WORKSHEET 3.10

# Calibration, and Whether a Meter Can Be Trusted

*Subchapter 3.10 · case in the book: Ghent*

Take the energy performance figure your property reported last year and follow it backwards to the instruments it came from: through the spreadsheet, through the sub-meters, to whatever physically measured something. Beside each instrument in that chain, write the date it was last checked against anything at all. If the chain ends at a device nobody has ever verified, your figure has the accuracy of that device, and nobody in the property knows what that is.

This worksheet turns the tools of the subchapter into a form you can fill in. The texts come from the book; the empty columns are for your own property. Adapt it before use: an unadapted checklist is exactly what the book warns against.

## Practical application: what to do in your property

| Step (from the book) | Done? | What we found / owner |
|---|---|---|
| Trace one reported figure backwards to the instruments it rests on, and note where verification stops. | | |
| Reconcile the sub-meters against the supply meter every month and record the percentage, once its level has been explained. | | |
| Then watch for movement in that percentage, and never set a target for it. | | |
| Add one line to the maintenance report format: what was removed, what was fitted, its class, and whether the reading moved that day. | | |
| Verify once, against a portable instrument, the two or three sub-meters that carry the most weight. | | |
| For any derived value, record the underlying instruments and the date any of them was changed. | | |
| Write the exemption page: which instruments are not verified, and why that is acceptable. | | |
| When consumption moves, check the instrument before checking the plant. | | |

These steps are the book's method, not requirements of ISO 50001. Evidence can take whatever form suits the property; a separate document is needed only where an applicable requirement, or the property's own system, makes it necessary.

## Verification Pact: what is believed, tested against the standard

| What is commonly believed | What actually holds | Our position |
|---|---|---|
| «Our meters are calibrated.» | The supplier's billing meters are. The instruments your indicators are built from are usually a different set entirely. | |

| What is commonly believed | What actually holds | Our position |
|---|---|---|
| «Calibrating everything is unaffordable.» | It is, and it is not what the standard asks for. Stability can be shown by comparison at no cost, and accuracy by a one-off verification of the instruments that carry weight. | |
| «The sub-meters do not add up to the bill.» | They never will. The residual needs explaining once; after that, a change in it is the signal to watch. | |
| «The reading has been stable for three years, so it is reliable.» | Or it has been wrong since installation. Stability distinguishes drift from error, not error from correctness. | |
| «The contractor replaced a faulty sensor.» | Of what class, and did anything shift that day? On a six-degree difference, half a degree at each end in opposite directions can move a derived value by about a sixth. | |
| «We record the efficiency of the unit every month.» | You record a computation. Its inputs are two temperatures and a flow, and none of them appears in the record. | |

## Common mistakes: a self-check

| Mistake (from the book) | Present here? | Action / owner |
|---|---|---|
| Assuming that verified billing meters make the measurement chain verified. | | |
| Treating certified accuracy of every device as the requirement, when the standard asks for accurate and repeatable data established by means the property chooses. | | |
| Never reconciling sub-meters against the supply meter, and so having no signal at all. | | |
| Trying to close the reconciliation gap, and adjusting readings to do it. | | |
| Reporting a derived value without recording the instruments it was derived from. | | |
| Accepting a service report that records a component and not a class or a shift. | | |
| Trusting an instrument because it has always read the same, when it has always read wrong. | | |
| Responding to the subject with a calibration programme that costs more than the decisions it informs. | | |

## Operative synthesis

- **Every claim in this volume rests on instruments, and in an ordinary hotel exactly two of them have ever been checked by anybody, and both belong to the supplier. The rest were fitted by an electrician in a busy week and have been believed ever since.**
- **The requirement is not calibration. It is that the equipment used for the key characteristics be accurate and repeatable, and that the property be able to say how it knows. Repeatability is the half that the question whether performance changed leans on most, and it can be established for nothing by comparing instruments that already exist (accuracy, the other half, rests on commissioning evidence and one-off verification): sum the sub-meters against the supply meter, record the percentage, and explain its size once and then watch it for movement.**
- **Two classes escape that method and need their own defence. A derived value (efficiency, heat output, any coefficient) is only as good as its worst input, and two temperature sensors half a degree out in opposite directions across a six-degree difference can move the result by about a sixth; its defence is a record of the instruments and the dates they were changed. An instrument that has been wrong since installation produces a stable plausible number for ever and no monitoring regime will ever question it; its defence is commissioning evidence or, where the figure carries no key characteristic, payment or obligation, an honest written statement that it is unverified.**
- **In Ghent the reconciliation was free, took an hour a year, found two of the three errors, and had never been done. The third error was found by asking a question nobody asks of a number that has never moved. The next subchapter stays with the instruments and turns to the system that acts on them: to who is able to change a set point in a building management system, who did, and whether the system would be able to tell anybody.**

## Action plan for our property

| Action | Owner | Due | How we will know it worked |
|---|---|---|---|
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Source: Francesco Dore, The Helm and the Lens, Volume 4b «The Lens», subchapter 3.10. Edizioni Effedore, 2026. Clause references are paraphrased; this sheet does not reproduce the text of ISO 50001, ISO 50003 or ISO/IEC 17021-1. It is not legal advice: energy law is that of the place where the property operates.