产品类成果

冷却塔水力热力计算软件

【创新性】

工业用水占全国总用水量的 23%，其中 70%~80% 为冷却塔循环用水。冷却塔的水力热力特性对提高用水效率、保障工业生产具有重要作用。近年来，超大型冷却塔、海水冷却塔以及排烟冷却塔等新型冷却塔不断涌现，但现有的冷却塔计算软件不能准确分析新型冷却塔的水力热力特性。为此，我院在大量原型观测与模型试验研究的基础上，开发了冷却塔水力热力计算软件，有效解决了超大型和新型冷却塔的计算难题。软件分析方法全面，计算功能强大，通用性好，能够准确快速地分析冷却塔的水力热力特性。

【影响力】

该软件已被电力行业广泛采用，在国内火、核电技术的市场占有率分别为 80% 和 100%，已被国内 10 余家设计院应用于百余项火 / 核电工程设计中。软件多次被中国电力规划设计协会鉴定为国内先进、国际领先水平。

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HYDRAULIC HEATING CALCULATION SOFTWARE FOR COOLING TOWER

【Innovation】

Industrial water use occupies 23% of the overall water consumption nationwide, of which 70-80% is used for the circulation of the cooling tower. The research of hydraulic heating properties of the cooling tower will help improve its water consumption efficiency and ensure the safety and economical efficiency of industrial production. With the flourishing of Chinese industry as well as growing demands for water and energy conservation, new cooling tower technologies, such as super-large, seawater and smoke discharge cooling towers, have emerged accordingly, but the existing cooling tower calculation software fails to accurately analyze the hydraulic heating properties of new types of cooling towers. Therefore, our Academy has conducted the research of prototype observation of a large number of cooling towers and model experiments, tested the hydraulic heating properties of core components of over 100 cooling towers at home and abroad, and developed the hydraulic heating property calculation software for cooling towers based on it, which has effectively solved the calculation problem of super-large and new cooling towers. The software is able to accurately and quickly analyze the hydraulic heating properties of cooling towers thanks to its all-around analysis method, powerful computing functions and excellent universality.

【Influence】

The software has been widely used in the electric power industry, with a share of 80% and 100% respectively in China's thermal and nuclear power technology markets, and has been applied in the design of a few hundred thermal/nuclear power projects. It has been identified as the advanced level at home and the leading level at abroad by the China Electric Power Planning & Engineering Association for several times.

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