SMART**set** OPTIMISATION REAL-TIME CFD AND ENVIRONMENTAL ANALYSIS IN THE BROWSER

A clear understanding of your capacity enables you to maintain an optimal level of redundancy, remaining resilient without implementing unnecessary surplus.





SMARTset OPTIMISATION FEATURES:

- Developing a clear understanding of your physical, power and cooling capacity is essential for maximum efficiency.
- Compare 'before' and 'after' snapshots to see the effect of changes.
- You can take snapshots of your environment using data at a specified point in time, enabling you to see the results of making changes such as moving a rack or a floor vent, or adjusting the set point of a cooling unit:
 - Charts provide you with a quick overview of the impact of a change, showing a heat map and common values (such as average temperature or relative humidity)
 - Tuning Reports show more detailed information, as well as indicating where values have increased or decreased and by how much. Information from reports can be exported in spreadsheet format for further analysis.

- Use the power of Computation Fluid Dynamics (CFD) in real-time to simulate changes and try out 'what-if' scenarios in minutes, not hours.
- Create your own simulations to see the impact of changes before implementing them, removing much of the guesswork from attempts to maximise capacity or reduce costs.
- Using a drag-and-drop mapping tool, you can add servers, racks, floor vents, air handling units and other equipment to your room. You can identify where transducers (sensors or controllers) are placed, enabling heat maps to be generated from readings received.
- The ability to associate operational parameters (heat load, power consumption, dimensions) with individual pieces of equipment provides the data needed for simulations.
- If you have integrated SMART**set** with an asset management system, much of this information will already be available automatically.

CFD ENGINE

- SMART**set** Optimisation harnesses the power of distributed, multi-core parallel processing and real-time queuing to enable real-time analysis of simulations whilst still providing the user with a dynamic experience.
- Using an 'elastic' scaling system, the engine can be tuned to meet the needs and complexity of any CFD analysis seamlessly.
- Simulations run in minutes rather than hours so that you can see results when you need them, on the screen.



SIMULATION PLANS

- This module enables the user to create CFD simulation plans from existing physical rooms. Using a drag-and-drop mapping tool, the user can edit a specific physical room, change the room plan or equipment features and save this as a CFD simulation plan. Once editing is complete, the user can run a CFD simulation and view the results.
- The CFD optimisation produces thermal images depicting airflow and temperature distribution within the room. The user can scale the produced thermal images for deeper insight into CFD results, view derived CFD numerical data, and export the data to spread sheets for further offline analysis.

TUNING PLANS

- This module enables the user to take a snapshot of the physical room at any point in time. These snapshots appear as references in a storyboard allowing users to conduct 'side by side' comparisons to determine changes in maximum temperature, humidity and power etc.
- All snapshots show a selectable heat map of temperature, humidity, pressure, and power distribution.
- The tuning plans view includes details such as which rack or ACU has the highest temperature, power consumption and a graph for the user to classify rack by temperature threshold.

SIMULATION REPORTS

- This module enables the user to compare two CFD simulations. The user selects two CFD simulations plans related to a room and compares them. A detailed comparison view is shown to the user with room heat maps placed side by side, hall temperature, heat load and density comparison etc.
- The user can export the comparison data to spread sheet for further offline analysis

TUNING REPORT

- This module enables the user to compare two physical plan snapshots. A comparison highlights changes in key metrics and allows the user to automatically identify where those changes have occurred.
- Comparison results are presented graphically and numerically to show in real terms the significance of the changes.
- All results are exportable both in Excel and PDF form for offline analysis and distribution.

TECHNICAL DETAILS

- CFD Analysis is extremely CPU intensive it is recommended that a separate server is used to carry out the analysis
- SMART set will automatically utilise n-1 cores where n is the total number of cores on the machine



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