Sun shading system at conservatories
Perfect climate for more quality of life
Sun shading system at conservatories
More quality of live and comfort.

As a manufacturer of sun shading systems for buildings and rooms, WAREMA produces pioneering solutions that are technically superior and are designed to meet the individual requirements of your property, thereby improving the energy balance of your building, the value of your property and enhancing your own quality of life.

This brochure provides an initial overview, allowing you to find your way around the wide and varied choice of shading possibilities in your conservatory.
Introducing WAREMA  2-9
Energy efficiency  10-11
Applications  12-13
Fields of application  14-15
Sun shading system solutions
  Conservatory awnings  16-19
  Window awnings  20-21
  External venetian blinds  22-23
  Roller shutters  24-25
  Internal sun shading systems  26-27
  Insect screen  28-29
General information
  Fabric qualities  30-33
  Colours  34-35
  Control systems  36-39
The right products for your dream house.
We develop and produce modern and functional sun shading system solutions which enable active SunLightManagement. We rely very consciously on the strengths of a family company based in Germany. Cooperation based on trust and fairness is a key prerequisite for the partnership with our customers. Our actions and approach are consistently geared towards increasing customer benefit. To this end we now offer a growing range of products and services tailored to your requirements and demands.

Our varied and innovative product developments, our high quality claim, the individually manufactured products and the extensive services are indispensable for our leading position as SunLightManager on the European market.

The most modern manufacturing technique and handwork are equally important for our order-related manufacturing of the sun shading control systems, whereas the aspects sustainability and protection of the resources are taken into consideration for all processes.

Apart from first-class products we offer our expert partners an comprehensive range of services which supports your daily work.

We offer builders a range of different options for both internal and external sun shading and control systems - with existing products as well as with individual special solutions. We can guarantee complete professional service as well as advice and information on our products that take into account current energy saving regulations and recent developments in standards for the building sector.
Sun shading systems from A to Z.

External venetian blinds

Venetian blinds facade systems · Metal system venetian blinds · Window system venetian blinds · Front-mounted external venetian blinds · Top-mounted external venetian blinds for new buildings · Sloped external venetian blinds · Wind-stable external venetian blinds · Light control venetian blinds

Large slats

Pergola awnings, patio roofs and patio awnings

Single-walled slat systems · Hollow slat systems · Large slat systems

Articulated arm awnings · Cassette awnings · Conservatory awnings · Patio side screens · Canopy awnings

Roller shutters

Front-mounted roller shutters · Top-mounted roller shutters · Top-mounted roller shutters for new buildings · Renovation roller shutters · Sloped roller shutters · Safety roller shutters

Sun sail

Pergola awnings · Patio roofs · Sun sail
Unattractive and boring purpose-built buildings are a thing of the past – continuous glazed facades and special shapes have become a staple of modern architecture. And the desire for individual style is constantly growing. This new diversity also demands a similar diversity of sun shading systems. WAREMA offers a perfect, individual solution for every architectural style – for inside and outside.
Room climate intelligently controlled – the WAREMA system concept.

The OPTI SYSTEM

External sun shading systems
External WAREMA sun shading systems reduces solar incidence of energy. Incidence of light is optimised to allow for sufficient daylight utilisation without glare. The concept is simple: Depending on time of day or year more or less sunlight is allowed in and the system uses more or less of the possible solar energy gain.

Internal sun shading systems
The internal WAREMA product provides additional glare control all year round, providing convenience and a high level of comfort. Visual privacy or view out can be individually adjusted. High-grade materials and a varied colour palette give individual style to any room.

Intelligent control system
WAREMA control systems create the ideal room climate with optimum daylight utilisation. They make use of solar energy according to demand and around the clock.
Optimal sun shading systems and significant energy savings are interesting aspects for any home owner today. The WAREMA OPTI SYSTEM provides the ideal room temperature – pleasantly cool in summer and cosily warm in winter. Fully automatic with maximum comfort. With existing heat protection glazing, the combination of external adjustable sun shading systems, internal glare control and intelligent control saves up to 40 percent of energy costs.

Further information can be found at www.warema.com/optisystem

**Summer daytime**
Solar incidence of energy has to be kept low on a hot summer day. Incidence of light should be high enough to allow for sufficient daylight utilisation without glare. Additional internal glare control can be used where requirements are especially high.

