

Integrating HVAC Equipment for Optimum System Performance and Efficiencies.

Quality HVAC equipment doesn't make a quality HVAC system unless the equipment is integrated to work together. The tekmarNet™ 4 product line sets a new standard in integrating HVAC equipment for optimum system performance and helps improve the overall system efficiency.

HVAC systems require control of heating, ventilation and air conditioning equipment. Currently, individual stand alone controls are used to operate only their part of the system. Due to the lack of integration between different equipment controls in the system, conflicting operation often occurs. This compromises efficiency, comfort and equipment reliability of the system. Ironically, these are the benefits that building owners demand the most. The tekmarNet™ 4 product line combines multiple control functions and communication between HVAC equipment, such as thermostats and outdoor reset controls, to optimize system performance.

The following points are some powerful examples that describe the benefits provided to the end-user by integrating control functions:

True Blue Indoor/Outdoor Reset; Indoor Temperature Feedback communicates the room temperature information from each thermostat to the outdoor reset control. This allows the **Outdoor Reset** logic to consider the internal heat gains and losses of each zone (in addition to the outdoor temperature) to fine tune the water temperature delivered to the heating system. Occupant comfort is greatly improved by maintaining steady air temperatures in the zones while heating plant efficiency is increased by operating the boiler and mixing systems at their lowest possible temperatures.

Zone Synchronization provides communication of the zone on-times between the zones and the system control in order to synchronize zone operation. The benefit of bringing on all the zones that require heat at the same time is; 1) the current full heating load is given to the boiler at one time rather than a load that is randomly applied. 2) The system is brought up to temperature at once giving maximum flow to the majority of the zones at the beginning of each cycle.

Boiler Cycle Manager; the Auto Differential (A/D) feature adjusts the differential in each firing cycle to optimize the boiler cycle itself. A boiler operator with a narrow differential and a small load will have a short ON time, not allowing the boiler and other components to get up to temp, wasting energy. A boiler with a wide differential while having a longer on time will also waste energy by heating the water more than what is required to heat the building. Managing the boiler cycles is an essential component of a true integrated system and allows the control to minimize short cycling of the boiler or overheating of the boiler; therefore increasing heating plant efficiency.

Helping improve Boiler efficiencies; The new condensing high efficient boilers on the market cannot deliver the rated AFUE's unless the controls help them out. We have seen many of these boilers installed in the field where the control strategy and settings would never even allow the boilers to operate in the condensing range, thus turning them into an expensive non-condensing boiler. With an integrated tN4 control system and our networking thermostats, we can ensure the boiler(s) will operate at the lowest possible temperature for the longest required cycle. This will improve the overall system efficiency and the boiler efficiency.

Cooling Groups; Communication between thermostats allow for the setup of Groups of heating zones in one cooling zone. This ties multiple heating zones to a single air handling unit for cooling. This prevents conflicting operation between the heating and the cooling thermostats. Energy Savings are achieved by preventing inefficient simultaneous heating and cooling within the same zone.

The **Optimum Start / Stop** function allows for energy saving functions such as **Programmable Schedules** to be used in radiant applications. The thermostats learn the response of each zone and therefore can bring the room temperature to the desired setpoint at the desired time. This is accomplished by starting the warm up period before the setback event is over, and boosting the water temperature to the radiant system. The energy savings capabilities are brought back to a radiant system without compromising the occupant's comfort.