

REFRIGERATION AND THERMAL TEST CENTER



RTTC Promotes Energy Efficiency

RTTC ADDRESSES CHALLENGES OF ENERGY EFFICIENCY

Businesses face many challenges today.

With escalating operating expenses and concerns about energy costs, optimal energy efficiency in air conditioning and refrigeration systems can mean the difference between red ink and black ink on the ledger books.

Southern California Edison's Refrigeration and Thermal Test Center (RTTC) can help meet the energy-related challenges by serving as an impartial and reliable resource for commercial and residential customers, state and federal agencies, manufacturers, national laboratories and academia.

WHAT IS THE RTTC?

Founded in 1996, the RTTC is an applied research and educational facility that combines state-of-the-art research capabilities with staff expertise and educational programs to promote energy efficiency in refrigeration, air conditioning and other thermal technology applications.



WHO DOES THE RTTC SERVE?

The RTTC serves SCE customers with refrigeration and/or HVAC equipment, HVAC and refrigeration system designers, state and federal agencies, national laboratories, manufacturers and academia.

WHAT SERVICES DOES THE RTTC OFFER?

Testing: The RTTC's research facility is globally recognized for its scientific simulation and testing capabilities of existing and emerging energy-efficient technologies.

Evaluation: The RTTC helps customers make informed purchasing decisions by providing expert, unbiased performance evaluations of various energy-efficient technologies.

Training: The RTTC brings energy efficiency to life by combining theory with practical hands-on training at the center or at customers' sites.

Consulting: The RTTC uses its knowledge of customer operations and needs, its alliance with leading industry manufacturers and expertise in thermal science to transform theory into practical applications. Energy efficiency consulting is available to SCE customers and interested members of the retail food, food service and air conditioning industries.

Collaborative Research: Results obtained from the RTTC's research are available at no cost to SCE customers and other interested parties. The RTTC's research has played an instrumental role in evaluating and promoting energy-efficient technologies in collaboration with the California Energy Commission's codes and standards initiatives and statewide energy efficiency incentive programs.

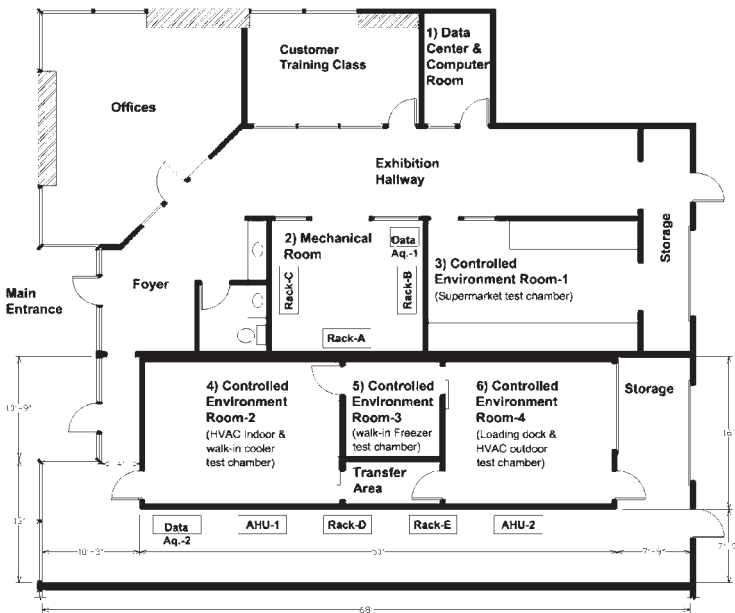
Development: The RTTC works with manufacturers and state and federal agencies to develop energy-efficient equipment and more robust energy efficiency codes and standards, labeling systems and energy-saving tools.

PARTIAL LIST OF CLIENTS AND ALLIES:

- Safeway Inc.
- Ralphs Supermarkets
- Taco Bell
- U.S. Department of Energy (DOE)
- Oakridge National Laboratory (ORNL)
- California Energy Commission (CEC)
- Hill Phoenix Inc.
- University of Illinois
- California Institute of Technology
- Hussmann Corp.

WHAT ARE THE RTTC'S CAPABILITIES?

