

Supplementary Material

Optimizing Alkaline Water Electrolysis: A Dual-Model Approach for Enhanced Hydrogen Production Efficiency

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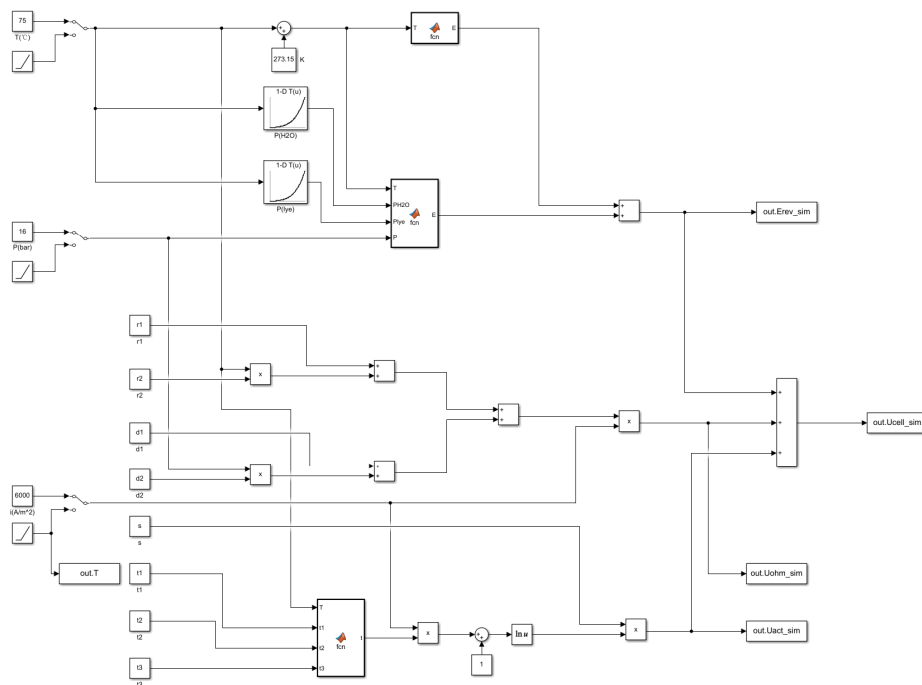


Figure. S1 Voltage model of alkaline electrolyzer

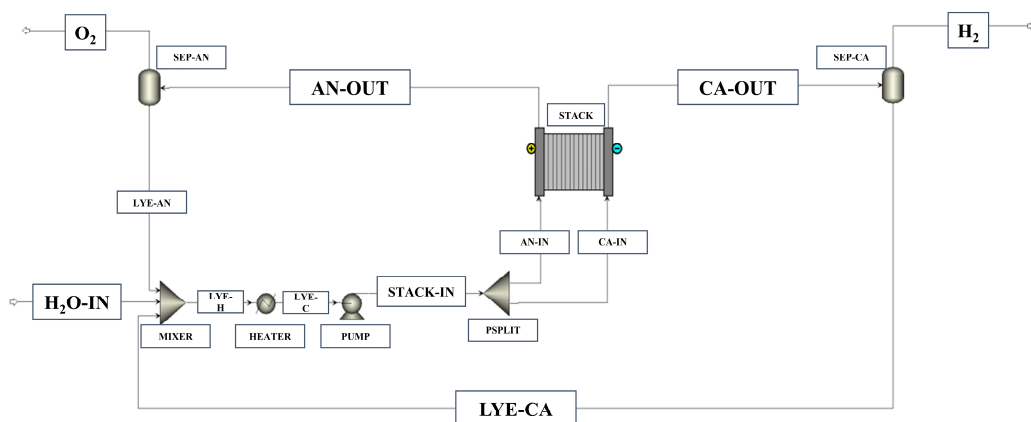


Figure. S2 Model of alkaline electrolyzer system

Reactions

Anode

$2OH^- = 0.5O_2 + H_2O + 2e^-$

Cathode

$2H_2O + 2e^- = H_2 + 2OH^-$

Overall

$H_2O = H_2 + 0.5O_2$

Operating Conditions

Total power

kW

Total current

199.97

amp

Number of stacks

1

Number of cells per stack

24

Total load

0

Watt

Temperature

C

Anode pressure

1.7

MPa

Anodic Feed Ratio

0.5

Faraday efficiency

1

Cathode pressure

1.7

MPa

Calculation Methods

Figure. S3 Electrolyzer Module Parameter Setting Interface