

# LOSSNAY SYSTEM






## SELECTION


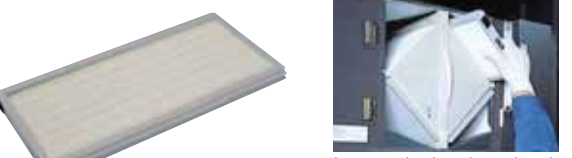
A line-up of three product groups that addresses a wide range of needs.

### SELECT LOSSNAY

Select the most appropriate model according to factors such as the shape of the building and ventilation requirements.

<p><b>LGH SERIES</b> Ceiling-concealed Nine models (150–2000m<sup>3</sup>/h)</p>  <p style="text-align: center;">LGH-15 to 100RX<sub>5</sub>-E</p> <p style="text-align: center;">LGH-150 and 200RX<sub>5</sub>-E</p> <ul style="list-style-type: none"> <li>• Applications: Offices, Stores, Etc.</li> <li>• High total heat-exchange efficiency</li> <li>• Excellent airflow control (Extra High, High, Low and Extra Low)</li> <li>• Multi-ventilation Mode</li> <li>• Can be interconnected with other Mitsubishi Electric air conditioners</li> <li>• Exclusive Lossnay remote-control system</li> <li>• Mr. Slim remote controller can be used for some systems</li> </ul>	<p><b>LGH SERIES</b> Ceiling-suspended 400m<sup>3</sup>/h</p>  <ul style="list-style-type: none"> <li>• Applications: Stores, Schools, Etc.</li> <li>• High/Low airflow control</li> <li>• Can be controlled using separately sold mechanical switches</li> </ul>
<p><b>VL SERIES</b> Wall-mounted 100m<sup>3</sup>/h</p>  <ul style="list-style-type: none"> <li>• Application: Prefabricated offices (container houses), Residences, Etc.</li> <li>• High/Low airflow control</li> <li>• Pull-string switch</li> </ul>	

### SELECT OPTIONS

<p><b>Remote controller (PZ-60DR-E)</b></p>  <p style="text-align: right;">Unit: mm</p> <ul style="list-style-type: none"> <li>• 8-Language dot-matrix display</li> <li>• Weekly timer</li> </ul> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 30%;">Source power requirement</td> <td>Power received from a LOSSNAY unit, TM4 ①-②</td> </tr> <tr> <td>Number of LOSSNAY units controlled by PZ-60DR-E</td> <td>1–15</td> </tr> </table>	Source power requirement	Power received from a LOSSNAY unit, TM4 ①-②	Number of LOSSNAY units controlled by PZ-60DR-E	1–15	<p><b>High-efficiency filter</b></p>  <p style="font-size: small;">Incorporation into the main unit is simple, and filter changes can be performed via the main unit inspection opening.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th>Model</th> <th>Number of filters per set</th> <th>Applicable model</th> <th>Filter material</th> </tr> </thead> <tbody> <tr> <td>PZ-25RFM</td> <td>2</td> <td>LGH-15RX<sub>5</sub>-E, LGH-25RX<sub>5</sub>-E</td> <td rowspan="5">Non combustible fiber (Polyester polyolefin) 65% (EU-F7)</td> </tr> <tr> <td>PZ-35RFM</td> <td>2</td> <td>LGH-35RX<sub>5</sub>-E</td> </tr> <tr> <td>PZ-50RFM</td> <td>2</td> <td>LGH-50RX<sub>5</sub>-E</td> </tr> <tr> <td>PZ-65RFM</td> <td>2</td> <td>LGH-65RX<sub>5</sub>-E</td> </tr> <tr> <td>PZ-80RFM</td> <td>2</td> <td>LGH-80RX<sub>5</sub>-E, LGH-150RX<sub>5</sub>-E (2 sets)</td> </tr> <tr> <td>PZ-100RFM</td> <td>2</td> <td>LGH-100RX<sub>5</sub>-E, LGH-200RX<sub>5</sub>-E (2 sets)</td> <td></td> </tr> </tbody> </table>	Model	Number of filters per set	Applicable model	Filter material	PZ-25RFM	2	LGH-15RX <sub>5</sub> -E, LGH-25RX <sub>5</sub> -E	Non combustible fiber (Polyester polyolefin) 65% (EU-F7)	PZ-35RFM	2	LGH-35RX <sub>5</sub> -E	PZ-50RFM	2	LGH-50RX <sub>5</sub> -E	PZ-65RFM	2	LGH-65RX <sub>5</sub> -E	PZ-80RFM	2	LGH-80RX <sub>5</sub> -E, LGH-150RX <sub>5</sub> -E (2 sets)	PZ-100RFM	2	LGH-100RX <sub>5</sub> -E, LGH-200RX <sub>5</sub> -E (2 sets)	
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\* Options listed above are exclusively for LGH-\_RX<sub>5</sub>-E models.

