Smarter energy use in production and quality control

Energy metering enhances visibility into production processes, helping manufacturers reduce waste, improve quality and boost performance.

Who is this for?

Production managers, operations leaders, engineering teams and sustainability officers in manufacturing operations seeking to improve throughput, consistency and energy intensity.

Key metering benefits

- Identify energy-intensive processes and poor-performing assets.
- Help detect variability and conditions that impact product quality.
- Support smarter shift planning, equipment sequencing and maintenance.
- Enable energy intensity and quality KPIs at the line or asset level.
- Strengthen justification for automation, upgrades and system controls.

Implementation tips

- **Start with high-impact systems:** focus on known problem areas like ovens or chillers.
- **Use interval data to build baselines:** track energy per shift, product or cycle.

Why it matters

Manufacturers face pressure to cut costs, lower emissions and maintain consistent product quality amid volatile energy prices and tight production schedules. Yet the energy used across many systems such as presses, pumps, dryers, chillers or ovens is often poorly measured or misunderstood, leading to process inefficiencies and missed opportunities.

Metering provides real-time visibility at the equipment or line level. It helps detect sub-optimal conditions, identify variability and fine-tune conditions that impact both energy use and product outcomes. Integrated with Supervisory Control and Data Acquisition (SCADA) and Programmable Logic Controller (PLC) systems, metering enables deeper insights into run-time performance, asset condition and production sequencing.

Energy becomes a controllable input, not just a background cost, giving manufacturers an edge in efficiency, quality and competitiveness.

- **Share early insights with teams:** use results to drive engagement across operations and engineering.
- **Integrate into continuous improvement:** expand scope to link data to quality, maintenance and reporting frameworks.

How it works in practice

Process-level metering allows teams to correlate energy use with production performance and product quality. By submetering key loads and tracking energy over time, manufacturers can:

- detect energy waste from standby loads or overlapping cycles
- pinpoint variability across shifts, product lines or operating conditions
- optimise scheduling and warm-up routines to reduce peak loads
- link energy intensity to reject rates, downtime or maintenance needs
- support continuous improvement using measured data.

The result: less rework, lower overheads and more consistent output.

What to look for in a good system:

- asset-level metering by machine, zone, and line integration with SCADA systems, PLC or manufacturing execution systems (MES)
- real-time alerts for abnormal loads or process drift
- dashboards that link energy to throughput or product specifications
- exportable datasets for internal analysis or ISO 50001 compliance.

Real life success stories

1. **A food manufacturer**
   - Metered pumps, heat exchangers and packaging lines.
   - Reduced gas use by 16% by tuning flow rates and sequences.
   - Identified compressor cycling tied to stoppages.
   - Justified automated valve controls and VSD co-funding.

2. **A regional food manufacturer**
   - Installed SCADA-connected meters on heat exchangers and gas equipment.
   - Refined process timing to cut gas use by 3,200 GJ/year.
   - Identified line-level inefficiencies driving peak loads.
   - Supported shift sequencing and targeted maintenance.

3. **A bakery using PLC-integrated metering**
   - Maintained oven temperature control
   - Cut defect rates by 9%.
   - Extended maintenance intervals.

4. **A metro industrial ingredients facility**
   - Monitored boiler energy transfer and feedwater inputs.
   - Optimised economiser operation and cut boiler cycling.
   - Saved well over 5,000 GJ/year.
   - Improved batch consistency by adjusting process temperatures.

5. **A beverage facility**
   - Coordinated cleaning and pasteurisation using metering data.
   - Cut steam use by 12%.
   - Reduced rework by improving thermal control.

Related resources

- NSW Energy Savings Scheme
- NSW Government programs, grants and scheme