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Techno-economic Analysis on Frosting/Defrosting Operations for An Air Source Heat Pump Unit with An Optimized Multi-circuit Outdoor Coil

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## Highlights:

- Techno-economic analysis on ASHP frosting/defrosting operations firstly reported;
- Economic performance of the optimized ASHP unit efficiently improved;
- Total running costs in heating seasons saved as much as 10.33%;
- Total cost saved 3,516.75 CNY, or 4.67%, over 15 years of service life;
- Payback period of initial cost and variation of electricity unit price discussed.

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