Carrier **COMFORT NETWORK**

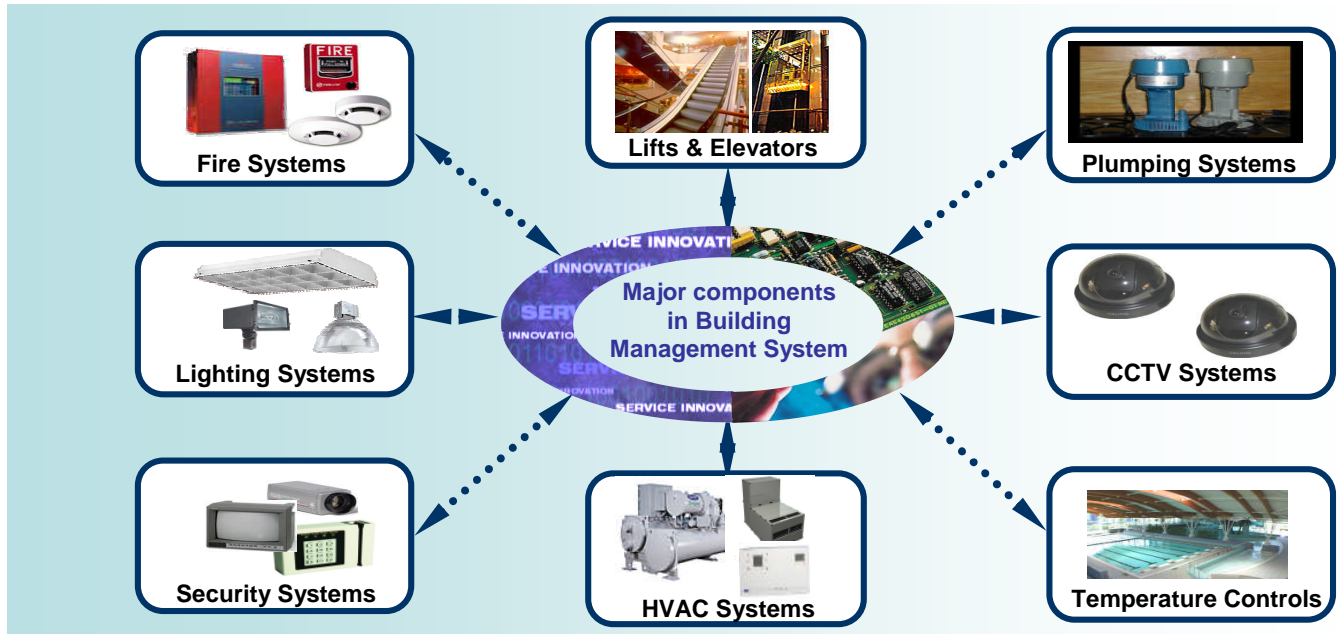# *Carrier*

Comfort

Network

- optimizes the performance of HVAC Systems & is the premier solution for Building Control

CCN Overview

Fire Systems

Lifts & Elevators

Plumping Systems

Lighting Systems

Major components in Building Management System

CCTV Systems

Security Systems

HVAC Systems

Temperature Controls

Opportunities for better efficiency, comfort, remote control & analytical capability. Experience the difference!

What if you can improve system performance & extend the equipment life?

How better the case will be if you can manage your chilled water plant for greater comfort & efficiency?

What if you can coordinate up to eight centrifugal, screw or reciprocating chillers? Orchestrate all peripherals? Integrate with your building's entire HVAC system? Trim down energy cost?
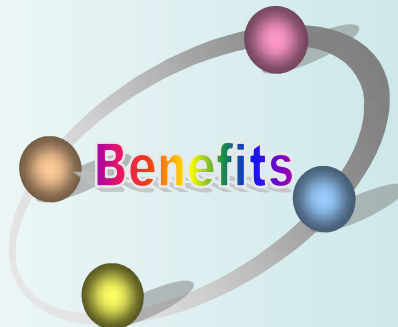
Carrier Comfort Network (CCN) makes them possible!

