

air-cooled for the field

01 Where pipelines need PWHT

Pipeline codes require stress relief of carbon-steel welds above a wall-thickness limit and wherever the design, material or service demands it — sour service, high-strength line pipe, station piping and repairs. Induction brings code-controlled PWHT to the right-of-way: the cable wraps the joint, the cabinet runs from a generator, and the recorder documents every weld.

Pipeline work	Typical PWHT trigger	Induction advantage
Heavy-wall mainline & crossings	Carbon-steel wall above ≈ 32 mm (B31.4 / B31.8)	Uniform 360° soak on thick walls
Tie-ins and golden welds	Thickness, restraint, project specification	Fast set-up between crews
Compressor & pump stations	B31.3 / B31.8 station piping rules	Recorded charts per joint
Sour-service lines	Hardness limits (NACE MR0175 / ISO 15156)	Even tempering of weld and HAZ
Hot-tap fittings, sleeves, repairs	Repair procedure / owner specification	Local treatment without shutdown of large sections



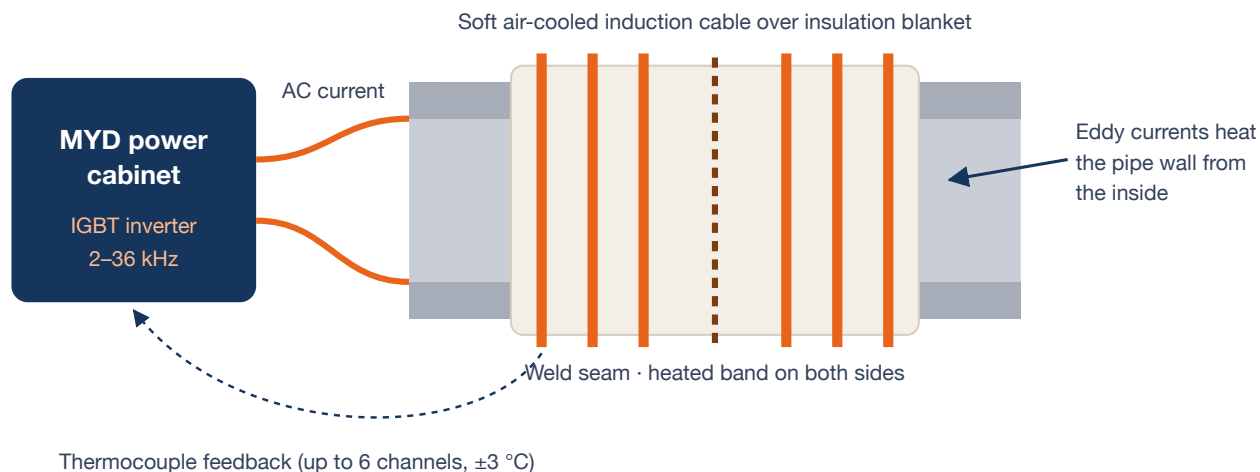
Large-diameter line pipe with induction cable during welding.



Two joints prepared with insulation and induction cable.

02 How induction pipeline PWHT works

The IGBT inverter drives 2–36 kHz current through soft cable wound over ceramic-fibre insulation on the joint. Eddy currents heat the pipe wall within the heated band; up to six thermocouples feed the PLC, which follows the programmed ramp, soak and cooling while the recorder logs the cycle.



Typical pipeline PWHT requirements

Item	Typical value / practice
Stress-relief trigger (carbon steel)	Wall thickness above ≈ 32 mm (1¼ in) per ASME B31.4 / B31.8, unless exempted
Soak temperature (carbon steel)	595–650 °C; high-strength TMCP line pipe often 580–620 °C per WPS
Soak time	≈ 1 h per 25 mm, minimum per code / specification
Heating and cooling	Controlled above ≈ 315 –427 °C per procedure
Sour-service hardness	Typically ≤ 250 HV10 / 22 HRC in weld and HAZ
Records	Time–temperature chart for every joint

Indicative — the project specification, WPS and current code edition govern.

