

ruukki
Building your tomorrow.

SPA sandwich panels

Repair and maintenance instructions

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MAINTENANCE OF THE PANELS

Regular inspection of the general condition of the panels and their accessories can extend the life cycle of the panels. The durability and aging of the panel façade depend on the building environment and the type and color of the panel coating. For example, the sun's UV radiation, harsh weather conditions, sea proximity, air pollution, and environmental pollution strain on the panel surface. Air pollution affects the most around industrial areas and coastal regions, as well as in those parts of the building, where rainwater does not wash away the dirt. Dust and debris on the coating shorten working life. Therefore, it is very important to clean the façade regularly.

Zinc and colour coating protect the steel core of the outer surface sheets from corrosion caused by the environment. If the coating is dented or scratched, the protection it provides becomes considerably weaker. The working life of the panel surface can be kept normal by repairing also the slightest of damages by painting them as soon as possible.

A maintenance record must be kept for the maintenance works, indicating the date of the maintenance work, the areas in which the work was carried out, the person performing the work, and the substances and materials used. During the yearly maintenance, for example, the condition of fasteners, gaskets, insulations, and surfaces are inspected. During the maintenance, it is recommended to clean the façade surfaces as well.

WASHING AND CLEANING OF THE COLOUR COATED PANEL SURFACE

By washing and keeping the façade clean, it is possible to extend the life of the façade. If necessary, the panel surfaces can be washed to remove the impurities. Suitability of the used cleaning products and detergents and susceptibility of the façade surface to mechanical impacts must be considered when cleaning the façade. Because of this, it must be ensured that during washing carried out with, for example, maintenance cradle, the cradle does not cause dents or paint damage to the panel by touching the panel surface.

It is recommended to clean the outer surface of the panels primarily with water only. Diluted household detergents, detergents developed for washing of colour coatings, sponges, and soft brushes can be used to remove stains that are difficult to clean. It is also possible to remove ingrained dirt from the coatings with suitable cleaning agent or a cloth dipped in white spirit. When using detergents and white spirit, washed surfaces must be rinsed especially well with clean water. Thorough rinsing must always be performed from top to bottom. Additional instruction for washing and maintaining GreenCoat Hiarc –coatings can be found from SSAB's GreenCoat color coated steel –maintenance instructions.

The use of a pressure washer is not recommended for cleaning the panel surface, as water spraying under high pressure may penetrate to façade structure or cause damage to the façade surface. If the use of a pressure washer is necessary, low water pressure must be used (< 50 bar) and perpendicular spraying to a panel and flashing joints must be avoided.

REMOVING GRAFFITI FROM GREENCOAT HIARC COATING

Tools needed for graffiti removal are solvent meant for graffiti removal (W-GRA), protective gloves, wiping cloths, water in a suitable container, and a spray bottles if needed. First, apply the solvent over the dry graffiti with either cloth dipped in the solvent or with a spray bottle and let the solvent act 0,5–5 minutes. Suitable exposure time for the solvent can be tested by swiping. To avoid damaging the coating, the solvent must not be allowed to act for too long. The solvent and graffiti are wiped off with a dry cloth. The surface is then rinsed thoroughly with clean water from top to bottom or cleaned with a damp cloth and dried to remove any remaining paint residues.

When using detergents, instructions provided by the detergent manufacturer must be followed. When preparing the work, it should be noted that the temperature must be above 0 °C and that the temperature affects the exposure time of the detergents; an increase of temperature accelerates and a decrease of temperature decelerates the exposure time of the chemicals.

REMOVAL OF URETHANE FOAM FROM PANEL SURFACE

Urethane foam that is in contact with the panel surface cannot be completely removed. However, it has been tested that it is possible to remove approximately 90% of the urethane foam from the surface. Urethane foam is removed by first carefully cutting the dried thicker layer of the urethane foam with for example thin steel spatula, without scratching the surface of the panel. The Softcare -urethane remover is then applied to the remaining thin layer with a very damp cloth. When applying the chemical, remember to wear appropriate rubber gloves and eye protection by following the instructions. The urethane remover can be allowed to act for a maximum of 30 minutes. Graffiti remover can also be used to remove urethane foam. When doing so, carefully rinsing and swiping the surface needs to be remembered, so that no solvent remains on the surface of the panel. Next, the remaining soft urethane foam layer is removed with a plastic spatula. The painted surface of the panel can withstand some amount of abrasion with a plastic spatula. Sharper the plastic spatula, the better. However, special care must be taken not to scrub the surface too much to avoid damaging the surface of colour coating.

