

# Renovation with ventilation

for future-oriented living



Healthy people,  
healthy buildings

[www.maico.de](http://www.maico.de)



# Renovation - only with ventilation!

When you are looking at the refurbishment of a building these days, many different aspects have an increasing significance, such as general well-being, health, property rentability and maintaining the value of the building.

When you take criteria such as these into account, a successful refurbishment can only be carried out with the inclusion of the installation of a ventilation system.



## Mould: Danger for people and buildings

When a building was refurbished in the past, the insulation of the building shell was improved in line with the required energy savings but at the same time, this dramatically reduced the exchange of air between the inside of the building and the outside world.

As a result, the relative humidity of the rooms increased greatly resulting, in many cases, in the build up of mould and damage caused by damp.



A build-up of mould inside a building creates problems of hygiene, which cannot be tolerated from a health standpoint. Once evidence of the development of mould has been found, professional building measures have to be carried out for its long-term removal.

# Window ventilation - not the whole answer

To start with, you might think that regular window ventilation could be the solution.

Practice shows us, however, that is not possible to create a defined and controlled exchange of air using just the windows. It can result in bad air quality in the rooms or increased energy consumption

because of the random combination of elements such as the weather, the temperature and the time of day and it can create draughts and lead to cold feet.

The biggest problem however, is that you can't influence or control the behaviour of the persons using the room in terms of ventilation, through window ventilation.

# Your health - a valuable asset

You can only live a healthy life in a "healthy" house. Evidence has shown that health issues connected with mould spores include bronchial disorders, susceptibility to infection, allergies and tiredness. Good air conditions in the living space can promote good health.

In the same way that you consult your doctor when you are ill, you should also seek the advice of a professional when your house starts showing signs of deterioration.

As residential properties are long-term investments, if you carry out the wrong refurbishment work, this can affect you for many years to come.



**"When looking at the big picture therefore, effective refurbishment can only be carried out when it includes the installation of a ventilation system."**

## MAICO Renovation suggestions - A system overview

Renovation with ventilation in a multiple family unit	Solution 1: Decentralised ventilation in bathroom, toilet and kitchen .	Page 4/5
Renovation with ventilation in a multiple family unit	Solution 2: Sophisticated air extraction system, per apartment .....	Page 6/7
Renovation with ventilation in the bathroom	Solution 3: Good air quality in the bathroom .....	Page 8/9
Renovation with ventilation in a single family unit	Solution 4: Standard exhaust air system .....	Page 10/11
Renovation with ventilation in a single family unit	Solution 5: Sophisticated system with heat recovery .....	Page 12/13

## Renovation with ventilation in a multiple family unit

### Solution 1:




# Decentralised ventilation in bathroom, toilet and kitchen

With this model, air is extracted by decentralised fans from those rooms that are most affected, such as bathrooms, toilets and kitchens and expelled over the roof through ducting. As a result of the slight partial vacuum occurring in the rooms, fresh supply air can flow directly into the living and sleeping areas through wall or window-mounted supply air elements.

Additional overflow openings such as door grilles, ensure good air circulation between the individual rooms in the apartment.



