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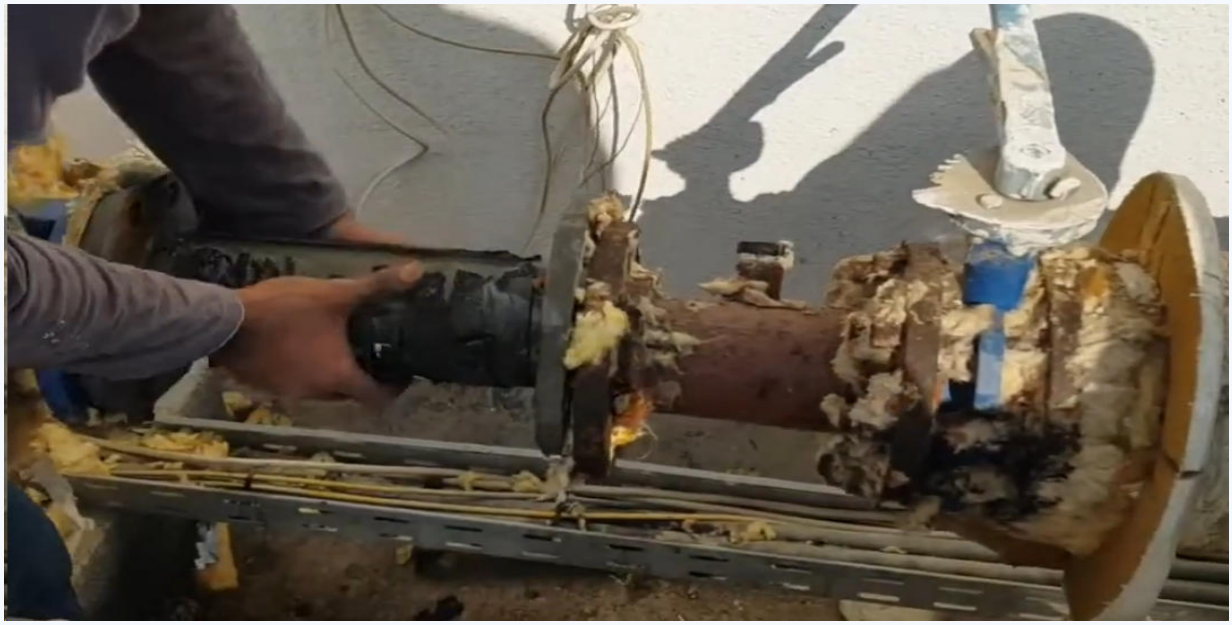
How to Replace BTU Meters and Install Thermowells

A real-world project guide for chilled-water energy metering



Project example 2 ultrasonic meters: DN65 and DN80 5 temperature-sensor thermowells	Guide status Technically reviewed: 30 July 2026 For adaptation to project requirements
Primary equipment reference Landis+Gyr T550 / ULTRAHEAT UH50 family	Work stages Survey - isolate - install - test - commission - handover

This guide explains a practical work sequence. It is not a substitute for the approved shop drawing, equipment submittal, risk assessment, permit-to-work system, welding procedure, or the installation instructions supplied with the actual meter.