**Summer nights**
At the end of a hot summer day the building will have heated up. At night the control raises all existing sun shading components which block the heat flow from inside to outside. This supports the building cooling down.

**Winter daytime**
Solar energy gains should be used on a cold winter day. In the case of glare, only internal glare control is used. When the sun is low the requirements for glare control are especially high. Internal products with low transmission can meet these requirements. Dark colours ensure that a large quantity of solar energy can be used.

**Winter night time**
During the cold winter night the building has to be protected from heat loss. This requires all sun shading products to be lowered. The resulting air pockets between the individual components improve heat insulation.
Increase energy efficiency – with WAREMA sun shading system.

Energy savings with technical sun shading systems in connection with an intelligent control system

- Reduction of cooling loads
- Reduction of heating loads
- Reduction of energy consumption by artificial lighting

Bar chart showing the percentage reduction in cooling loads, heating loads, and energy consumption by artificial lighting.
Around 40% of the energy requirement of a European home is used for lighting, heating, cooling and ventilation - half of it for heating alone! According to a study by the European Solar Shading Organisation (ES-SO) around 110 million tonnes of CO$_2$ could be saved in Central Europe alone with efficient sun shading systems in connection with an intelligent sun shading commission. This is a key issue in terms of the energy saving regulations and its consequences for builders and home owners.

The increasing size of glazed and window facades provides greater surfaces for the sun to enter buildings, causing rooms to heat up faster in summer. In winter, heating energy increasingly radiates to the outside. You can use WAREMA sun shading systems to reduce the outward radiation of heat, prevent your rooms from heating up and make the most of daylight. Daylight improves personal well-being and therefore also performance in the workplace.
The selection of the correct sun shading system depends on many factors. The positioning of the conservatory, existing shading such as trees in the vicinity as well as the design and the size of the conservatory determine the requirements concerning the sun shading system. This requires detailed consultation and coordination by the qualified specialist. The ideal comfort in a conservatory can be achieved through a combination of external and internal sun shading system in combination with a control system.

Applications

In summer
- The sunrays enter the room through the big glass surfaces of the conservatory
- The "greenhouse effect" leads to a heat accumulation which results in an unpleasant room climate

In winter
- In winter the solar incidence of energy can be used for heating up the conservatory thanks to the big glass surfaces
- The incoming sun supports the heating up of the rooms and thus saves energy
Internal sun shading
- 15 – 50 % of the sunrays hitting the glazing are prevented from entering into the inside of the room by means of the internal sun shading system and thus create comfortable feel-good atmosphere during the day

External sun shading
- By means of the external sun shading system 70 to 95 % of the sunrays hitting the glazing are prevented from entering into the inside of the room
- This reduced the heating up of the room by this percentage
Buying the WAREMA sun shading products means choosing pioneering design and innovative technology. They are the ideal prerequisite for a perfect climate in your conservatory. The choice does not only include functional aspects but also aesthetic questions: Shapes and colours have to harmoniously blend in with the rest of the room.

Fields of application

Conservatory – external

Products for use in sloped areas:
■ Conservatory awnings
  (type W6 and W8)

Products for use in vertical areas:
■ Conservatory awnings
  (type W5, sloped vertical)
■ Window awnings
■ Insect screens
■ External venetian blinds
■ Roller shutters

Conservatory – internal

Products for use in sloped areas:
■ Conservatory awnings
  (type W10 and W8)
■ Ceiling roller blinds

Products for use in vertical areas:
■ Ceiling roller blinds
■ Venetian blinds
■ Vertical louvre blinds
■ Curtain panels
■ Pleated blinds
Conservatory - special solution

Available products outside:
- Conservatory awnings
- Triangles and trapezoids (type D2)
- Hipped or sloped conservatories (type W7)
- External venetian blinds
- Roller shutters

Available products inside:
- Ceiling roller blinds
- Venetian blinds
- Vertical louvre blinds
- Curtain panels
- Pleated blinds
- Conservatory awnings

Patio roofs

Available products
- Conservatory awnings
- Window awnings
- External venetian blinds
Conservatory awnings
External sun shading systems for large glass surfaces.

WAREMA Conservatory awnings provide pleasant shading for large glass surfaces and operate according to the back-pull system. As the awning is extended, the awning fabric unwinds from the fabric shaft and at the same time the drop profile is pulled out by a tensioning element running in the guide rails. A pre-tensioned spring mechanism guarantees optimum fabric tension.