Finally, the paint surface should be cleaned with at least a well-moistened towel from the area where the chemical was removed and where the chemical spilled. Chemical left on the surface can cause a change in the colour and gloss of the colour coating or, in the worst case, blistering and softening of the colour coating. A very thin, almost transparent layer of the urethane that remains on the surface will usually brittle off the surface of colour coating under the influence of solar radiation in few years.

It should be noted, that Ruukki's guarantee is no longer valid in those places, where urethane foam has been left on the surface of the panel, the surface of colour coating has been scrubbed too hard with washing chemical or the washing chemical has been left on the surface due to poor rinsing (including runoffs).

TOUCH-UP PAINTING THE PANEL SURFACE

Touch-up painting is recommended, when repairing small damages such as scratches. Damage to the coating should be repaired as soon as possible while the damaged area is still small. Repairing small damage is usually a quicker and simpler task than repairing large damage.

If the damage is very small, for example, a scratch in the coating, touch-up painting begins with cleaning the damaged area with white spirit. After the white spirit has dried, the scratch is painted using a narrow brush and the right kind of (air-drying) paint. One coat of paint is enough, if the scratch extends only to primer. If the scratch extends down to the zinc layer of the sheet, it is advisable to paint a second coat of paint after the first coat has dried. In secondary places, very small scratches can be fixed with repair wax used in car renovation without touch-up painting.

Touch-up paint should only be applied where necessary, as it fades differently than the original paint. Note, spray paints are not allowed to use on colour coated surface.

REPAINTING THE PANEL SURFACE

The service life of the colour coated panel can be divided into two types: aesthetic service life and functional service life. One practice to extend the aesthetic service life of the panel is to repaint its surface. The need for repainting usually arises from damage to the surface of colour coating, fading of colour, and change in gloss. The durability of the colour coating is affected by several factors, such as the position of the surface concerning points of the compass, the slope, the construction method, the installation work, the nearby vegetation, and the type and the colour of the colour coating. Due to the above-mentioned factors, it is very difficult to provide an exact time when repainting is needed.

Esthetic guarantee time of GreenCoat Hiarc coating is very long and after the guarantee period the surface of the façade should be inspected at least between every few years. If it will be noticed during follow-up that there is need for repainting it must be carried out according to SSAB's GreenCoat color coated steel -maintenance instructions. When repainting is carried out according to the manufacturer's instructions and carefully the service life of colour coating is estimated to be over 50 years.

The durability of the different colour coatings against UV radiation and airborne impurities varies greatly depending on the properties of the coating. For example, the colour of the coating can affect the coating's service life, as dark coatings absorb more UV radiation and thus heat up more than light-coloured coatings. Because of this, dark-coloured coatings often need to be repainted earlier than light-coloured coatings. Special colours like for example bright red and yellow colours are usually needed to repaint earlier than standard colours.

Before repainting, it is important to verify the adhesion of the old colour coating to the substrate. Any loose, cracked, or flaky coating should be removed. If the adhesion is poor, the existing paint should be completely

removed. Any rust should then be ground off with caution so that the zinc layer will not be damaged. The old colour coating, which is in good condition, is rinsed with clean water from top to bottom. When the surface has dried, a test painting should be done to check the suitability of the new paint and its adhesion to the substrate. All areas, where rust and old paint coat has been removed, are primed with anti-rust paint. The actual painting is done with paints and paint combinations by following SSAB's GreenCoat color coated steel -maintenance instructions.

Repainting of GreenCoat Hiarc coating is challenging due to its surface properties (polyvinylidene fluoride coating). Also certain solvent-based special paints are available for the repainting of GreenCoat Hiarc coating but those paints are intended only to the use of professional painters. Gloss of paint can be matt, semimatt or semigloss. Ruukki's technical support can be contacted for additional information.

Surface, which has been painted in time, according to the instructions and carefully, is as good as new and can be repainted again after 20 years.

REPAIRING SMALL DENTS

When considering repairing options for dents in panel surfaces, the size and location of the dent must be assessed. If the dent is so large, that 10 % of the effective width of the panel is exceeded, the loadbearing capacity of the panel may be affected. In this case, the strength of the panel must be checked and Ruukki's technical support must be contacted for repair instructions.

