

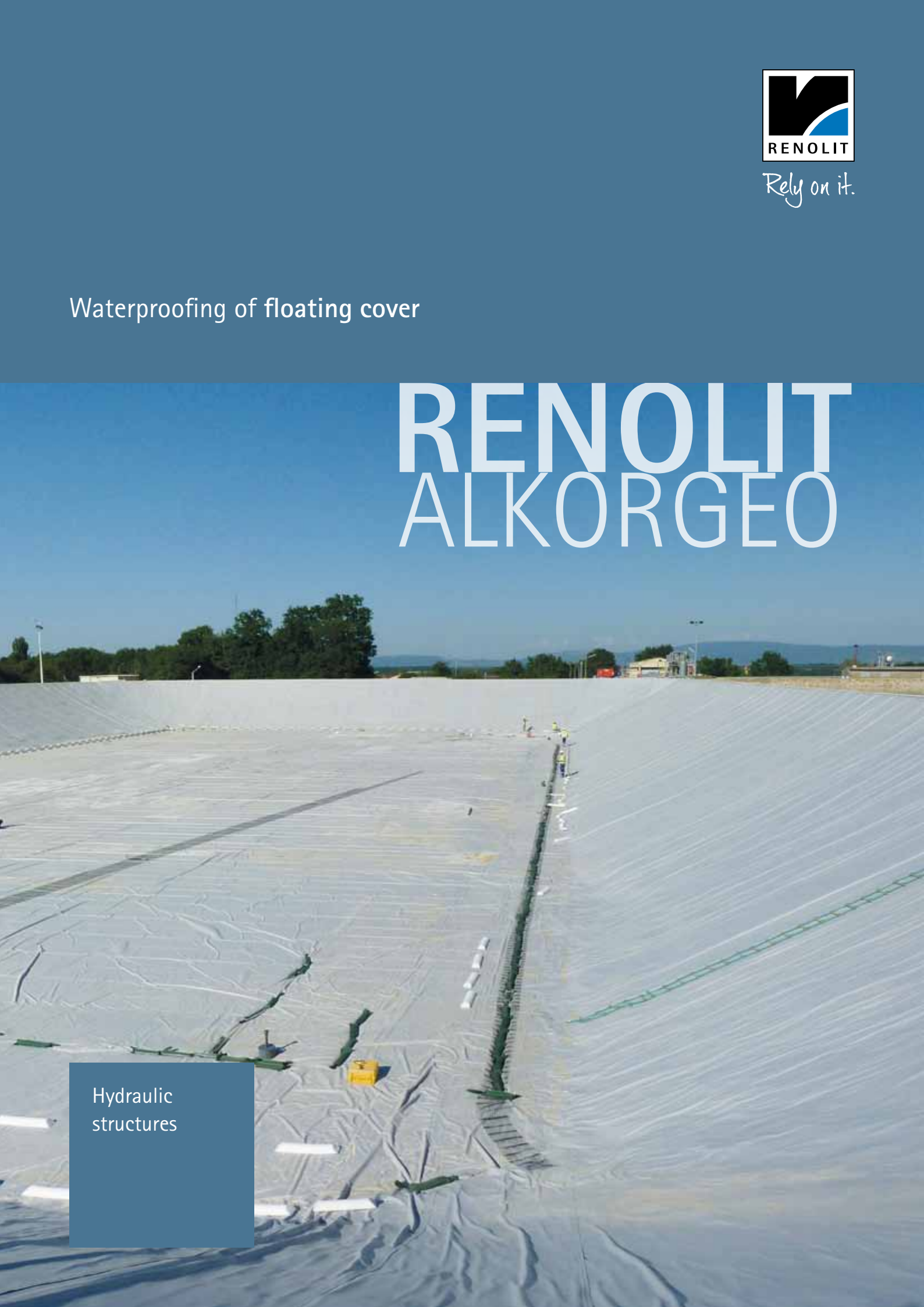


Rely on it.