Product benefits
■ Varied shading variants through sloped vertical, sloping or curved shape
■ Versatile design options
■ Modular system – combination of certain conservatory awnings possible for shading triangular and trapezoid glass surfaces
■ Units running from bottom to top possible

Features
■ Construction limit values (depending on type):
  - max. width: 6000 mm
  - max. projection: 6000 mm
  - max. area: 30 m²
■ Drive: Motor, radio motor or plug receiver
■ Fabric: Acrylic fabrics, Soltis 92 fabric
■ Options: W6 and W8: optionally available with integrated sensor system (wind and sun sensor)

Fields of application and mounting
■ Conservatories, pergolas and patio roofs
■ Mounting with brackets with different spacings possible
■ Mounting external
■ Also for hipped or sloped conservatories
Conservatory awning W6

Conservatory awning W8

Conservatory awning D2

Conservatory awning W5

Conservatory awning W7

Cover panel
Fabric
Guide
Sensor system
Guide tube
Front rail
Conservatory awnings
Internal sun shading systems for large glass surfaces.

The WAREMA internal conservatory awnings provide optimum shading under the glazing of patio roofs, pergolas, atria or in the conservatory and ensure a relaxed atmosphere. With the innovative guide secudrive® guiding where the awning fabric is directly guided into the guide rail, no light gap can occur between the guide rail and the fabric with type W10 and W10²! Just relax in your comfortably air-conditioned place of comfort!

Product benefits
■ Versatile design options
■ Shading without light gap between awning fabric and guide rail through patent pending® technology (only type W10, W10²)
■ Model with two cover panels and two different curtains (type W10²) for the creation of an awning as glare control and sun shading system
■ Shading of big surfaces (up to 40 m²) with horizontal awnings possible

Characteristics
■ Construction limit values (depending on type):
  max. width: 4000 mm
  max. projection: 10000 mm
  max. area: 40 m²
■ Drive: Motor, radio motor and/or plug receiver
■ Fabric: Acrylic fabrics, Soltis 92 fabric

Fields of application and mounting
■ Mounting internal
■ Conservatories, pergolas, atria and patio roofs
■ Mounting with brackets with different spacings possible
Horizontal awnings H3/H4

Conservatory awnings W10

Conservatory awnings W10²

Conservatory awning W8

Horizontal awnings H1/H2

Horizontal awnings H3/H4

Cover panel
Fabric
Guide
Front rail
The vertical and sloping glazing on your conservatory can optionally be shaded with WAREMA window awnings. If required the sun shading system can be unobtrusively integrated into the architectural style or made to work as an intentional design element.

**Product benefits**
- For shading vertical surfaces at conservatories
- Delicate appearance due to different cover panel shapes and dimensions
- Lateral ZIP guidance in guide rail and/or rod possible
- With markisolettes and drop-arm awnings: View out to the outside with simultaneous sun shading system by projecting the curtain section

**Characteristics**
- Construction limit values (depending on type):
  - max. width: 4000 mm
  - max. projection: 6000 mm
  - max. area: 18 m²
- Drive: Motor, radio motor and/or plug receiver

**Fields of application and mounting**
- Conservatories, patio roofs, vertical glass surfaces and punched windows
- Mounting with brackets with different spacings possible; alternatively direct mounting
- On the facade or in the reveal
- For new buildings, retrofitting and refurbishment

The vertical and sloping glazing on your conservatory can optionally be shaded with WAREMA window awnings. If required the sun shading system can be unobtrusively integrated into the architectural style or made to work as an intentional design element.
Drop arm awnings

- Cover panel
- Fabric
- Guide
- Guiding tube
- Drop profile
- Projection system
- Drop arm

Window awnings with ZIP / rod ZIP guidance

Vertical awnings

Facade awnings

Markisolettes

Drop arm awnings
External venetian blinds
Perfect sun shading
with modern design.

WAREMA external sun shading systems combine modern design with sturdy technology. External venetian blinds offer protection against overheating and simultaneously ensure an optimum daylight utilisation. The angle-adjustable slats ensure free visual contact in the garden and simultaneously protect against undesired glances. A wide range of available equipment models, slat and cover panel shapes and their great sturdiness make these blinds true all-rounders. Enjoy a nice and carefree time in your conservatory.

