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Telcordia GR-3028-CORE: Thermal Management in Telecommunications Central Offices

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Today's Challenge





GR-3028-CORE

The goal of GR-3028-CORE was to develop a requirements document for thermal management in Central Offices.

The document provides needed standardization for ensuring network integrity while leaving room for innovative equipment designs and environmental solutions.



GR-3028-CORE

GR-3028-CORE was developed in collaboration with 20 major equipment manufacturers and service providers as well as HVAC and chip manufacturers.

3Com, AFC, Alcatel, AT&T, C-Mac, Calix, Ciena, Cisco, Compaq, Fujitsu, Intel, Liebert, Lucent, Marconi, Nokia, Qwest, SBC, Siemens, Turin, and Verizon.



Typical Telecom Switch Room

**Overhead
Cabling**

**Overhead
Air**

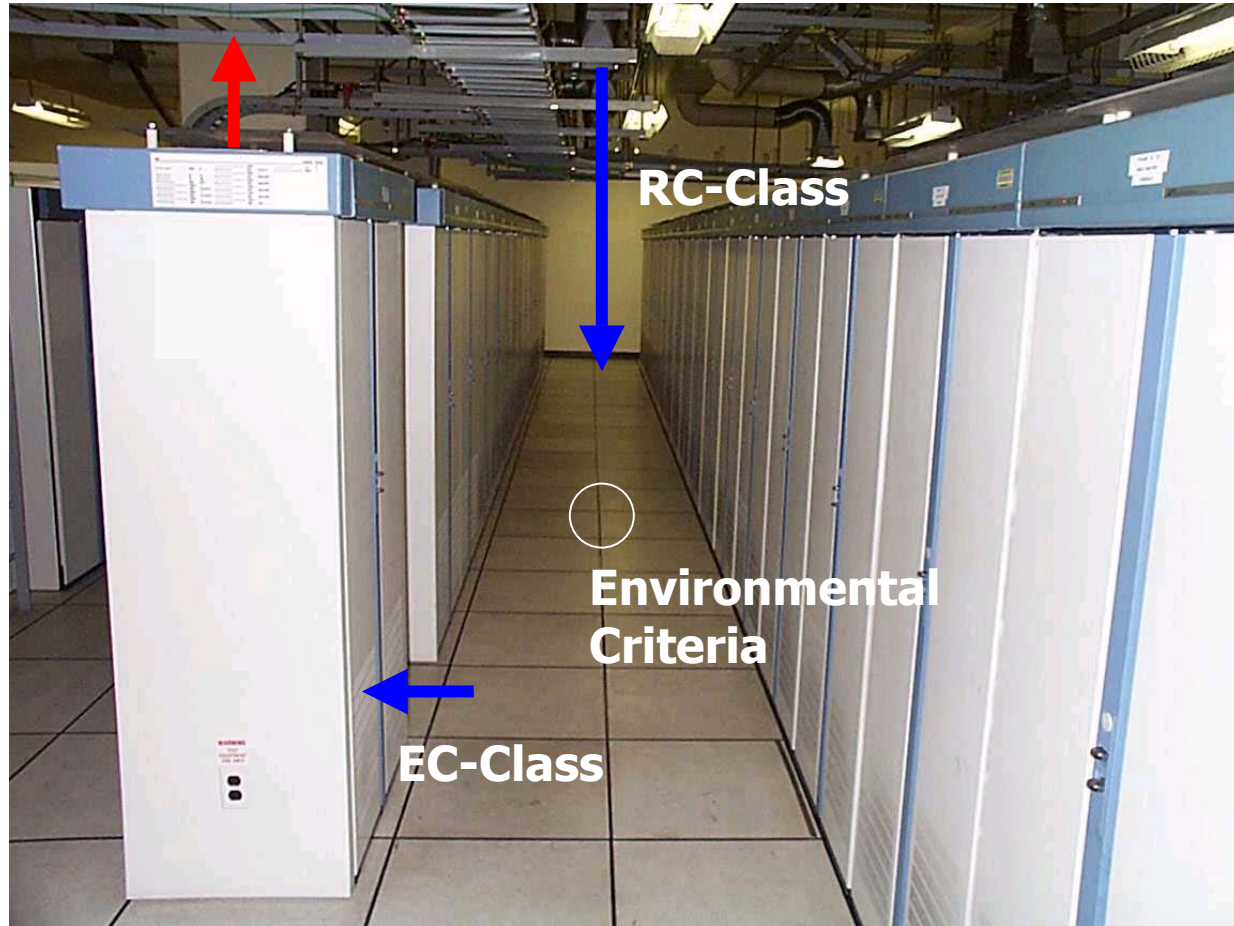
**No Raised
Floor**

**Air-Cooled
Equipment**





1. Heat-Release Target (W/SF)



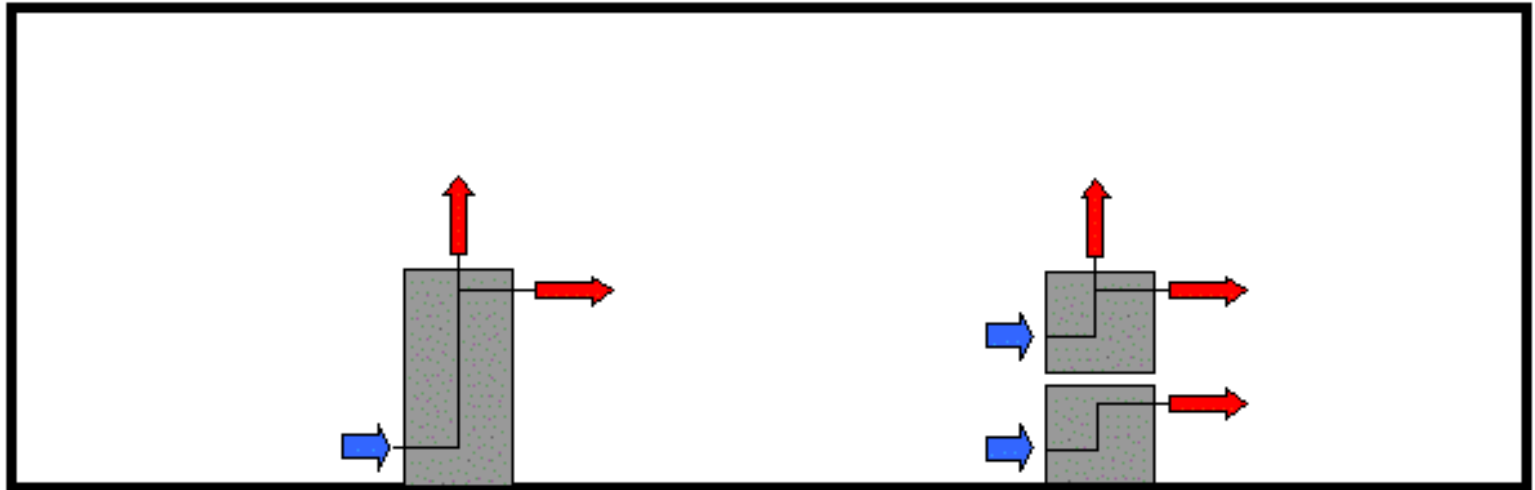


2. Equipment Specifications





EC-Classes



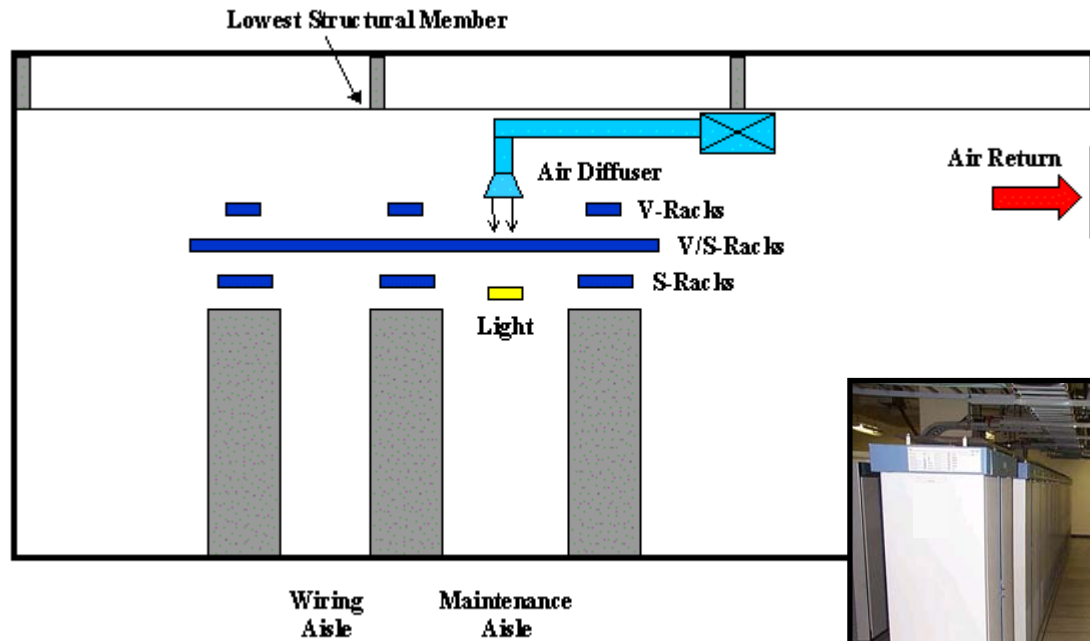
Cabinet
F1-R3
F1-T
F2-R2

Shelf
F1-R3
F1-T
F2-R2



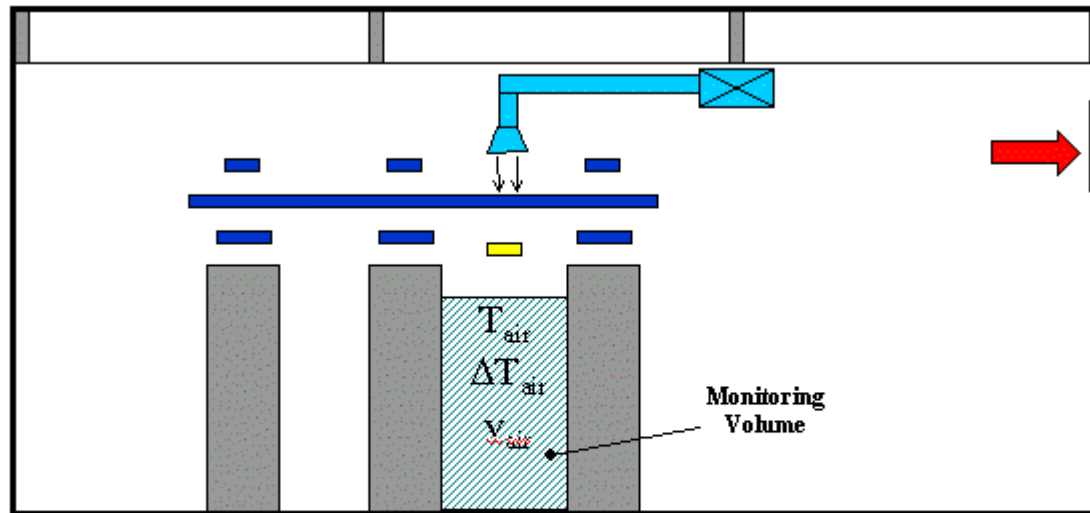
RC-Class VOH

Section





Environmental Criteria



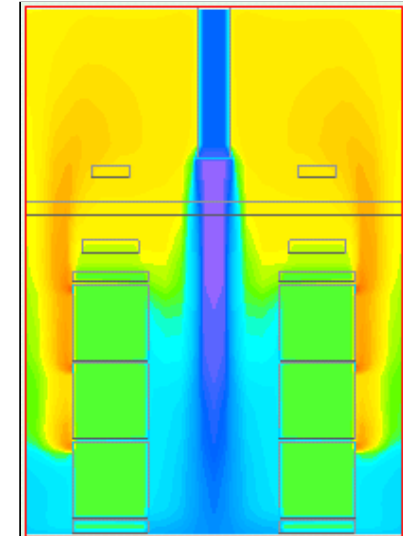
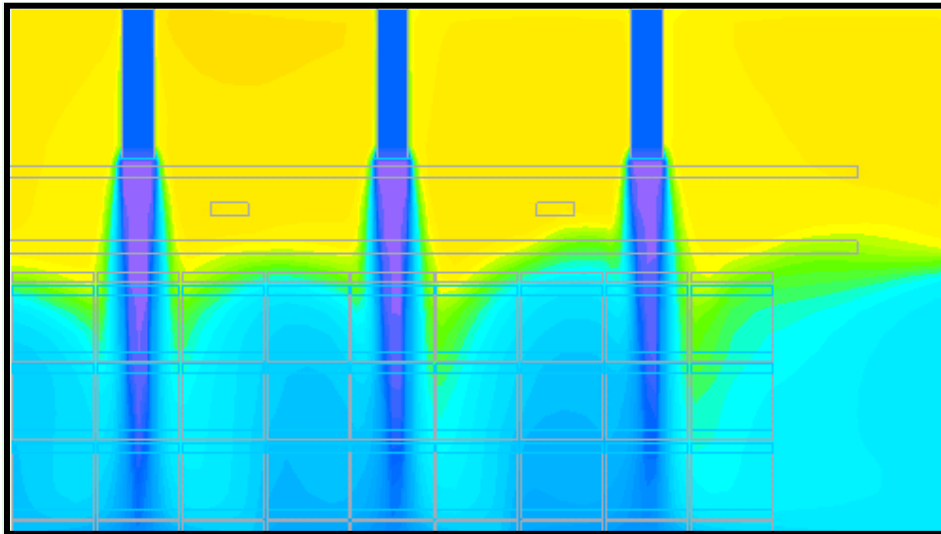
T_{air} Space Temperature

ΔT_{air} Temperature Gradient

v_{air} Air Velocity



Thermal Modeling



EC/RC-Classes + Env. Criteria → Max Heat Density



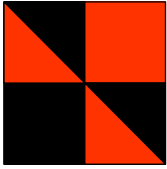
Heat-Release Targets (HRT)

RC-Class	HRT (W/sf)	Optimal EC-Classes
VUF	150	F1-R3, F1-T, F2-R2, B-R3, B-T
VOH	130	F1-R3, F1-T, F2-R2
HOH	100	F1-R3, F2-R2
HDP	90	F1-R3, F1-T, F2-R2



Equipment Specifications

1. **Planning Value (PV)**
Heat-Release Model → Actual Heat Release
2. **EC-Class**
EC-Class Syntax
Cabinet EC-Class Syntax
3. **Dimensions**
Door Swing
Draw Clearance
Cable Protrusions
4. **Weight**



Summary

By utilizing EC/RC-Classes, Environmental Criteria, Heat-Release Targets, and Equipment Specifications, equipment manufacturers and service providers have a common, well defined “language,” creating a strong foundation for Thermal Management.



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Thank You