



Fidelity Investments

High performance cooling, high reliability



Project Business Objective

FEA was commissioned by Fidelity Investments to provide design, construction administration and commissioning services for a new data center space in downtown Boston.

Project Summary

The Fidelity Investment data center project presented unique challenges. To meet the demanding requirements of the computer equipment and maintain operational isolation from the critical IT functions, two dedicated mechanical rooms were created to house all ECUs, VFDs and associated chilled water piping and power distribution.

FEA performed a CFD analysis to validate the design concept and determine the effects of equipment failures, below floor silencers and variable air flow rates on the complete system. The result was a hardened raised floor cold air distribution system that could match individual ECU operational set points to actual load conditions, using VFDs and customized controls for improved energy efficiency. In addition, all mechanical equipment access and chilled water piping was isolated from the data center.

Additional design characteristics further promoted the division between IT space and support infrastructure. For example, "A" and "B" bus power to the racks were pre-wired in dedicated pathways and used a flexible design to accommodate future equipment requirements without running new pipe and wire. Branch circuit monitoring was also deployed to help IT and the facility staff better manage and operate the raised floor environment without the need for craft support to open panels to take load readings.

Finally, FEA lead a comprehensive integration testing and commissioning effort that proved out the conceptual design, equipment performance and installation integrity of all sub-components and systems.

Deliverables

- // 2N 500kW UPS System
- // Dual fed environmental control units (ECUs)
- // Dual bus power distribution
- // Static transfer switches
- // Branch circuit monitoring
- // Computational fluid dynamic (CFD) analysis
- // Customized BAS controls
- // Variable frequency drives (VFDs)