**Product benefits**
- External venetian blinds with beaded slats for high utility with robust technology
- Architectural highlight of the facade design
- External venetian blinds with flat slats for delicate appearance and very low stack heights
- The metal system external venetian blind with lifting chain in the guide rails for a very demanding visual solution - special protection is provided by the specially constructed bottom rail with integrated push-up guard
- Sloped external venetian blinds for shading sloped glazings and special solutions, model with guide rails possible

**Characteristics**
- Construction limit values (depending on type):
  - max. width: 5000 mm
  - max. height: 5000 mm
  - max. surface: 25 m²
- Drive: 230 V central motor, solar, crank
- Slats: Flat/dim-out slat, beaded slat

**Fields of application and mounting**
- Conservatories
- Transom and mullion facades
- For new buildings, retrofitting and refurbishment
External venetian blinds with beaded slats

External venetian blinds with flat slats

Metal system venetian blinds

Asymmetrical external venetian blinds

- Slat
- Lateral guidance
- Ladder tape
- Steel wire cord
- Bottom rail
WAREMA roller shutters are the classic amount the sun shading systems and convince by optimum heat insulation. In the area of conservatories they offer a practical solution especially for front-mounted roller shutters. They ensure heat insulation, serve as protection against noise, refuse curious glances and simultaneously offer an effective anti-burglary protection. Upon request roller shutters can also be equipped with integrated insect screen products and thus offer the perfect protection against annoying insects.

**Product benefits**
- Effective protection against solar radiation with simultaneous protection against wind and weather
- Insulating air gap between roller shutter curtain and window pane for effective energy saving effects
- Automatic push-up guard through locking device using pressure springs
- Prefect coordination with the architecture of the house due to boxes in 4 different shapes
- Ideal combination of front-mounted roller shutters with sloped roller shutters for shading glass gables and bevelled windows
- The roller shutter curtain retracts almost fully into the box – for an unobstructed view

**Characteristics**
- Construction limit values (depending on type):
  - max. width: 3500 mm
  - max. height: 3500 mm
  - max. surface: 10 m²
- Box shape: Rectangular, Round, Square, Plaster

**Fields of application and mounting**
- Conservatories
- Glazed gables
- Glass dormers
- For new buildings, retrofitting and refurbishment
- Easy installation and service
Front-mounted roller shutters upon request available with integrated insect screen roller blind or swivel frame

Sloped roller shutters in different unit shapes

- Box
- Roller shutter curtain
- Lateral guidance
- End rail
- Integrated insect screen
Internal sun shading systems
inspirations for
individual living spaces.

Individual living spaces create a positive quality of life and are becoming increasingly important to people. WAREMA offers inspirations for your very own lifestyle with innovative and at the same time creative solutions for internal sun shading systems. Let yourself be introduced in living spaces that live up to your demands in terms of design and quality of life.

Product benefits
■ Protection against summer heat, view out, glare control and visual privacy depending on selected curtain
■ Individual design with countless colours, fabrics, patterns and structure and the combination of different designs as well as different options for bunching
■ Several product models available for each room situation
■ Convenient locking in any position
■ Delicate appearance thanks to slender profiles

Characteristics
■ Construction limit values depending on product and type
■ Operation depending on product and type

Fields of application and mounting
■ Conservatories
■ Indoors
■ For vertical, horizontal or sloped glass surfaces
Insect screens
Enjoying to the full.

The conservatory opens the house to nature. No matter if sliding doors, doors, or windows - enlarge your leisure atmosphere and enjoy unforgettable memories. The insect screen programme protects you effectively from undesired troublemakers. The WAREMA systems are characterised by longevity and weather-proof qualities. Enjoy elegant and stylish constructions which are effectively integrated into your conservatory and offer full protection.

