Corrigendum

Corrigendum to <'Benchmark of proton exchange membrane fuel cell parameters extraction with metaheuristic optimization algorithms'>
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<M. Kandidayeni [a,b] *, A. Macias [a,b], A. Khalatbarisoltani [a,b], L. Boulon [a, b], S. Kelouwani [c]>

<[a] Hydrogen Research Institute, Department of Electrical Engineering and Computer Science, Université du Québec à Trois-Rivières, Trois-Rivières, Québec, G9A 5H7, Canada

[b] Canada Research Chair in Energy Sources for the Vehicles of the Future

[c] Hydrogen Research Institute, Department of Mechanical Engineering, Université du Québec à Trois-Rivières, Trois-Rivières, Québec, G9A 5H7, Canada>

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The authors regret that the manuscript contains a typographical error in Eq. (7). The correct form of this equation is:

$$\begin{cases} V_{Act} = -[\xi_1 + \xi_2 \, T_{stack} + \xi_3 \, T_{stack} \ln(Co_2) + \xi_4 \, T_{stack} \ln(I_{FC})] \\ Co_2 = \dfrac{Po_2}{5.08 \times 10^6 \, \exp\left(-498/T_{stack}\right)} \end{cases} \qquad (7)$$

Moreover, there had been a typographical error in the code of the previous version of the paper for the values of maximum current (I_{max}) and active area (A) to calculate J_{max}. The reported value for J_{max} in Table 7 should be changed to:

$$J_{max} = \frac{I_{max}}{A} = \frac{27 \, A}{52 \, cm^2} = 0.51923 \, A \, cm^{-2}$$

The reported I_{max} in the first line of page 921 should be changed to 27 A. Due to this typographical error, the authors needed to update the parameters in Table 8 and Table 9 and as a result replot Figures 7 to 10. It should be noted that the mentioned typographical errors have not changed the conclusion or the discussion of the paper results. The only reason that the authors have updated all the data is to make this work reproducible for the researchers who want to use the provided data in their research projects. The authors would like to apologise for any inconvenience caused. Hereinafter, the updated tables and figures are presented.

Table 7: The characteristics of the Horizon 500-W open cathode PEMFC

Technical specification	
Type of FC	PEM
Rated Power	500 W
Rated performance	22 V @ 23.5 A
Max Current (brand new)	42 A
Rated H2consumption	7 SLPM
Ambient temperature	5 to 30 °C
Max stack temperature	65 °C
Cooling	Air (integrated cooling fan)
Reactants	Hydrogen and Air
N_{cell}	36
P_{H2}	0.55 atm
P_{O2}	1 atm
A	52 cm²
l	25 μm
Actual J_{max}	0.51923 A cm⁻²

Table 8: The identified parameters and the obtained fitness value for 500-W Horizon PEMFC

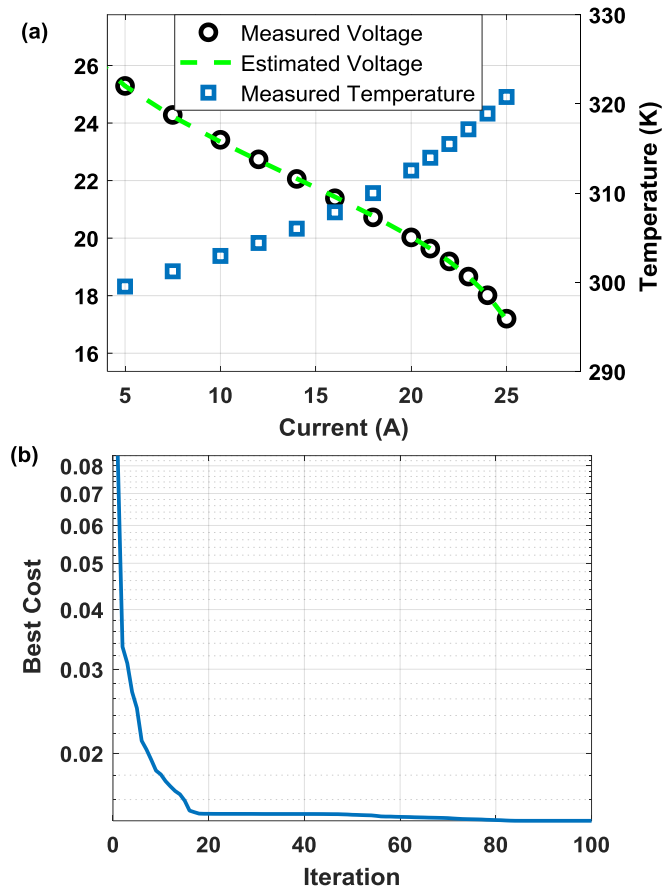| Parameter	Estimated value by SFLA
ξ_1	-0. 8532
$\xi_2 \times 10^{-3}$	2. 698
$\xi_3 \times 10^{-5}$	9.136174
$\xi_4 \times 10^{-5}$	-16.1
$R_C \, (\Omega) \times 10^{-4}$	7.999
λ	13
β (V)	0.048504
Best fitness	0.01444

Figure 7: 500-W Horizon PEMFC case study: a) estimated polarization curve by SFLA, b) fitness function (SSE) minimization trend comparison

