

Aisle Containment Testing

Executive Summary

Improve data center energy performance

As organizations fill data center enclosures with increasing numbers of high density servers, our customers are looking to us for help and advice on:

- ✓ How to add high density servers and increase rack density in an energy efficient way.
- ✓ Analyzing data center energy performance and potential improvements.
- ✓ Determining efficient data center cooling methods.
- ✓ Discovering problems with energy profiles of existing data centers and predicting design limitations of new or expanding facilities.

It all adds up to increased performance and a more energy efficient data center with the added benefit of knowing that Wright Line has energy efficiency and savings at the core of our service delivery and expertise.

What you don't know can hurt you

Measurement is the key. There is no question that the correct approach to reducing energy consumption is to begin by measuring, establishing a baseline, and tracking performance for your facility. Our group can also combine virtual models with measured test results as part of a calibration and validation service to confirm precisely where issues arise.

Details of Service

Wright Line's experienced team is trained in providing state-of-the-art containment strategies. Our professional services group specializes in identifying airflow management issues and taking corrective action to improve upon proposed solutions.

The service and deliverables are described below in the scope of work

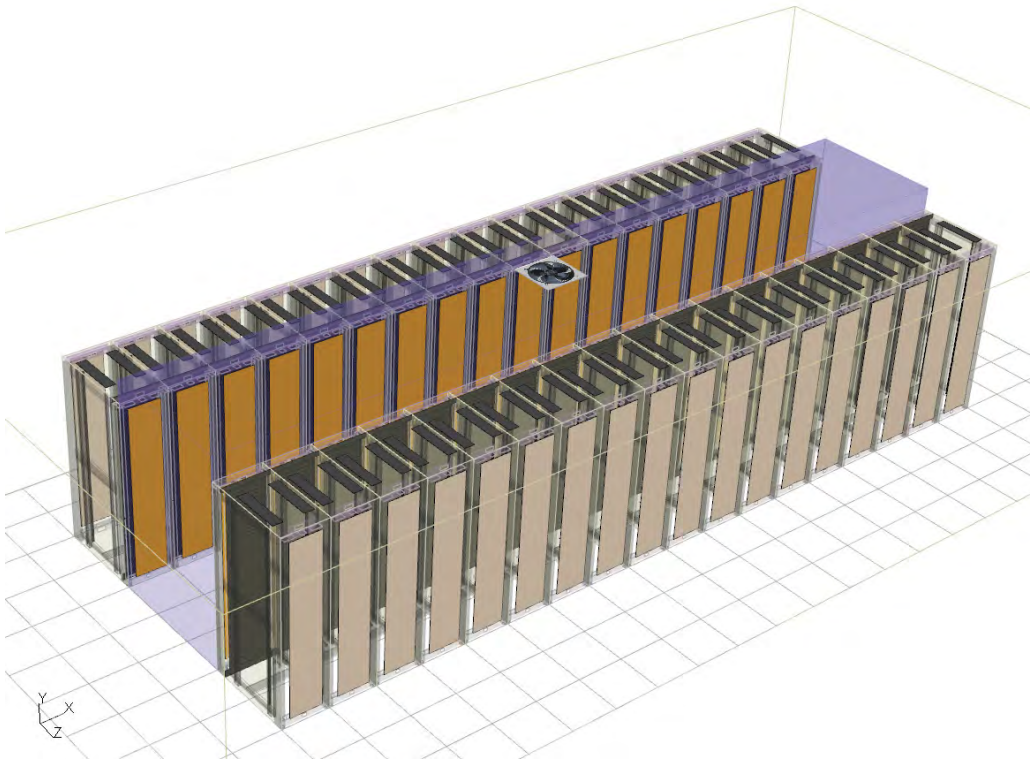
Scope of Work

The data center design specification calls for cold aisle containment PODS. Each will be supplied with 22,000 CFM of conditioned air in a space that measures approximately 2100 Ft³. The pressure within these PODS will not exceed 0.007 inches/ H₂O. The specification requires no more than 3% leakage of air or a maximum gap leakage area that is no more than 3% of the total containment surface area.

To test the cold aisle containment PODS to ensure it meets the required specification, the following tests will be performed.

Tests

1. The overall gaps in leakage area will be measured as a ratio to the overall surface area of the rack enclosure inlets.
2. A fan will be used to pressurize sealed containment pods and to test whether the environment can maintain 3% or less leakage of air at 0.007 inches in H₂O .



3. Use of fog generator to trace and detect leakage areas within the pod region.
4. Determine the effects of Supply Air Velocity impact on containment Integrity (Curtain Sections only)

Reporting

Reporting will include:

- Summary overview of test results
- A detailed analysis of each test including
 - The facility, infrastructure, and baseline metrics to which the tests were conducted
 - the apparatus used to conduct each test
 - procedure used to conduct each test
 - How the results were collected and measured
- A spreadsheet indicating which PODS passed and failed each of the tests
- A summary illustrating any issues in which the specification was not met and where improvements would be required.

Assumptions

Customer satisfaction is Wright Line's top priority. This includes timely, accurate, and complete delivery of services. To provide a superior level of service, Wright Line makes the following assumptions when developing a price quote and setting the expectation of service delivery:

1. Customer will provide a single point of contact to assist with Wright Line Data Center Audit form. Unrestricted access should be made available to all areas of the facility to accommodate the site audit and measurement information where required. All customer supplied data points will be assumed to be 100% complete and accurate.
2. If data points are incomplete and require data collection or validation to be performed by Wright Line a new service agreement must be made with the end-user prior to proceeding further.
3. An estimated delivery date will be issued once 100% of customer supplied data is in possession of Wright Line.
4. Service will be provided during normal weekday business hours on a 5x8 basis unless otherwise noted and agreed to with the customer.
5. For some customer locations, sources of radiant heat (i.e. lighting, solar loading, weather data, and occupancy levels) can be important. These will be assumed to be insignificant unless advised otherwise by the client.
6. If facility infrastructure information is unavailable Wright Line may be able make assumptions to supplement the data. Useful results are still likely to be obtained, although accuracy may be compromised.

Scope of Responsibility

Wright Line Scope of Responsibility:

- Provide a Wright Line point of contact to the customer.
- Conduct work in a timely manner.
- Identify any open issues.
- Manage any site-based issues affecting service delivery.

Customer Scope of Responsibility:

- Provide an authorized point of contact to the Wright Line Professional Service team for scheduling and on site coordination.
- Complete and return the Wright Line Data Center Audit forms.
- The facility information should be provided in hard and soft copy CAD drawings. Along with any written design specifications. MEP drawings as well as detailed floor plan as-built drawings are preferred.
- Notify Wright Line professional Service Team of any barriers, such as security clearance, insurance requirements, non-disclosure agreement, or any special training, safety, or induction sessions required (and fees if required) prior to pricing services.
- Disclose any building restrictions that need to be met such as loading dock scheduling, elevator scheduling and any other building facility management requirements.
- All time lines are based upon complete and accurate information delivered from the customer and received by Wright Line. Any delay in providing complete and accurate facility information can jeopardize the delivery date of receiving test data and reports.

Terms and Conditions

Standard Wright Line Terms and Conditions apply, available in the sales quote package, at www.wrightline.com, or by contacting your Wright Line Sales Representative.