# ENERGY SAVING SOLUTIONS FOR AIR SYSTEMS

Addressing energy conservation and environment is becoming a key success factor in our industry.
The innovative design of all new Lennox rooftop units dramatically improves energy usage, helps in saving operating costs and reduces environmental impact. Below is a short description of some of the solutions we have been developing to save energy while improving the indoor air quality.

## *Efficient systems are designed around R410A:*

R410A allows more energy efficient and environmentally friendly systems. R410a is considered as a long term alternative to R22. It allows significant improvement in energy efficiency as well as more compact systems and lower refrigerant charge.

## *What you should know about capacity modulation:*

Good capacity modulation brings more comfort through more accurate control of the supply air temperature as well as energy efficiency improvement during part load operations. Not all modulation techniques can improve both comfort and part load efficiency:

## *Dynamic Defrost:*

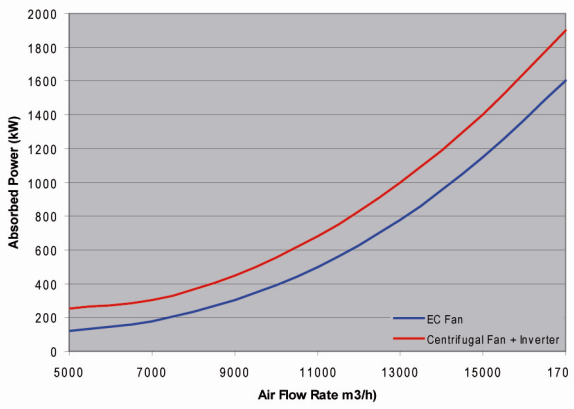
Most heat pumps start defrosts cycles periodically. Lennox has developed the dynamic defrost feature to improve energy consumption by starting the defrost cycles only when needed. For example air cooled units operating as heat pumps when outdoor temperature and humidity is low do not need to defrost every 45 minutes

***The improvement in energy consumption thanks to dynamic defrost can be as high as 15%.***

## *Managing airflow saves energy and improves comfort:*

Efficiency can be improved by adjusting the airflow and by using more efficient motor.
No Transmission = No transmission losses
Easy site start up and maintenance (no pulley and belt + adjustable airflow)
Supply air temperature control = more comfort
Air sock start up capability built in

Absorbed power vs airflow shows large energy consumption improvement when reducing airflow.



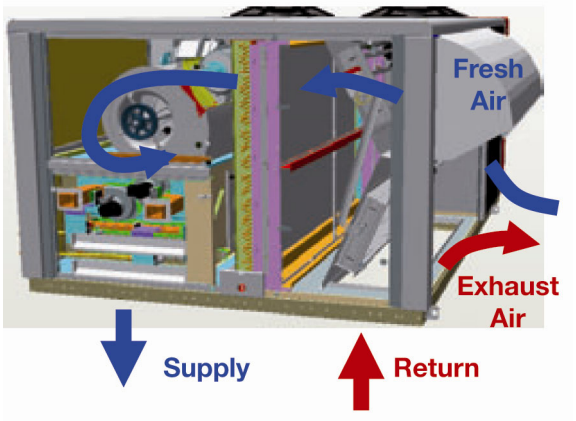

## *Variable airflow helps you save up to 15% in energy consumption*

## *Free-cooling = Free energy*

Free-cooling is the best way to save energy with Air to Air cooling units.
Free-cooling can be used every time the outdoor temperature goes below the indoor set point.

## *Free-cooling saves up to 50% of energy consumption*

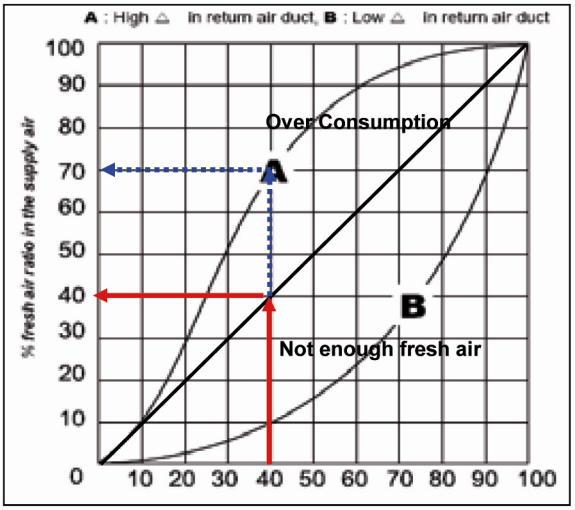
when compared to a system not using free-cooling
Savings will depends on unit location and schedule



### *Accurate percentage of fresh air can save Energy*

The amount of fresh air entering the building depends on the position of the air damper but also on the pressure drop difference between return air duct and fresh air duct:
Having too much fresh air entering the unit will lead to over consumption to cool or heat the extra amount of air.
Lennox CLIMATIC™ 50 uses a patented algorithm to periodically recalibrate the damper position and ensure that the right amount of fresh air is introduced into the building and NOT more.

***20% of extra fresh air on a unit supplying 20000 $m^3$/h can account for up to 1000 € of extra energy consumption EVERY year.***




### *Saving energy with Heat Recovery*

Energy recovery Option saves energy by exchanging energy with the exhaust air to preheat / pre-cool the fresh air.
The energy efficiency of enthalpic Heat Recovery wheel can be as high as 80% depending on air flow rate and % of fresh air. The amount of energy that can be saved using this system will depend on the climate at unit location and the requirement in fresh air of the building

***Lennox has been developing innovative heating and cooling systems for many years. Today we concentrate on creating high efficiency products and systems that help business reduce their total cost of operation while maintaining a high level of comfort for their occupants.***