Small dents in the panel surface can be repaired by pulling the dents straight using hot-setting adhesive, plastic adhesive pullers, and a sliding hammer. A plastic puller (a part used for repairing car dents) is glued to the surface on top of the dent. When the adhesive has cured, and the plastic part is firmly fixed to the surface, the part is then pulled off from the surface using a sliding hammer. As a result of the force generated, the dent straightens a little bit and the plastic part comes off from the surface. After this, the remaining hot-setting adhesive left on the surface is removed using a distilled spirit and a plastic spatula. These steps are then repeated until the dent in the surface of the panel has straightened. If the sheet of the panel is arched outwards due to the straightening operation, the sheet can be gently hit to straighten the surface by using a plastic, round-tipped tool, and a hammer.

A small dent can also be straightened by using a suction cup. In this case, the suction cup is attached on top of the dent and the dent is straightened by pulling the suction cup.

You can also try to fade the dent with a general screed. First, the old paint is ground off from the damaged area and the area is then cleaned thoroughly. After this, the dent is filled with a general screed (e.g. plastic padding) or epoxy putty (epoxy adheres best to the Hiarc-coating). After the screed has dried, the surface is sanded evenly so that the repaired areas do not mirror due to uneven surfaces after painting. Then particulates and all dust resulting from the grinding must be removed carefully and the area which will painted must be cleaned from all impurities so that primer coating will adhere as good as possible to the area which will be painted. After the surface has dried, the surface is first primed and after the primer has dried, 1-2 coats of topcoat are applied according to touch-up painting instructions, depending on the depth of the damage. When choosing a maintenance paint, the gloss of the colour coating should be taken into account. The gloss of maintenance paint should be as close as possible to colour coating so that the maintenance painted area would not differ so much from the colour coating around. UV resistance of GreenCoat Hiarc coating is excellent thus UV resistance of maintenance paint should also be as good as possible. Maintenance paint must be selected only from the paints which are recommended by Ruukki.

However, dents may always remain visible despite the repairs. When the panel is dented, the surface plate of the panel is probably detached from the wool core of the panel and the area may appear as a spot after straightening the sheet. Note, Ruukki's warranty is no longer valid for repaired areas.

PANEL FASTENERS

The condition of the panel fasteners should be checked by opening few fasteners from different parts of the building. Panel fasteners can be found underneath the flashings. Note! Screws can only be opened one screw at a time per panel end. For stainless steel fasteners, a check every 10 years is sufficient whereas carbon steel fasteners must be checked every 5 years. If the type of the fastener is unknown, it can be tested simply with a magnet: carbon steel screw is magnetic, stainless steel screw is not. If the fastener is rusted, it must be replaced with a new one. When opening the fastener, the condition, and the appearance of the seal under the screw head are also checked. In addition, the condition of the fasteners on the panel flashings should be checked. If the screws are loose and cannot be tightened, they must be replaced with new ones. If the new screw does not bite into the steel sheet, the new screw should be drilled next to the old hole and the old hole in the surface sheet must be sealed with sealant.

CORROSION OF THE CUT EDGES

Painted steel sheet surfaces can only be cut with plate shear or circular saw, which carbide blade has a negative angle. Hot-shearing and the use of an angle grinder to cut the panel are strictly prohibited. When cutting a coated steel sheet, the cut steel sheet edge is left exposed and the cut edge may start to rust. Usually, the cut edges of the panel remain protected under the flashings. If the cut steel sheet edge has rusted and the edge needs to be cleaned, the area can be repainted. First, a cracked, and flaky coating and the rust is removed from the damaged area and narrow area around it. The formed rust is removed by treating the damaged area with sandpaper, special care must be taken not to damage the zinc layer of the sheet. After this, the area is cleaned thoroughly with an alkaline degreasing agent and rinsed with clean water. When the treated area is clean and dry, the surface is painted first with anti-rust paint and then with a topcoat.