Table 9: The steady-state characteristics of the 500-W Horizon PEMFC

| Current (A)	$V_{FC,meas}$ (V)	$V_{FC,est}$ (SFLA)	|Residual|	Temperature (K)
0.6	29.370000	29.4951	0.125191	296.200000
2.5	26.777390	26.8104	0.033025	297.810917
5	25.290250	25.2894	0.000774	299.520062
7.5	24.281859	24.2381	0.043659	301.227449
10	23.418000	23.3590	0.058951	302.950000
12	22.739103	22.7106	0.028503	304.404279
14	22.058523	22.0792	0.020775	306.006926
16	21.386148	21.4420	0.055883	307.842680
18	20.721728	20.7738	0.052142	309.994399
20	20.026000	20.0395	0.013585	312.532000
21	19.636350	19.6297	0.006596	313.961094
22	19.191807	19.1748	0.016932	315.501399
23	18.663630	18.6524	0.011152	317.153087
24	18.015227	18.0208	0.005577	318.913454
25	17.201250	17.1865	0.014695	320.776562
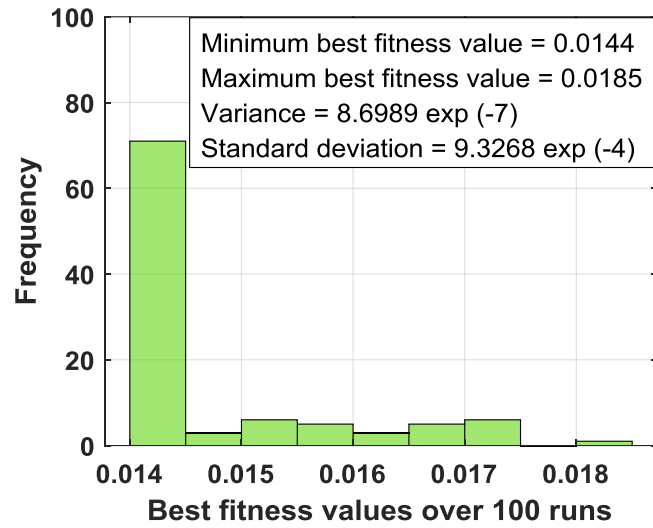
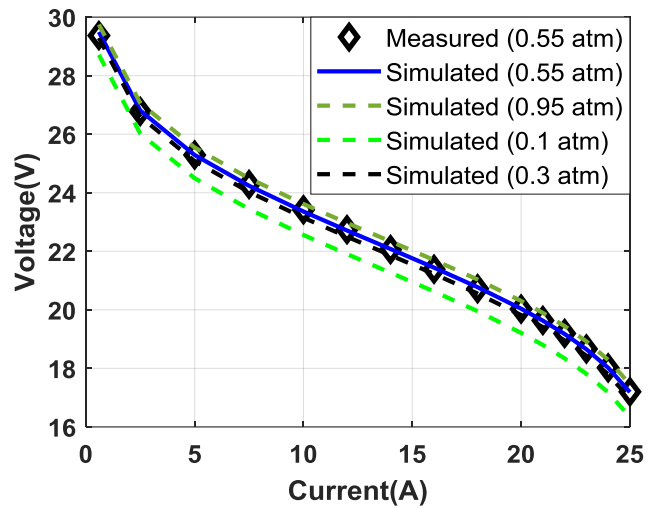Figure 8: The histogram analysis of SFLA

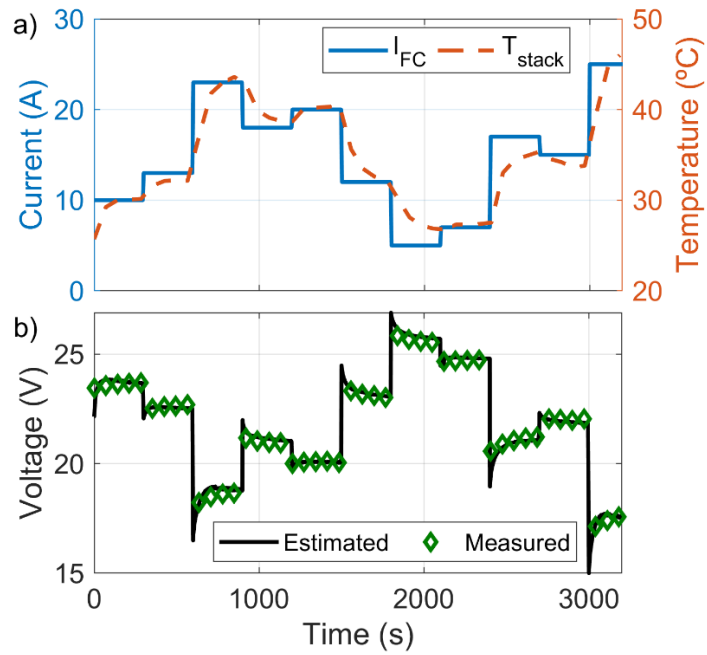Figure 9: Polarization behaviour analysis in different partial pressures of hydrogen

Figure 10: Performance validation of the tuned PEMFC model for the Horizon 500-W PEMFC case study: a) the current profile applied to the real PEMFC and the corresponding measured temperature, and b) the comparison of the estimated and measured voltage.

<Corresponding author details: Mohsen Kandidayeni>
<Corresponding author email address: mohsen.kandi.dayeni@uqtr.ca>