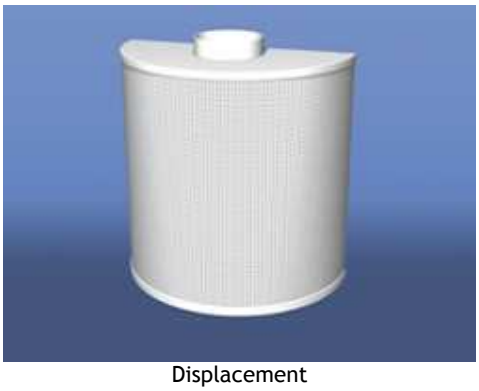
The Most Efficient HVAC System?
It's Probably a Hybrid



Displacement

+

Hydronic Components

WHY?

Consider the outside air (DOAS):
A fully decoupled system uses minimum ventilation for all of the ventilation requirements. This creates the smallest possible air handling system.

How does displacement help?
Displacement ventilation will, at a minimum, reduce the size of the DOAS system by 20%. In taller spaces and depending on the load, it can reduce the system size by over 50%. Displacement also creates the potential for the least frictional losses (no reheat coils, low pressure drop diffusers). The net effect is the lowest possible fan horsepower.

Consider the cooling system:
Since 58F water temperature is generally the guideline to prevent condensation with chilled beam systems, the use of heat recovery chillers become optimal as their most efficient discharge temperature is right around 58F.

WHAT ELSE?

Heating consideration:
As we can't heat using displacement ventilation, we are forced to use radiant heating on the perimeter control of our envelope. Using water for heat transfer is, of course, far more efficient than trying to heat with air.

30% load reduction?
You bet. And then some.

Gotchas?
They can all be addressed, but at minimum you'll need:

- **A good envelope with a good vapor barrier**
- **A solid understanding of controls**
- **Enthalpy controlled economizer**
- **A high performing DOAS system**
- **An open mind**

Displacement ventilation and radiant cooling work well together. New studies are just getting underway to test how these systems operate together.

If you want to get on the front lines, the folks at Air Flow can help. We can help you with design consideration, equipment selection, and go so far as to mock up the space for you so you and your customer can witness test it. If you are interested, contact Tom Gelin at 414-351-7744 or e-mail me at tom@airflowinc.biz

Regards,
Tom Gelin
Air Flow, Inc.
(414) 351-7744 Direct
tom@airflowinc.biz