1. Why this replacement needs more than a flange change

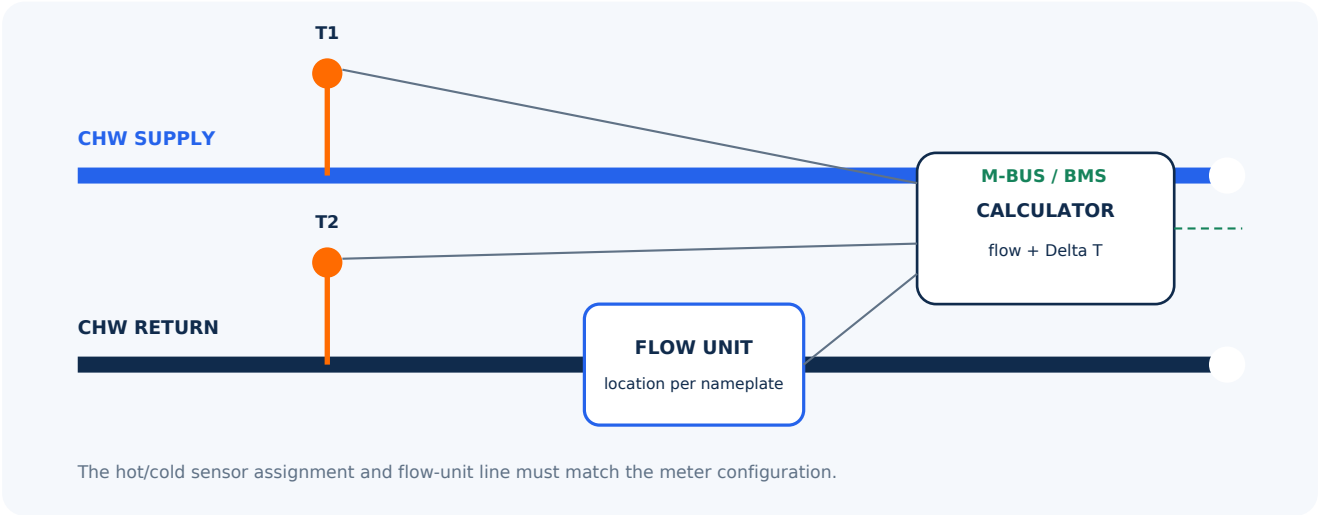
On paper, replacing a BTU meter looks straightforward: isolate the line, remove the old body, fit the new meter and reconnect the temperature sensors. On a live chilled-water system, that description is too simple. The real work is in controlling the shutdown, proving that the pipe is pressure-less, confirming that the new meter is genuinely compatible, protecting the pipe during thermowell work, and leaving enough evidence for the consultant and facility team to accept the installation.

This guide follows a project scope involving two Landis+Gyr ultrasonic meters - one DN65 and one DN80 - and five new sensor thermowells on AHU chilled-water lines. The sequence is written so that an engineer can adapt it to a similar project without treating the example quantities or meter details as universal requirements.

> The term BTU meter is commonly used on site. Technically, the assembly is an energy meter: it combines measured water volume with the temperature difference between the two sides of the circuit. A meter can power up and communicate with the BMS while still producing the wrong energy value if the flow direction, configured installation side, or temperature sensors are incorrect.

The first engineering decision	Confirm whether the instrument is configured as a cooling meter, heat meter, or combined heat/cooling meter. Do not decide the flow-unit location or hot/cold sensor assignment from pipe colour or habit. Use the meter nameplate, approved submittal and manufacturer instructions.

How the measurement chain fits together



Simplified measurement arrangement. The actual flow-unit line and temperature-sensor assignment depend on the meter configuration.

Scope covered by this guide

- Pre-work survey and recording of existing meter data.
- Mechanical isolation, draining and safe removal of flanged ultrasonic meters.
- Installation of new thermowell sockets or use of approved existing ports.
- Installation and identification of paired temperature sensors.

- Controlled refill, venting, leak testing and insulation reinstatement.
- Local meter checks, M-Bus/BMS verification and handover records.

Not covered	Pipe design changes, hydraulic balancing, meter sizing calculations, legal metrology approval, welding procedure qualification, BMS software modification and final authority approval remain project-specific specialist tasks.

2. Freeze the technical basis before the shutdown

The shutdown window is not the time to discover that the replacement body is longer, the flange drilling is different, or the communication module is missing. A reliable installation starts with a line-by-line comparison between the existing meter, the approved replacement and the pipework.

