

## *SEMCO helps Navy Federal Credit Union surpass efficiency and comfort expectations*



How do you design a building that is 3 times as large as an existing LEED Gold certified building on the same plot of land and manage to make it 20-30% more efficient than the existing LEED Gold Building? The Design Team could scarcely believe it themselves, but the utility billing data revealed that Building 2 of the Navy Federal Credit Union in Pensacola Florida was indeed that much more efficient than Building 1 on the very same campus.

### ■ FACTS

**Customer:**

Navy Federal Credit Union in Florida, USA.

**Need:**

A thermally comfortable environment that demanded less cooling, heating and energy.

**Solution:**

SEMCO Pinnacle® unit

# “The numbers based on utility meter data suggest 50-60% savings”

The Pinnacle unit offered the ability to provide conditioned air at warmer supply air temperatures (key to raised floor air delivery) but at lower relative humidity by recovering thermal energy in exhaust and return air streams and using that energy to pre-condition outdoor air and finally condition the supply air. This energy exchange between airstreams reduced chilled water demand and reduced electric heat demand.

The key to the success of this application lays in the delivery of pre-tempered air at a suppressed dew point of 45°F. This dry air delivery, along with the under floor air distribution system, makes it possible to keep Building 2's occupants comfortable at a 76°F dry bulb temperature.

However, higher set points are just one small part of the savings. Recovering energy from exhaust air via (4) Pinnacle® Primary Ventilation and Energy Recovery Units made by SEMCO accounts much of the savings.

The Pinnacle system pre-conditions and dehumidifies outdoor air using exhaust air from bathrooms, janitorial rooms, break rooms, etc throughout the 157,000 sq. ft. Building 2. Pre-tempering and dehumidification are both accomplished by recovering heat from the exhaust air stream via the two internal heat wheels contained within the modified Pinnacle units. The first wheel, a total energy wheel, and the second, a passive desiccant dehumidification wheel, work in series to pre-temper and dehumidify supply air, ultimately bringing it down to an arid 45°F dew point.

The Pinnacle system responds to variations in temperature and humidity by modulating the rotational speed of the passive dehumidification wheel, and/or



also adjusting the energy input to the cooling coil, which is positioned between the two heat wheels.

Although typically designed to condition 100% outdoor air, these particular Pinnacle units were designed with an internal chamber in which a percentage of return air mixes with supply air just upstream of the cooling coil. This keeps the Navy Federal from having to condition unnecessarily large volumes of outside air.

According to John Shaw, design engineer at Newcomb & Boyd, the real numbers based on utility meter data suggest 50-60% savings.

“The SEMCO units have been a substantial contributor to those savings,” said Mr. Shaw. “We’ve seen square foot/ton numbers that are virtually unheard of.”

The performance was so high that it took 2 trips of a few Newcomb and Boyd employees to verify the remarkable savings were actually occurring.

“We were very surprised at the maintained low indoor humidity levels at such large square foot/ton efficiencies,” said Mr. Shaw.

## SEMCO

SEMCO is a unique indoor environment products manufacturer serving the key disciplines of air distribution, noise abatement, temperature, and humidity control in the commercial and industrial building markets. SEMCO was acquired by Fläkt Woods in 2007.

## Fläkt Woods Group

Fläkt Woods is a global company providing solutions for ventilation and air treatment for buildings as well as fan solutions for Industry and Infrastructure applications.

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