



Department
of Energy &
Climate Change

chp QA

Monitoring & Metering : Satisfying CHPQA Metering Requirements

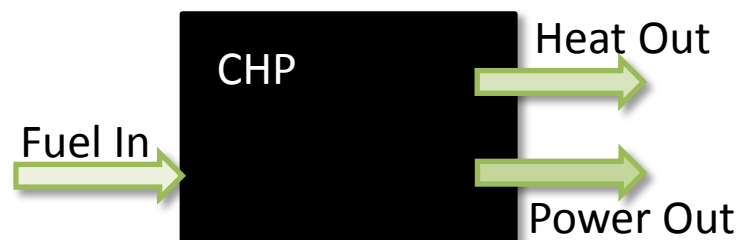
Bill McKay



Monitoring & Metering

➤ Scheme Boundaries

- black box approach



- can be flexible, as long as
 - boundaries meet the CHPQA requirements
 - appropriate monitoring systems are in place



Monitoring & Metering

- It is required to monitor the key inputs and outputs of a scheme:
 - All fuel inputs
 - Total power generated
 - Useful heat
 - Power imports/exports (optional)

- Required to satisfy metering quality requirements

- Metering requirements are detailed in
 - Fuel Inputs – GN14
 - Power Outputs – GN15
 - Heat Outputs – GN16



Fuel Input

Gases

- Natural gas, biogas, syngas

- Billing meters, correction, CV



Liquids

- Hydrocarbon oils, bioliquids

- Flow meters, purchase & stock control, CV

Solids

- Homogeneous
 - Coals, some biomass
- Heterogeneous
 - Wastes, biomass



- Gravimetric, purchase & stock control
- CV, Moisture analysis
- Sampling protocol





Power Output

- Generator – power measured at terminals
 - Appropriate Class meter – GN15
 - or demonstrate meets specification



- Export/Import – optional
 - Meter Class appropriate



- Mechanical Power
 - equivalent electrical output x 1.05



Heat Output

➤ Location

- Monitoring must be located such that the 'useful heat' is monitored
 - eg heat rejection and internal use (eg deaeration, pre-heating) must be accounted for

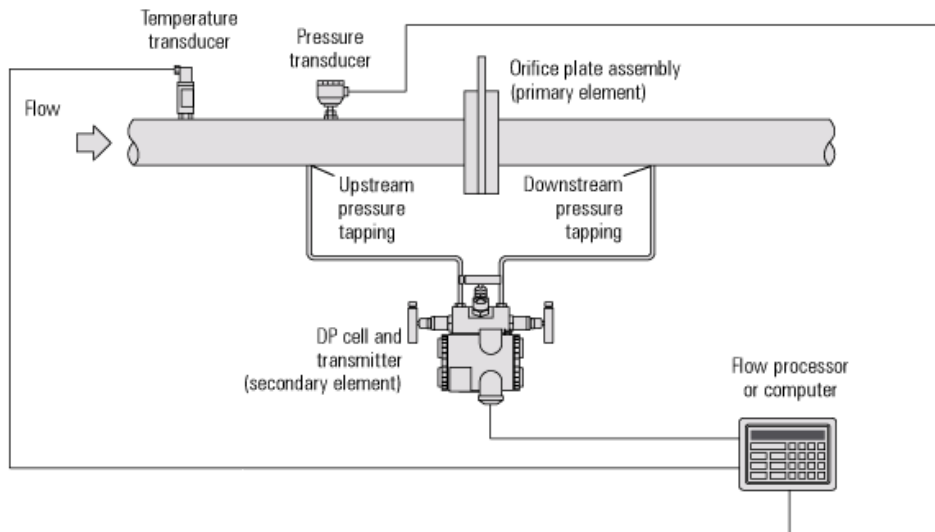
- Water/Thermal Oil

- Packaged device – EN1434
- Component device
 - flowmeter
 - temperatures
 - calculator

- Steam

- Consists of

- primary device (pipeline unit)
- secondary device (signal unit)
- flow processor or computer





Metering Quality

➤ Why?

- To maintain a robust monitoring system
- To ensure benefits are properly and fairly targeted

➤ Guidance

- Meters (GN17) – includes a ‘simplified’ approach to calculating uncertainty for meters
- Calculations (GN18) – details the approach to determining and combining uncertainties for calculated inputs/outputs
- Adjustments (GN19) – shows how to adjust inputs/outputs in CHPQA submissions for excessive uncertainty