# LOSSNAY SYSTEM

Lossnay ventilation systems are renowned industry-wide for their efficiency. They offer environment-friendly energy recovery and humidity control, and enable air conditioning systems to simultaneously provide optimum room comfort and energy savings.



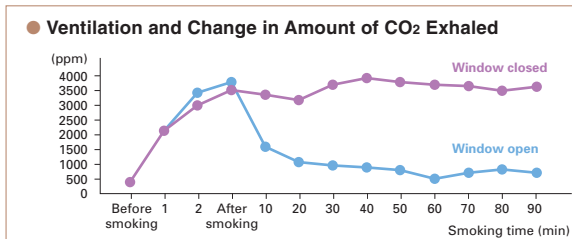
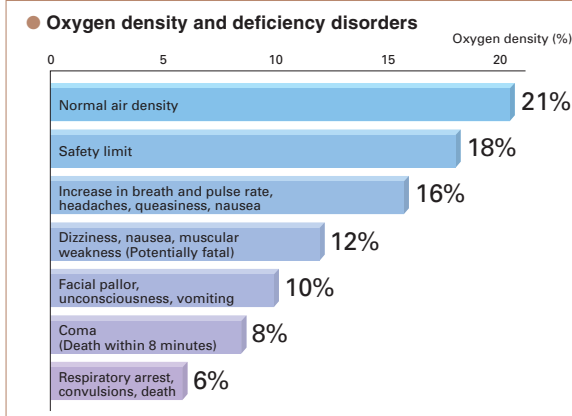
## One Adult Needs 400 Litres (Equivalent to Two Barrels) of Fresh Air Every Hour

In everyday life daily, occasionally there are times you might feel out of breath, like when you're in a closed room or a crowded train. This is because the air becomes carbon-rich; that is, the carbon dioxide (CO<sub>2</sub>) that people exhale accumulates in closed spaces, thereby increasing the carbon gas density in the enclosed space. The average person exhales about 20 litres of carbon-rich gas per hour. If there is no ventilation, the carbon gas density increases in the room as the oxygen density decreases, and various problems could eventually occur. To live comfortably, every person needs a surprising 400 litres of fresh air per hour; a volume equivalent to two large barrels.