Waterproofing of floating cover

RENOLIT ALKORGEO

Hydraulic
structures



RENOLIT ALKORGEO

Hydraulic structures



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Geomembrane recommended

RENOLIT group manufactures and markets a complete range of PVC, PE or PP geomembranes in response to a wide variety of applications. Experience has shown that the geomembrane PVC reinforced with a polyester scrim is one of the best suited to achieve a floating cover due to its excellent mechanical behaviour, weldability, resistance to UV and durability: RENOLIT ALKOPLAN 00414. If necessary, the geomembrane is also available with a special formulation for storage of potable water: RENOLIT ALKOPLAN 00312.

Installation of floating cover

Conception of Floating cover

The floating cover is composed of a reinforced geomembrane in which are incorporated floaters and weights. The floaters and weights are integrated on the geomembrane to adjust the size of the floating cover regardless of the level of water in the basin in order to ensure always its tension on the water surface.

The size of the floating cover corresponds to the size of the basic lining of the basin. After the installation the liquid will be pumped between the basic waterproofing and the floating cover.

In case a floating cover is projected after the basin has been filled with liquids, it can still be installed afterwards.

Technical Approach

The target of the technical solution is to avoid as many dangers as possible which could cause the waterproofing system to fail, as for example.:

- Hand welding on site
 - Reduction of T-crossings to a minimum
 - The use of materials that are not compatible with each other
- A maximum use of machine welding reduces the possibility of failures in the assembling of the panels in an important way.

Preconditions for the installation of the lining system

- Basic waterproofing of basin is completed.
- Preparation of clean area outside the basin to execute prefabrication.



Installation

Prefabrication

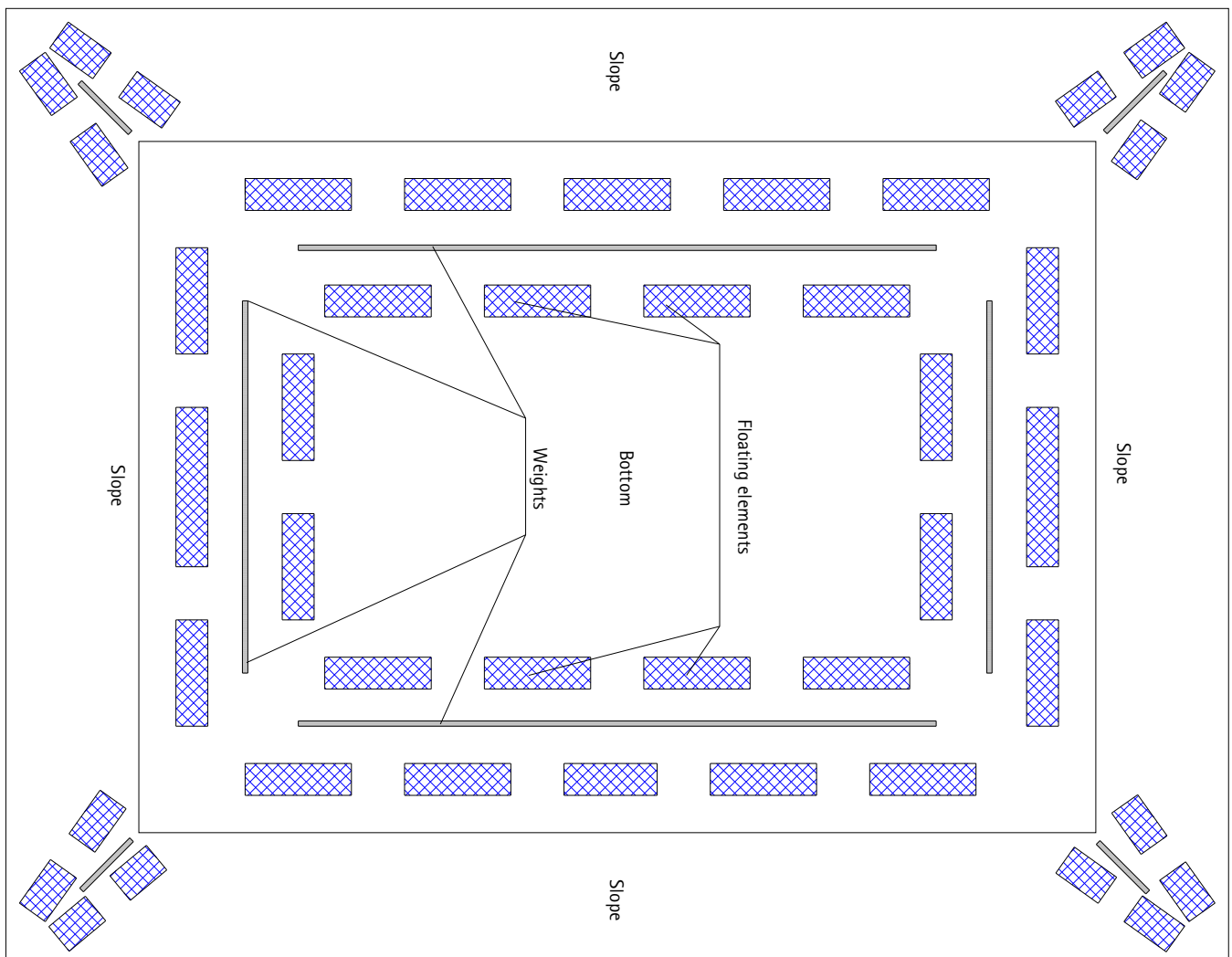
It is absolute recommended to prepare as much as possible in prefabrication. Especially the sections with floaters and weights have to be prepared in prefabrication. To work in the inside of the basin endangers the basic waterproofing. The prefabrication of panels should take place possibly in a hall with flat and clean surfaces. When panels of the floating cover are assembled inside the basin precautions have to be taken not to damage the basic geomembrane. During welding process an additional strip of geomembrane under the welding area helps to avoid damage to the geomembranes. Prefabricated panels have to be welded together with a welding machine; each welding is controlled by air pressure and noted on a welding protocol.



