1. **Cladding: Profile**

   a. **General**

   The facade cladding is a system solution that consists of a set of main and auxiliary profiles that are linked together, thus form one whole. An aluminium or wooden support structure with the mounting hardware and the profiles make up the ventilated facade system. Insulation and a vapour barrier can be added to it, if so desired. The insulation with or without vapour barrier or waterproof rain sheets must be installed according to the guidelines of the manufacturer.

   b. **System**

   The main profiles have either 3 corrugations (visible width: 180mm) or 2 corrugations (visible width: 150mm) and are connected to one another by means of a tongue-and-groove system. The tongue-and-groove system can be adapted in 2mm increments, allowing for a width that corresponds exactly to the width of the facade that requires cladding. The first and last profile have one corrugation that each allow for a play of +5mm/-5mm. This profile can be used in various places: as combined corner profile and combined starting profile.

   c. **Main profile (ANL-A-100)**

   The facade cladding shall consist of extruded aluminium profiles with a width of 202.25mm. The profile has a maximum extrusion length of 6,000mm. The shape of the profile is similar to industrial corrugated sheet metal, thereby creating vertical lines. The gaps are 30mm wide. The profiles are connected to one another by means of a tongue-and-groove system, creating a seamless whole. The connections between the profiles are always vertical. The weight of the base profile on the facade does not exceed 9kg/m².

   d. **Specifications**

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<th>Alloy</th>
<th>6060 T66</th>
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<td>EN norm</td>
<td>EN 755-9</td>
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   e. **Auxiliary profiles**

   The main profiles are completed with auxiliary profiles that are chosen according to their function within the cladding. Concretely, this means: starting, end, inside corner and outside corner profiles and a combination of clips and a cover strip. The quality is the same as that of the main profile. The auxiliary profiles enable the invisible installation of the entire system.
2. **Support structure:**
   
   a. **General:**
      The profiles are to be installed on a support structure. This can consist of various materials, as described below.

   b. **Wooden support structure:**
      i. **Principle:**
         A battening of wooden slats of impregnated (process A 2.1/acc. NBN EN 351) Nordic pine or European pine (minimum wood grade C18), behind which are placed solid insulation boards. Saw cuts and machined parts will require on site treatment. The battening is taken up as a horizontally positioned lattice. The fastenings are sufficiently long, as directed by the manufacturer. These are to be fastened with sufficient regularity, in accordance with the substrate (or every 100 / ... cm). The entire structure shall be installed flush and level.
      
      ii. **Sizes and spacings:**
         (either) the sections and spacings between posts, as well as the number of fasteners are chosen according to the weight and arrangement of the cladding elements, the characteristics of the substrate support structure and as specified on the general drawings. The openings in the facade (doors / windows / gates) can be determining factors in the selection of support structure elements in order to solidly and adequately install the entire system.
         (or) The following sections and spacings must be adhered to
         - Section of the horizontal battening: minimal 89x35 / ... mm
         - Horizontal spacing (centre to centre): 100 / 120 / ... cm
         - Planned facade insulation: solid PUR / PIR / boards
         - Fasteners: mechanical (spacer bolts and wall plugs)

   c. **Aluminium support structure:**
      i. **Principle:**
         This consists of an anchor and an L-profile. The anchor has an L-shape - the rear part is bolted against the fixed wall. The height of the rear part is 135mm. The space created between the cladding and the substrate wall is variable. The corner of the anchor is reinforced to prevent sagging. The anchor has a punched lip at its end that can hold the intermediate L-profile during positioning. At one end there are 18mm pre-drilled slots that allow installation of the intermediate L-profile. The intermediate L-profile is extruded at an angle of 90°. The profile sections are 60x40mm and 2mm thick.
      
      ii. **Amount:**
         The amount and location are determined by the manufacturer, taking into account a maximum deflection of 1/200 of their span at maximum wind load.
3. **Surface treatment**

The surface of the profiles must be clear of graphite and corrosion skin after treatment. According to the specifications in the special plan the profiles will be finished with one of the following surface treatments:

*(either) anodised*

The treatment and protection of the profiles with a sulfuric acid process meets the norms STS 36.14.4 and NBN EN 12373-15 - Aluminium and aluminium alloys - Anodising - sections 1-15 (1999-2000). Anodising is done as described in the special specifications according to

- method AO - Unpolished with anodic treatment (satined).