### Main Gaseous Contaminants Found Indoors

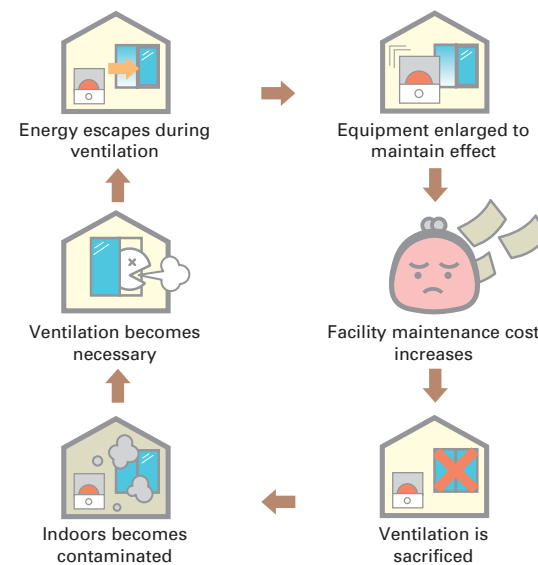
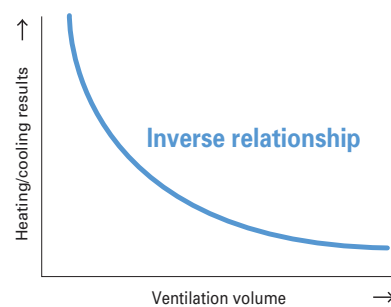
Contaminant Name	Chemical Formula	Harm
Carbon Monoxide	CO	Causes severe damage to the body
Sulfurous Gases (sulfur oxide)	SO <sub>2</sub>	Damages the body; causes asthma; reacts with metals, generates rusting
Nitrous Gases Nitric oxide Nitrogen dioxide	NO NO <sub>2</sub>	Direct harm to the body is unclear; becomes NO <sub>2</sub> when bound with oxygen, causes indirect harm; irritates the throat and lungs, possibly causing serious damage.
Carbon Dioxide Gas	CO <sub>2</sub>	No direct harm unless the gas is very dense
Bad Odours	—	Bad odours found inside residences do not cause serious damage health-wise, but may create discomfort

Source: An Introduction to Home Environment Studies. S. Fuji, Shoukoku Publications



## Ventilation Providing Both Heating and Cooling

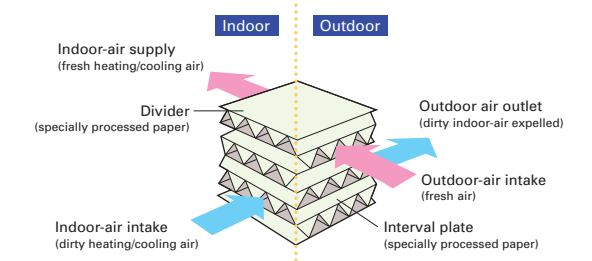
When using a ventilating system, indoor air that has been heated or cooled escapes causing the room to become cold in winter or hot in summer. As the heated/cooled air dissipates, the environment becomes uncomfortable, precious energy and money are wasted, and the increasing amount of contaminated indoor air that needs to be ventilated turns into a major problem. The reason for this phenomenon is that heating/cooling and ventilation have an incompatible relationship that is inversely proportional. For air conditioning from now on, Mitsubishi Electric proposes heating and cooling systems that provide effective ventilation at the same time.



## Simple Construction, High Performance – That's Lossnay Air Ventilation

### Simple Construction

As shown in the illustration, the Lossnay element design adopts a cross-flow shape and plate-fin construction that enables total heat exchange using specially processed paper dividers and interval plates. Since the dividers separate the intake and exhaust passages, fresh air is always inducted without mixing with exhaust air.



### Operating Principle

The Lossnay element skillfully provides total heat exchange—temperature (i.e., sensible heat) and humidity (latent heat)—using specially processed paper dividers and moisture permeability characteristics; enabling dirty indoor-air to be expelled outside and fresh outdoor-air to be inducted inside, passing through the Lossnay without ever mixing.

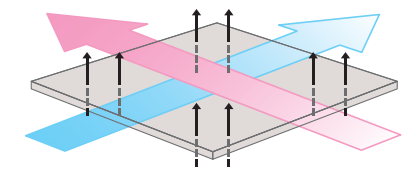
The principle can be explained by a simple experiment. Roll a sheet of paper into a tube shape and blow through it. The warmth of the air is transferred to your hand, and conversely, if cold air is blown through the tube, the coldness would be transferred to your hand. The same special properties of the paper are used for the Lossnay total heat exchanger.



