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Konvekta High-Performance Energy Recovery Systems
with an intelligent controller for maximum reliability and recovery effectiveness of 70 to 90%.

The right technology takes you further!

Highest performance in the smallest space!

The special design of Konvekta's high-performance coils with headers on both sides of the coil ensures cross-counter flow, and achieves almost pure counter current.

This is a prerequisite for high energy efficiency in energy recovery systems. At the same time, this minimizes coil depth and saves space in the air handler.

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Tradition and Technology!

Konvekta was founded in 1949 as a family business and is still a family business today. Thanks to the focus on continuous improvement and successful technology advancements, Konvekta is one of the leading manufacturers of complex high efficiency energy recovery systems.

Konvekta combines tradition with the latest technology. As early as 1975, Konvekta began developing software to optimize both energy efficiency and the economic benefit of energy recovery systems. Later, the DOE-2 building simulation program was integrated into the Konvekta software as the basis for optimization calculations.

Konvekta has extensive knowledge in the development of software for the optimization of energy recovery systems. Our custom software is needs-based, controls the energy recovery system, calculates energy savings and continuously monitors the system for maintenance needs. Thanks to continuous improvement, the Konvekta Controller leads the market.

For Konvekta and our staff, the customer is at the center of our business. To ensure that our customers achieve maximum benefits, we offer cutting edge technology and comprehensive service. We guarantee optimized, trouble-free operation for the life of your facility.

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System Controller witht Auto-Reporting*plus*

- Maximum visibility of system performance
- Continuous system monitoring
- Unique operational reliability
- Guaranteed recovery rates of up to 90% for the life of the facility
- Reduction of operating costs by over 80%
- Reduction of CO_2 emissions by up to 90%

Energy Recovery Coils

Almost Perfect Counter-flow
Konvekta energy recovery coils have a very unique design with headers on both sides of the coil.
The cross-counter-current results in almost perfect counter-flow.
This maximizes the overlap between the outlet temperature of the air and the heat transfer fluid.

Highest Performance in the Smallest Space
Achieving almost pure counter-flow is a prerequisite for high recovery efficiencies and optimal energy recovery. At the same time, this design approach minimizes the required space in air handlers.

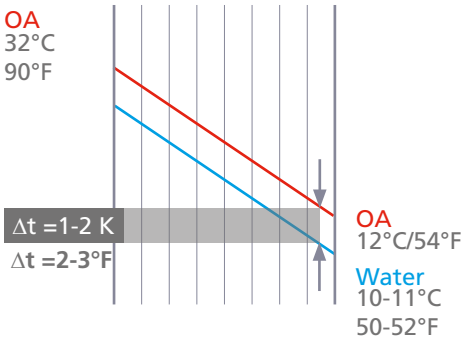
High Efficiency
With Konvekta high performance cooling coils there is a very small temperature difference between air and fluid.

Sturdy Fins
The energy recovery coils are made of either pure aluminum or of a sea-water resistant aluminum / magnesium alloy. They are 0.4 mm thick.
These thick, sturdy fins have significant advantages in transportation and assembly.

Proven Performance
Konvekta energy recovery coils were tested by the University of Lucerne to analyze recovery performance.
The results demonstrate that Konvekta High-Performance Energy Recovery Coils achieve in excess of 80% recovery.

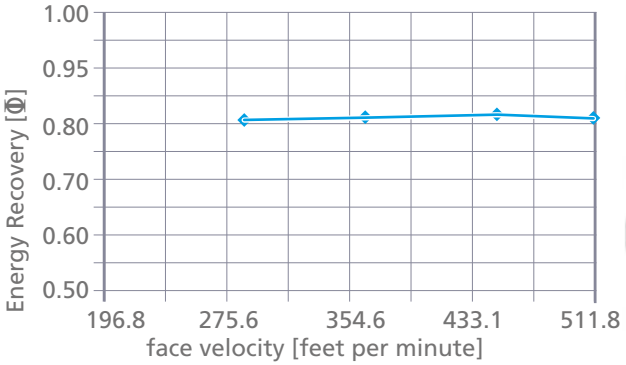
High Corrosion Resistance
When required, the aluminum magnesium fins can be coated with a corrosion resistant coating. The corrosion protection also reduces the cleaning frequency. For very corrosive conditions, like at ABL Labs, Konvekta offers acid and alkali resistant coatings.
These coatings have been in use and tested in extreme conditions for over 20 years.