Efficiency

✓Provides stable operation by scheduling, chilled water set-point reset, etc
✓Replaces manual tasks by automatic control

Comfort

✓Provides a balanced temperature, relative humidity & fresh air environment

Benefits

Remote Control

✓Enables two way remote access to the systems for control diagnosis

Analytical Capability

✓Captures data for energy analysis

System Overview

19XR Centrifugal Chiller

Chillervisor System Manager

CCN Bus

30GX/HX Screw Chiller

Comfort Controller

Cooling Tower Control — Hardwire — Cooling Tower

Condensing Water Pump Control — Hardwire — Condensing Water Pump

Chilled Water Pump Control — Hardwire — Chilled Water Pump
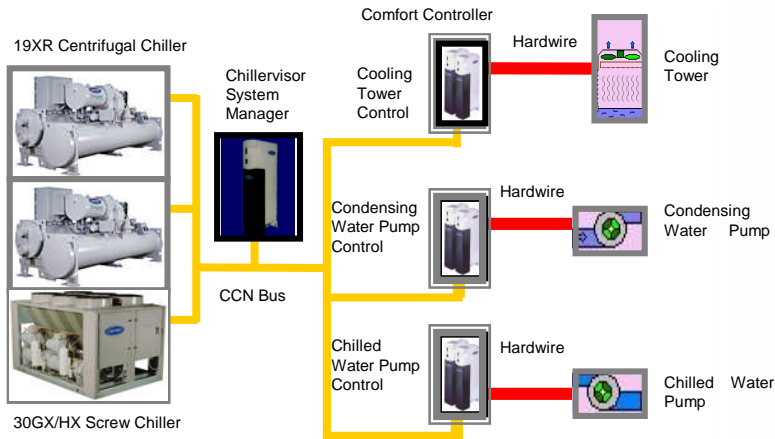
[Chillervisor System Manager (CSM III)]

✓ Central control & management of multi-chillers
✓ Auto start & stop chillers to balance operating hours
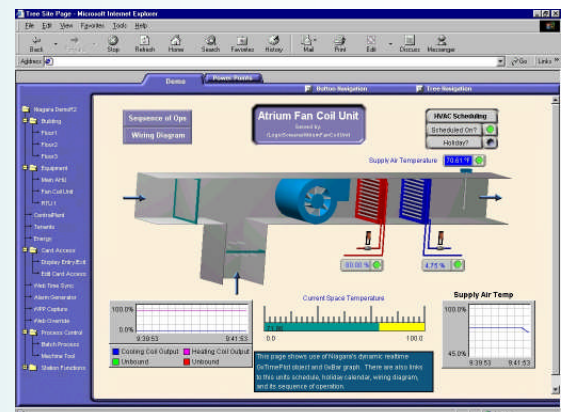✓ Enhances working efficiency of chillers

[Universal Controller and Comfort ID]

Applies to control Air Handler Units, Fan Coil Units and VAV zoning systems

VAV zoning

Comfort ID

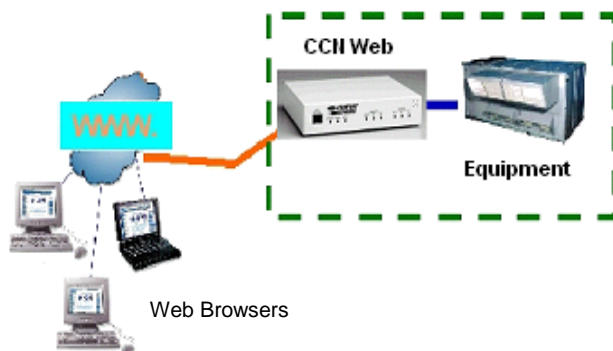Air Handler Unit

Universal controller
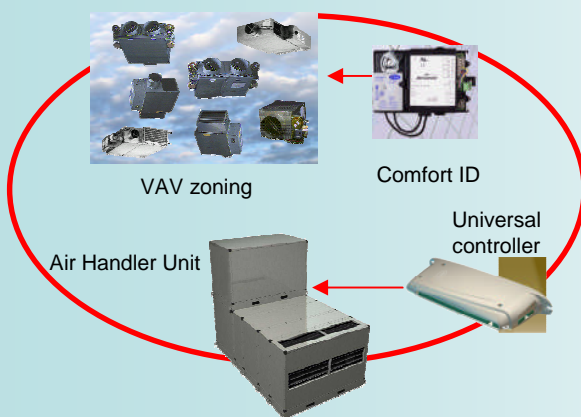
[Comfort View]

