



المؤسسة العامة القطرية للكهرباء والماء
Qatar General Electricity & Water Corporation

District Cooling Workshop

Wednesday 18/6/2014

Towards Cooperative District Cooling Society

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DISTRICT COOLING

GOOD PRACTICE

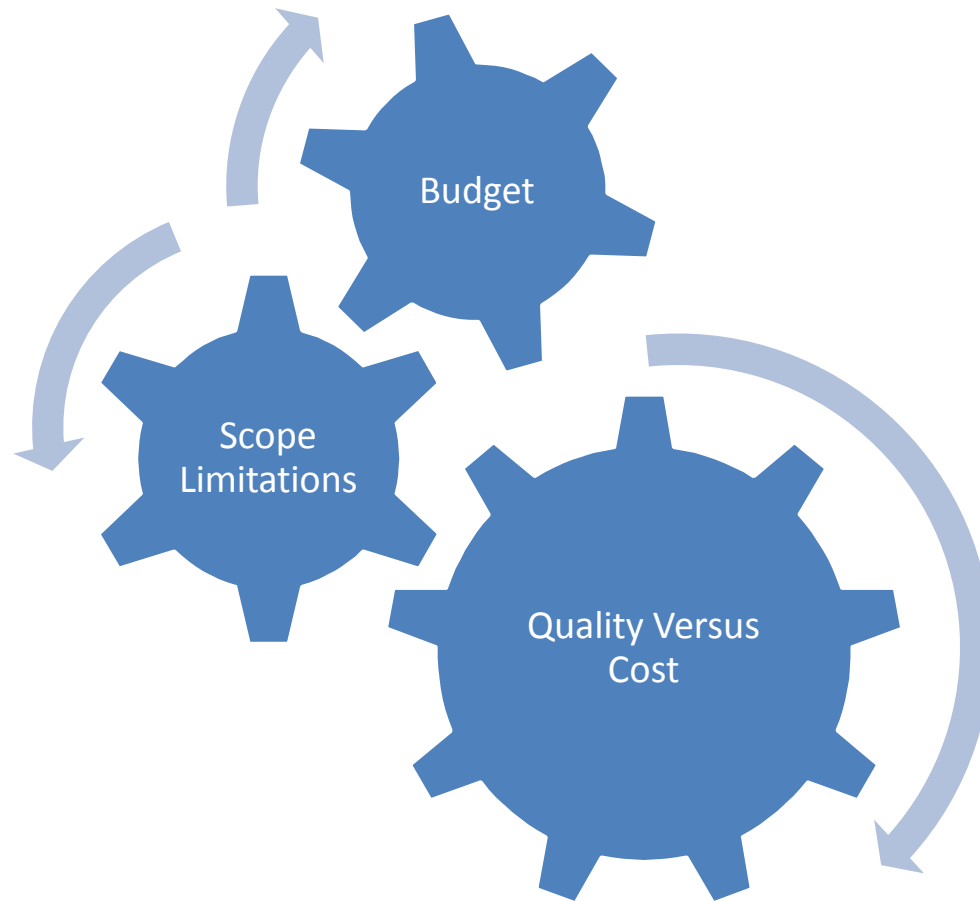


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2014

DISTRICT COOLING- GOOD PRACTICE

- Past Experience
 - Successful installations
 - Learning from mistakes
- Codes and standards
 - ASHRAE
 - AHRI
 - NFPA
 - QCS
- Good engineering Practices
 - Design
 - Installation, Commissioning, O&M
- Project economics and Feasibility

DISTRICT COOLING SYSTEM CONSTRAINTS



PROJECT ASSESSMENT & SYSTEM PLANNING

- What is the nature of the project ?
- What is the volume of the Cooling Load?
- What is the cooling load profile?
- Who are the stake holders?
- Where is the location of the project ?
- Power availability?
- Water availability? Type of water?
- Applicable codes and regulations ?