03 Technical specifications

Model	MYD-40	MYD-50	MYD-60	MYD-80	MYD-100	MYD-120
Output power	40 kW	50 kW	60 kW	80 kW	100 kW	120 kW
Input current (380 V)	60 A	75 A	90 A	120 A	150 A	180 A
Net weight	130 kg	136 kg	140 kg	145 kg	168 kg	180 kg

Common data	All models
Power supply	3 × 380 VAC standard · 220 / 440 VAC optional
Output frequency	2 – 36 kHz, IGBT
Temperature control	Up to 6 thermocouple channels, ±3 °C
Cycle	PLC touch screen: ramp, soak, controlled cooling
Recording	Digital recorder, printer optional
Cooling	Air-cooled cabinet and soft cable
Mobility	Wheels, lifting eyes, quick-release couplings

04 Generator sizing for field work

Model	Input current (380 V)	Apparent power	Suggested generator
MYD-40	60 A	39 kVA	≥ 51 kVA
MYD-50	75 A	49 kVA	≥ 64 kVA
MYD-60	90 A	59 kVA	≥ 77 kVA
MYD-80	120 A	79 kVA	≥ 103 kVA
MYD-100	150 A	99 kVA	≥ 128 kVA
MYD-120	180 A	118 kVA	≥ 154 kVA

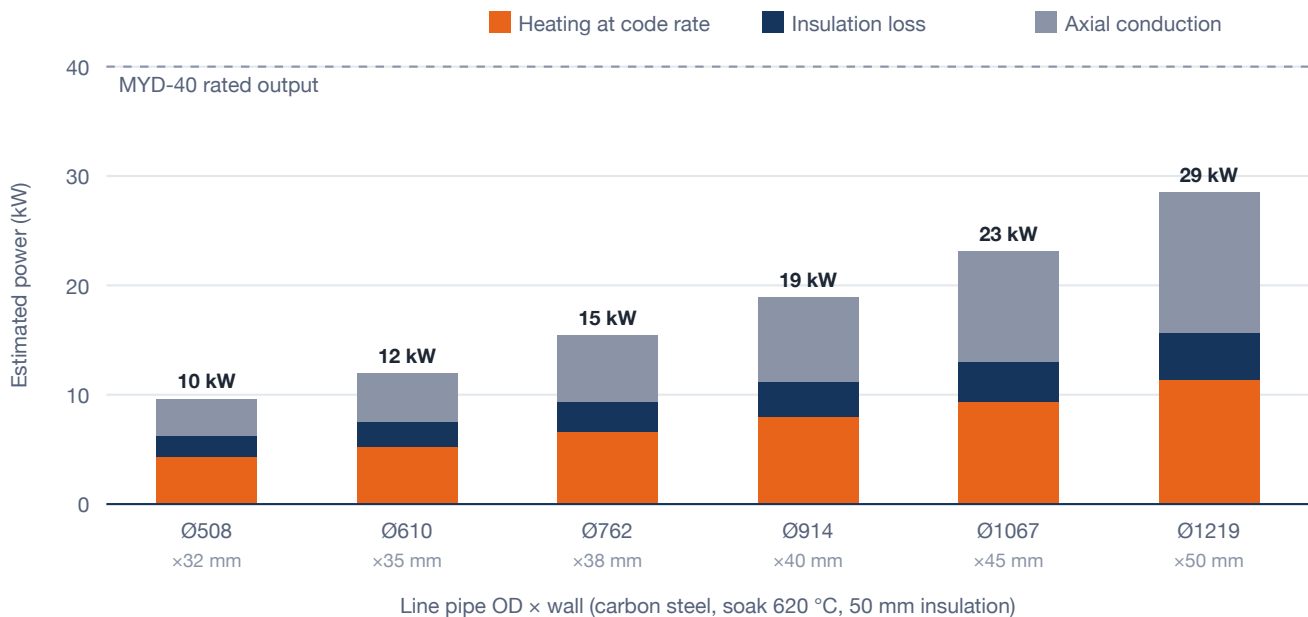
Rule of thumb: generator $\geq 1.3 \times$ apparent input power for inverter loads — confirm with the generator supplier.

Power per joint (see Chart A)

Pipe	Heated band	Steel in band	Code heating rate	Estimated total
Ø508 × 32 mm	300 mm	113 kg	173 °C/h	10 kW
Ø610 × 35 mm	300 mm	149 kg	159 °C/h	12 kW
Ø762 × 38 mm	300 mm	204 kg	146 °C/h	15 kW
Ø914 × 40 mm	300 mm	259 kg	139 °C/h	19 kW
Ø1067 × 45 mm	300 mm	340 kg	123 °C/h	23 kW
Ø1219 × 50 mm	320 mm	461 kg	111 °C/h	29 kW

