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Energy Management Subcommittee

SCTE STANDARD

SCTE 219 2021

Technical Facility Climate Optimization Methodology

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Document Types and Tags

Document Type: Operational Practice

Document Tags:

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| ☐ Test or Measurement | ☐ Checklist | ☒ Facility |
| ☐ Architecture or Framework | ☐ Metric | ☐ Access Network |
| ☒ Procedure, Process or Method | ☐ Cloud | ☐ Customer Premises |

Document Release History

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1. Introduction

1.1. Executive Summary

This Operational Practice is to be used by facility managers and facility design engineers to improve air flow and climate conditions in critical facilities. This document outlines the basic steps to conduct an assessment of the facilities existing energy efficiency and climate conditions. Recommended actions to improve air flow conditions and environmental conditions are included along with factors to consider in moving to more advanced cooling technologies such as air side and water side economizers.

1.2. Scope

This Operational Practice outlines how to improve cooling and airflow efficiency and provides actions that can be taken to reduce cooling energy consumption and energy costs.

This document contains the definition, energy measurement methodology and reporting requirements. The scope of the document shall include processes and references for the given measurement.

1.3. Benefits

Climate management of critical facilities represents an excellent opportunity for operation cost savings. Cooling in general represents approximately 35% or more of a facility's overall energy load. Over time, equipment and rack spacing, if not kept in check, and changes in equipment without consideration for climate management, could create hot spots or other airflow challenges that impact the entire facility's performance and the cost of operating the facility. Worst case, without climate management assets are at higher risk for failure and ultimately could face shorter life span.

1.4. Intended Audience

Facility design engineers, facility managers

1.5. Areas for Further Investigation or to be Added in Future Versions

As rack heat loads increase further research *should* be conducted to determine the most appropriate cooling systems. This could include liquid cooling, rear door heat exchangers and immersion cooling.

2. Normative References

The following documents contain provisions which, through reference in this text, constitute provisions of this document. The editions indicated were valid at the time of subcommittee approval. All documents are subject to revision and, while parties to any agreement based on this document are encouraged to investigate the possibility of applying the most recent editions of the documents listed below, they are reminded that newer editions of those documents might not be compatible with the referenced version.

2.1. SCTE References

No normative references are applicable.

2.2. Standards from Other Organizations

No normative references are applicable.

2.3. Other Published Materials

No normative references are applicable.

3. Informative References

The following documents might provide valuable information to the reader but are not required when complying with this document.

3.1. SCTE References

- [SCTE 184] SCTE 184 2015: SCTE Energy Management Operational Practices for Cable Facilities
- [SCTE 186] ANSI/SCTE 186 2021: Product Environmental Requirements for Cable Telecommunications Facilities
- [SCTE 203] ANSI/SCTE 203 2019: Product Environmental Requirements for Cable Telecommunications Facilities —Test Methods
- [SCTE 210] ANSI/SCTE 210 2020: Performance Metrics for Energy Efficiency & Functional Density of Cable Data Generation, Storage, Routing, and Transport Equipment
- [SCTE 211] ANSI/SCTE 211 2020: Energy Metrics for Cable Operator Access Networks
- [SCTE 212] ANSI/SCTE 212 2020: Cable Operator Energy Audit Framework and Establishment of Energy Baseline
- [SCTE 213] ANSI/SCTE 213 2020: Edge and Core Facilities Energy Metrics
- [SCTE 274] SCTE EMS 41 2021

3.2. Standards from Other Organizations

- [ISO] ISO 50001:2018 Energy Management Systems – Requirements with guidance for use.
<http://www.iso.org/iso/home/standards/management-standards/iso50001.htm>
- [BICSI] ANSI/BICSI 002-2014, Data Center Design and Implementation Best Practices

3.3. Published Materials

- [Green Grid] The Green Grid: <http://www.thegreengrid.org/>
- [ASHRAE] Air-Side Free Cooling Maps: The Impact of ASHRAE 2011 Allowable Cooling Ranges.
- [PUE] PUE: A Comprehensive Examination of the Metric.
- [Schneider] Schneider Electric Guidance for Calculation of Efficiency (PUE) in Data Centers
<http://it-resource.schneider-electric.com/h/i/40161383-wp-158-guidance-for-calculation-of-efficiency-pue-in-data-centers>