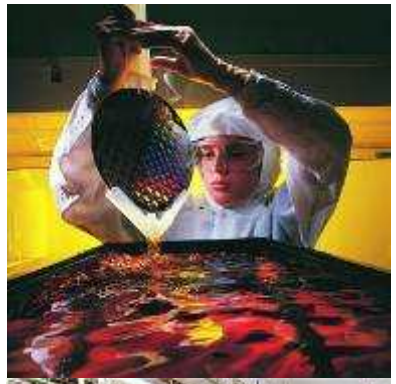
Heat Recovery
Integrated Energy Saving Solution

CenTraVac Chillers

Recover waste heat to use in the system, rather than dumping into the atmosphere.



Improved Economic and Environmental Solution

Heat Recovery
Integrated Energy Solution “Reasons to Use”

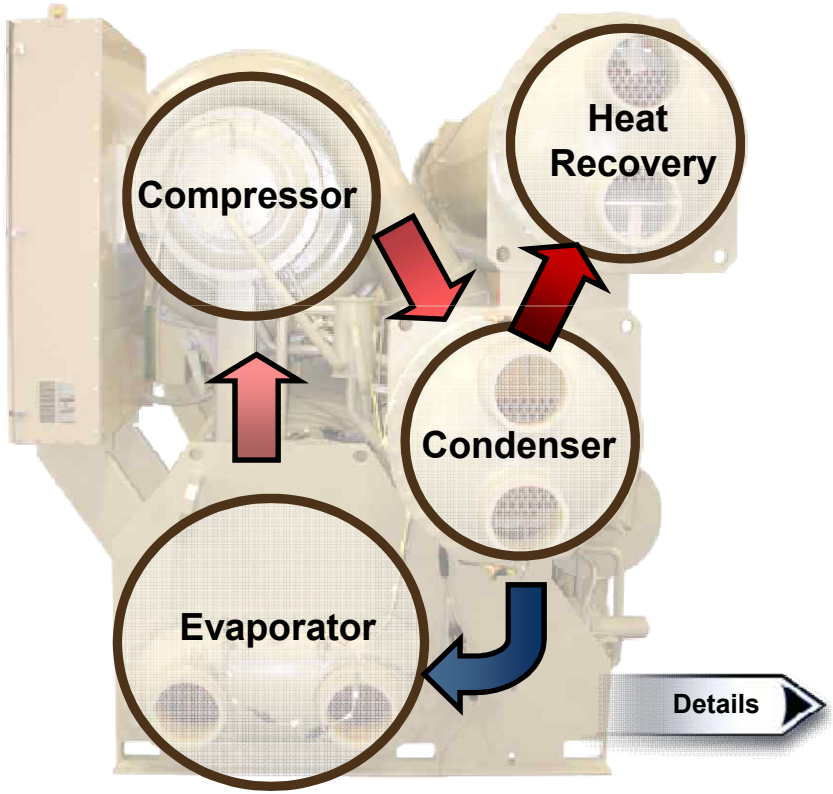
Availability of simultaneous heating and cooling loads

Benefits

- Improve overall system efficiency
- Reduces heating plant consumption
- Reduces ancillary power
- Simplify system control
- Lower total operating costs

Environmental Stewardship

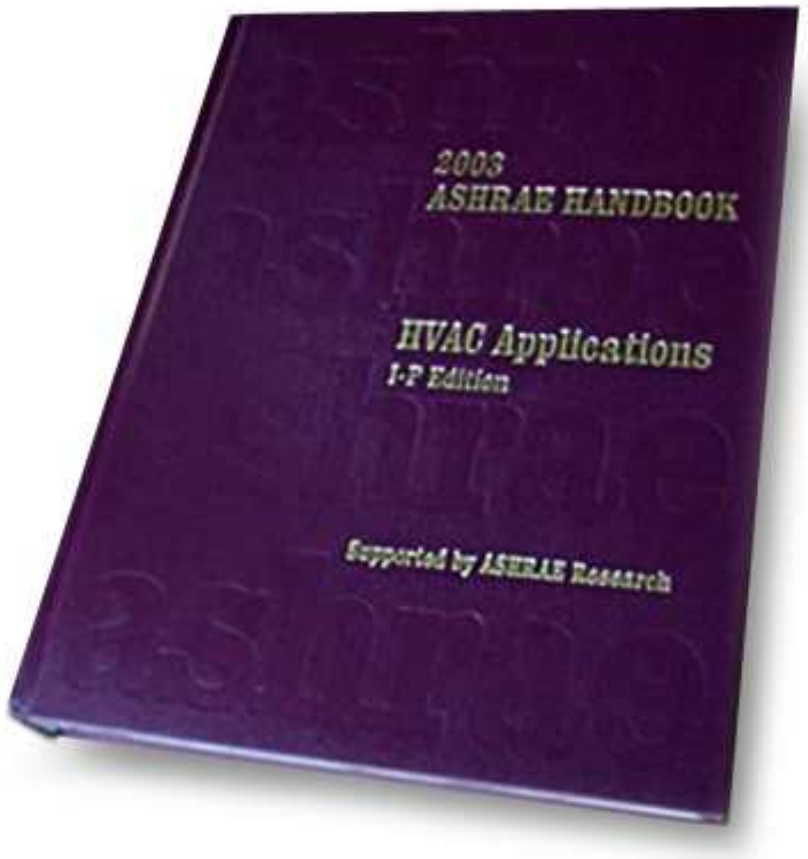
- Minimize source energy use
- USGBC LEED® prerequisite
- ASHRAE 90.1
- Lower overall emissions