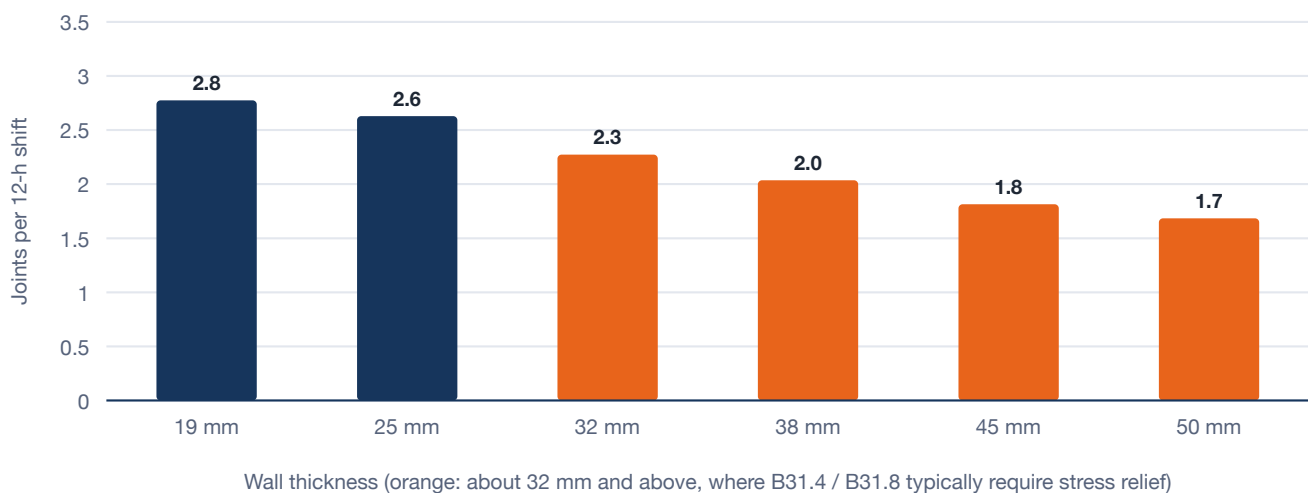
05 Sizing charts

Chart A — Estimated PWHT power for line pipe at 620 °C



Heated band $6 \times \text{wall} + 20$ mm (min 300 mm); 50 mm insulation 300 mm beyond each side; axial conduction 0.6 m each side; no wind. A MYD-40 covers single joints to Ø1219 × 50 mm with margin.

Chart B — Joints per 12-hour shift per machine



Per joint: 1 h set-up and strip, 0.5 h to 427 °C, code-limited cycle above 427 °C (620 °C soak), 0.5 h cool to removal. Add machines to match welding-crew output.

06 Pipeline applications



Field girth welds

Joint wrapped on the pipe rack, cabinet alongside, chart for each weld.



Preheat during welding

The same cable holds preheat while the welder works, then runs PWHT.



Coated line pipe

Local heating limited to the joint band — coating outside the band protected by insulation.



Spool and station piping

Shop PWHT of fabricated station piping before shipment.

Suitable pipeline materials

Material	Typical PWHT soak	Watch-out
API 5L Gr.B – X52 / X60	595–650 °C	Thickness trigger, sour-service hardness
API 5L X65 – X80 (TMCP)	≈ 580–620 °C per WPS	Do not exceed qualified temperature — strength loss
ASTM A106 / A333 station piping	595–650 °C	B31.3 rules
Cr-Mo station piping (P11 / P22)	650–760 °C	Hardness check

07 Frequently asked questions

Do pipeline welds need PWHT?

Carbon-steel welds above ≈ 32 mm wall typically require stress relief under ASME B31.4 / B31.8; sour service, high-strength pipe and project specs may require more.

Which temperature?

595–650 °C for carbon steel; high-strength TMCP pipe often 580–620 °C as qualified in the WPS.

How much power per joint?

≈ 10 –30 kW for $\varnothing 508 \times 32$ to $\varnothing 1219 \times 50$ mm at 620 °C with 50 mm insulation — one MYD-40 per joint.

Can it run from a generator?

Yes — size the generator at $\geq 1.3 \times$ the input kVA (≈ 51 kVA for MYD-40).

How many joints per shift?

About 2–3 joints per 12-h shift per machine for 19–32 mm walls, ~ 1.7 for 50 mm.

Does it help meet sour-service hardness?

Uniform tempering of weld and HAZ helps reach typical ≤ 250 HV10 limits when the procedure is followed.

Is water cooling needed?

No — cabinet and cable are air-cooled, ideal for the right-of-way.

Can it preheat as well?

Yes — preheat, interpass and PWHT on the same set-up.

Standard accessories



Cable · thermocouples · recorder · extension cable · blankets · junction box.

Insulation blankets



Ceramic-fibre PWHT blankets — 50 mm recommended for field work.

Request a pipeline PWHT proposal

Send your pipe schedule and PWHT procedure — our engineers will recommend models, number of units per spread, cable and insulation sets, generator size and an estimated cycle per joint.

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Please include in your inquiry

- Pipe grade, OD and wall thickness; coating type
- Applicable code and PWHT procedure (temperature, time, rates)
- Service (sour / non-sour) and hardness limits
- Joints per day and number of crews
- Site power: grid or generator, voltage and frequency