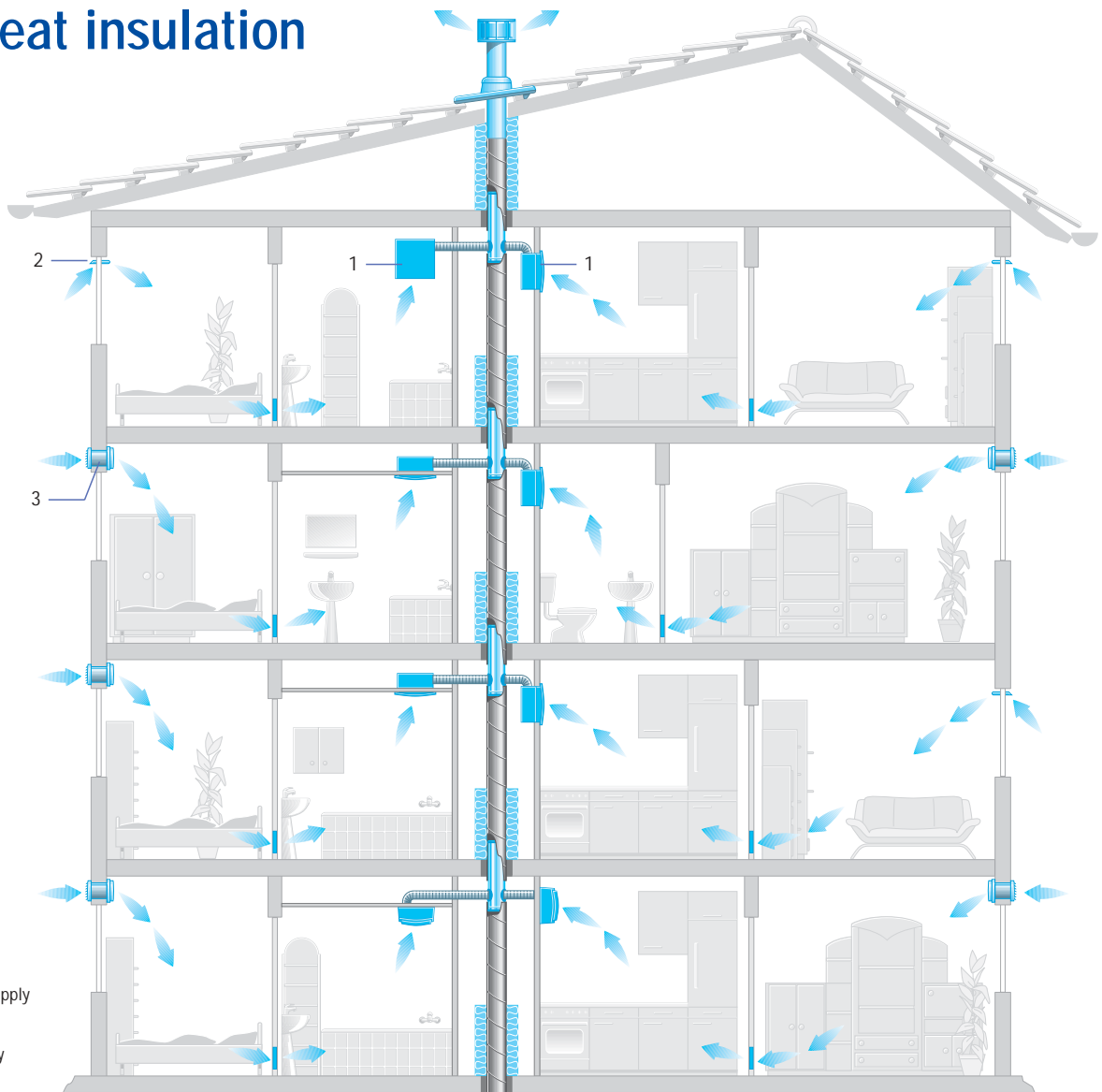
**"Solutions that rely on measures don't give the most"**

System description	
Building type	Multiple family unit
Equipment type	MAICO ER 100 D individual fans with ZE supply air elements
System components	 +  + 
Advantages	<ul style="list-style-type: none"><li>• Simple and secure installation</li><li>• Economically priced</li><li>• The system requires no adjustment</li><li>• Units can be controlled separately for each living unit.</li><li>• Electricity consumption can be billed separately for each living unit</li></ul>
Special feature	Maintenance-free fire protection can be achieved with MAICO aeroduct





solely on heat insulation benefit "



- 1 ER 100 D fan
- 2 ZE 45 F Window supply air element
- 3 ZE 10 T Wall supply air element

## Renovation with ventilation in a multiple family unit

### Solution 2:




# Sophisticated air extraction system with heat recovery, by individual apartment

Here also, air is extracted from those rooms that are most affected, such as bathrooms, toilets and kitchens and expelled over the roof or through the external walls using ducting. The WS 150 unit extracts the heat from the exhaust air and feeds it back into the supply air.

