



Protan Exposed Membrane Roof

Your design - Our solution

Exposed membrane roof

The principle function of a roof is to provide durable protection against the external environment to a building.

Unprotected roofs are exposed to all of nature's elements: sun, wind, rain, temperature variations and also pollution. Provision should be made for:

- Weather resistance
- Strength and stability
- Thermal insulation
- Fire resistance
- Sound insulation
- Good aesthetics

Protan roofing systems have been developed to meet these requirements, with proven durability of over 30 years.

The Protan Company has been built on real values, with a reputation for quality and friendly service, and provides technical support from concept, through installation and beyond.



Roof construction

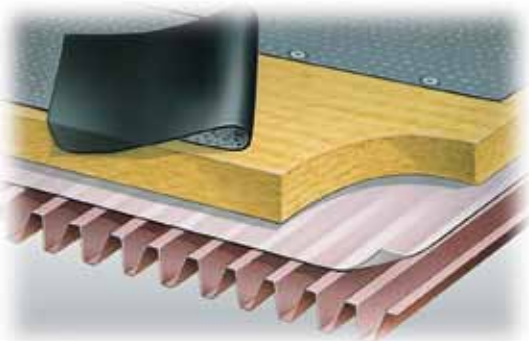
A Protan roofing system on exposed applications can be constructed as either:

“Warm roof construction” Consisting of:

- Protan polymeric roofing membrane
- Insulation
- Vapour control layer
- A structural deck

“Cold roof construction” Consisting of:

- Protan polymeric roofing membrane
- Separation layer
- A structural deck



Exposed roofing systems:

- Protan Mechanically Attached Roofing Systems
- Protan Vacuum Roofing Systems
- Protan Adhered Roofing Systems

Several factors influence the choice of roofing systems. Consult the *Protan Specification Guide* for more information.

Roof design

Modern flat roofs have the advantage that irregular plan forms can be accommodated, giving benefits over pitched roofs where the geometry of the roof often dictates the form of the building. Planning restrictions, particularly in urban environments require maximum use of available building height. A flat roof also enables the building to be extended vertically more easily and gives easier access for roof maintenance and arrangement of roof-mounted plant and equipment.

Protan roofing materials are also suitable for sloping or curved roofs including vertical applications. With constructions like these, the roof is more prominent on the building, making even greater demands on the aesthetics of the roofing material. A visible roof may need to reflect the requirements of the local planning authority.

Protan materials offer the most comprehensive solutions for the discerning designer.



Protan design solutions

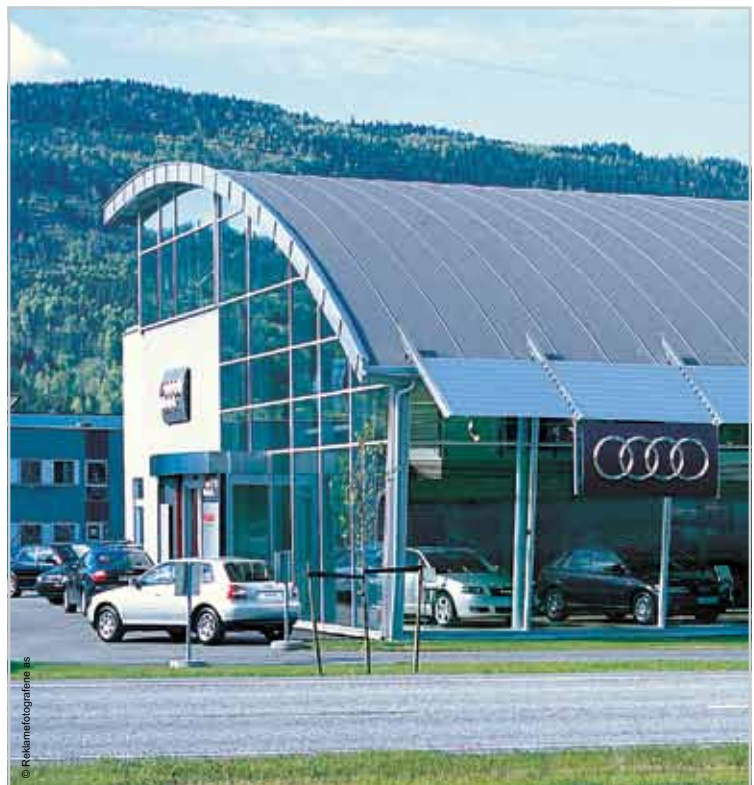
The selection of a suitable and durable roof covering is crucial to the design of the overall roof construction. More than 60 million square metres of Protan roofing membranes have been installed in Europe since 1971.

The membrane is available in 1 and 2 metres wide by 20-metre long rolls as standard. Special lengths up to 30 metres and widths up to 6 metres can easily be supplied, along with prefabrication of special shapes to order.



Key Protan benefits are

- Superior waterproofing integrity
- Design versatility
- Tough and durable
- Fire resistant
- Appearance can be compatible with traditional materials, like lead, zinc, aluminium, copper etc.
- Environmentally sustainable
- Speed of installation
- High slip resistance
- Easily repaired
- Lightweight
- Cost effective



Protan Mechanically Attached Roofing Systems

In response to changes in construction technology, Protan has set especially stringent standards in the field of mechanical attachment of roofs, based on more than 30 years of practical experience in harsh environments.