Replacement verification matrix

Item	What must match	Evidence
Meter function	Cooling, heating, or combined mode; configured hot/cold installation side	Nameplate, order code, approved data sheet
Hydraulic size	DN, permanent/nominal flow rate (qp), overload flow (qs) and pressure loss	Approved selection and manufacturer data
Mechanical fit	Face-to-face length, flange standard, pressure rating, bolt pattern and available clearance	Site measurement and approved drawing
Process limits	Water quality, working pressure and temperature range	Project CHW data and meter limits
Temperature sensors	Sensor type, matched pair, cable length, connection method and pocket compatibility	Meter/sensor certificates and instructions
Power	Battery, 24 V AC/DC, 110 V AC or 230 V AC version as applicable	Nameplate and wiring diagram
Communication	M-Bus or other module, terminals, baud rate, addressing and BMS point requirements	Approved controls submittal and BMS schedule
Metering records	Serial number, starting values, calibration/conformity status and asset tag	Handover register and client requirements

Why 'same DN' is not enough	DN65 or DN80 confirms only the nominal connection size. It does not confirm the correct qp, pressure rating, face-to-face dimension, meter function, sensor arrangement, supply voltage, or communication module.

Manufacturer points verified for the T550 / UH50 family

- Install or remove the meter only when the pipe is pressure-less.
- Flush the system before fitting the meter and install the body so its arrow agrees with actual flow direction.
- The manufacturer states that general inlet and outlet straight lengths are not required for this meter family. A special minimum distance of 10 x DN applies where the meter is in a common return downstream of the junction of two circuits, to allow temperature mixing.
- Temperature sensor tips must reach at least the middle of the pipe cross-section. Pockets are recommended for pipe sizes DN25 and above in the current installation instructions.

- For cooling-meter service, orient the flow-sensor cover to the side or downward, mount the pockets horizontally or vertically downward, separate the electronic unit as required, and form a downward cable loop to prevent condensate reaching the electronics.
- Open the isolation valves slowly at start-up, check leak-tightness, vent carefully, and confirm stable flow and plausible temperatures.

Straight-run note	Do not add a generic 5D/10D requirement to the method statement unless the approved meter manual or project specification requires it. Different ultrasonic meter designs have different installation conditions.

3. Roles, permits and release points

A clear division of responsibility prevents the mechanical team, controls team and facility operator from assuming that somebody else completed a critical check.

Role	Minimum responsibility
Project manager	Agrees shutdown window, resources, access and client/FM coordination. Confirms approved documents and materials are available.
Site engineer	Owns the work sequence, survey, method briefing, technical checks, inspection requests and daily records.
FM/operator	Identifies the correct valves and affected equipment, performs or witnesses isolation, accepts shutdown/restoration and confirms plant status.
HSE officer	Reviews risk controls, permits, LOTO, hot work, access, lighting, chemical exposure and emergency arrangements.
Pipe fitter / welder	Removes and installs mechanical items. Welding is completed only under an approved WPS by qualified personnel.
Controls technician	Records addresses and wiring, connects the approved communication interface, verifies local values and proves BMS data.
QA/QC engineer	Checks materials, hold points, inspection records, test evidence, snag closure and handover pack.

Minimum permits and controls

- Approved method statement, task risk assessment and toolbox talk.
- Mechanical isolation and lockout/tagout record; electrical isolation where required.
- Hot-work permit, fire watch and post-work fire monitoring for welding or cutting.
- Work-at-height permit and inspected access equipment where the meter cannot be reached from floor level.
- Approved lifting plan or controlled manual-handling arrangement for large flanged bodies.
- Environmental arrangement for drained water, glycol or treatment chemicals.
- BMS impairment/override record and restoration plan where alarms or control points are affected.

Hold points that should be written into the plan

Hold point	Stage	Release condition
HP-1	Before shutdown	Replacement materials, dimensions, permits and BMS plan accepted
HP-2	Before opening pipe	Isolation locked, drain open, zero pressure and safe temperature confirmed
HP-3	Before welding	Pipe drained/dry, WPS and welder approved, metallurgy and pocket position confirmed
HP-4	Before refill	Meter orientation, gaskets, bolts, pockets, sensors and cable routing inspected
HP-5	Before insulation	Leak test accepted and commissioning values recorded
HP-6	Before handover	BMS point-to-point test, labels, photos and as-built records complete

4. Tools, materials and pre-start records

Use the tool list as a planning check, not as a blanket instruction. The actual pipe material, flange rating, access and thermowell detail determine what is needed.

