



District Cooling Systems

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District Cooling System

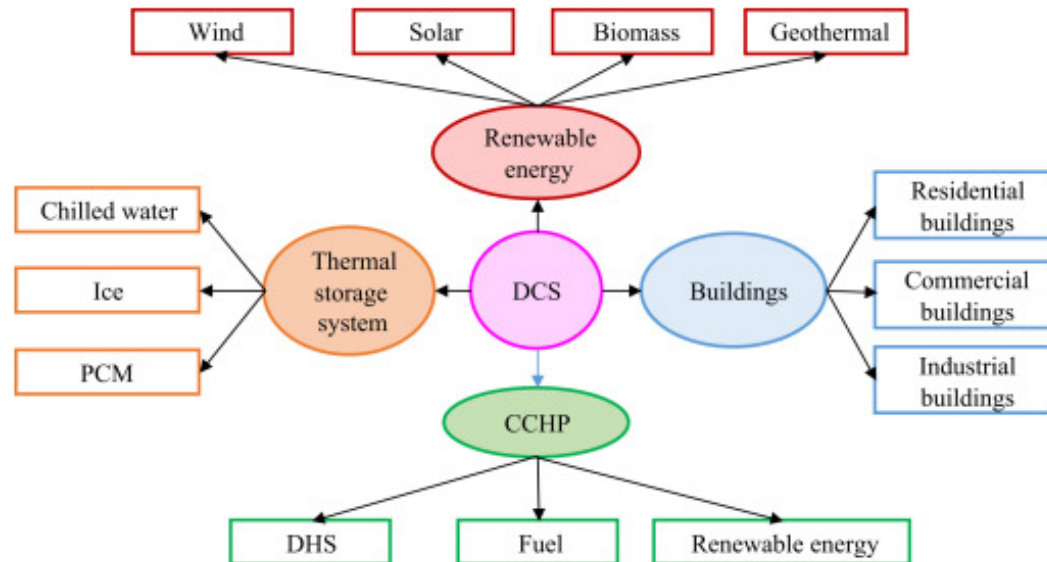
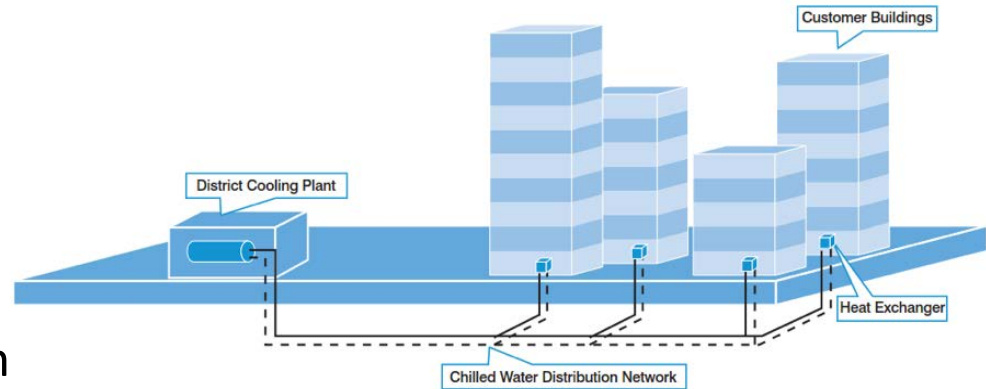