*For Mechanically Attached Systems, Protan has developed the **Protan SE** range.*

Principal features

- Quick and easy to install, and therefore cost efficient.
- Can be installed in a wide variety of temperature and weather conditions.
- Allows superior water vapour permeability
- No need for adhesive or solvents
- No use of open flame
- Isolates membrane from differential movement of the substrate
- Allows easy separation for additions, renewal, repairs and recycling
- Not limited to flat roofs, but are equally suited to curved design, pitched roofs and even vertical applications.
- Provide restraint without relying upon the laminar strength of intermediate layers

Suitable substrates includes profiled metal decking, timber or concrete. Other substrates may be suitable, please consult Protan.

The substrate should be structurally sound and adequate to resist the design loads.

Wind load design

Protan Wind Load Design Guide gives assistance in the calculation of wind loads, and the design of membrane fixings and detailing, particularly at roof perimeters where the roof is most vulnerable to wind uplift. Alternatively consult Protan Technical Services Department. The design will comply with statutory wind codes and other relevant standards.

By using the high performance telescopic tube fixing system, thermal bridging is avoided. In addition, due to the higher uplift performance, less fixings are needed.

Protan has developed a unique Edge Restraint Detail to ensure optimum wind-resistance at roof perimeters.

There are two Protan systems of mechanical attachment.



Protan Overlap System

In the standard overlap system, the membrane is fixed to the substrate within its sidelap and overlapped by the adjacent sheet. The two sheets are then welded together using semi-automated hot air welding equipment. This guarantees a homogenous seam, which is of greater strength than the membrane. Minor works are carried out using hand held hot air welding equipment.



Protan Prefabricated system with Secret Fix Strips (PFS or SFS)

Protan has developed a unique system with factory engineered backing strips, which enable non-penetrating mechanical attachment of the membrane. The system provides greater resistance to wind uplift because fixings are distributed over the entire membrane area.

Using the Secret Fix System is often cost effective, because it requires less PFS welding and reduced quantity of fasteners.

The Secret Fix System is the best solution:

- On vertical applications
- In heavy wind areas
- When the steel deck is running parallel to the sidelap of the sheets
- When quick installation is required
- M2M systems are preferable

Secret Fix System can also be combined with the Overlap System to optimise the design.



Details and accessories

A full range of roofing fittings, accessories and prefabricated components are used to provide complete and reliable roofing systems. Each element has been carefully designed and manufactured to give durable, watertight performance and visual appeal.



Protan Adhered Roofing System



To secure the membranes against wind uplift, fully adhering is commonly used in countries where weather conditions favour installation.

For Adhered Roofing Systems, Protan has developed the **Protan GX** fleece - backed membrane.

Adhered roofing systems are traditionally used where

- penetration of the substrate is undesirable
- perforation of the vapour control layer is prohibited (eg. buildings with high level of humidity like swimming pools)
- mechanical attachment is difficult or impossible, (eg. woodwool decks)
- higher than normal wind up lift resistance is required

Normally, perimeters and details will be mechanically attached to enhance wind resistance in sensitive areas (corners and edges).

In combination with other systems, detailing may be fully adhered.



Many adhesive alternatives are approved by Protan.

Protan Vacuum Roofing System



Working with the forces of nature

The membrane is loose laid on the roof, fastened only around the perimeters and penetrations. The stronger the wind forces, the better the system works.

Traditionally roof coverings are either adhered, ballasted or mechanical fastened to the substrate to resist wind uplift.

Based on a proven scientific principle Protan has developed its Vacuum Roofing System using a greater understanding of the way in which wind-forces act upon a building. Since the early installation of the vacuum roof of the Norwegian Building Research Institute in Trondheim, Norway, the system has been adopted for many projects around Europe.

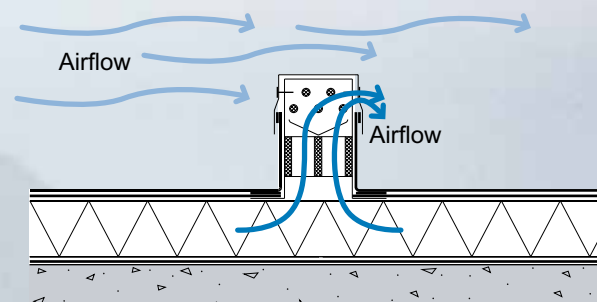
*For vacuum roofing system, Protan has developed the **Protan SE** range.*

This system is especially suitable:

- When the use of fasteners is prohibited or undesirable
- When the substrate is not suited to the use of traditional methods
- When renovating sound surfaces

Cost saving is possible, depending upon the geometry of the building. Often a good alternative when speed of application is critical.

The system introduces controlled airflow beneath the membrane through specially designed air valves. However due to the nature of the design principle, the substrate must be airtight. *In all cases, consult Protan Technical Services Department.*



Additional information and local contact details available on Protan's International web-site: www.protan.com/roofing