Durable Enough to Clean According to the Highest European Standards!
Since the fins of the Konvekta coils are so thick and sturdy, the coils can be easily and thoroughly cleaned with high pressure water or steam (2,900 psi). Removing the coils from the air handler is not necessary.
The cleaning parameters meet the requirements of the highest European standards and were tested and confirmed by an independent institute.



Example: The OA is 32°C/90°F.
The required chilled water temperature is 10°C-11°C/50°F- 52°F. Konvekta's cooling coils cool the OA to 12°C/54°F.
The COP of the chiller will be greatly increased with this high water temperature.

University of LUCERNE Analysis Konvekta Energy Recovery Coils



Measuring a Konvekta energy recovery system with mass flow ratio 1.0
Air conditions:
Outside Air 5°C/41°F, 80% RH
Return Air 20°C/68°F, 28% RH

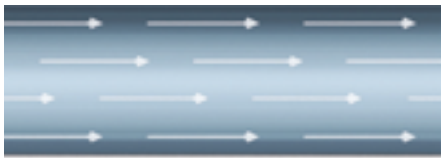
Hydronic Module

A Compact Unit
Konvekta's factory-tested hydronic module includes all major components such as controller hardware and software, pumps, valves, plate heat exchangers (for supplemental heating, cooling and free cooling) and many temperature sensors. This dramatically simplifies installation.
All controller components are in a dust-and weather-proof cabinet so an enclosure is not necessary. This makes pump maintenance easy and extends the life of electronic components. The open design also allows easier access to the individual components for service and maintenance.

Demand-Dependent Energy Recovery Controls
Unlike conventional energy recovery systems, where the fluid circulation rate is constant and not controlled based on system variables, Konvekta's energy recovery controller is demand-dependent and accounts for all relevant operating parameters. In energy recovery systems with multiple supply air handlers and multiple exhaust air handlers, the energy is taken from where it is available and used where it is needed.

This demand-oriented approach is essential to maximize recovery efficiency.

Always Turbulent Flow
Turbulent flow must always be maintained in the tubes of energy recovery coils. It is critical that in both full load and part-load operation the energy recovery coils are designed to find the optimal relationship between annual energy recovered and increased electrical consumption of the system pump. In many energy recovery systems where the fluid flow rate is adjusted based on reduced air volumes, laminar fluid flow occurs and turbulence is lost.


Laminar fluid flow


Turbulent fluid flow

Redundant Pump
To ensure that the system never fails, the hydronic module contains a redundant pump. If one pump fails, the controller automatically switches to the other pump which guarantees uninterrupted performance. During normal operation, pump hours are asymmetrically alternated between the two pumps. This ensures that the two pumps have different "ages" which increases system reliability.

The redundant design of the pump also minimizes service interruptions because the pumps come due for maintenance at different times.

sys▼kon

Quality begins with Planning!

Accurate Design of Complex High Performance Energy Recovery Systems using Dynamic Custom Software

sys▼kon is a combination of a building simulation program, DOE-2 energy modeling, and equipment sizing software for various system components, such as energy recovery coils, pumps, fluid piping, chillers, and condensers, etc. During the day when heat demand fluctuates, heat recovery can only be effectively optimized with a dynamic building simulation program. Using **sys▼kon** results in significantly higher accuracy than when static calculation methods are used (for example, cumulative frequencies). Konvekta provides the customer with profitability calculations that evaluate the use of different system components and designs so that the best solution is found. Konvekta will provide design options early in the design process so that the energy recovery system is sized properly and energy savings and pay-back are identified early.

Typically energy savings range from 70% to 90%, and returns on capital investment reach 20-60%. We guarantee the energy savings and provide continuous monitoring of the energy recovery system to ensure that the specified energy savings are realized for the life of the building.

Commissioning by the Manufacturer
After installation of the equipment our technical experts commission the system.