- Supermarket and cold storage refrigeration equipment testing
- HVAC testing – packaged and split A/C systems
- Calorimetric testing
- Equipment testing in accordance with Standards provided by:
 - Air Conditioning and Refrigeration Institute (ARI)
 - American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
 - National Sanitary Foundation (NSF)
 - American National Standard Institute (ANSI)
- Refrigerant testing
- Computer modeling of energy systems in supermarkets and cold storages
- Infiltration and air curtain modeling and analysis
- Computational fluid dynamics modeling
- Cooling load analysis
- Fluid flow visualization and quantification experiments using Laser Doppler Velocimetry and Digital Particle Image Velocimetry techniques

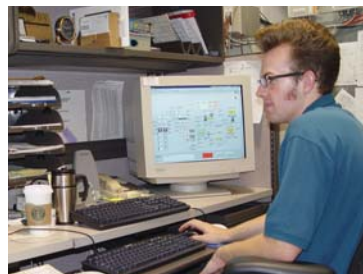


REFRIGERATION AND THERMAL TEST CENTER

RTTC BRINGS ENERGY EFFICIENCY TO REALITY

The RTTC's 3,800 square-foot, state-of-the-art facility can simulate and test various indoor and outdoor conditions, evaluate equipment performance and test the energy efficiency impact on new and emerging technologies. Through simulation, testing, evaluation and research, the RTTC brings energy efficiency to life.

- 1) Data Center and Computer Room:** This sophisticated supervisory, control and data acquisition center screens, collects and measures data from the RTTC's controlled environment rooms.
- 2) Mechanical Room:** This facility houses sophisticated refrigeration and glycol/chiller test racks, as well as a state-of-the-art data acquisition systems.
- 3) Supermarket Test Chamber:** Low- and medium-temperature display cases in this isolated thermal zone are served by independent heating, cooling and humidification systems.
- 4) HVAC Indoor and Walk-in Cooler Test Chamber:** This test chamber is designed to replicate a wide range of indoor conditions found in walk-in coolers. It also provides thermal conditions typically found in air-conditioned spaces of residential and commercial buildings, where maintaining desirable human comfort is critical.
- 5) Walk-in Freezer Test Chamber:** This test chamber can maintain temperatures as low as -40°F.
- 6) Loading Dock and HVAC Outdoor Test Chamber:** By replicating weather conditions, this test chamber tests how walk-in coolers, freezers and air conditioning units respond to real-life situations.



WHY SHOULD I CALL OR VISIT THE RTTC?

- To quantify the impact of various indoor and outdoor conditions on the performance of your refrigeration and air conditioning equipment
- To make informed, intelligent decisions when purchasing new refrigeration or air conditioning equipment
- To increase profitability by determining the best configuration of refrigeration or air conditioning components
- To increase profitability by identifying opportunities for energy savings
- To optimize the marketability of refrigeration or air conditioning products by enhancing energy efficiency
- To take advantage of the RTTC's staff expertise in energy efficiency, understanding of the food industry and alliance with industry manufacturers
- To establish your organization as a leader in energy efficiency

STAFF QUALIFICATIONS:

The RTTC's staff of qualified professionals combines advanced degrees in engineering and physics with extensive experience in refrigeration and air conditioning engineering and laboratory operation. For more information on staff qualifications, please visit the RTTC's Web site at www.sce.com/rttc.

PARTIAL LIST OF PROJECTS:

- Performance evaluation of A/C units in high ambient temperatures
- Investigation of high-efficiency display cases
- Evaluation of advanced anti-sweat heater control technologies
- Impact of indoor air conditions on performance of refrigeration systems
- Impact of federal codes on energy use of refrigeration systems
- Performance comparison of energy-efficient display cases vs. standard models
- Impact of glass doors and shields on the performance of refrigeration systems
- Effects of product stacking on performance of refrigeration systems



TO REACH THE RTTC:

The RTTC is located in SCE's Gateway Center in Irwindale, a central San Gabriel Valley city. From the I-210, take the Irwindale Avenue exit and go south. The exit is approximately .25 mile east of the I-605, 20 miles northeast of downtown Los Angeles and eight miles west of the intersection of the 57 Freeway and the I-210.

To enter the Gateway Center, turn left at the first stoplight south of I-210 on Irwindale Avenue and then go straight. The RTTC is at the far end of the second building on the right.

MAILING ADDRESS:

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