### What are Sensible Heat and Latent Heat?

Sensible heat is the heat resulting from temperature changes (i.e., rise/fall) in a substance, and latent heat is that which is generated or dissipates according to changes in the state of a substance (e.g., evaporation, condensation, etc.).

- **Temperature (sensible heat) exchange** Thermal conduction and heat transfer through the divider in all temperature ranges.
- **Humidity (latent heat) exchange** Water vapor transference through the divider in all temperatures ranges based on differences in water vapor pressure.

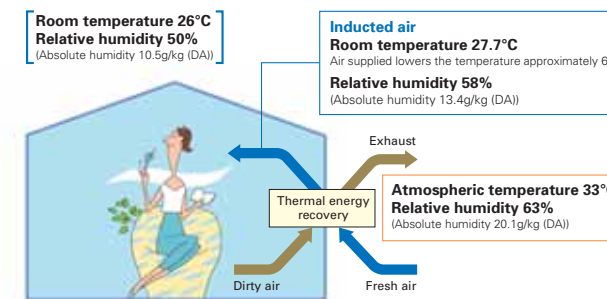


## Comfortable Air Ventilation Regardless of Being Hot or Cold

### Summer

Difference between inducted air and indoor temperature is 1.7°C.

- Inducted air is brought to the condition of cooled (dehumidified) indoor-air.



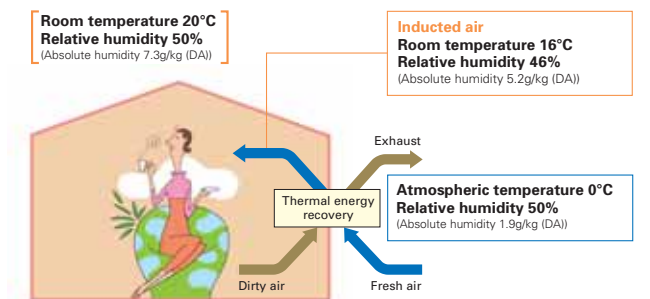
■ Calculation Conditions: LGH-100RXs (High notch)

In the case of general ventilation (including open windows) → In order to induct outdoor-air as is, changes in high-temperature summer air and low-temperature winter air are not considered.

### Winter

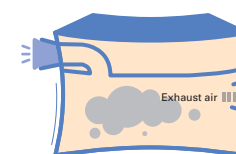
Humidity recovery of 4kg/h

- Inducted air is brought to the condition of the heated (humidified) indoor-air.



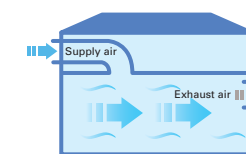
### Other Features

Lossnay provides better air ventilation because air is inducted and expelled concurrently, thereby offering more efficient operation than traditional air ventilation (exhaust ventilation only).



If air is not supplied, the air pressure in the room drops and the entire space is not properly ventilated.