How Hot Does Your Water Need to Be?

Integrated Energy Solution "Temperatures Needed"

Required by code or standard



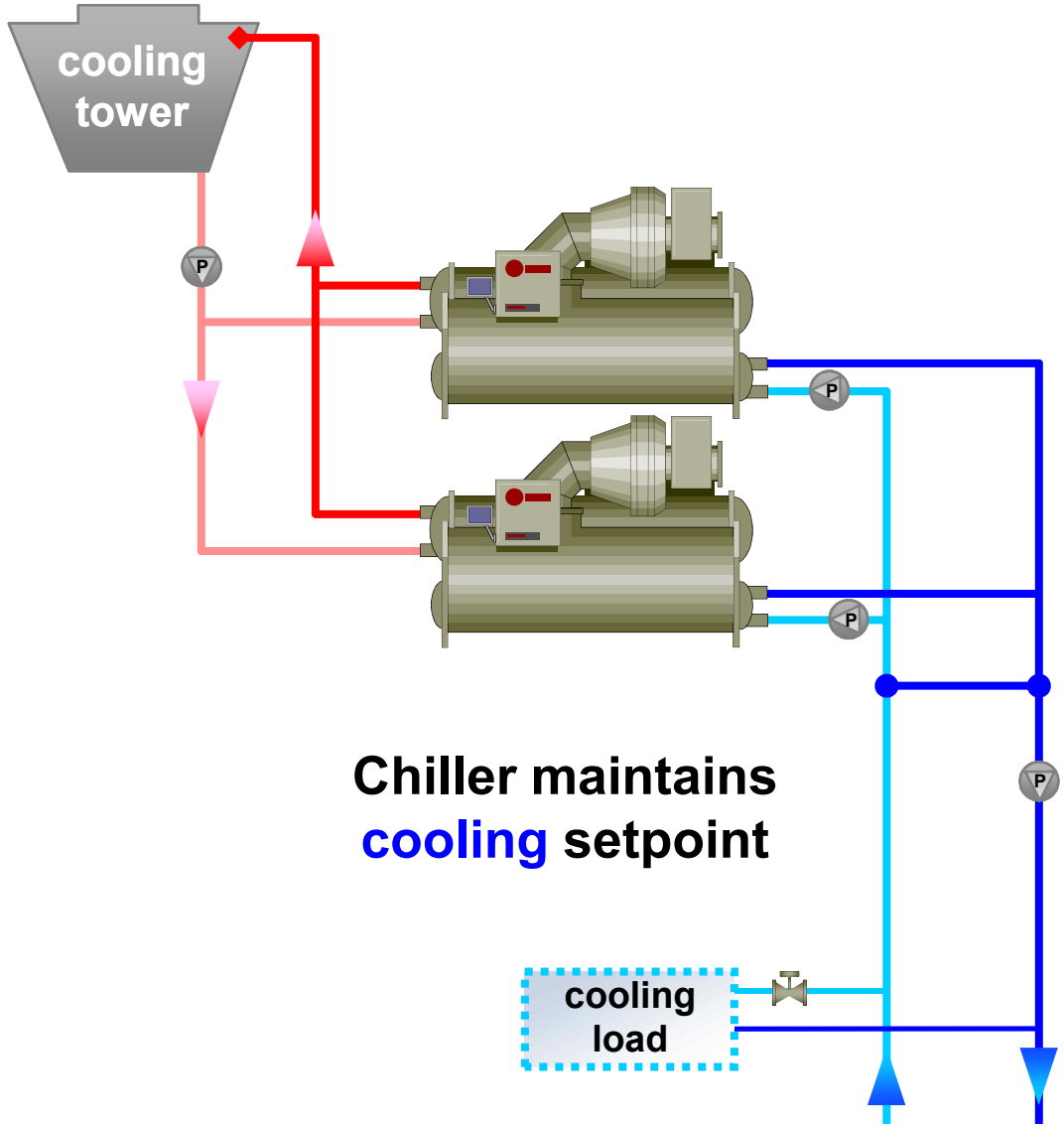
"For typical buildings, chillers normally provide hot water for space heating at 105°F to 110°F"