Welding protocol of prefabricated panel

Installation on Site

Floaters and weights have to be positioned at the correct places of the floating cover in order to work properly with changing water levels. The placing of floaters and weights depends on the geometry of the basin. The distance of weights from the floaters depends on the highest water level of the basin.

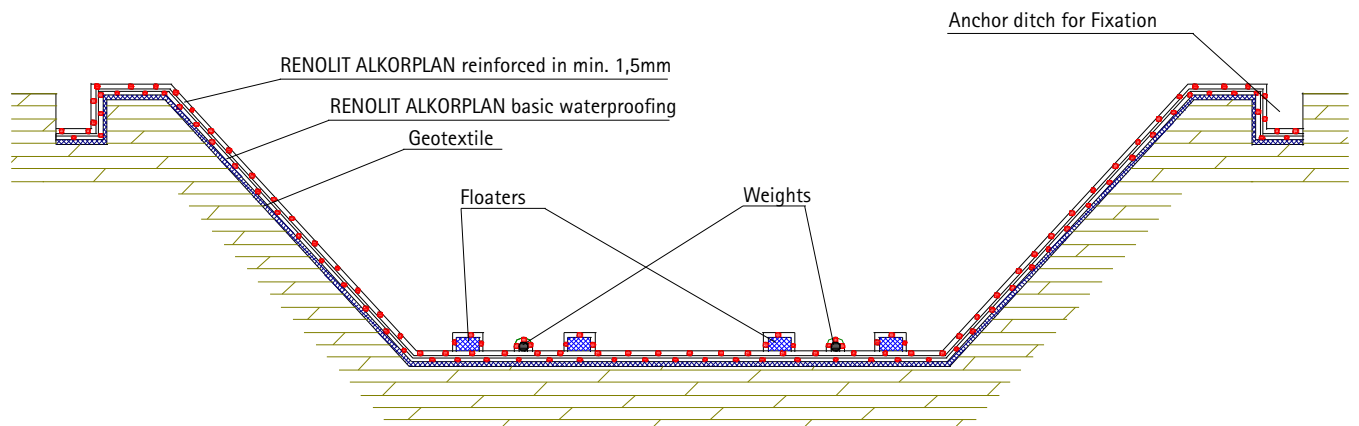


Position of floaters and weights in rectangular basin

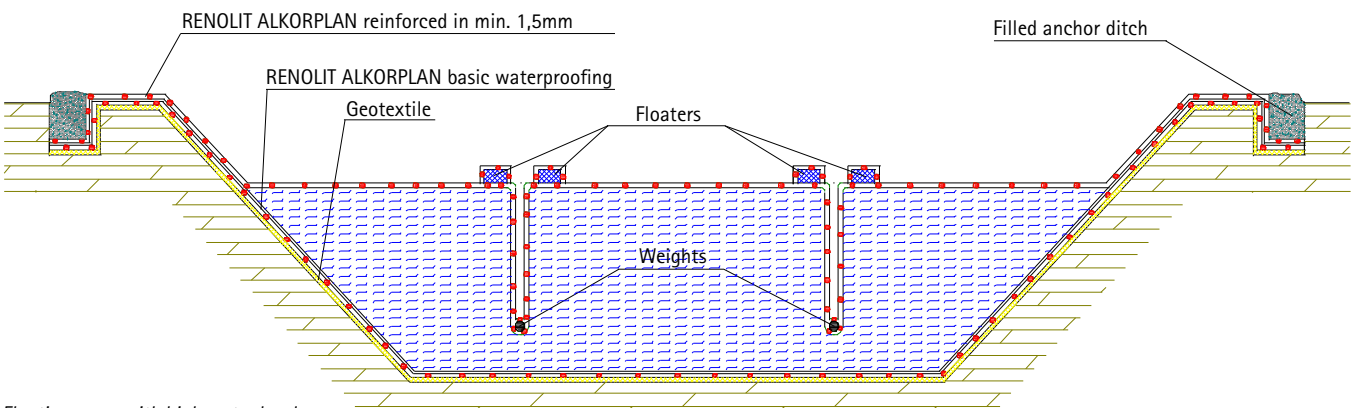


The usual procedure of installing the floating cover is when the basin is empty.

Floating cover Installation



Completely installed floating cover



Floating cover with high water level

Floaters:

Floating elements keep the geomembrane on the surface of the liquids. They are made of polystyrene and are fully dressed with geomembrane. They are welded to the cover in an optimal position. The floaters are designed in size and number depending on the surface and the weight of the floating cover (thickness of geomembrane).

Weights:

Their task is to adjust the floating cover in order to keep it flat and straight regardless of the water level. Different materials can be used as weights, sand bags and steel bars are the most common. The weights have to be protected – as the floaters – with geomembrane or plastic tubes.



Floaters



Sand bags



Anchor ditch



Plastic tubes for steel bars

Fixation

The floating cover has to be fixed at the crest of the basin. This can be done in different way, depending on the construction plans. Generally the geomembrane will be placed into an anchor ditch which is filled with sand and backfill.

In case the perimeter is made of concrete the floating cover is fixed with a flange construction between two compressible layers.

