

DYNAMIC CHILLED WATER BALANCING

Intelligent Controls To Optimize Your Chilled Water System

The 75F **Dynamic Chilled Water Balancing (DCWB)** is a unique solution that harnesses the power of IoT and cloud computing to optimize the efficiency of a Chilled Water System within commercial buildings. This end-to-end solution for your chilled water system maintains comfort while using less chilled water and saving more energy. 75 sensors placed in each zone directly communicate with the Central Control Unit of our system, giving you the ability to monitor the inlet and outlet temperatures, chilled water flow rate and BTU energy consumption across the line. Our system understands, analyses and optimizes the overall performance of the HVAC system under various conditions, thereby driving significant energy savings at an AHU level and at the chiller plant.



Key Benefits



Energy Savings

The smart system understands, analyses and optimises the overall performance of the HVAC system under various conditions, thereby driving up to 50% energy savings at an AHU level and at the chiller plant.



Increased Comfort

75F provides a comfort system that monitors and controls not only the temperature in your building, but also accounts for heat loads, the set point of air temperature, airflow, humidity and indoor air quality. This is made possible by the integration of the high-side and the low-side.



With real-time energy metrics, you can monitor and manage energy consumption across your building(s) right from your Smartphone, tablet or computer.



Quick Payback

With DCWB you save on installation cost, benefit from increased employee productivity and reap significant savings through reduced equipment wear and tear.

How It Works

The 75F Dynamic Chilled Water Balancing system is a unique control solution for the Chilled water line of the Chiller System and its Air Handling Units (AHUs). It consists of:



Block Diagram of 75F Dynamic Chilled Water Balancing System

1) Sensors - CHW Inlet Temperature Sensor, CHW Outlet Temperature Sensor, Flow Meter. The sensors and meters are fitted onto the Chilled Water Line inside the AHU room.

2) Actuator – [®]mounted onto the 2-way valve on the chilled water line to automate it.

3) Controller- The 75F® Central Control Unit[™] (CCU). The Control Mote (CM) board fitted on the back helps in powering the CCU & amp; transmitting the signals/control logic to the CCU.

- The **CCU** displays parameters like CHW ΔT, Volume, CHW Inlet/Outlet temps, CHW Flow Rate, Volume. - The system controls the 2-way control valve per its designed algorithms after factoring in all the above inputs. It modulates the actuator and ensures the design flow rate through the Chilled water line.

- The **sensors** measure the CHW In /Out Temperatures & the CHW flow across the line and communicates this information to the CCU.

- The CCU communicates with the actuator fitted on the 2-way valve which controls the CHW Δ T in the Chilled water line to match the design set point and ensures there is no extra flow through the chilled water line, thereby helping drive energy savings. The CCU also controls the AHU, with more inputs to the load condition in the building, thereby optimizing the CHW flow. In addition to modulating the chilled water valve supplying the AHU coils, the CCU controls the speed of the fan in the Air Handling Unit (AHU) via VFD.

If cooling or heating coils are operated at an excessively high flow rate at an excessively low differential temperature, above a certain operating point the energy consumption of the pumps and of the cooling and heat generators will rise – without increasing the power output. 75F's Dynamic Chilled Water Balancing can help outfit your system with smart controls.

A truly integrated HVAC solution

The 75F automation solution provides comprehensive integration between the high-side and the low-side, ensuring greater comfort and more efficient operation. You have access to numerous inputs like your facility heat loads, zone-specific temperatures, airflow temperatures, humidity, Indoor air quality, forcasted weather data, occupancy schedules, chilled water inlet/outlet temperature, flow rates, etc. On a minute-to-minute basis, our system creates an optimal chilled water strategy ensuring better comfort while using less chilled water and saving more energy.