The most common anodising qualities are: EN AW 1050A and EN AW 5005. After the respective pre-treatment and before the anodic oxidation process the profiles are degreased and pickled. The oxide layer is completely tight (poreless) and covers the entire surface of the parts. The oxide layer must be made completely waterproof by a sealing process in boiling water. The anodising process is the responsibility of the system supplier who can thereby offer a full warranty on the quality of the finished profiles (aluminium, thermal break and surface treatment). The company carrying out the anodising must carry the quality label QUALANOD - this label is awarded and permanently monitored by the EWAA (European Wrought Aluminum Association). Quality control is performed by testing in accordance with the procedure described on the label. The required thickness of the oxide layer meets STS 36.05.33 and is at least:
- Class 2 - town atmosphere - 20 micron
- Class 3 - maritime or industrial atmosphere - 25 micron

Colour choice: nature / champagne / bronze / black anodised
The paint layers are impact resistant and must not chip during mechanical machining (drilling, sawing, milling, punching, ...). The pre-treatment is carried out according to Qualicoat or GSB requirements (Gütegemeinschaft fur Stückbeschichtung), the surface treatment is carried out in accordance with the guidelines of the Aluminium Painters Association (APA) and carries the QUALICOAT label - awarded and monitored by the EWAA (European Wrought Aluminum Association). In accordance with the location and/or special specification the powder coating system meets

- class 2 (normal load / town atmosphere) by means of a polyester or polyurethane powder coating for outdoor use (min. thickness 60 micron - at normal load).
- class 3 (aggressive impact / marine or industrial atmosphere, tested with acidic (pH=3) salt spray test) either by industrial application of a pre-anodised layer, finished with a polyester or polyurethane coating (min. thickness 60 micron) or by a two-layer polyester or polyurethane powder coating (min. thickness 100 micron).

In accordance with the Qualicoat label all systems must have a coating without annoying defects, such as roughness, wrinkles, sagging, excessive orange peel, inclusions, fish eyes, dust, blistering, burnt spots, dull spots, scratches etc. that can be seen in natural light with the naked eye, viewed perpendicularly to the surface at a distance of 3 meters and are recognisable as a defect.

Colour choice: RAL powder code ....

- (either) Glossy (gloss grade +/- 70%)
- (or) Matte (gloss grade +/- 30%)
- (or) textured coating

- (or) layer thickness 60 micron
- (or) layer thickness 100 micron (2-layered)
4. **Execution**

   a. **(either) Installation on aluminium support structure:**

   The anchors shall be fixed to the wall at the locations indicated by the manufacturer. The entire system can be adjusted along 3 axes. Between the fixed wall and the anchors a plastic piece is placed for avoiding thermal bridges. If needed, the space can be filled with insulating material to meet requirements about U-values. On top of that a vapour barrier shall be installed, according to the specifications of the manufacturer. The spots where the anchors are and where the vapour barrier is interrupted shall be sealed on site by means of EPDM or other products provided for that purpose, to be used according to the instructions of the manufacturer. After that, the L-profiles are firmly attached to the anchors. Finally, the main profiles are firmly attached to the L-profiles. The transitions (corners, windows, roof, storeys) are performed according to the guidelines of the manufacturer and with the necessary auxiliary profiles.

   **(or) Installation on wooden support structure:**

   Prior to installing the wooden substructure, the facade shall be completely isolated with a hard type of insulating board without interruptions and in accordance with the guidelines for detailed thermal bridges. The thermal insulation of the exterior wall shall be performed by means of hard boards with a density in their core of ± 30 kg/m³, with a fire reaction A1 according to KB 19/12/1997 and Euroclass D, s2 d0 according to EN13501-1. To promote windproofing we recommend finishing the seams with insulation tape as determined by the manufacturer of the boards. The tape shall be applied to a dry, clean surface and be firmly pressed down over its entire length.