Product benefits
- Protection against insects, bower, leaves and dirt
- With the highly transparent WAREMA Vision-Air gauze the insect screen almost seems to be invisible
- Ideal for every window situation, also for skylights and special shapes
- Use of high-grade materials
- Insect screen sliding frames are perfect for big glass surfaces, as can be found on conservatories

Characteristics
- Construction limit values
  (depending on product and type):
  max. width: 2100 mm
  max. height: 3000 mm
  max. surface: 6 m²
- Curtain:
  Gauze available in different models

Fields of application and mounting
- Doors to conservatories, patios, balconies or glazed facade sections
- Vertical windows and doors
- Custom shape windows
Fixed frames

Swivel frames

Sliding frames

Insect screen roller blind

- Gauze
- Frame profile
- Bar with integrated handle rail
- Guide track
- Cassette
- Handle bar
WAREMA awning fabrics unite first-class design and function down to the smallest detail. WAREMA awning fabrics are characterised by perfect protection against the sun, reliable repelling of dirt and water and impressive qualities. Each collection offers a wide range of materials and colours for every field of application.

Acrylic Lumera
- CBA fibre (Clean Brilliant Acrylic)
- Smoother surfaces, rich colours, long lasting luminosity, high tear resistance
- Dirt-repellent through higher fabric density

Acrylic Standard
- 100% branded acrylic fabric
- Spinning nozzle dyed, light-fast, weatherproof and tear-resistant
- Dirt-repellent, rot-proof, air-permeable and water-repellent through impregnation

Acrylic All Weather / Perfora Acrylic fabric
- 100% branded acrylic fabric
- Acryl All Weather: due to transparent acrylate coating on the outside almost 100% water-proof
- Perfora Acrylic fabric: due to uniform perforation high-grade, elegant optics, increased view out and transparency.

Soltis 92
- Carrier fabric made of highly tear-resistant polyester with PVC coating
- UV-resistant and dirt-resistant through surface treatment with acrylic varnish
- Fabric is flame-resistant or self-extinguishing

Screen
- Screen fabric made of PVC-coated glass fibre
- Heavy quality and reinforced edges using a thermoplastic process
- Fabric flame resistant and/or self-extinguishing according to DIN 4102 B1

WAREMA SecuTex fabric A2
- Glass fibre curtain with silicone coating on both sides for best possible sun shading system with additional safety due to fire protection classification A2, non-flammable, according to DIN 4102 A2.
- Field of application: Window awnings as well as internal sun shading systems
- Prices and available variants on request

The entire collection is documented in the collection brochure Art. No. 417705.
Fabric qualities
for internal sun shading products.

Immerse yourself in the colourful world of WAREMA awning fabrics and design your product to meet your unique personal taste. Our large selection of fabrics and colours can make any wish come true and will give your conservatory a quite unique style.

**Trevira CS**
- Specially modified polyester fibre
- Fibre type only suitable for indoor use
- Thanks to flame resistance within the fibres, properties such as handling, sheen and care remain unaffected
- Flame resistant according to DIN 4102, B1
- Some variants are certified according to OekoTex

**Polyester standard fibre**
- Fibre only suitable for indoor use
- Stands out on account of its excellent strength and abrasion resistance
- Large variety
- Some qualities are flame resistant according to DIN 4102, B1
- S variants are certified according to OekoTex

**Glass fibre**
- Fabric only suitable for indoor use
- Some variants contain PVC
- Some qualities are flame resistant (B1) according to DIN 4102 or non-flammable (A2) according to DIN 4102

**Soltis 99**
- Base material made from highly tear-resistant polyester with open PVC coating (opening factor 1 %)
- High tensile strength in chain and weft as well as high diagonal stability through coating and pre-tensioning
- Flame resistant according to DIN 4102, B1

**Films**
- Polyester plastic films are transparent and provide high glare control
- Suitable for windows up to 1.5 m width
- Some qualities are flame resistant according to DIN 4102, B1

**Digital printing**
- Individual design for roller blinds, vertical louvre blinds and panel curtains
- Advertising: Realisation of effective and conspicuous logo, claim or photo printing
- Decoration: Targeted room accents with original photo or pattern printing

The entire collection is documented in the collection brochure Art. No. 511501.
Colours of the aluminium parts.

The colours of the extensive WAREMA colour range provide a selection of colours for aluminium parts which is harmoniously adapted to the selected fabric and the individual conservatory.

- Durability through excellent coating quality
- Surface coating with chrome-free pre-treatment corresponds to the directive GSB AL 631
- Colour selection within the WAREMA standard colour fan according to WAREMA colour specification
- WAREMA textured colours feature a finely structured coating with a metallic appearance
- The fine surface structure lets water containing dirt particles roll off very easily
EWFS – flexible radio control for your sun shading system.