If Lossnay is used



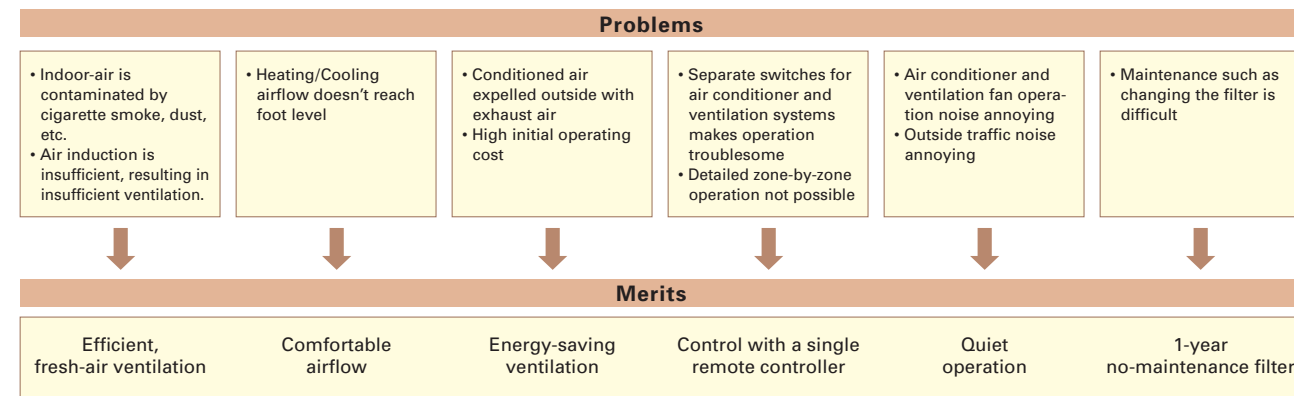
By inducting and expelling air concurrently, Lossnay constantly provides sufficient ventilation and maintains a good air environment indoors.

## Mr. Slim & Lossnay Interconnected Ventilation Systems

High-quality Air Conditioning Systems Fusing Comfort and Economy

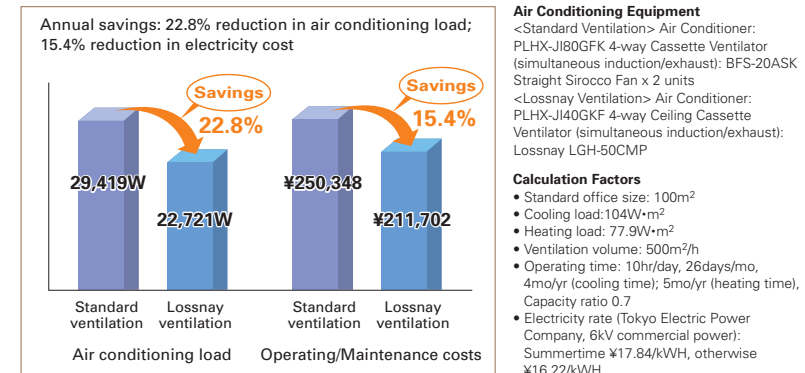


### Six Major Merits of Interconnected Ventilation Systems



### Reduce Heating/Cooling Costs with Efficient Ventilation

Conventional ventilation systems expel heated/cooled air outside, which is definitely a minus from an economic standpoint. Lossnay units induct outdoor-air through an independent heat exchanger and bring the air near the indoor-air temperature before distributing it in the room, thereby keeping the indoor-air temperature virtually constant. Incorporation of a Lossnay unit can result in a reduction in annual heating/cooling cost of approximately 15–16%.



Trial calculation conditions, standard business office in Tokyo metropolitan area; 100m<sup>2</sup>

### Mr. Slim Air Conditioners Compatible with Lossnay Ventilation Units

Type	Model Name	Type	Model Name
Ceiling Cassette (4-way)	PLA-BA/SLZ-KA	Ceiling	PCA-KA/HA
Ceiling-concealed	PEAD-JA/PEA-GA	Wall-mounted	PKA-HA/KA
	SEZ-KD	Floor-standing	PSA-GA

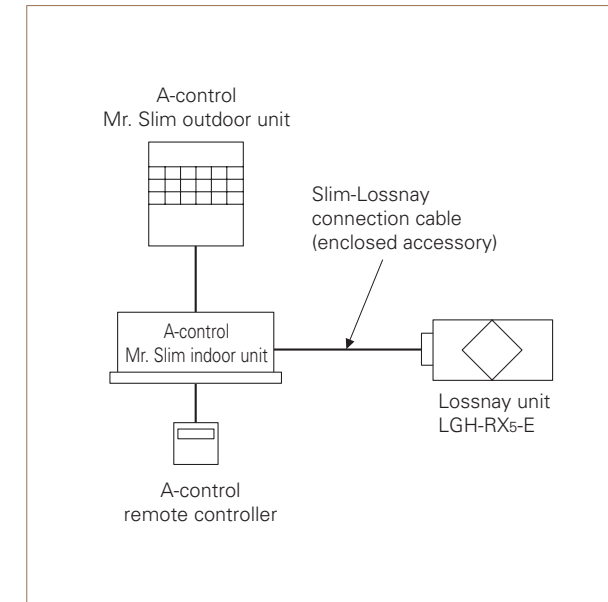
\* The wired remote controller must be set before it can be used to operate individual Lossnay units.