   If there are open joints in the outer cladding the entire surface shall be covered with a breathable, waterproof and UV-resistant film that is to be attached to the installed insulation, in accordance with Article 30.33 housing - films / plastic / ....

   Installation of wooden substructure of the ventilated facade system shall be carried out by means of facade screws and wall plugs, selected for the type of substrate. The facade screws are installed through the insulation in the supporting structure. The number of adjusting screws, the spacing and the sections of the support structure shall be based on the recommendations of the manufacturer. The ventilated space between the back of the wooden battens and the front of the insulation must be at least 20 mm in order to assure ventilation and control of the battens. The facade screws for attaching the facade system shall be designed for use in external wall cladding and have a nominal shaft thickness of 6.5 mm. The facade screws are to be covered with wind-tight tape in those spots where they pierce the insulation, to achieve an entirely closed insulated wall.

   The facade screws have a special corrosion-resistant zinc/nickel coating with corrosion-resistant properties in accordance with a salt spray test of 700 hours. The type of wall plug and the anchoring depth are determined by the substrate,
according to load tables from the manufacturer. The wall plugs shall be made of halogen-free polyamide (PA6), resistant to aging and stress relaxation. The drilling of holes is to be carried out with a drill bit that is suitable for the type of substrate. The drilling instructions of the manufacturer of the wall plugs should be strictly adhered to. The facade screws are used as part of a 2-phase attachment system. In the first stage (positioning phase) the horizontally (singularly) placed facade screws align the substructure in the desired plane. In the second phase (stabilisation phase), dependent on substrate, cantilever and weight of the facade system, angled facade screws are placed at an angle of 30 degrees upwards with the singular facade screws. The amount of singular and angular screws is determined by the load tables from the manufacturer. The singular and angular wall screws together form a lattice structure. After the second phase, the construction shall have reached its final strength and stability.

b. Placement of main profiles:

Construction always starts with either a start profile, an inside corner or an outside corner combination. Construction always ends with a combination of end profiles, or an inside or outside corner. The distance between start and end profile is to be filled with the basic profiles, possibly combined with an intermediate start/stop combination. The project designer fills this space by using the flexible spacing of 27.5 / 30 / 32mm per profile connection. The system is designed in such a manner that all dimensions can be achieved, if the required combinations are developed. The ALINEL system offers rubber auxiliary parts for installation, to determine the spacing.

It goes without saying that leveling (aligning) the first and last profiles at the beginning and end require special attention.

The system is designed in such a manner that in exceptional cases customised combinations can be realised.

Sawing shall be carried out with the necessary care, without damaging the coating of the face area. Visible edges remain untreated or are coloured in the colour of the visible surface.

Where different metals or other materials touch, the occurrence of possible (electro)chemical damage must be prevented.

- In accordance with STS 36 all steel items and structures that come in contact with the aluminum cladding shall be metallised (class Zn80)
- or galvanised (EN ISO 14713- EN ISO 1461). Contact with non-magnetic stainless steel, e.g., 18/8 creates no issues.
5. **Ventilation**

   Between the rear side of the board and the insulation material there should be a minimum space of 2 cm for continuous ventilation. The presence of vents and careful workmanship at all the corners and edges shall be checked. Running metre board must have at least 20 cm² [3.1 sq in] of vents for buildings with heights up to 8m [26.25’], or 50 cm² [7.75 sq in] for buildings with heights of over 8m [26.25’], both near the top as well as near the bottom. Sturdy and corrosion-resistant insect netting is to prevent entry of pests into the ventilation.

6. **Damage repair**

   In case of damage to one or more profiles, they can always be removed. If it concerns one of the main profiles, the damaged profile or profiles can be removed by de-installing the profiles up to the point where the damaged profile or profiles are located. If it concerns a larger surface area the system allows, according to a chosen interval, to place a ‘clips profile’ that can be removed after installation. This allows for repairs to the system without removing the entire facade. The corner profiles can always individually be removed. The project manager must determine where and how often such invisible interruptions are applied. It goes without saying that these must be clearly identified on the drawings in order to be able to use them later.

7. **Intellectual property**

   The system is part of a patent application.