Group	Typical requirement
Mechanical	Correct spanners/sockets, calibrated torque wrench, flange spreader if approved, alignment tools, drain hoses and drip trays
Lifting/access	Rated lifting aid, inspected slings/shackles, scaffold or platform; do not lift the meter by its electronic unit
Welding	Approved welding set, compatible consumables, screens, fire blankets, extinguisher and temperature/fire monitoring equipment
Electrical/controls	Insulated tools, multimeter, communication interface/software where approved, laptop and point schedule
Inspection	Camera, labels, marker, measuring tape, flange/bolt records, pressure gauge and calibrated test instruments
Materials	Approved meter, matched sensors, correct pockets/sockets, new gaskets, bolts/nuts/washers if specified, insulation and vapour-barrier materials

Record the existing installation before touching it

☐	Meter manufacturer, complete model/order code, DN, qp, pressure rating and serial number photographed.	
☐	Energy, volume, flow, supply temperature, return temperature, operating time and error status recorded.	
☐	Flow arrow and actual water direction confirmed with the operator.	
☐	Existing meter location identified as configured hot side or cold side.	
☐	Temperature-sensor tags, cable routes, terminals and pocket locations photographed.	
☐	Power-supply type and communication module identified.	
☐	M-Bus primary/secondary address and BMS object/point reference recorded.	
☐	Pipe outside diameter, flange detail, face-to-face length and removal clearance measured.	
☐	Isolation valves, drains, vents and affected AHU/branch identified.	
☐	Insulation type, thickness, vapour barrier and cladding restoration requirement recorded.	

Practical lesson Take wide photographs showing the pipe arrangement as well as close-ups of terminals and labels. Close-ups alone do not prove which sensor came from which line when the system is being reassembled at night.

5. Safe work sequence

Each stage has a release condition. Do not move forward on verbal confirmation alone.

5.1 Plan the shutdown around the system, not the clock

Night work may reduce occupancy impact and heat exposure, but it is a project decision rather than a technical requirement. Confirm what will lose cooling, how long the branch can remain off, whether a standby circuit is available, and who has authority to restore the plant. Include contingency time for seized bolts, damaged gasket faces, blocked drains and BMS troubleshooting.

5.2 Isolate, lock and prove the line is safe

1. Stop the affected equipment in the agreed sequence and obtain operator confirmation.
2. Close the correct upstream and downstream isolation valves. Apply lockout/tagout in accordance with the site procedure.
3. Isolate the meter power or affected control circuit where the approved equipment arrangement requires it.
4. Open the designated drain and vent points in a controlled manner. Collect and dispose of water or treatment solution as agreed.
5. Verify zero pressure with a suitable gauge and confirm that draining has stopped. Treat a blocked drain as a possible trapped-pressure condition.
6. At the workface, loosen a test point only under the approved procedure. Do not rely on a valve position indicator as proof of isolation.

Stop condition Do not loosen flange bolts, drill or weld until the line is demonstrably pressure-less and at a safe temperature. If an isolation valve is passing, stop and agree an alternative isolation boundary.

5.3 Disconnect and preserve the metering information

- Label each sensor and communication conductor before disconnection.
- Record the terminal numbers and take a clear photograph that includes the cable tag.
- Protect removed communication modules, batteries and electronic parts against water and electrostatic discharge.

- Do not break calibration/security seals unless the work scope and responsible authority permit it.
- Keep paired components together. Do not mix the calculator, flow unit or matched temperature sensors between meters.

5.4 Remove the existing meter

- Support the meter body before fully releasing the bolts. Do not use the electronic unit as a lifting point.
- Release flange bolts evenly and remain clear of the joint until the absence of trapped pressure is confirmed.
- Remove the old gaskets and protect the open pipe ends against dirt, welding debris and foreign material.
- Inspect flange faces, alignment, corrosion, bolt condition and available gap. Record any condition outside the approved scope before correction.

