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- Problem 3
- Solution 4
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Problem at Hand

Today's CHW Plant Challenges

- Chillers Not Operating at Design Temperature Splits – Plagued with "Low Delta-T Syndrome"
- Excessive Bypass of Chilled Water Flow – Increased Pumping Energy, Chiller Energy, Shaft-Miles, and "Low Delta T Syndrome"
- Constant Volume Pumping (both CHW and CW) – Excessive Pumping Energy, Chiller Energy, Shaft-Miles, and Contributes to "Low Delta T Syndrome"
- Comfort is often Sacrificed to Obtain Efficiency – Uncomfortable Occupants = Reduced Productivity
- Total Plant Energy Performance not fully Measured – Difficult to Manage (Increased Risk)
- Operate at Design Intent Conditions only 5% of the Time (per ARI Standards) – Inefficient and Costly Plant Operations 95% of the Time (per ARI Standards)
- Continuous Full Speed Operation of Some Plant Equipment – Decreased Equipment Life

Inefficiency and waste

Solution

- Plagued with Low Delta-T Syndrome – Solves Low Delta-T and Increases Deliverable Tonnage
- Excessive By-Pass and Excessive Pumping Energy – Subsystems “In-Sync” Creates a Virtual Single CHW Loop
- Excessive Chiller “Lift” and Unstable Refrigerant Flow – Reduced Chiller Energy, often w/o Costly Chiller VSD's
- Full-Load / Full-Speed Operation of System Components – Less-Strain and Less Run-Time = Extended Equipment Life and Less Energy Usage
- Uncomfortable and Less Productive Occupants – Improved Indoor Environmental Quality and Comfort
- Little or No Sub-Metering of Individual Subsystems – Data Transparency and Expert Analysis through EMC
- Inefficient and Costly Plant Operations 95% of the Time* – 20-50% Energy Savings with 1-4 year Simple Paybacks

Demand Flow Solution – Dramatic Energy Savings

Best Practice

Reduced Energy Consumption and Greater Performance

- Typically 20-50% Total Chilled Water System Energy Savings
- 1-4 Year Simple Payback
- Requires Less Energy to Deliver Potentially Colder Chilled Water Temperatures
- Improves System Deliverable Cooling Capacity

Extended Equipment Life

- Increased Deliverable Tonnage Means More Redundancy
- Reduced Run-Time = Less Maintenance
- Less Wear and Tear on System Components

Improved Indoor Environmental Quality

- Occupant Comfort is not Sacrificed to Provide Energy Savings
- More Effective Humidity Control

Simplified System Operation

- Sequencing Chillers is Typically Lead / Lag Based on Run-Hours (can be Customized)
- More Intuitive Sequencing of Equipment
- Improved System Reliability and Control