Source: 2004 ASHRAE Handbook – HVAC Systems and Equipment, p8.20

ASHRAE 90.1

Heat Recovery
Integrated Energy Solution “System Design”

- HR Single Condenser
- HR Double Condenser
- Auxiliary Condenser
- Cascading System



Heat Recovery
Integrated Energy Solution "Types of Options"

	Chiller Condenser Option	
Characteristic	**Heat Recovery**	**Auxiliary**
Configuration	Second, full-size condenser	Second, smaller condenser
Typical Application	Larger heating loads (i.e. perimeter reheat coils)	Preheating loads (i.e. boiler make-up water)
Leaving Water	Hot **(105 - 110°F / 40-43°C)**	Warm **(95°F / 35°C)**
Capacity Control	Yes	No
Chiller Efficiency	Decreases	Increases
System Efficiency	Increases	Increases

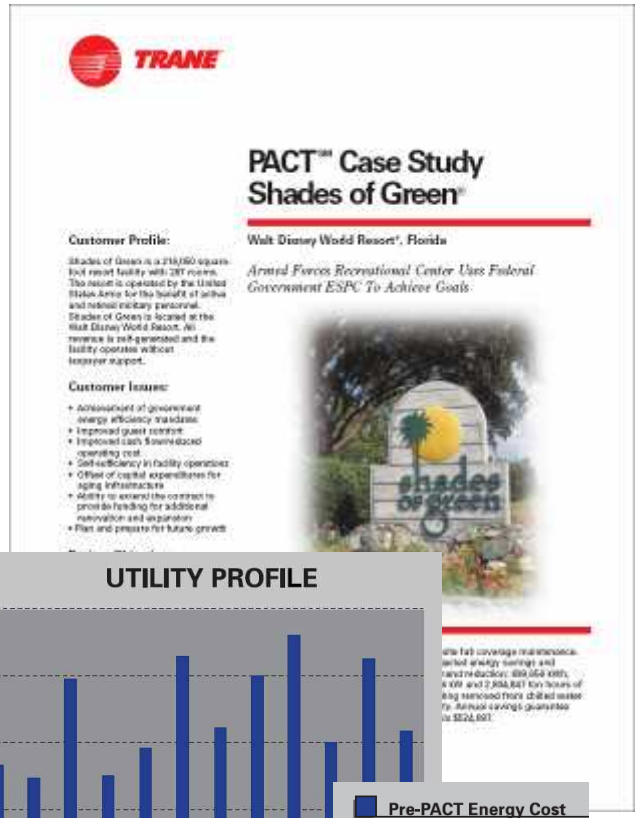
Heat Recovery
Integrated Solution "Case Study"

Shades of Green® (Florida)
Armed Forces Recreational Center (Orlando)

Problem
- Reduce operational costs
- Provide better maintenance and support
- Add chilled water on site

Application
- Two CenTraVac CVHE 350-ton with heat recovery system
- Providing 700 tons of cooling while reducing their natural gas consumption
- Building automation system with room occupancy sensors

Results
- Annual Savings guarantee totaled over $520,000


TRANE

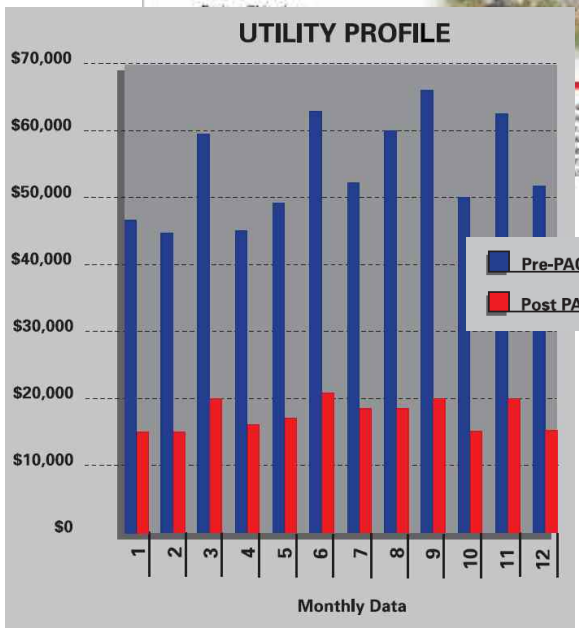
PACT℠ Case Study
Shades of Green®

Customer Profile:

Walt Disney World Resort®, Florida

Armed Forces Recreational Center Uses Federal Government ESPC To Achieve Goals

Customer Issues:



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