6. Thermowell and socket installation

The original short method used the phrase 'mark and drill holes, weld threaded sockets and insert thermowells'. That is not enough for an occupied chilled-water system. The pocket location affects measurement quality, while the welding affects pressure integrity and the future life of the pipe.

Engineering checks before making a hole

- Confirm the exact number and purpose of each pocket. An odd quantity such as five may include a spare, monitoring point or a sensor serving another device; it must not be assumed to form complete meter pairs.
- Confirm pipe material, wall thickness, design pressure and compatible socket material.
- Confirm pocket thread, insertion length, pressure/temperature rating and compatibility with the approved sensor.
- Locate the sensor tip so it reaches at least the centre of the pipe cross-section, in accordance with the T550 / UH50 instructions.
- For cooling service, arrange the pocket horizontally or vertically downward to reduce condensation-related risk.
- Check access for sensor removal after insulation and avoid clashes with valves, supports, weld seams and other services.
- Obtain approval for the socket detail and welding procedure before site fabrication.

Controlled installation sequence

Step	Activity	Control
1	Set out	Mark each approved location and tag it to the drawing and sensor schedule.
2	Prepare	Confirm the pipe is drained and dry. Remove insulation locally without damaging adjacent vapour barrier.
3	Open pipe	Drill/cut by the approved method. Prevent swarf and debris entering the system; retrieve and inspect the cut-out.
4	Fit socket	Align and weld the approved socket under the WPS. Protect nearby equipment, cables and insulation.
5	Inspect weld	Complete visual inspection and any specified NDT. Record welder ID and inspection result.
6	Fit pocket	Clean threads/sealing faces and install using the approved sealing method and torque.
7	Fit sensor	Insert the correct paired sensor fully, secure it and apply tamper protection where required.
8	Identify	Label the line, pocket and sensor so hot/cold assignment remains unambiguous.

Do not guess the sealant

PTFE tape, thread sealant, gasket or metal sealing arrangement depends on the approved pocket design and process conditions. Use the manufacturer's detail and project material approval.

After welding

Remove debris, confirm that the bore is clear and complete the specified weld inspection before the pocket is hidden by insulation. Where the project requires pressure testing or non-destructive examination, record the accepted result as a hold point. Never use the new meter as a temporary spool during flushing or welding work.

7. Install the replacement meter and sensors

7.1 Prepare the pipe and meter

- Confirm that the replacement nameplate and serial number match the approved material inspection record.
- Flush the branch as required before installing the clean meter. Remove temporary strainers or debris only under the approved procedure.
- Clean and inspect flange faces. Use new, correctly rated gaskets; do not reuse compressed gaskets.
- Check that the pipe is aligned without forcing the meter body into place. Correct unacceptable pipe strain through the approved piping method.

7.2 Position and bolt the flow unit

1. Place the meter between the isolation valves with the body arrow in the actual direction of water flow.
2. Confirm the configured installation side shown on the meter matches the selected hot/cold line.
3. For cooling service, orient the transducer/black cover to the side or downward as required by the manufacturer.

4. Install the approved gasket and bolts. Bring the flanges together evenly using a cross-tightening sequence.
5. Apply the final bolt torque specified for the actual flange, gasket, bolt grade and project standard. Record the value and tool calibration reference.
6. Support the meter and adjacent pipework so no external load is carried by the meter body or electronic unit.

Torque statement	A universal flange-bolt torque cannot be given safely from DN alone. The method statement should identify the approved torque source rather than invent a value.

7.3 Install the temperature sensors

- Use the matched sensor pair supplied or approved for that meter. Do not exchange sensors between meter sets.
- Confirm hot-side and cold-side assignment from the meter marking and circuit function.
- Insert each probe fully into the approved pocket. The sensing end must reach the required immersion position.
- Do not cut, shorten or extend factory-connected sensor cables. For detachable sensors, follow the approved cable length and certification requirements for the exact version.
- Route cables away from hot surfaces, sharp edges, moving parts and power/high-frequency cables. The current manufacturer instructions specify a minimum separation of 500 mm from high-voltage and high-frequency cables.
- Form a downward loop where needed so condensate cannot track into the calculator. Reinstate grommets and seals.