EWFS, the standardised WAREMA radio system, is used for remote controlling of sun shading and lighting. Using the control is just as comfortable and easy as e.g. the operation of your TV device. EWFS solutions are particularly practical for expansion and retrofitting: Wireless components and various control options allow subsequent expansion of your individual sun shading system with minimum installation work.

**Product benefits**
- Ideal for expanding and retrofitting
- Individual expansion of the control with minimum installation work
- Convenient radio remote control of sun shading units
- Switching and dimming of light possible
- Simultaneous operation of several receivers by pressing just one button
- Complete product range for controlling sun shading products such as external venetian blinds, awnings or roller shutters
- Additional components available for expansion, e.g. radiant heater control for patio awnings

**Characteristics**
- Transmission frequency: 433.92 MHz
- One EWFS transmitter controls any number of receivers

**Control functions:**
- brightness
- wind
- precipitation
- time
- dawn/dusk using astro function

**Typical applications**
- one-family houses
- renovation
- retrofitting
WMS – mobile control for discerning requirements.

The WAREMA Mobile System unites modern technology and aesthetic design in a sophisticated radio remote control for higher standards. In the WAREMA Mobile System the only components needed are the transmitter and receiver. Distant systems can also be reached by transmitting commands from receiver to receiver (routing function). Users receive feedback about all move commands of their sun shading units.

**Product benefits**
- Larger range through intelligent routing function
- Optical feedback of the executed move command
- Control via smartphones or iOS app
- Scene control for up to 32 different scenes
- Move to individual comfort positions at the press of a button
- Commissioning and changing of limit values possible via PC
- Individual expansion of the control with minimum installation work
- Window control possible

**Features**
- Transmission frequency: 2.4 GHz
- Control of sun shading products on up to 96 channels
- Offers maximum protection against unauthorised controlling

**Typical applications**
- one-family house
- multiple occupancy buildings
- renovation
- retrofitting

- Control functions:
  - brightness
  - wind
  - precipitation
  - time
  - dawn/dusk
  - outside temperature
  - ice monitoring
Wisotronic is an intelligent control system for your individual sun shading combination. It is suitable for all WAREMA products and at home in various environments. The control system provides a comfortable room climate and a pleasant living or working environment, even when you are busy or not at home. The design provides visual highlights – it received the iF product design award 2012.

**Product benefits**
- Easy commissioning using the quick start menu (ready to operate after 5 settings)
- 4 adjustable scenes create an individual feel-good atmosphere
- Temperature sensor integrated into the operating panel
- Weather data such as temperature or wind speed displayed on the operating panel
- Integrated timer
- Integrated ice monitoring protects sun shading products against damage
- System can be expanded or extended at any time
- High-gloss surface provides visual highlights in the living area
- Operating panels available in black or white

**Characteristics**
- Operation via EWFS hand-held or wall-mounted transmitter possible
- 1-4 channels for controlling different sun shading products or facade sides

![Wisotronic award](image)

**Typical applications**
- one-family houses
- new buildings
- multiple occupancy buildings
- retrofittings
- office buildings
WAREMA climatronic® 2.0 coordinates your sun shading system with heating, air conditioning and ventilation systems to create the best possible room climate. In smaller and larger buildings it monitors and controls according to environmental influences which have an effect on your well-being. Humidity, temperature or light intensity are controlled according to your preset values. Intuitive operation makes it easy to create your personal preferred climate for working and relaxing.

**Product benefits**
- Slat tracking according to sun position allows best possible light gain and prevents direct glare
- Switching and dimming of light possible
- Up to 16 channels can be set
- Settings using free software and operating panel:
  - convenient adjustment at any time
  - can be saved to and loaded from an SD card
  - prevents re-wiring when user requirements change
- Using the operating panel as KNX central control unit via KNX Gateway
- Use as KNX central control unit requires no commissioning tool and allows user changes

**Features**
- Channels can be operated via EWFS transmitter
- Operating panel with control wheel, sensor keys, glass front and 5.7" TFT colour display

- Up to 7200 individual products are controlled on 64 channels in individual or group circuits
- Sensors for inside temperature and humidity are already integrated into the operating panel

**Typical applications**
- one-family houses
- multiple occupancy buildings
- office buildings
- new buildings
- renovation