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Application of AI intelligent control in utility systems

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At the Taiwan Photon Source (TPS), several studies on energy savings and utility system optimization are currently underway, with AI solutions being actively explored for laboratory applications. The proper operation of the cooling tower and chilled water system plays a crucial role in energy conservation. Through AI-based analysis, we can clearly observe the impact of ambient wet-bulb temperature on system energy consumption. Furthermore, system efficiency is enhanced by optimizing temperature setpoints, controlling pump flow, and managing the on/off scheduling or frequency modulation of facility operations. In this study, a model is constructed to verify the practical impact on energy consumption. The analysis demonstrates that these mechanisms can effectively improve overall energy performance.

Footnotes

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