TIGHTNESS OF THE FLASHINGS

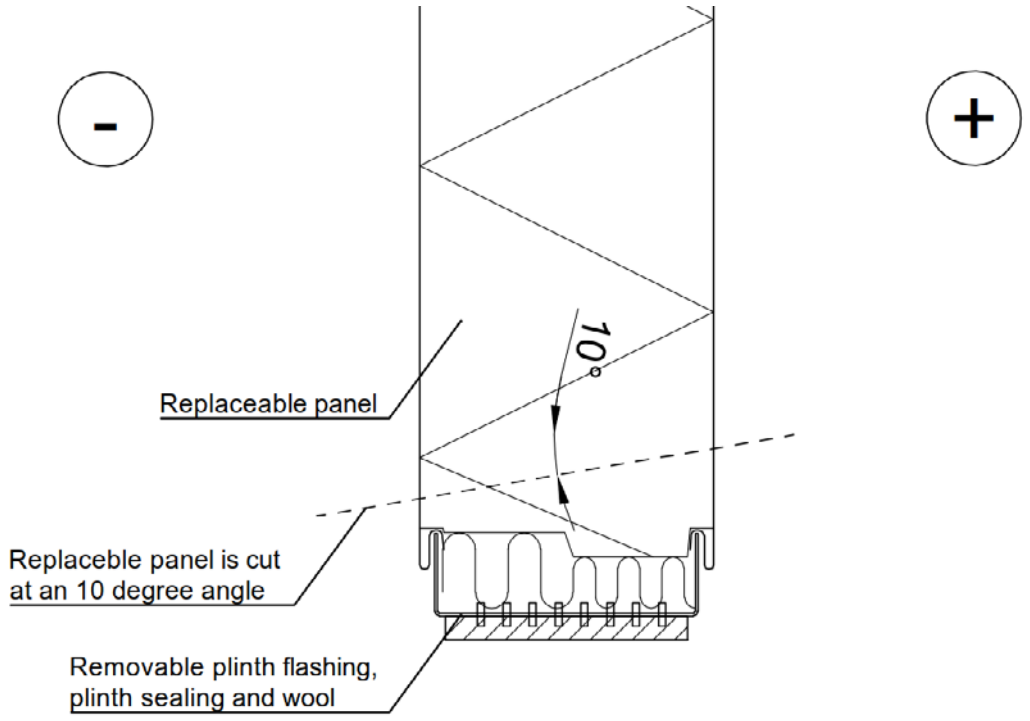
When inspecting and maintaining the panel, it is also advisable to check the condition of the flashings. Flashing should be installed tightly to the panel surface. If a gap is noticed between the panel and the flashing, the gap must be sealed by adding elastic sealant or more screws to the flashing. All gaskets that are in poor condition must be replaced where possible. If it is not possible to replace the gaskets which are in poor condition, it must be replaced with new materials suitable for the application, such as joint sealing compounds and gaskets.

REPLACING HORIZONTALLY INSTALLED PANELS

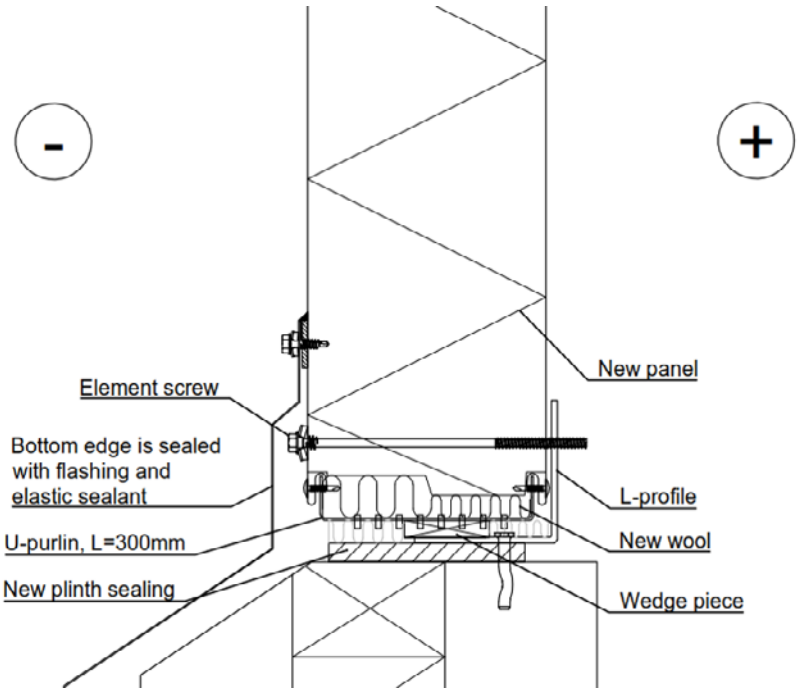
If the condition of the panel is so poor that the basic repair measures mentioned above are not sufficient, the panel must be replaced with a new one. The new panel must be compatible with the old one e.g. tongue and groove, thickness of the wool type, coating, and colour. When replacing the panel, at least new panel fasteners, gaskets, flashings, and cutting and lifting equipment are required. When replacing Ruukki panels, it is recommended to use a vacuum lifter.

