Pre-Heater SCADA and Consumption Data Update

18 January 2023

Data Provision

- SCADA data
  - NGN 54 sites
  - SGN 10 sites
  - WWU 80 sites

- Usable pre-heater consumption data
  - NGN 6 sites
  - SGN 10 sites
  - WWU 8 sites

DNV

Data Provision

- Sites with both full SCADA data and usable pre-heater consumption data
  - NGN 6 sites
  - SGN 5 sites
  - WWU 8 sites

- Subject to supply of SCADA data for Little Burdon

- Total sample size of 19 sites for assessment of OUG model accuracy

DNV

Confidence Calculation

- The purpose of using pre-heater consumption data is to estimate OUG model error using a sample of as many sites as possible. This requires, for each site in the sample:
  - Modelled pre-heater consumption (based on SCADA data)
  - Actual pre-heater consumption
- We have the necessary data to carry out this calculation for a sample size of n=19 sites

- Larger sample = higher confidence in estimated model error
- Smaller sample = lower confidence in estimated model error

- Confidence is based on the width of the Confidence Interval around the error estimate (i.e. the uncertainty in the output)

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Confidence Calculation

- Largest possible sample (i.e. all sites) = 100% confidence

- Smallest possible sample (2 sites) = 0% confidence
  - Sample size 1 does not allow a Confidence Interval to be calculated

- Sample size n=19 gives 67.8% confidence
  - This sample size reduces uncertainty by 67.8% from the theoretical maximum

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Confidence Calculation

- Confidence scores for a range of sample sizes for comparison

Sample Size	Confidence
2	0.0%
5	36.8%
10	55.4%
19	**67.8%**
35	76.4%
50	80.4%
100	86.4%
200	90.8%
500	95.0%
All	100.0%

DNV