CAPITAL & OPERATING COST SAVINGS

FEATURES

IPS™

INTEGRATED PIPING SYSTEM

Goal: For the total installed cost of the mechanical system to be less than $15/sq. ft.

IPS™ uses the hydronic system for domestic use already in the budget to reduce installed system costs. Capital cost savings are achieved through an accumulation of multiple attributes.

Average Cost Range - $/square foot

System	Installation Cost	Operating Cost *
4-pipe	$ 25-27	$ .70-.90
2-pipe	$ 20-23	$ .90-1.10
WSHP - VRV	$18-24	$ .90-1.20
PTAC	$13-14	$1.60-1.80
IPS *	**$14-15**	**$.80-1.00**

* Based on electricity costs of $.10/kWh and gas costs of $1.50/Therm

Simple Payback - based on average difference (years)

System	Installation	Operating	Payback
4-pipe	+13	-0.9	14 years
2-pipe	+9	-0.7	12 years
WSHP - VRV	+7.5	-0.65	11 years
PTAC	+13.5	1.70	Basis*
IPS *	**+1**	**-0.8**	**1.25 years**

* Not adjusted for PTAC equipment life of approx. 7 years vs. Fan coil equipment life of approx. 20 years.

Capacity On-Demand vs. Purchased Capacity

The Central Plant Advantage!

General

- TWO IN ONE System uses less but necessary equipment.
- TWO IN ONE System uses less Piping.
- Relatively smaller mains & sub pipe sizes due to lower GPM.
- Piping Material Flexibility – Riser -CPVC, Plumbing – PEX.
- Can eliminate separate high temperature hydronic loop.
- Plumbing trade do most of the piping.
- Lower connected electrical load result in smaller electrical system.

Labor Costs

Labor costs are reduced because the materials going into the building are reduced most of the equipment and piping are eliminated.

Piping Reduction

The mechanical system is at all times totally isolated from the domestic water system. The IPS™ Terminal becomes a "fixture" and the temperature of the cold water is managed while the hot water temperature remains unchanged. Standard 4-pipe fan coil systems require domestic cold water, domestic hot water supply, domestic hot water return, heating water supply, heating water return, chilled water supply and chilled water return for a total of seven pipes. 2-pipe fan coil systems require five pipes; domestic cold water, domestic hot water supply and return – space heating water supply and return. In the cooling season, the heating pipes "changeover" to chilled water. Radiant baseboard systems have five pipes. Water source heat pumps have five pipes. Variable refrigerant adds refrigerant piping and controls plus the cost of electrical. The Integrated Piping System (IPS™) adds a single pipe for a total of four pipes; a domestic hot water supply and return, along with a domestic cold water supply and return. The supply is sized for the domestic requirement and the return is sized for HVAC.

Boiler Reduction

By utilizing the domestic hot water boilers and distribution system for dual-purpose use, the need for separate space heating boilers is eliminated.

Pump Reduction

Further capital cost savings are realized with IPS™ as the domestic water system eliminates the need for a separate space-heating loop. The pumps typically needed in standard hydronic heating systems to circulate space-heating water are eliminated.

Associated Equipment Reduction

Sometimes referred to as "interface costs" are the costs associated with installing the second set of pipes. Installation requires building space along with fittings and valves, chases, access, insulation, hangers and treatment of wall or floor penetrations, inspection and test; and all in addition to balancing and pressure management. In addition, stagnant water and dead legs are eliminated as now both the hot and cold water are continuously circulating.

Less Maintenance

- No Compressor operation.
- No Water Treatment OR use of antifreeze on distribution piping.
- No Large Strainers required.
- No pipe scaling.
- No Balancing Valves needed – System runs on balanced pressure.
- No hydronic balancing needed.