Introduction

Working

Chiller Plant & other System Components

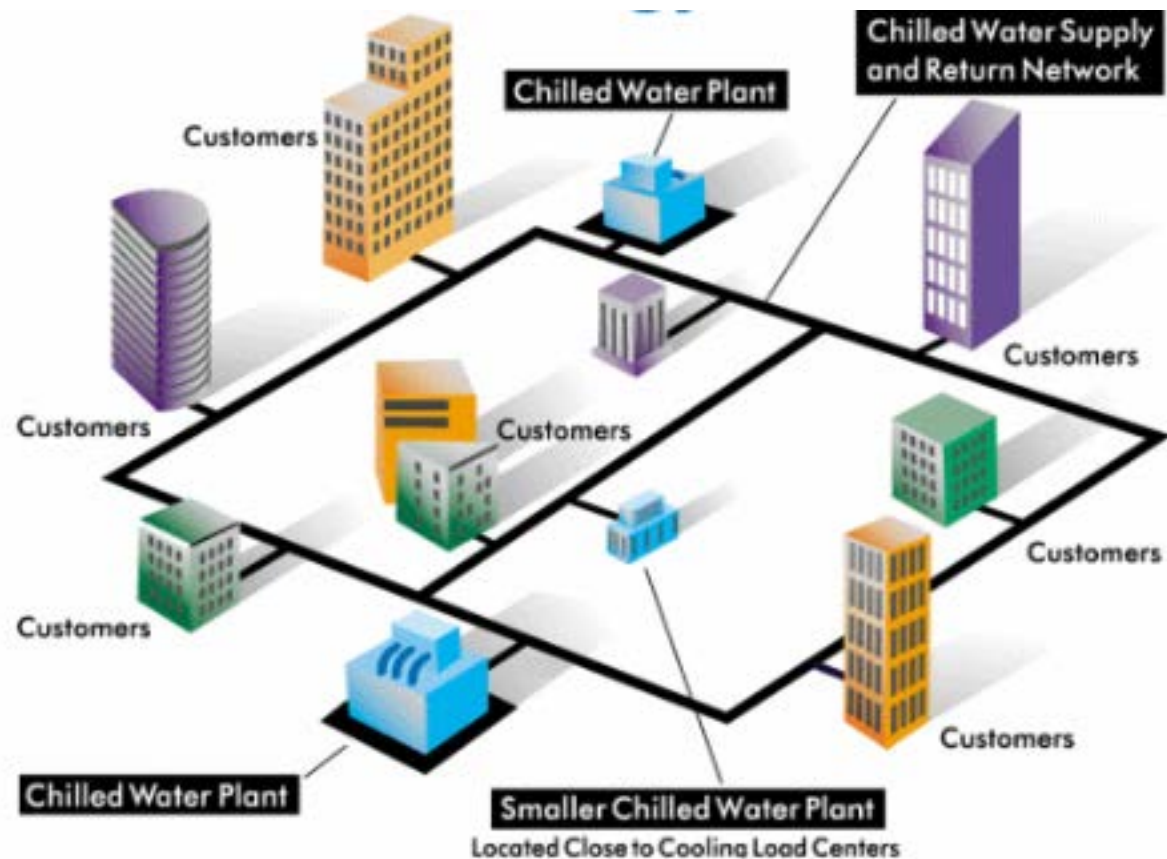
Benefits



DCS Components



- Central Chiller Plant– *Generate chilled water for cooling purposes*
- Distribution Network– *Distribute chilled water to buildings*
- User Station– *Interface with buildings' own air-conditioning circuits*



Chiller Plant & Auxiliary Equipment

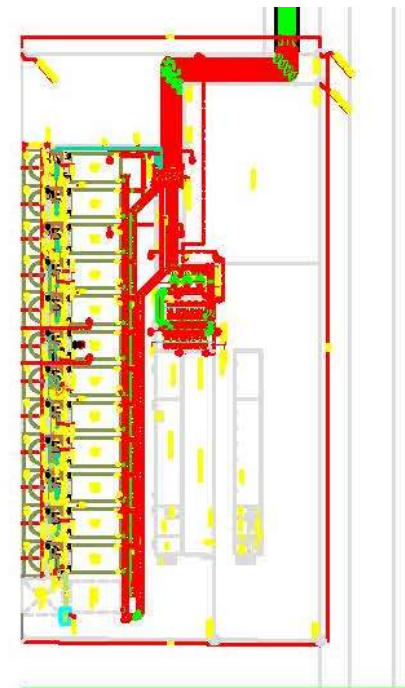


- Chillers – Hi efficiency
- Pumping System
- Cooling towers
- Piping distribution
- Thermal Energy Storage
- Energy Transfer Station
- Controls
- Water treatment



Chillers

- Modules of high capacity Centrifugal Water Cooled Chillers are installed
- Chillers can be designed with series counter flow arrangement for various capacities of approx. 5000 TR
- Large delta T across Evaporators and Condensers
- Power consumption of approx 0.55 KW/TR





Pumps & Cooling Towers

- Fixed speed primary, condenser and variable speed secondary pumping
- Trend towards variable primary flow
- Power consumptions less than 0.2 KW/TR
- Chiller - Cooling Tower Optimization
- Select with the best approach



Piping distribution



- Capital intensive as it has to accommodate future expansion and should have longevity
- Good insulation properties
- Requirement of liasioning with authorities for service corridor
- Welded steel, HDPE, Pre-insulated pipes commonly used.
- Use of leak detection system in buried pre-insulated pipe