In this way, fresh air can flow directly into the living and sleeping areas through supply air valves and overflow openings guarantee the airflow between the individual rooms.

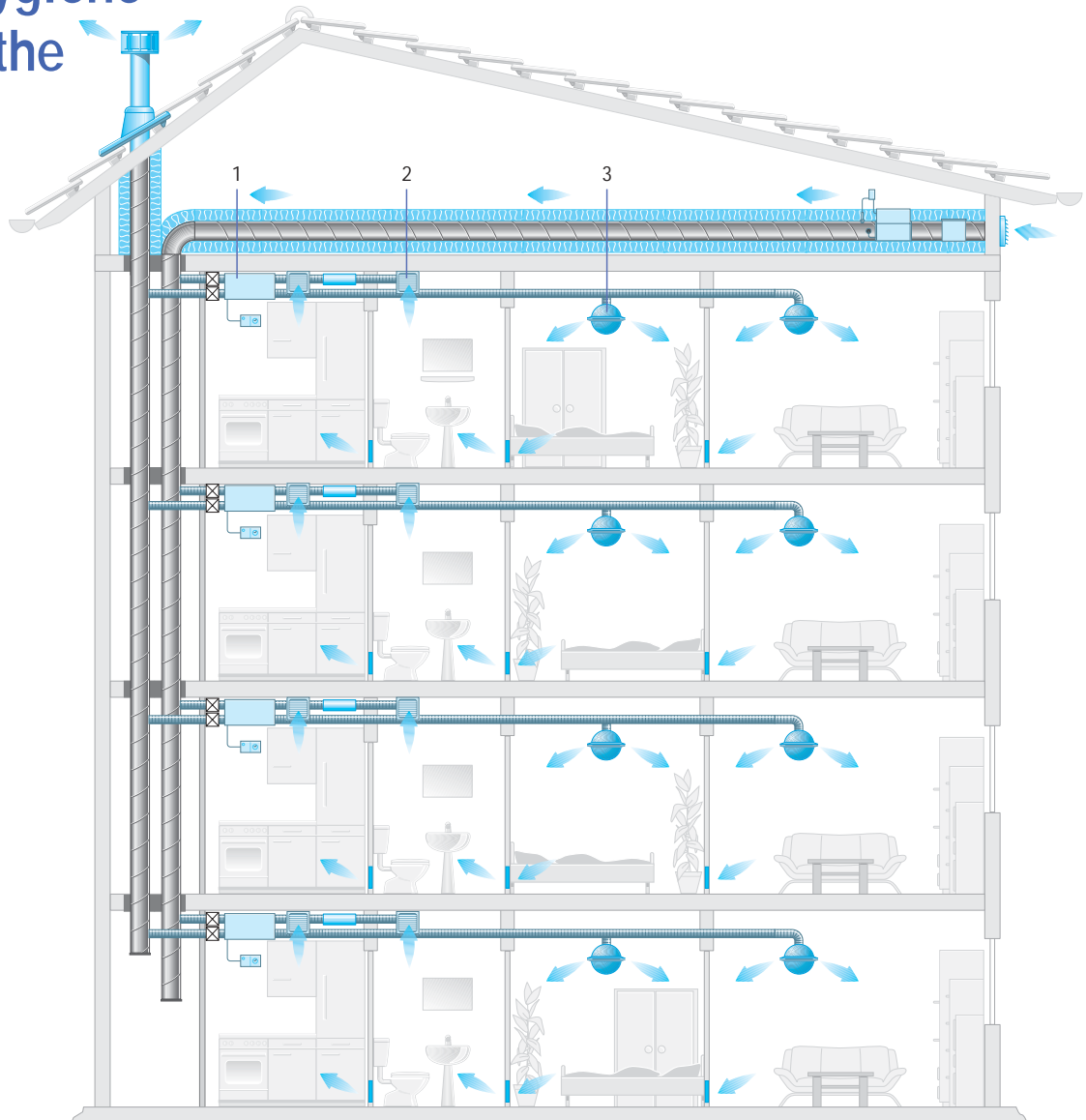


**"Living comfort and play an important role during the ventilation concept"**

System description	
Building type	Multiple family unit
Equipment type	MAICO aeronom WS 150 room air system with supply air elements
System components	WS 150      AZE      WD 10 W  +  + 
Advantages	<ul style="list-style-type: none"><li>• Reduced installation work</li><li>• Low-noise ventilation of several rooms</li><li>• Low power consumption</li><li>• Energy-saving through use of heat recovery</li><li>• Small dimensional profile</li><li>• Balanced airflows</li></ul>
Special feature	Three different ventilation steps can be selected through the wall-mounted control panel, depending on the ambient conditions



aspects of hygiene  
selection of the



- 1 aeronom WS 150
- 2 AZE exhaust air element
- 3 WD blower nozzle

## Renovation with bathroom ventilation

### Solution 3:

# Good air quality through refurbishment of the bathroom

The AWB small room fan is designed for use in the extraction of air from rooms such as bathrooms, toilets, storage rooms and larders.




The air that is extracted is expelled directly to the outside through a wall sleeve with an external shutter.

The short distances involved keep the installation costs as low as possible.

In particular the bathroom, which mists up very easily, stays clear. No heat is lost as window ventilation is no longer necessary.

Using the AWB 100 shows that you understand about bathroom refurbishment.

**"One thing is sure,  
have a significant effect on**

System description			
Building type	Single or multiple family unit		
Equipment type	MAICO AWB 100 small room fan		
System components	AWB 100	MLK	AP 100
		+ 	+ 
Advantages	<ul style="list-style-type: none"><li>• Simple and effective</li><li>• Promotes hygiene and health</li><li>• Steam and odours are removed</li><li>• Retains warm air flows</li><li>• Clear visibility and good air quality in a warm bathroom</li></ul>		
Special feature	Also available with time delay switch or interval controller		