PROCESS ESTABLISHING & SCOPE REFINING

- Plan with Alternatives
- Refine Cost Estimates
- Down Select the Alternatives
- Preliminary Cost Analysis of Feasible Options
- Develop Technically Feasible Options
- Locate Planned Future Loads & estimate their magnitudes
- Information gathering and verification for existing loads , utility sizes and locations

CODES & STANDARDS



SUSTAINABILITY

- Setting the criteria for the end users loads
- Controlling the load demand by end user
- Optimizing the Plant efficiency
- The Distribution network
- Monitoring and Control
- Diversity at different levels
- Protecting the environment

PLANT PROVISIONS/UTILITIES AVAILABILITY

- WATER POTABLE
- TSE WATER
- SEA WATER
- GRID POWER
- RENEWABLE ENERGY
- CO GENERATION
- EFFLUENT/BLOWDOWN DISCHARGE

PHASED DEVELOPMENT & CONSTRUCTION

- Current load assessment
- Future load(s)
- Project / future load phasing
- Future load distribution
- Interrelation between load segments
- Centralization Vs Decentralization
(Modularity)

CENTRAL PLANT SITING

- Centralization Vs Decentralization
- Modular Design & Construction
- Aesthetics
- Acoustics
- Topography
- Electric Substations /Power Source
- Cooling Tower Location
- Thermal Storage

CHILLER SELECTION

- Anticipated – Diversified Loads
- Winter Minimum Loads
- Average /Normal operating Loads
- COP
- Number of chillers Vs reliability
- Control Philosophy
- Operating Power
- operating Delta T

PLANT INTEGRATION & PERFORMANCE OPTIMIZATION

- Coordination at selection stage
- Plant Control Manager
- Variable Frequency Drives
- Performance optimization Control (AHRI 550/590)
- Plant Capacity at Humid weather
- Low Delta T syndrome
- Tertiary Pumps Control
- Over all KW/TR

CHILLED WATER DISTRIBUTION SYSTEM

- Networks Hydraulics
- Supply and Return Temperatures
- The higher the Delta T the Lower the GPM
- Load distribution/ Feasibility
- Network monitoring / Leak detection
- Pumping Cost (Pumps Head Vs Pipes Dia)
- Coordination with other existing services
- Loops within Distribution System
- Flexibility to add new loads

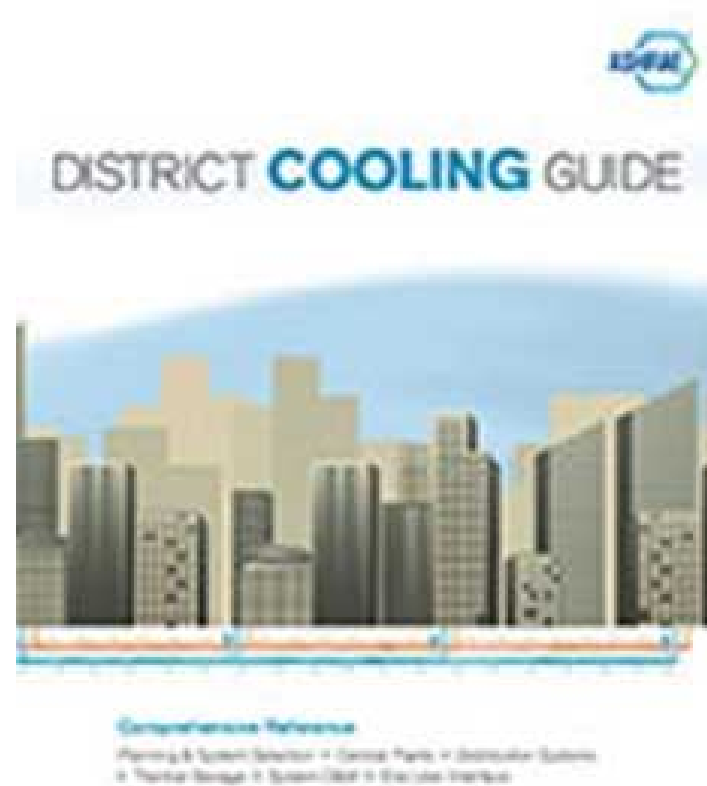
OPERATION & MAINTENANCE

- Competent Operation Staff
- Proper Handing over
- Plant Manager Readings Assessment
- Performance monitoring and continuous enhancement
- Scheduled preventive maintenance
- Emergency Plans and reliability
- Surrounding Environment Protection

ECONOMIC ANALYSIS & USER RATES

- CAPEX & OPEX
- Life cycle cost analysis
- Control of Operating cost
- Bulk Agreements with the utility providers
- Controlling the consumables cost
- Fair and Transparent agreements with the end users

DISTRICT COOLING GUIDE





Qatar Oryx Chapter

*Thank
You*