Panel replacement always begins with the removal of the joint flashing at least at the panel to be replaced. The best way to remove the element depends on the thickness, span, and location of the panel. For example, a short panel from the door jamb can be removed through the door opening. It is always recommended to remove the long-span panel from the top of the wall if the roof and eave solutions allow doing so. This is done by dismantling all the panels in that column spacing from the wall to the panel to be replaced. However, usually, the damages focus on the lower panels of the wall, in which case it is the most practical way to replace the panel through the bottom edge of the wall.

When replacing the panel on top of the socle through the bottom edge, the panel is cut lengthwise as close as possible to the bottom. The cutting angle should be at least 10 degrees outwards.

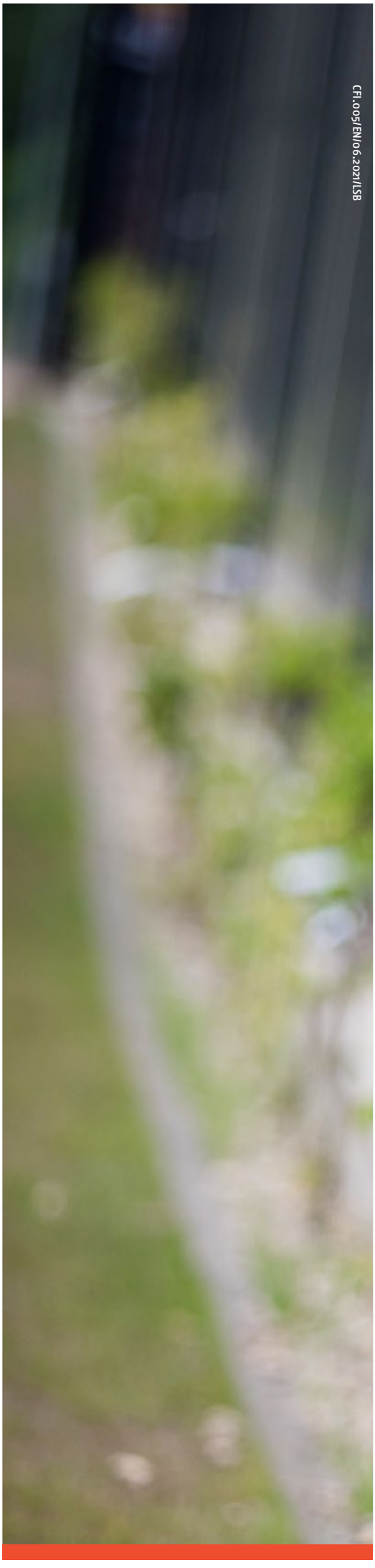


After this, panel fasteners are removed, and the upper part of the panel is removed with the vacuum lifter. The lower part of the panel as well as the plinth flashing, wools, and plinth sealing can easily be removed. Next, a plinth sealing, and L-profile will be installed to support the new panel as shown in the figure below. Under the new panel, 300 mm long low-flange (flanges <25 mm) pieces of U-purlins are attached to the groove joint, 3-4 pcs. per panel. The U-purlin is fastened to the panel by screwing the screws through the panel tongue to the frame. Before installing the new panel, mastic sealant is applied to the outer and inner side of the groove joint according to SPA External wall details instruction. Using the vacuum lifter, the new panel is installed from below by carefully pushing the tongue of the panel into the groove of the upper panel. Before the lifter is removed, enough wedge pieces are added under the U-purlins and the new panel. Wedges are used to lift and press the panel tightly to the groove of the upper panel until the panel is properly fixed. The panel is fixed to the existing frame and the L-profile from the bottom with new panel fasteners. Space under the new panel is then filled with mineral wool and the bottom edge is sealed tightly with flashing and elastic sealant



Finally, joint flashings, gaskets, and socle flashing are added according to Ruukki SPA installation instructions and SPA External wall details.

We make steel-based products for walls and roofs, for both commercial buildings and private homes. We're a supplier of high-quality products, systems and solutions, developed sustainably and to live up to the highest demands on durability in harsh conditions.



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