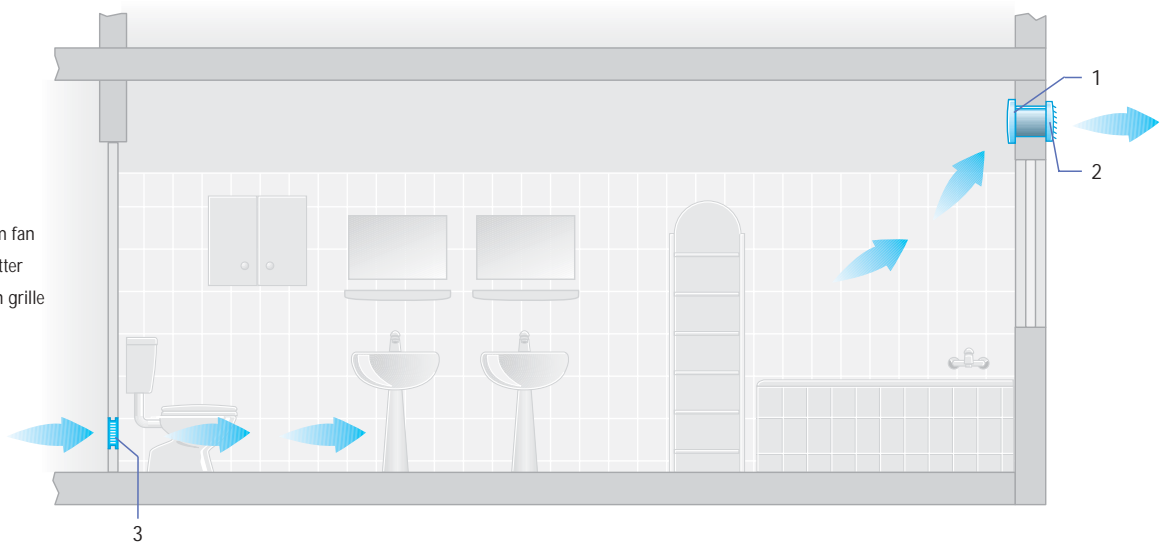




that heating and ventilation  
the build-up of mould "

Renovation with  
Ventilation from  
**MAICO**

- 1 AWB 100 small room fan
- 2 AP 100 external shutter
- 3 MLK door ventilation grille






## Renovation with ventilation in a single family unit

### Solution 4: Standard exhaust air system

The standard solution with the ZEG exhaust air system also guarantees fresh air and a comfortable sense of well-being. The air is extracted from those rooms that are particularly affected and expelled over the roof through ducting.

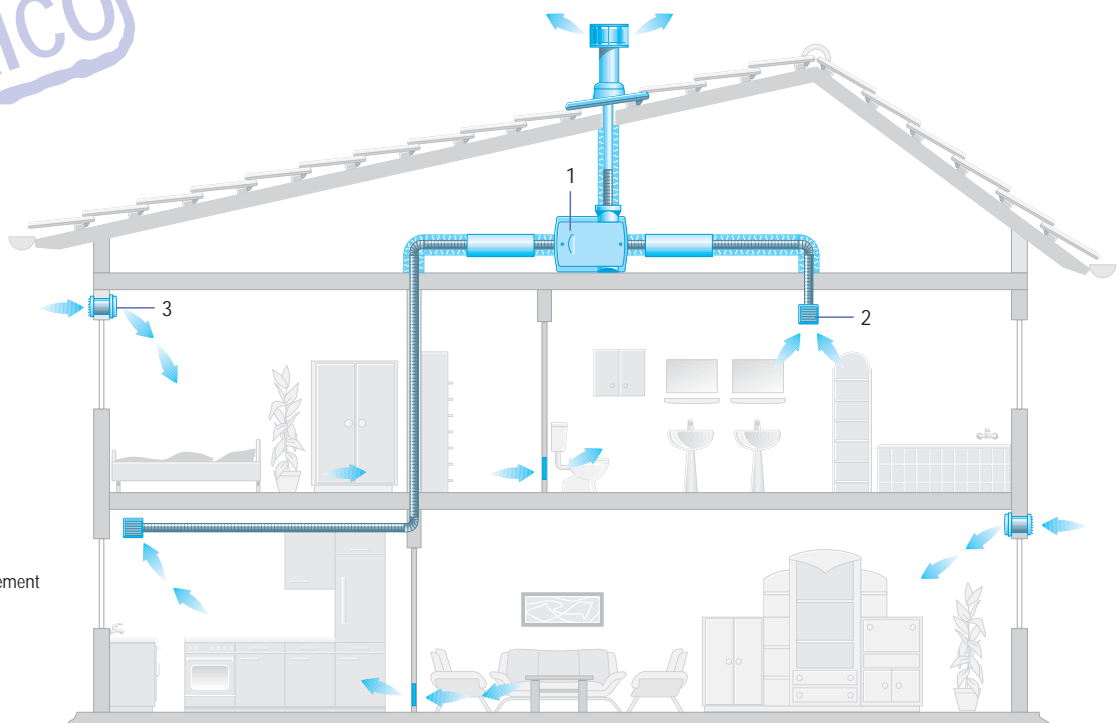
As a result of the slight partial vacuum occurring in the rooms, fresh air can flow directly into the living and sleeping areas through wall or window-mounted supply air elements. Additional overflow openings ensure good air circulation between the individual rooms in the apartment.

