

热能工程

一种汽轮机组排汽干度的在线软测量方法

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摘要: 随着信息计算机技术的发展,对大型汽轮发电机组性能进行在线监测及分析成为可能。机组热耗率和干度是2个被监测的重要指标。通过对已往的汽轮机变工况计算的方法分析,该文提出以汽轮机末级抽汽或次末级抽汽(过热蒸汽状态)为计算起点的汽轮机的顺序变工况核算方法。根据初始假定的末级流量和现场实际的末级前热力状态和背压,用汽轮机变工况流型判别准则,判别级的流型,然后从未级前参数开始顺序进行一次级的变工况核算,得到新的排汽焓和排汽干度,最后算得机组热耗率和排汽焓(或排汽干度)。该方法不用测量流量,也不用测量排汽干度,就能比较准确地在线监测机组热耗率和排汽干度。

关键词: 流型判别准则 排汽干度 变工况计算 在线监测

A Flexible On-line Monitoring Method of the Exhaust Steam Dryness in Steam Turbine

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Abstract: With the development of computer information technology, it is possible to monitor and analyze features of large steam turbine-generator units on line. The heat consumption rate and the dryness in steam turbine are two important indices. Based on the analyses of those existed calculation methods for turbine varying condition, the paper gives a sequential varying condition calculation that starts with steam extraction of the final stage or the second final stage (superheated steam condition). According to the initially assumed final stage flow, the thermodynamic parameters before the final stage, and the backpressure, the flow patterns of the stage can be distinguished by a discrimination criterion of varying condition, then a stage varying condition calculation can be conducted in sequence from the front parameter of the final stage, so the new exhaust steam enthalpy and the exhaust steam dryness can be got, and the precise heat consumption rate and the exhaust enthalpy (or the dryness) of the steam turbine can be got easily. Obviously, without measuring the flow or the exhaust steam dryness, the heat consumption rate and the dryness of the units can be monitored on line relatively accurately.

Keywords: discrimination criteria of the flow patterns dryness of the exhaust steam varying condition calculation on-line monitoring

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