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[摘要]

中央風管系統進行測試調整平衡時，需使設備系統正常運轉、空調箱總風量調整於設計值 $\pm 10\%$ 範圍內、儀器校正系統(Energy Management Control System)監測調整，搭配比例式平衡方式(Proportionally Balancing Method)進行調整。落實測試調整平衡，可使得室內氣流與溫度分佈均勻，並且避免因局部氣流溫度不符需求時，徒增空調箱風量。中央風管系統工程現場依據實際現場案例取得各項分析基本參數，並經ASHRAE 2001基礎篇-風管設計，建立風管擬中央風管系統各項壓降損失，包括主風管損失、漸縮管損失、漸擴管損失、彎頭損失、支風管損失、分歧管損失。風管系統不同風管路徑，系統區段對風速與風管路徑壓降之關係。經由分析探討後，由實際案例中，得知附件損失所在，由此可知選用風管附件之重要性。此外，經由實際案例1可知適當轉換風門型式、改變風管尺寸確實可使得壓降低，以期達成節能省電之目的。此數學模擬，可應用於設計階段比較風管各路徑壓降，並將壓降較大路徑予以適當修正。亦可用在風管測試調整平衡。

[英文摘要]

During the process of testing, adjusting and balancing (TAB) for central air duct system, it requires system stability within the range of $\pm 10\%$ to design capacity、make any necessary adjustment on instruments to ensure a correct flow from diffuser, as the result shows by using Energy Management Control System with Proportionally Balancing Method adjusting supply air volume directly from the diffuser. The purpose of testing, adjusting and balancing (TAB) is to distribute.

Based on this case; it is to obtain basic parameters from central air duct system on an actual site. As a reference, established the structure of pressure drop analysis of the duct and fitting. By using Excel software to simulate all ducts, reducing/extended ducts, branch ducts, duct connectors, duct elbows, duct tees, dampers and diffusers for velocity and pressure drop in different paths and sectional area of the duct system. From the analysis, we know that drop usually causes by duct fitting losses (especially in damper pressure loss). Proper damper installation and reduce duct area and consequently lower pressure loss of the duct system. Furthermore, the fan operates with lower static efficiency can be achieved.

In this mathematical simulation, we can easily apply this application and comparison to all sections in duct system large pressure drops paths. It can also be applied after TAB, for reviewing the original design parameters and providing reference.

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