Monitoring and Optimizing the System
Since no two systems are identical, components must be synchronized when the commissioning phase is completed. This is typically done with an operational optimization, where all system parameters are optimized at critical operating points. Konvekta systems are usually equipped with VPN access. This allows our engineers to observe live operation and if necessary, take action to optimize the system.
A poorly controlled system or malfunctioning components will reduce recovery efficiency by up to 80%.
If a system is not monitored, assebly errors, software failure, leaking valves, etc. are rarely or never noticed.

Konvekta energy recovery systems are equipped with a large number of sensors, so that the controller receives accurate performance data.
This ensures optimization and maximizes energy efficiency.

Take advantage of our expertise and service and we'll guarantee a highly efficient building with verified energy recovery savings.

The Energy Recovery Controller Measures, Controls and Optimizes!

The Guarantee for Reliability and Efficiency
The heart of the Konvekta Energy Recovery System is the controller. It is essential that the controller regulates the performance of the entire energy recovery system. The basis for this is providing the controller with actual operating data for significant operating parameters and the performance maps of the energy recovery coils. Unlike conventional energy recovery system calculations, the Konvekta controller uses the performance maps of energy recovery coils, and the ACTUAL values of important system data. This is a prerequisite for accurate control of high-performance energy recovery systems. This data enables the Konvekta controller to provide a comparison between the calculated NOMINAL values, from the measured operating conditions, and the effective actual values. Deviations from optimal operating conditions are analyzed and automatically reported. Performance issues can then be resolved before a noticeable energy loss occurs.

Trust is Good - Control is Better
The innovative add-on Software, Auto-Reporting*plus* provides a real time visual snap shot of the system status. Potential deviations are displayed on an Auto-Reporting-eye that shows different states in different colors. This allows operators to recognize in a glance if the system is running in the „green zone“, or if there is a reduction in performance and what the cause is. It goes without saying that operating discrepancies need to be reported to the operator automatically. This guarantees rapid problem resolution and optimal operation.

Complex High-Performance Energy Recovery Systems
The Konvekta controller regulates complex, multi-functional high-performance energy recovery systems consisting of several supply and exhaust air handlers that include inputs of heat, cold and free-cooling. It takes the energy from where it is available, and uses it where it is needed. If less energy is required, than what is available the system will adjust itself so that the most optimal operating point is found. Konvekta also provides an effective freeze protection feature.

Energy Savings up to 90%
With the Konvekta energy recovery controller optimal performance is guaranteed with recovery rates of up to 90%.

Reduce CO_2-Emissions Significantly
With a high-performance energy recovery system Konvekta not only maximizes recovery rates but also minimizes operating costs. CO_2 emissions are reduced by the reduced consumption of fossil fuels.

Return on Investment

High Return on Investment
When investing in the capital market, depending on the risk, returns range from 5 to 10%. Investment in a High Performing Energy Recovery System can yield a return of 20 to 60%.
With absolutely no risk because performance is guaranteed!

Calculation Example:
Bogenhausen Hospital
In 2007 when Klinikum München-Bogenhausen, a 951 bed hospital in Germany that provides the highest level of care, renovated their HVAC system they installed a Konvekta high-performance energy recovery system. The facility achieved a verifiable net annual efficiency (according to SWKI VA 300-1) of 86.3%. This resulted in annual energy savings for heat of $650,000 (USD) and $25,000 (USD) for cooling (2012 energy costs). With investment costs of $2,310,000 (USD) and annual savings of $675,000 (USD), for a 15 year term, this is a return on investment of almost 28% - guaranteed and risk-free!

Conclusion:
After about 4 years, by investing in a highly efficient energy recovery system, the savings of the Bogenhausen Hospital have paid the investment in full and since 2011 they have saved almost $680,000 (USD) annually. At the same time, they have reduced their annual CO_2 emissions by 7,000,000 lbs or 3'200'000 kg.

Service & Maintenance

Many Services Offerings
After the system operation has been optimized Konvekta offers comprehensive maintenance services. Various „Care-Packages“ cover all of your needs. The simplest package includes daily data queries, performance analysis and a password protected dashboard. The most comprehensive package offers assistance by Konvekta’s technical specialists who are available 24/7, routine data analysis, and if necessary, emergency control of your system.

Other options include system site inspections, periodic pump maintenance, and sensor-calibration.

We are pleased to customize a Care Package for you so that your investment pays off for many years to come.

The Konvekta Service Promise:
24 hours a day, every day of the week

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