Kyllor

Variable Flow Balancing Technology*
For Hydronic Distribution Systems

Variable Flow Balancing Technology, (VFBT)* achieves both a balanced Variable flow distribution and the lowest energy consumption at the pump(s)

Continuously, throughout the day, flow balance is re-established as thermal loads change with weather and occupancy

Existing and New building projects will benefit from improved occupant comfort, at the highest energy efficiency

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Kyllor Products

* VFBT Patent Pending

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Variable Flow Balancing Technology*
For Hydronic Distribution Systems,

Features

With a single technology, **Kyllor VFBT** achieves both a balanced Variable flow system and the lowest possible pump operational energy consumption.

Kyllor VFBT generates more, energy reductions than, existing pump speed adjustment technology. Significant reductions in energy consumption results from minimization of distribution differential pressure losses.

Kyllor VFBT provides balancing reports, on line, in real time, and on demand. Reports identify opportunities which may achieve significant additional reductions in energy consumption.

BAS network compatibility is available with the BAC.net interface. **Kyllor VFBT** is available as a standalone system within a BAC.net BAS or, as components operating within a BAC.net environment.

Kyllor Loop Control Algorithm* is used throughout, providing a more efficient and exceptionally stable control, outperforming that offered by the industry standard PID algorithm.

Accuracy of **Kyllor VFBT** is in the order of +/- ½ %, compared with +/- 5. %, at best, with manual balancing.

Kyllor technology continuously balances actual flow levels, as Demand flows change in response to occupancy and weather.

Background

Up to now, a Variable flow system is first balanced manually, as Constant flow system. Pump speed is set to100% and then the system flows are manually balanced. Later, during building operations the pump speed is set to a lower speed to reduce pumping energy consumption.

When the pump speed is reduced from the 100% setting, the Manual Flow Balance is destroyed.

Later, pumping speed is again adjusted manually by the building operator, to a higher speed consistent with **"zero tenant complaints".**

In some cases, the pump speed adjustment is based on maintaining a Differential Pressure setting at 1 or more, key piping locations. Since the Differential Pressure target setting is not easily established this arrangement often defaults to the operator adjustment at a level consistent with **"zero tenant complaints".**

The industry does not have a balancing technology for Variable flow distribution systems.

Kyllor VFBT provides the solution, and changes the Balancing Industry.

The **Kyllor VFBT** balances the Hydronic distribution system incrementally during each hour of each day. During this process compatible adjustments of pumping speed are made.

Pumping energy consumption is minimized and balanced Variable flow system is achieved. **Kyllor VFBT** achieves this with a single technology.

Applications

Kyllor VFBT applies to new and existing, variable flow Hydronic distribution systems.

For example, Kyllor VFBT applies to Primary and secondary Hydronic distribution systems. The bridge between the primary and secondary systems is balanced as secondary flow demands change during daily operations. Kyllor VFBT provides 100% differential temperature transfer across the Bridge.

Also, Kyllor VFBT applies to conversion of Hydronic distribution systems from Constant flow to Variable flow and achieves the maximum possible energy cost reductions.

Performance of Kyllor VFBT

A Node Balancing Unit is operational at each node in the Hydronic distribution systems, while a Node Balancing Unit is operational as a communitcation Node in the VFBT Network. Each Node Balancing Unit monitors conditions at the Hydronic distribution systems node and communicates with other network nodes to achieve flow balance and lowest possible energy consumption.

This process begins at the tertiary Nodes and adjustment data flows upstream in the Network to the Node Balancing Unit servicing the VFD(s) at the Pump(s).

The 1st system priority is balancing the varied flow demands, during each hour of the day, then adjusting the pump speed to the minimum level consistent with the 1st priority.

* VFBT Patent Pending