

Creating a gas measurement and monitoring plan for your industrial site

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About this update

This dated news record has been reorganised for clear reading and connected to current guidance.

Publication date: July 9, 2019.

Status note: Present-tense statements, market figures, deadlines and program details in the archived record belong to its publication date. Check current official sources before making a decision.

What this article reported

Gas costs are hurting business and have been for some time. Making informed and smart decisions using good data can help reduce operating costs. The measurement and monitoring of energy flows such as gas, steam, hot water, hot air or electricity is needed, however it can be technically challenging and often expensive.

For these reasons, a well-thought-out measurement and monitoring plan is an essential part of any industrial site, and can be achieved using a 5-step process:

Step 1 - Specify the goal and understand what is already known. Step 2 - Prioritise what to measure. Step 3 - Investigate and select energy management software and long term data storage solution. Step 4 - Specify and select suitable meters and their communication system. Step 5 - Develop a budget and implementation plan

Step 1 - Specify the goal and understand what is already known. This is the essential part of a metering and monitoring upgrade as it determines the useful data and how it will be used. Other equally valid goals could be:

"Determine the Coefficient of Performance (COP) of the refrigeration system to assist in developing a business case for its replacement"

"Understand how much one area of the plant costs to run"

"Establish plant energy performance KPIs and track them"

Once the objective is clear, spend time determining what data is available and what additional metering is necessary. In many cases some metering is already in place but unused.

Step 2 - Prioritise what to measure. Keeping in mind the initial goal, determine the highest priority energy flows that need to be measured. Start by building a preliminary energy balance on either the site, a specific utility, a plant area or an individual piece of equipment. It isn't necessarily the largest energy users that are the priority.

Step 3 - Investigate and select energy management software and long term data storage solution
Before jumping in to select meters, consider how to collect and store the data, as well as who needs the

information. The purpose of metering is to provide data that is usable, and insights are acted upon. Data collection may use a pre-existing data management or SCADA system, or a new online portal. The range of people needing to access the data might range from plant operators, plant managers, energy managers, or compliance personnel.

Step 4 - Specify and select suitable meters and their communication system. There are hundreds of different meters available on the market, and all of them have different benefits and drawbacks. Consider things like precision, repeatability, flow range, method of installation and format of the data being reported.

Step 5 - Develop a budget and implementation plan. The budget and implementation plan of the metering and monitoring project must consider:

Schedule of works to be completed.

Plant down time and commissioning requirements.

Communication and data storage installation.

Safety of the works carried out.

New procedures or responsibilities to utilise the data

Meter validation and ongoing meter maintenance.

Meter validation is often overlooked. To test if the meter is accurate, first compare its data with what is expected, or with other meters up or downstream. At Northmore Gordon we often find meters in the field that have been incorrectly reporting energy usage for years!

Make informed and smart decisions about energy usage. Acting on the data is what really matters. Software tools exist that are designed to aggregate data from industrial data management systems and present it in a way that is easy to understand. If information is easy to understand, it is more likely to be trusted and acted upon.

Northmore Gordon is passionate about helping large industrial and commercial customers increase energy productivity. We can help you design a metering, monitoring and energy management solution for your specific needs.

For more specific details on gas metering and monitoring, you might want to check out the NSW OEH publication co-authored by Northmore Gordon: "Gas Measurement and Monitoring Guide" or contact me.

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For current use, confirm the applicable scheme rules, regulator notices, market date and reporting period. Keep historical prices or forecasts separate from present quotes and verified outcomes.

Separate source-reported facts from forecasts, targets and commentary. For a current project, retain the official source, version, effective date, assumptions and decision record in the evidence file.

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What is the 5-step process for creating a gas measurement and monitoring plan described by Northmore Gordon?

The five steps are: Step 1 – Specify the goal and understand what is already known; Step 2 – Prioritise what to measure; Step 3 – Investigate and select energy management software and long term data storage solution; Step 4 – Specify and select suitable meters and their communication system; Step 5 – Develop a budget and implementation plan. This structured approach ensures that metering systems answer operational or investment questions rather than collecting data without clear purpose.

Why is specifying the goal (Step 1) considered essential in a metering and monitoring upgrade?

Specifying the goal determines what data will be useful and how it will actually be used. Example goals include determining the Coefficient of Performance of a refrigeration system to support replacement decisions, understanding area-specific operating costs, or establishing plant energy performance KPIs for tracking. Once the objective is clear, you can determine what data already exists and what additional metering is necessary, since some metering is often already in place but unused. This prevents wasteful data collection.

How should a site prioritise what to measure under Step 2?

Keep your initial goal in mind and determine the highest priority energy flows that need to be measured. Start by building a preliminary energy balance at the site, utility, plant area, or individual equipment level. The priority is not necessarily the largest energy users, but rather the flows that support your stated decision. This ensures measurement effort is proportionate to the questions you need answered and avoids collecting unnecessary data.

What data ownership and responsibilities must be settled before meters are commissioned?

Before installation, identify who owns the data and who can access it, how data will be exported and in what format, and how equipment changes will be recorded. Clarify time-zone and daylight-saving treatment, and whether readings represent interval energy, cumulative register values, or power measurements—since these cannot be combined without understanding their meaning. Also establish how missing periods, resets, duplicates and implausible values will be detected and documented. Preserve original observations alongside any corrected analysis dataset.

What factors should be weighed when selecting meters and communication systems (Step 4)?

Hundreds of different meters are available, each with different benefits and drawbacks. Consider precision, repeatability, flow range, method of installation, and the format of data being reported. Your selection should match the information requirement you defined in Step 1—not the most expensive or sophisticated option, but the instrument that answers your operational or investment question reliably. Match the measurement period to your operating cycle to ensure representative data collection.

How does metering and monitoring data support energy management decisions?

A useful metering system answers a specific operational or investment question by collecting data that can be interpreted and acted upon. Metering provides the data foundation for energy performance measures such as total consumption, cost, peak demand, and energy per production unit. This information enables monthly energy reviews, identifies unexpected changes requiring investigation, and supports performance tracking against agreed indicators. The data becomes operationally valuable only when responsibilities are assigned for reviewing it and responding to anomalies.

What is the relationship between metering planning and measurement and verification?

Early metering planning is critical for measurement and verification projects. The NSW Government's M&V; guide emphasises that planning and a complete operating cycle must occur before installation, as leaving measurement until immediately before implementation can make the intended analysis difficult or impossible. A metering plan should establish whether your data will cover representative pre- and post-project conditions, include relevant operating variables that could affect consumption, and define how timestamps, units and corrections will be retained. This ensures credible evidence for verifying energy savings.

How does Northmore Gordon support the metering and monitoring planning process?

We deliver metering and monitoring planning services that include costing, purchasing support, and oversight of metering installation. The company has demonstrated this capability through projects such as Bulla Dairy, where it provided planning and installation oversight. We also reference our knowledge library guidance on metering and data quality, which connects business needs definition with system procurement, installation and functional specifications. The company can help establish appropriate scope and deliverables for your specific site decision.