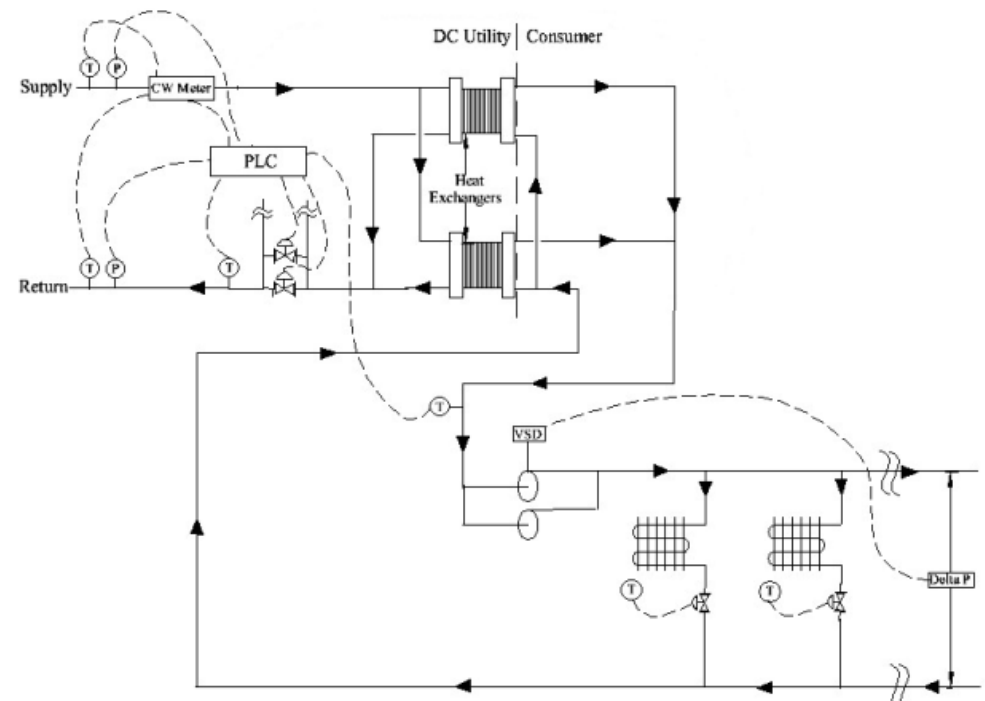


JUMEIRAH BEACH RESIDENCE DISTRICT COOLING SYSTEM

Energy Transfer Stations - ETS



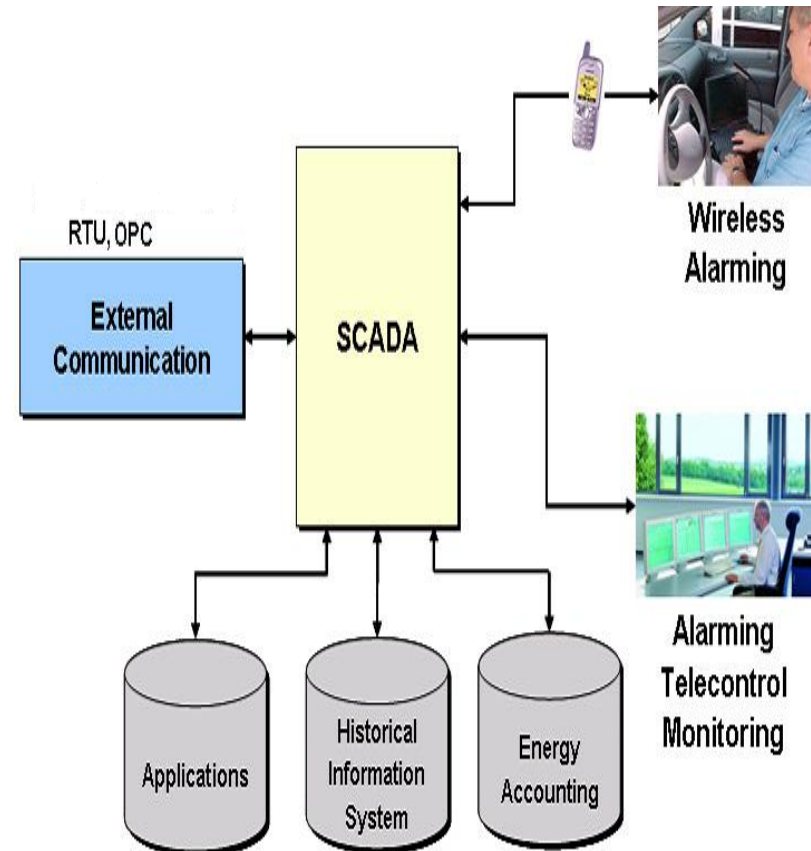
- Thermal energy transfer point between district cooling and customer's HVAC system
- Direct and indirect connection
- ETS comprises of heat exchanger and a set of control valves
- BTU Metering