Details

To complete the system of a floating cover some other installations have to be introduced:

→ Aeration and evacuation of gas:

Depending on the stocked material it is necessary to install hoses to prevent the development of polluted air or gas.



Mechanical fixation



Aeration and evacuation of gas



→ Inlet for rainwater:

It is recommended to foresee inlets for rainwater in case the stocked liquid allows it. In case the stocked liquid may not be diluted with rainwater it can be evacuated with pumping from the canals created by the weights.



Rainwater inlet

→ Man-hole:

Basins covered with a floating cover also need maintenance for repair, cleaning and other services. For this reason man-holes have to be installed in order to enter under the floating cover. This man-hole is a special construction placed on floaters and fixed with a flange construction. Due to the strength of the geomembrane it is possible to walk on the floating cover.



Man-hole

**Installation of floating cover on filled basin**

In case the floating cover is installed when the basin is already filled the prefabricated floating cover will be pulled over the filled basin. To make this procedure possible a floater (number depends on the size of the basin) will be positioned under the floating cover during the installation process. The floater has the task to keep the floating cover over the liquid.

To be able to pull the floating cover without damaging it loops have to be welded to the side of the geomembrane.

This procedure of installation happens in the case of an existing basin already filled and can not be emptied, which is frequently the case in the chemical industry.



Rely on it.

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