System description			
Building type	Single family unit		
Equipment type	MAICO ZEG exhaust air system with supply air elements		
System components	ZEG	AZE	ZE 10 T
		+ 	+ 
Advantages	<ul style="list-style-type: none"><li>• Reduced installation work</li><li>• Low-noise ventilation of several rooms</li><li>• Minimum power consumption</li><li>• Small dimensional profile</li></ul>		
Special feature	The housing can be installed in any position on beams, walls or ceilings		



“The definition of a minimum air exchange level must track the goal of eliminating dangers for people and the buildings they live in”

Renovation with  
Ventilation from  
**MAICO**



- 1 ZEG exhaust air system
- 2 AZE exhaust air element
- 3 ZE 10 T wall supply air element

# Renovation with ventilation in a single family unit



## Solution 5: Sophisticated system with heat recovery

The sophisticated solution with the aeronom WS 250 room air system promotes a strong sense of well-being combined with efficient energy savings.

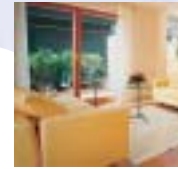
The system controls the supply of fresh air itself, throughout the whole year. The integrated heat exchanger ensures that the air is pleasantly warm in the winter and refreshingly cool in the summer. This is a significant plus for your well-being and living comfort.



Fresh air from the outside is fed into the living area as supply air through the WS 250 room air system. At the same time, the used air is extracted from those rooms that are particularly affected and expelled through the WS 250. The heat contained in the exhaust air is transferred to the incoming fresh air through the heat exchanger, which enables you to reuse up to 90% of the heat that would otherwise be lost.

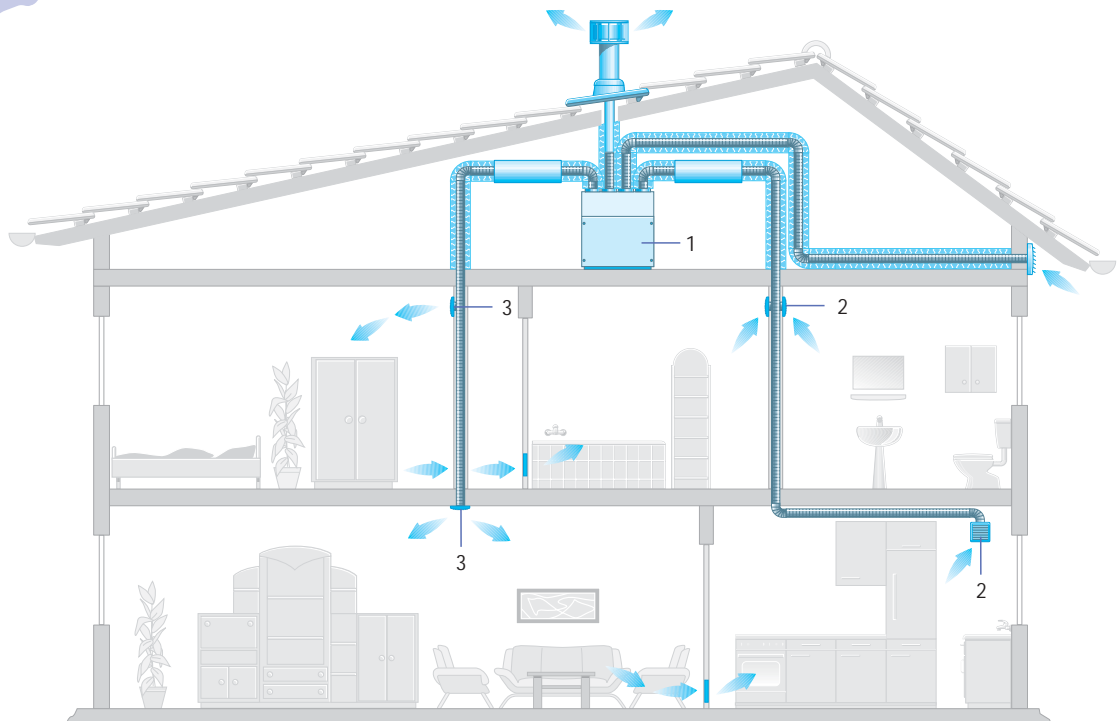
System description	
Building type	Single family unit
Equipment type	MAICO aeronom WS 250 heat recovery unit with supply and exhaust air valves
System components	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>WS 250</p>  </div> <div style="font-size: 2em; font-weight: bold;">+</div> <div style="text-align: center;"> <p>AZE</p>  </div> </div>
Advantages	<ul style="list-style-type: none"> <li>• Low noise while offering the highest comfort</li> <li>• Energy saving through heat recovery</li> <li>• Frost-protection heating for winter operation</li> <li>• Bypass for night time cooling in summer operation</li> <li>• Passive house certification</li> </ul>
Special feature	Heat recovery of up to 90% with crossflow heat exchanger