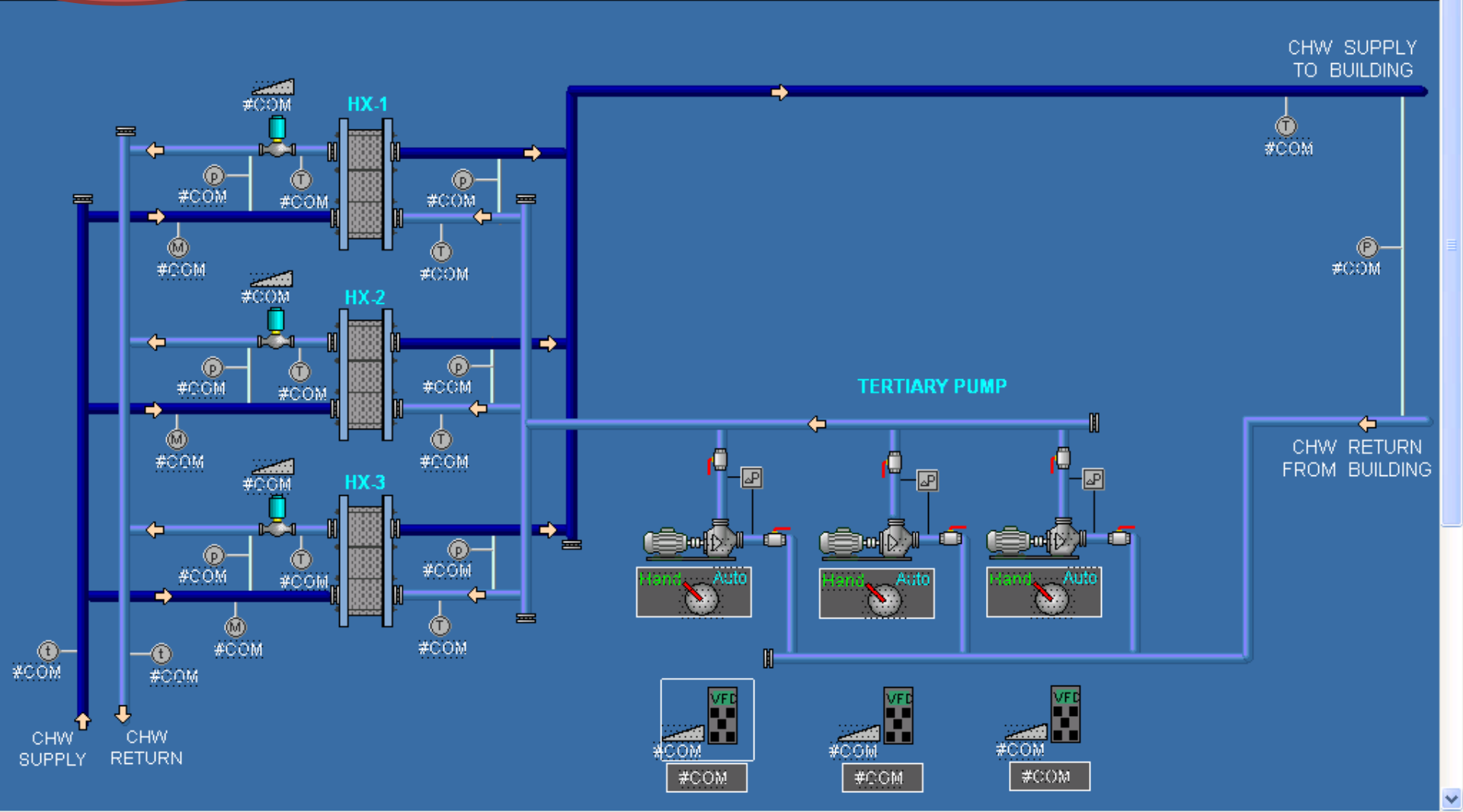


Controls



- An industrial grade and reliable PLC based control system
- Complex and distributive in nature
- Unit Level are the field devices & DDCs
- System Level are the plant controllers
- Management Level with WS Software





Water Treatment



- To minimize deposition, corrosion and control of microbiological activity
- A qualified and experienced water service provider is often considered
- Chilled water network for initial fill and make up
- Condenser water network for initial fill and larger makeup
- Potable water, ground water ,TSE, sea water
- Interest in using TSE water, but polishing plant needed for DC use



BENEFITS OF USING DISTRICT COOLING SYSTEMS



- Maximization of diversities
- Energy Efficiency
- Deferring Capital costs
- Increase in net lettable areas in buildings
- Reduction in O&M costs for the consumers
- Reduction in municipal utility infrastructure
- Minimization of environmental impact



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Thank You

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