Illustrational operation allows immense convenience on Building Management System

[CCN Web]
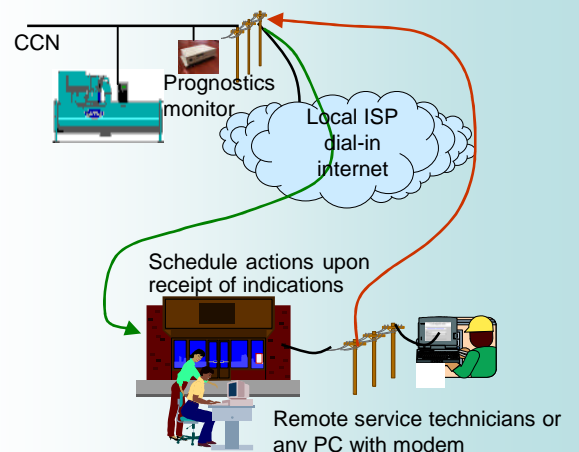
Navigates the whole CCN by using internet anywhere and anytime

CCN Web

Equipment

WWW.

Web Browsers

[Prognostics Services]

Monitors performance based on real time chiller performance parameters

CCN

Prognostics monitor

Local ISP dial-in internet

Schedule actions upon receipt of indications

Remote service technicians or any PC with modem

Main Plant Controls

Chillervisor System Manager III

Chiller System Manager ties up multiple stand-alone equipment together for an automated chiller plant to increase efficiencies and reduces operational costs.

Chillers under control can be centrifugal, reciprocating, screw…….in the same plant.

CMS III offers….

Performance

✓Stable water chilling plant temperature control

✓Automatic restoration of plant capacity after power failure

✓Equalizes chiller operating hours by automatically rotating chillers

✓Minimizes the downtime of the chiller plant

Paybacks

✓Optimizes equipment start/stop to reduce electricity demand charge

✓Temperature reset for energy savings

✓Demand limits to meet customers' expectation on energy consumption

Expandability

✓No programming is required for adding new chillers

Reliability

✓Factory Proven Control Logic & Programming

✓Fills in the Blank & Selection Control Logic for application

Features

Ease of Installation

✓Main chiller supply temperature sensor & main chiller return temperature sensor are required for most of application
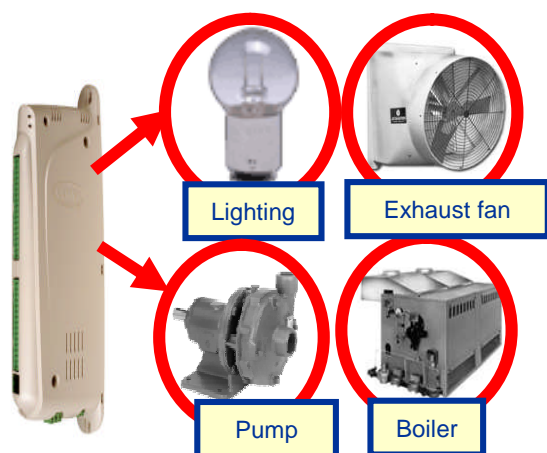
Low Investment Cost

✓Less engineering time

Low Running Cost

✓Optimizes chiller operation before starting lag chiller

# Auxiliaries Controls
Universal Controller & Comfort ID

Universal Controller

Lighting

Exhaust fan

Pump

Boiler

[Pre-engineered Standard Control Algorithm]:

- ✓ Heating/cooling coil control
- ✓ Humidification/dehumidification
- ✓ Mixed air damper optimization
- ✓ VAV fan control
- ✓ VAV supply & return fan tracking
- ✓ Indoor Air Quality for CO_2 sensor control
- ✓ Generic PID control
- ✓ Control point reset
- ✓ Time of day scheduling
- ✓ Discrete device controlled as analog
- ✓ Discrete staging
- ✓ Thermostat simulation