"It is possible to live in climate-friendly and modernised buildings at an affordable cost and it should be the goal for all of us"

Renovation with  
Ventilation from  
**MAICO**



- 1 aeronom WS 250
- 2 AZE exhaust air element
- 3 AZE supply air element

# Multiple family unit orientation guide

Basis: Four room apartment in a multiple family unit

System:	ER 100 D	WS 150	AWB 100
	Decentralised ventilation in bathroom, toilet and kitchen	Centralised ventilation through exhaust air system	Good air quality through refurbishment of the bathroom
			

# Single family unit orientation guide

Basis: Single family unit with five rooms

System:	ZEG	WS 250	AWB 100
	Standard exhaust air system	Sophisticated system with heat recovery	Good air quality through refurbishment of the bathroom
			

## Choosing the right time

When maintenance work is needed on the external shell of the building or when the heating system needs to be renewed are good times to install a ventilation system. Any additional costs are relatively low as a significant amount of work has to be done anyway.

## § Statutory requirements

Energy saving measures are promoted these days in most industrialised countries.

There are various local and national programmes for this and you should make enquiries with the appropriate authorities.

### Building regulations

These must always be taken into account when undertaking any renovation work.

Amongst other things, they contain details of requirements relating to appearance, stability, fire prevention and sound insulation and they control safety and property related issues.

### Listed buildings

In the case of work on a listed building, any modifications to the fabric of the building must be cleared first with the relevant authorities. You should get information pertaining to these regulations from the responsible authorities.



## Grants

As a rule, grants or financial assistance may only be applied for before the corresponding work is started. For this reason, you should check early on in the project planning whether such monies are available.

## Financial programmes for energy-related modernisation/renovation

There are various support measures available for the renovation and refurbishment of residential areas and buildings, e.g. low-interest loans or financial grants.

It is beyond the scope of this brochure to list all the currently known options, because they are constantly changing and being updated and because of the number of them that are available.

When you are planning such a project, you are advised to seek advice from a reputable energy-conservation consultant or contact your Local Authority.



The right **answer** for every **question....**

## Contact

Phone: +49 7720 694 359

Fax: 0 77 20 / 694 177

E-mail: [sales@maico.de](mailto:sales@maico.de)



**"When looking at all the aspects of economics, comfort, building value retention and health issues, effective building renovation can only be carried out when it includes the installation of a ventilation system."**



**MAICO**  
VENTILATOREN

Maico Elektroapparate-Fabrik GmbH  
Steinbeisstraße 20  
78056 Villingen-Schwenningen  
Germany

Phone: +49 7720 694 359  
Fax: +49 7720 694 177  
[www.maico.de](http://www.maico.de)  
E-mail: [sales@maico.de](mailto:sales@maico.de)