7.4 Restore communication and power

- Confirm the fitted communication module and correct slot before termination.
- Apply electrostatic-discharge precautions when handling modules.
- Connect M-Bus or other communication wiring to the documented terminals and maintain polarity where the interface requires it.
- Do not connect the cable shield at the meter side unless the approved module instructions explicitly require it.
- For mains-powered versions, use a qualified electrician and the isolation/overcurrent arrangement required by the actual product instructions.

8. Refill, leak test and restore the branch

The first refill is a controlled test, not simply a return to service. Sudden pressurisation can disturb gaskets, trap air in the ultrasonic measuring section and create water hammer.

1. Complete the pre-refill inspection and remove tools, temporary plugs and foreign material.
2. Confirm drains are closed and vents are ready. Keep insulation open around every disturbed joint.
3. Open the isolation valves slowly in the approved order while venting trapped air.
4. Inspect flange joints, pocket threads and weld areas continuously as pressure rises.
5. Bring the line to the project-specified test/operating condition. Do not exceed the meter, thermowell or pipe rating.
6. Hold and record the leak test for the duration and pressure required by the project documents.
7. Vent until the meter flow indication is stable. Check the branch and AHU for normal hydraulic operation.

Manufacturer start-up check

For the current T550 / UH50 instructions, an F0 no-flow indication may take up to 100 seconds to clear after start-up. Persistent F0 requires checking for air, closed valves, no actual flow or an installation problem.

Leak-test record

Record	Entry
Test medium	_____
Test / operating pressure	_____
Start / finish time	_____
Gauge ID and calibration	_____
Flanges checked	DN65 ☐ DN80 ☐ Other: _____
Thermowell joints checked	TW-01 ☐ TW-02 ☐ TW-03 ☐ TW-04 ☐ TW-05 ☐
Welds checked	Visual ☐ NDT reference: _____
Result / witness	Pass ☐ Fail ☐ Witness: _____

Insulation reinstatement

- Reinstate insulation only after the leak test and inspection hold point are accepted.
- Match the existing insulation thickness and vapour-barrier system or the approved replacement detail.
- Seal all penetrations and terminations against condensation. Provide removable access where the meter, pocket or sensor must remain serviceable.
- Keep the meter display, optical interface, labels and service access visible.
- Photograph the accepted joints before and after insulation.

9. Commissioning: prove the measurement, not just the display

Commissioning should establish that the meter is hydraulically live, the temperature sensors are correctly assigned, the energy calculation is plausible and the same values reach the BMS. A single screenshot showing an M-Bus device online is not enough.

Local meter checks

Check	Acceptance evidence
Identification	Model/order code, serial number, DN, qp, configured installation side and asset tag match records.
Flow	Positive and stable under known system operation; no negative-flow warning.
Temperatures	Hot/cold or supply/return values are plausible for the actual cooling circuit.
Temperature difference	Sign and magnitude are plausible; no negative-difference warning under load.
Energy and volume	Counters advance in the expected direction during stable operation.
Status	No persistent fault code. F0, F1-F9 or installation warnings investigated and recorded.
Seals	Approved tamper/user seals fitted without damaging calibration seals.

M-Bus / BMS point-to-point checks

☐	Correct device discovered using the recorded serial/secondary address.	
☐	Primary address is unique where used; baud rate and bus settings match the approved network.	
☐	Energy, volume, flow, supply/hot temperature, return/cold temperature, delta T and status points are mapped.	
☐	Engineering units and decimal scaling agree between local meter and BMS.	
☐	Values are compared at the same time; local display and BMS readings are recorded.	
☐	Communication loss is proved by an approved test where required and the expected alarm is confirmed.	
☐	BMS overrides, forced values and temporary alarms are removed before handover.	
☐	Trend or repeated readings confirm stable communication and plausible movement under load.	

Common false acceptance

A meter may show flow and still calculate the wrong energy if the two temperature sensors are reversed. A BMS may show live values and still use the wrong scaling or units. Compare the complete measurement chain.

