Erratum to “Techno-economic evaluation of electricity price-driven heat production of a river water heat pump in a German district heating system”

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This is an erratum to the article Techno-economic evaluation of electricity price-driven heat production of a river water heat pump in a German district heating system published by the International Journal of Sustainable Energy Planning and Management with DOI: https://doi.org/10.5278/ijsepm.6291 [1]

In the original published version of the article equation (10) was displayed incorrectly.

Corrected equation (10):

\[
\text{COP}_{\text{cascade}} = \frac{\text{COP}_1 \cdot \text{COP}_2}{\text{COP}_1 + \text{COP}_2 - 1} + \text{COP}_{\text{shift}}
\]

with:

\[
\text{COP}_1 = a \cdot (\Delta T_{\text{lift,1}} - 0.5 \cdot \Delta T_{\text{lift,shift}} + 2 \cdot b)^c \cdot \left( T_{\text{in,lift}} + 0.5 \cdot \Delta T_{\text{lift,shift}} + b \right)^d
\]

\[
\text{COP}_2 = a \cdot (\Delta T_{\text{lift,2}} - 0.5 \cdot \Delta T_{\text{lift,shift}} + 2 \cdot b)^c \cdot \left( T_{\text{out,h}} + b \right)^d
\]

\[
\Delta T_{\text{lift,1}} = \Delta T_{\text{lift,2}} = 0.5 \cdot \Delta T_{\text{lift,shift}} = 0.5 \cdot ( T_{\text{out,h}} - T_{\text{in,lift}} )
\]

\[
\text{COP}_{\text{shift}} = \text{vertical shift of COP function [-]}
\]

\[
\text{COP}_{\text{shift}} = 0.37
\]

\[
a, b, c, d = \text{fit parameter [-]}
\]

\[
a = 40.789, \quad b = 1.0305, \quad c = -1.0489, \quad d = 0.29998 \quad \text{[2]}
\]

\[
T_{\text{out,h}} \quad \text{heat carrier temperature at condenser outlet [K]}
\]

\[
T_{\text{in,lift}} \quad \text{heat carrier temperature at evaporator inlet [K]}
\]

\[
\Delta T_{\text{lift,shift}} \quad \text{horizontal shift of COP function [K]}
\]

\[
\Delta T_{\text{lift,shift}} = 12.8
\]

Description of the corrected mistakes:

In the equation for COP\(_1\) the last exponent is corrected to be \(d\) instead of \(a\).

In the equation for \(\Delta T_{\text{lift,1/2}}\) the third = sign was depicted as – in the published version.

In the equation for \(\Delta T_{\text{lift,1/2}}\) \(T_{\text{in,lift}}\) was depicted as \(T_{\text{h,in}}\) in the published version.

The publisher would like to apologise for any inconvenience caused.

References


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