gas AI - math formula

person usage index

$$x_{i,s,e} = \frac{U_{i,s,e}}{A_i \times \left(\sum_s^e \theta - (e-s)\vartheta_i\right)} \tag{1}$$

where is :

- $_i$: person index
- $_s$: start date
- $_e$: end date
- $U_{i,s,e}$: Person i Consumption Between the start and end dates
- A_i : Area of person i houses
- $\sum_s^e \theta$: Total average daily temperature Between the start and end dates
- ϑ_i : person i desired temperature = temperature at the minimum gas consumption per year

Weighted average and standard deviation

$$\omega_k = \frac{7.87 \times \sigma_{k\,all}}{(e-e_k)|x_i - \mu_{k\,all}| \times \mu_k} \tag{2}$$

Ebbinghaus forgetfulness curve

$$: \frac{7.87}{x}$$

$$\mu_i = \sum_{k=1}^{i\ all\ data} \frac{x_k \times \omega_k}{\Sigma\omega} \tag{3}$$

$$\sigma_i = \sqrt{\sum_{k=1}^{n} \frac{(x_k - \mu_i)^2}{n}} \tag{4}$$

where is :

- e_k : End date in load reading k
- e : end date
- $\mu_{k\ all}$: data mean in load reading k
- $\sigma_{k\ all}$: Standard deviation of all data in load reading k
- n : all person i data

Conditions under consideration

$$E_i = \frac{X_i - \mu_i}{\sigma_i} = Error\ factor$$

if -2 < E_i < 2 then data is safe