Comfort ID
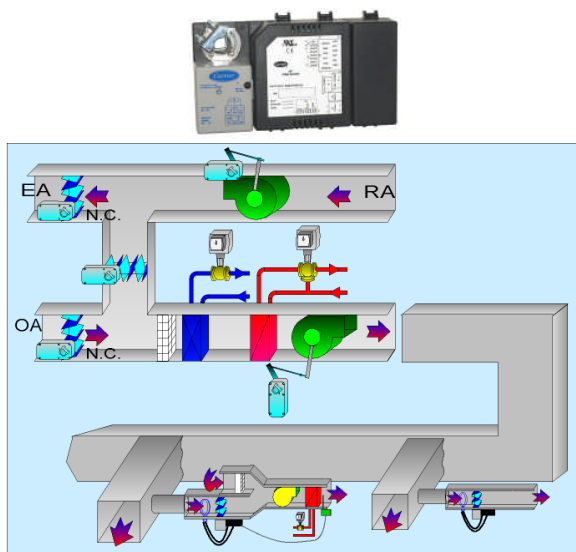
[Features & Functions]:

- ✓ Heating/cooling coil control
- ✓ Stand-alone DDC control
- ✓ Pre-engineered standard control algorithms
- ✓ Energy saving/optimization routines
- ✓ On-board data trending
- ✓ On-board consumable
- ✓ 365-day real-time clock with holidays
- ✓ No battery is necessary for holding programs and parameters
- ✓ Variable Air Volume Systems
- ✓ Pressure Independent DDC VAV air terminal controller
- ✓ VAV Cooling, Parallel and Series Fan Box Terminals
- ✓ CV & VAV Dual Duct Terminals
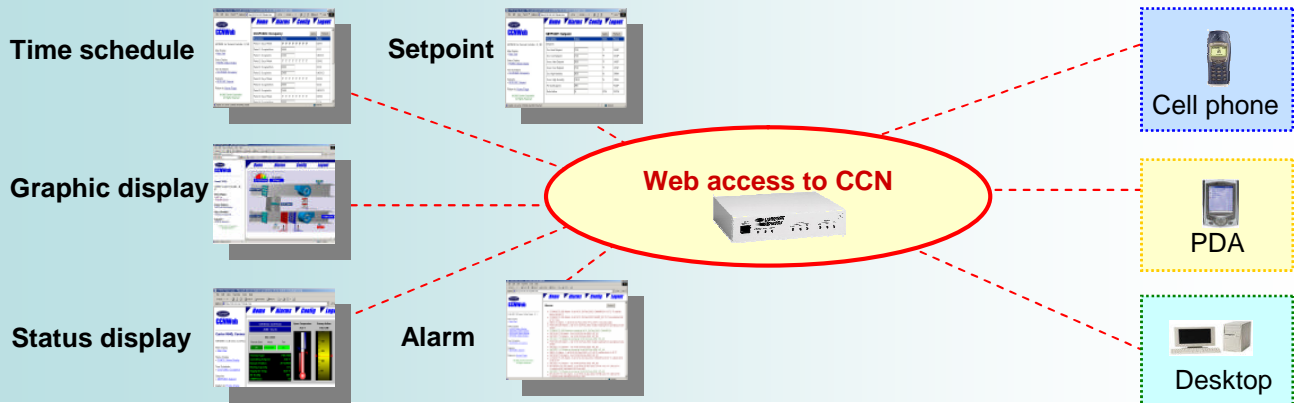- ✓ Zone Pressure Control
- ✓ Demand Control Ventilation for IAQ

ComfortView

- Displays dynamic data in both test and graphic modes
- Creates dynamic trend plots of data from one or multiple controllers
- Adjusts operating parameters such as time schedules, set points and point configuration
- Customizes graphics and create custom links
- Generates reports from system data
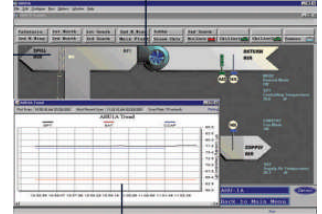
CCNWeb

CCNWeb is a cost-effective method to achieve Internet connectivity to Carrier's communicating controls by eliminating the need for an on-site computer. It includes a library of ViewSPACE templates for most CCN controllers.

Time schedule   **Setpoint**

Graphic display

Status display   **Alarm**

Web access to CCN

Cell phone

PDA

Desktop

Prognostics Service *- predictive intelligence*

What if you could predict and prevent chiller failures?

