Parallel Condensing Technology

Introduction

For almost a century, wet evaporative cooling towers have been the predominant choice of heat rejection systems for power plants not situated on a large body of water. In 1939, the first air cooled condenser was placed into operation providing the power industry with a dry cooled solution. This was

The turbine exhaust steam is conveyed through a large steam duct from the turbine exhaust to a steam surface condenser **(SSC) and** to the top of the air-cooled condenser **(ACC**). The exhaust steam is condensed simultaneously in both condensers at similar pressures. The quantity of steam condensed or the duty split between the SSC and ACC will be dependent upon the total heat rejection load, operator specified performance, available makeup water and the site's atmospheric conditions. For example, should the dry bulb temperature decrease at night, the capacity of the ACC would increase. Therefore, a portion of the thermal duty would shift from the SSC to the ACC causing a reduction in the makeup water required by the cooling tower. As the ambient and/or operating conditions vary, the steam flow will automatically adjust between the SSC and ACC without the need for internal flow control devices.

A control system operates the primary components such that the desired steam turbine backpressure is maintained within the allowable water consumption limitations. In this manner, water consumption is managed such that it is used most effectively. The control system also provides an automated means of exploiting the cyclic temperature profile at the power plant site to satisfy water restrictions on an annual, seasonal, or daily basis.

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