Recommended commissioning record

Parameter	Meter 1	Meter 2
Meter serial	_____	_____
Date / time	_____	_____
Flow	_____	_____
Hot / supply temperature	_____	_____
Cold / return temperature	_____	_____
Delta T	_____	_____
Energy	_____	_____
Volume	_____	_____
Status / fault code	_____	_____
M-Bus primary / secondary	_____	_____

10. Inspection and test plan

Activity	Inspection / record	Level	Release
Approved documents	Submittal, drawing, method, risk assessment, WPS, BMS schedule	Review	HP-1
Materials	Meter, sensors, pockets, sockets, gaskets and flange items	Material inspection	HP-1
Existing records	Serials, readings, wiring, addresses, photos and dimensions	Witness	Before shutdown
Isolation	LOTO, drain/vent and zero-pressure proof	Hold / witness	HP-2
Thermowell set-out	Location, orientation, insertion and service access	Witness	Before cutting
Socket welding	WPS, welder, visual inspection and specified NDT	Hold	HP-3
Meter installation	Direction, configured side, gasket, alignment, support and bolt record	Inspection	HP-4
Sensor installation	Matched pair, assignment, insertion, routing and labels	Inspection	HP-4
Leak test	Pressure/condition, duration, gauge and joint inspection	Hold / witness	HP-5
Commissioning	Local values, error status, energy progression and communication	Witness	HP-5
Insulation	Thickness, vapour seal, access and labels	Inspection	After HP-5
Handover	As-built, reports, photos, addresses, readings and snag closure	Review	HP-6

Acceptance criteria

- Installed equipment matches the approved order code and project duty.
- Meter and sensors are fitted according to their exact installation instructions.
- Pipework is leak-free at the accepted test condition and all required weld inspections are complete.
- Local flow and temperatures are stable and plausible under system operation.
- No unresolved meter fault or installation warning remains.

- BMS values, units and addresses correspond with the local meter and approved points list.
- Insulation and vapour barrier are restored without hiding required access or labels.
- All test evidence, serials, starting readings, photographs and as-built information are handed over.

11. Troubleshooting after replacement

Symptom	Likely causes	Action
No flow / F0	Air trapped, valves closed, no pump flow, blocked branch, wrong hydraulic condition	Vent carefully; prove actual flow and valve positions; check installation.
Negative flow	Meter body fitted against the system flow direction	Compare body arrow with proven flow direction; correct mechanically.
Negative temperature difference	Hot/cold sensors reversed or wrong configured installation side	Trace sensor tags and compare temperatures; correct assignment.
Unstable flow	Air, hydraulic disturbance, partial isolation, poor commissioning condition	Continue controlled venting; confirm branch operation and balancing status.
Implausible energy	Wrong sensor pair, scaling/unit error, low delta T, incorrect meter selection	Compare local values and calculation inputs; verify approved qp and configuration.
M-Bus device missing	Address conflict, open circuit, wrong module/slot, bus power or settings	Check module recognition, wiring, address, bus voltage and master settings.
BMS differs from display	Wrong register, unit conversion, decimal scaling or stale data	Compare timestamped local and BMS values; correct mapping/scaling.
Condensation at calculator	Cooling-service orientation or vapour seal is inadequate	Check split mounting, cable loop, pocket orientation and insulation/vapour barrier.
Flange leak	Damaged face, misalignment, wrong gasket, uneven tightening or pipe strain	Isolate and depressurise; dismantle and correct the root cause. Do not tighten a live leaking joint.
Pocket leak	Incorrect seal, damaged thread, defective weld or wrong component rating	Isolate and depressurise; inspect and repair under the approved procedure.

Do not troubleshoot mechanically under pressure

If a flange, thermowell thread or socket weld leaks, isolate and depressurise the line before correction. Tightening or disturbing a leaking pressurised joint can escalate the failure.