### One Remote Controller for All Operations

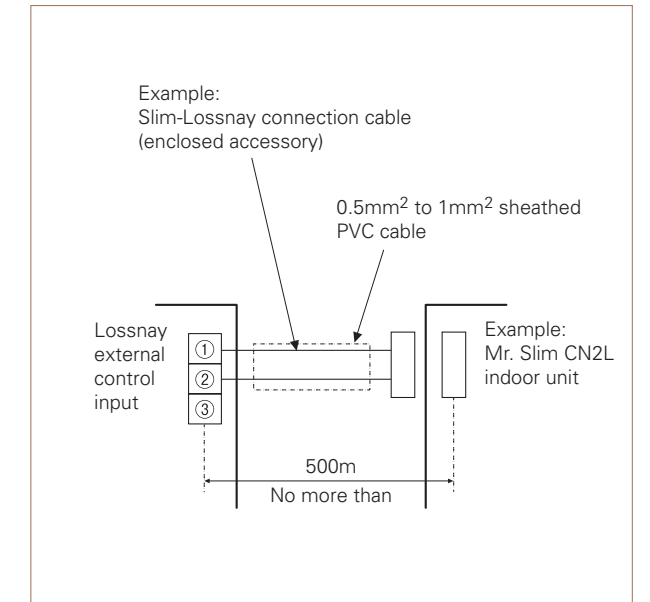
Control both Mr. Slim and Lossnay units with a single controller, the new "MA Remote Controller." Compared to conventional air conditioning and ventilation systems that require a separate remote controller for each unit, operation is greatly simplified. A variety of features are incorporated, such as a "Ventilation Changeover Switch" and "Filter Sign" for independent operation of the Lossnay when running for long periods of time.



### System Example



### Connection Method



### Lossnay Function Table (Interlocked settings)

Item	Details
Number of indoor units that can be set to interlocked operation with 1 Lossnay unit in each group	1 unit
Number of Lossnay units that can be set to interlocked operation with 1 indoor unit	1 unit
Operation of Lossnay unit only (When indoor unit is stopped)	Possible
Independent Lossnay unit start and stop (When indoor unit is operating)	Not possible
Delayed operation (Optional setting)	30 minute delayed operation when indoor unit cooling/heating is started
Fan speed switching	High/Low*
Ventilation mode	Automatic
Filter indicator	None
Error indicator	None
Restrictions and precautions	The Lossnay remote controller cannot be used for systems interlocked with Mr. Slim.

\* Cannot select extra-low fan speed when using the MA Remote Controller.

### Controller Function Table for Lossnay Units

Switched and display ○: Group only (or function available) ×: Not available

Model	Local remote	
	MA Remote Controller PAR-21MAA	Lossnay Remote Controller PZ-60DR-E
Operation	Start/Stop	○
	Fan speed switching (High/Low)*	○
	Ventilation mode switching	× (Automatic)
	Priority instructions Local permitted/prohibited	×
Monitoring	Status (Operation/Stop)	○
	Fan speed switching (High/Low)	○
	Ventilation mode	×
	Error indicator	×
	Error content	×
	Filter sign	×
Local permitted/prohibited	×	

Cannot be used with interlocked Lossnays

\* Cannot select extra-low fan speed when using the MA Remote Controller.