What if you could be immediately alerted to equipment performance issues, enabling you to resolve them before they affected operating efficiency?

Carrier's Prognostics Service makes this possible!

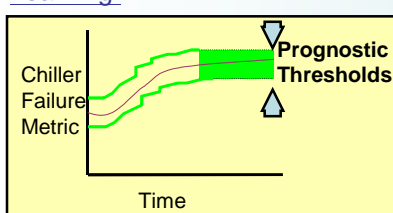## [Historical Data]

✓24-hour data collection for analysis

[Reliability]

✓Provides reliable operation by predictive ability
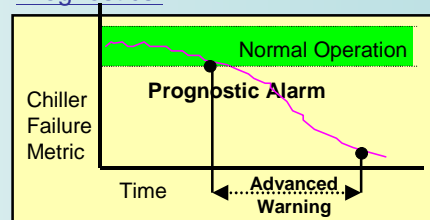
✓Enables equipment to be repaired before it shuts down

[Performance]

Benefits

Learning:

Chiller Failure Metric

Prognostic Thresholds

Time

Prognostics:

Normal Operation

Chiller Failure Metric

Prognostic Alarm

Time

Advanced Warning

06

3rd Party Interface
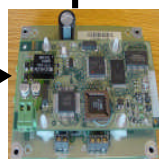
BACnet/Modbus Translator

Application

- ✓ Supplies BACnet MS/TP or Modbus RS485
- ✓ One Translator for each piece of equipment
- ✓ Supports any controller that speaks CCN
- ✓ Auto-finds PIC
- ✓ Auto-maps First 60 Points
  - ➢ Can be changed
- ✓ View, Force/Auto status point data
- ✓ Allows Time/Setpoint Schedule adjustments

BACnet MS/TP or Modbus

Data Transfer Option

Data Collection IV/Data Transfer Option (DCIV)

- ✓ Eprom Memory – no batteries required
- ✓ Communication rate up to 38400 baud
- ✓ Daily, monthly, and yearly reports for Runtimes and Consumables
- ✓ 99 Data collection tables
  - ➢ History - analog or discrete points (temperature, humidity, fan, etc.)
  - ➢ Runtimes - discrete points only (fan/pump status) 1 table supports 8 points
  - ➢ Consumable - analog or pulse meter point (KW, flow, etc.)

Chiller Interface

- ✓ CSMIII interface for 3rd party chillers or Carrier chillers without PICs
  - ➢ Centrifugal, Screw, Scroll, Rotary, reciprocating and absorption chillers
  - ➢ Carrier & non-Carrier brands
  - ➢ Must meet I/O requirements
- ✓ Occupancy Schedule for backup local mode
- ✓ Chilled water reset (4-20mA/0-10Vdc)
- ✓ Demand Limit (4-20mA/0-10Vdc)

LON Translator

Application

- ✓ Supplies LON FT-10A ANSI/EIA-709.1
- ✓ 3 Profiles
  - ➢ Chiller
  - ➢ Rooftop
  - ➢ Generic
- ✓ One Translator for each piece of equipment
- ✓ Supports any controller that speaks CCN
- ✓ Auto-finds PIC
- ✓ View, Force/Auto status point data
- ✓ Allows Time/Setpoint Schedule adjustments

CCN Job References

| **Institutions** | Baptist University
Educational Resource Centre
French International School
HKUST
VTC |

Shopping Complex
Lee Yue Mun Plaza
Ming Tak Shopping complex
Wing On Centre
Whampoa Garden

Banks
Bank of China
Public Bank Centre
Shanghai Commercial Bank

Industrial Buildings
Gate Gourmet Catering Facility
Garment Centre
Hua Wei Technologies Factory
SCMP Factory

Commercial Buildings
DHL Centre
Equinix Hong Kong Limited
Exchange Square III
Science Park
St. George's Building

Hotels
Disneyland Hotel
Hollywood Hotel
Wharney Guang Dong Hotel

Others
Macau International Airport
HK Productivity Centre
MTRC

For more detailed information on CCN, please feel free to contact us.

E-mail   :   chk.service@carrier.utc.com
Website   :   www.carrier.com.hk

Carrier