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Authorised and notified according
to Article 29 of the Regulation (EU)
No 305/2011 of the European
Parliament and of the Council of 9
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MEMBER OF EOTA



European Technical Assessment ETA-17/0312 of 29/06/2017

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S

Trade name of the construction product:

Petersen Cover ventilated facade system

Product family to which the above construction product belongs:

Kits for external wall cladding

Manufacturer:

Petersen Tegl A/S
Nybolnorvej 14
DK-6310 Broager
Tel. +45 7444 1236
Internet www.petersen-tegl.dk

Manufacturing plant:

Petersen Tegl A/S
Nybolnorvej 14
DK-6310 Broager

This European Technical Assessment contains:

9 pages including 2 annexes which form an integral part of the document

This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:

Guideline for European Technical Approval (ETAG) No. 034: Ventilated cladding kits comprising cladding components and associated fixings, April 2012, used as European Assessment Document (EAD).

This version replaces:

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II SPECIFIC PART OF THE EUROPEAN TECHNICAL ASSESSMENT

1 Technical description of product and intended use

Technical description of the product

The Petersen Cover façade tiles are handmade, fired at high temperatures and used as a cladding kit.

The Petersen cover tiles are fastened with screws to an underlying wooden or aluminum support construction. Each façade tile shall be fixed technically strain-free with at least two screws on a capable support construction.

The "Petersen Cover" are available in two different sizes. The tile with dimensions of 528 x 170 x 37 mm has at least two fixing holes. The size with dimensions 528 x 240 x 37 mm has at least two fixing holes. The tiles are tested in accordance with EN 1304 and the performances of the tiles are declared in accordance with the standard. See Annex A.

This kit is classified as family A, according to the ETA Guideline no. 034: Kits for external wall claddings. Part 1: Ventilated cladding kits comprising cladding components and associated fixings, edition April 2012.

2 Specification of the intended use in accordance with the applicable EAD

Petersen Cover cladding kit is intended for use on both new and existing (refurbishment) external walls.

The tiles are fixed to aluminium profiles with the self-tapping screw EJOT JT3-ST-2-6.0x60 and to timber battens with timber screw SPAX T-STAR plus 5x60/37 A2 KP. The aluminium profiles are at least alloy AW 6060 T66 with a wall thickness of 2 mm. The timber battens are at least strength grade C24 and sorting grade S10 TS.

The fasteners are drilled to the substrate with an assembly torque of 5.0 Nm.

See annex B for specifications of the wood and aluminium framework.

Petersen Cover is a non-load-bearing system. It does not contribute to the stability of the wall on which it is installed, neither to ensure the air tightness of the building structure. It can contribute to the thermal

performance of the building and provide enhanced protection from the effect of weathering.

The provisions made in this European Technical Assessment are based on an assumed intended working life of the post bases of 25 years.

The indications given on the working life cannot be interpreted as a guarantee given by the producer or Assessment Body, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works. "An "assumed intended working life" means that it is expected that, when an assessment following the ETAG-provisions is made, and when this working life has elapsed, the real working life may, in normal use conditions, be considerably longer without major degradation affecting the essential requirements.

3 Performance of the product and references to the methods used for its assessment

The assessment for the intended use of this kit for ventilated external wall claddings according to the Essential Requirements were carried out in compliance with the ETAG 034. The characteristics of the components shall correspond to the respective values laid down in the technical documentation of this ETA, checked by ETA Danmark.

3.1 Mechanical resistance and stability (BR1)

Requirements with respect to the mechanical resistance and stability of non-load bearing parts of the works are not included in this Essential Requirement but are treated under the Essential Requirement: Safety in use (See section 3.4)

3.2 Safety in case of fire (BR2)

3.2.1 Reaction to fire

The components have the following classifications:

Component	Classification	Reference Standard
Clay tiles	A1	EN 13501-1 and Delegated Regulation 2016/364

Components not part of the kit, but specified in annex B:

Component	Classification	Reference Standard
Timber	D-s2, d0	Acc. to CWFT decision
Aluminium	A1	EN 13501-1 and Delegated Regulation 2016/364
Steel components	A1	EN 13501-1 and Delegated Regulation 2016/364

3.2.2 Reaction to fire on back side

The clay tiles cladding is homogeneous or symmetric in construction layers should have same reaction at rear of cladding (in ventilated cavity) as section 3.2.1 whereby no performance is required.

