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Modeling of plate heat exchanger based on sensitivity analysis and model updating

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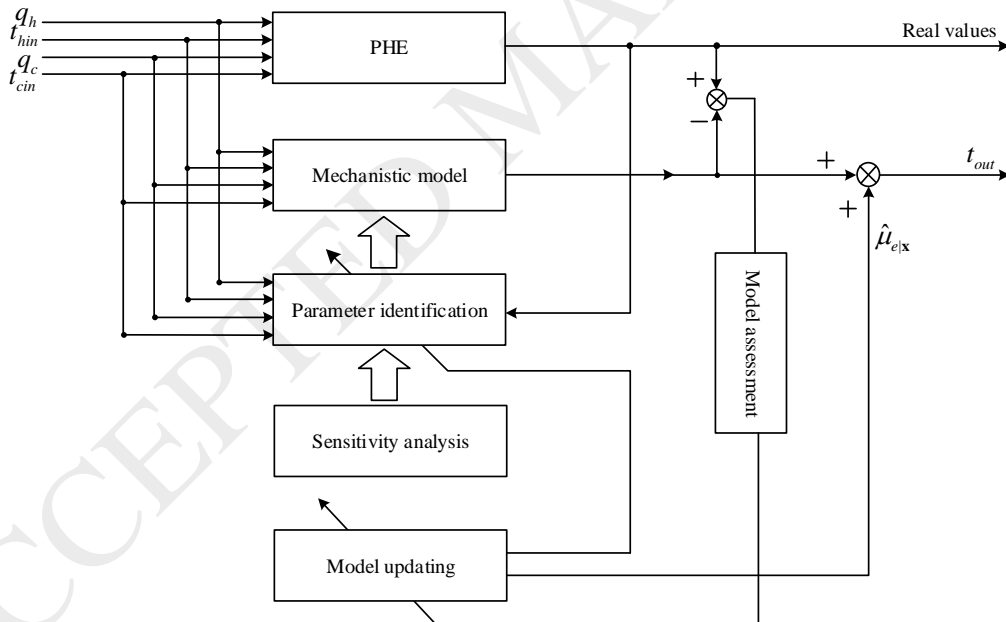
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Graphical abstract



Framework of the proposed modeling method

An efficient modeling method for plate heat exchanger (PHE) is developed. Firstly, the mechanistic model is established and the sensitivity analysis is employed to study the influence of unknown parameters on the model output. Based on the analysis results, the parameters with a significant influence on the model output are estimated using real data, and the values of parameters with low influence on the output are acquired from previous works. To track the changes of outlet cooling water temperature with high precision, Gaussian mixture model (GMM) is used to assess the model performance. According to the assessment results, model output offset updating or model parameter updating is activated.

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