What a useful completion report looks like

- One-page summary of what was changed and any approved deviation.
- Before/after photographs with tags visible.
- Meter schedule showing model, order code, DN, qp, serial, address and starting readings.
- Thermowell schedule showing line, tag, pocket detail, sensor assignment and weld/NDT reference.
- Isolation record, leak-test sheet, bolt-torque record and calibrated instrument references.
- Commissioning sheet with simultaneous local/BMS values.
- Updated schematic, wiring, M-Bus points list and as-built location drawing.
- Outstanding observations with owner and due date; no hidden open items.

12. Engineer's field notes

Check the old installation, but do not copy its mistakes.	Existing flow arrows, sensor tags and BMS descriptions can be wrong. Use them as evidence to investigate, not as the sole design basis.
Keep meter sets physically separated.	When two replacements are carried out in one shift, label separate trays for each flow unit, calculator, sensor pair, module and fasteners.
Plan for condensate before insulation goes back.	Cooling-meter electronics and sensor entries can fail later even when the first leak test passes. Orientation, drip loops and vapour sealing matter.
Record values before and after the shutdown.	Starting readings and simultaneous temperature/flow values make later billing and BMS disputes much easier to resolve.
Do not close the ceiling or insulation on a promise.	Obtain the required inspection release while the joints, welds, tags and cables are still visible.
Commission under a meaningful load.	A zero-load check can prove communication, but it cannot prove correct energy direction or a realistic temperature difference.

Using this guide as a project method statement

For formal submission, replace the example data with the approved project information and attach the relevant drawings, risk assessment, ITP, manufacturer documents, WPS, sensor/pocket schedule and BMS points list. Name the responsible parties and test pressures. Do not leave phrases such as 'same specification', 'tighten as required' or 'test M-Bus' without defining the acceptance evidence.

Project-specific items still to be completed	Client, project, location, document number, exact meter order codes, qp, PN/flange standard, sensor and pocket details, power supply, M-Bus settings, test condition, WPS/NDT requirement, insulation detail and approval matrix.

13. References and verification notes

The technical content was checked against the following primary manufacturer document and the project source method statement. Standards and local specifications must be confirmed against the contract edition available to the project team.

Ref.	Document	Use in this guide
[1]	Landis+Gyr GmbH, Installation Instructions - Ultrasonic heat and cooling meter ULTRAHEAT T550 (UH50...) / ULTRACOLD T550 (UH50...), document 32 16 101 002 i, dated 29 April 2026.	Safety, installation orientation, sensor pockets, cable separation, start-up, fault indications and communication modules.
[2]	Landis+Gyr GmbH, Installation and Service Instructions UH50, issue January 2011, document UH 206-101m.	Legacy UH50 installation context for existing equipment; use the document supplied with the actual meter as controlling.
[3]	Project source: Method Statement for Replacement and Installation of BTU Meters and Thermowells, Rev00, dated 3 August 2025.	Example scope: two UH50-series meters, DN65/DN80, and five thermowells.
[4]	Qatar Construction Specifications (QCS 2014), where incorporated into the contract.	Do not cite QCS generically. Identify the applicable section, clause and project amendments in the formal submission.
[5]	Approved project drawings, equipment submittals, HSE plan, permit-to-work procedure, WPS and BMS point schedule.	These documents control project-specific acceptance criteria.

Manufacturer document access

Current T550 / UH50 installation instructions: Landis+Gyr official product document.

Important limitations

- This guide does not confirm that a particular replacement meter is commercially or metrologically interchangeable with an existing unit. Verify the complete order code and approved selection.
- No flange-bolt torque, welding detail, test pressure or thermowell rating is stated because these depend on the actual approved materials and project design.
- Requirements for legal metering, billing, calibration seals and conformity vary by jurisdiction and contract.
- The manufacturer's latest instructions supplied with the actual product take precedence if they differ from this guide.

Prepared / adapted by Name: _____ Signature / date: _____	Checked by Name: _____ Signature / date: _____
Client / FM witness Name: _____ Signature / date: _____	Approval reference IR / WIR: _____ Test report / revision: _____

BuildMEP Engineering Note
Good metering work is traceable. If the installation, test and BMS values cannot be reconstructed from the handover pack, the job is not fully complete.