3.3 Hygiene, health and the environment (BR3)

3.3.1 Watertightness of joints

The kit is not watertight.

Openings between cladding panels “joints” may allow some percentage of driven rainwater to penetrate the rain screen where droplets may collect on the substrate or flow down the surface.

3.3.2 Water permeability and Water vapour permeability

These performances are not relevant for external wall cladding kits with ventilated air space.

3.3.3 Drainability

On the basis of the standard construction details (see annex B) and the installation criteria of this kit and the technical knowledge and experience, it may be said the water which penetrates into the air space or the condensation water can be drained out from the cladding without accumulation or moisture damage into the substrate.

3.3.4 Release of dangerous substances

Petersen Cover tiles do not contain substances mentioned in section 5.3.5.1 of ETAG 034 part 1 or of very high concern that are listed by the European Chemicals Agency.

3.4 Safety in use (BR4)

3.4.1 Wind load resistance

No performance assessed

3.4.2 Mechanical Resistance

3.4.2.1 Pull-through resistance of cladding element

Characteristic	Mean Value	Variation coefficient	$F_{R,k}$
	[N]	[%]	[N]
Pull-through resistance of cladding element with EJOT JT3-ST-2-6,0x60	6.527	13,65	4.817
Pull-through resistance of cladding element with SPAX T-STAR plus 5x60/37 A2 KP	6.755	16,67	4.593

No Performance Assessed

Characteristic	Mean Value	Variation coefficient	F _{R,k}
	[N]	[%]	[N]
Pull-out resistance of fixings from profiles; EJOT JT3-ST-2-6,0x60 and aluminum support construction	4.268	12,26	3.264
Pull-out resistance of fixings from profiles; SPAX T-STAR plus 5x60/37 A2 KP and wooden support construction	3.466	9,56	2.830

3.4.2.2 Pull-through resistance under shear load

Characteristic	Mean Value	Variation coefficient	F _{R,k}
	[N]	[%]	[N]
Resistance to vertical load	5.713	13,63	4.218

3.4.2.3 Bending strength

Petersen Cover façade tiles with the dimensions of 528 x 170 x 37 mm with support spacing of 350 mm reach an average bearing capacity in bending of 2.23 kN. With the same spacing of supports, an average bearing capacity in bending of 3.53 kN was measured for the "Petersen Cover" façade tile with the dimensions of 528 x 240 x 37 mm. This gives bending stresses of:

$$\sigma_{B,h=17cm} = \frac{M}{W} = \frac{6 * F * l}{4 * b * h^2} = \frac{6 * 2230 \text{ N} * 350 \text{ mm}}{4 * 528 \text{ mm} * 19 \text{ mm}^2} = 6,42 \text{ N/mm}^2$$

$$\sigma_{B,h=24cm} = \frac{M}{W} = \frac{6 * F * l}{4 * b * h^2} = \frac{6 * 3530 \text{ N} * 350 \text{ mm}}{4 * 528 \text{ mm} * 19 \text{ mm}^2} = 9,72 \text{ N/mm}^2$$

3.4.3 Resistance to horizontal point loads

No Performance Assessed.

3.4.4 Impact resistance

No Performance Assessed

3.4.5 Resistance to seismic actions

3.4.6 Hygrothermal behaviour

No Performance Assessed

3.7 Sustainable use of natural resources (BR7)

No Performance Assessed.

3.8 Aspects of durability and serviceability

Aspects of durability & serviceability relate primarily to cladding performances. The tiles have been tested in accordance with EN 1304, and the performances are declared in accordance with the standard, see annex A.

3.9 General aspects related to the performance of the product

The actual construction design and material specification must be based on project specific parameters. The partial safety factor for the material is recommended with $\gamma_M = 2,0$ However, the combined effects of wind, weight, pull-out strength, surface friction, and national safety factors require additional safety factors to be used in some design cases.

Further design consideration should be given to following factors:

- The mechanical characteristic values of the kit components (tiles, cladding fixings and subframe) in order to resist the actions applying on the specific work.
- National safety factor must be used.
- The substrate material to define the suitable anchorages.
- The possible movements of the substrate and the position of the building expansion joints.
- The possible dilation of the kit components and of the panels.
- The category of corrosivity of the atmosphere of the works.

4 Attestation and verification of constancy of performance (AVCP)

4.1 AVCP system

According to the decision 2003/640/EC of the European Commission, as amended, the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011) is System 2+.

5 Technical details necessary for the implementation of the AVCP system, as foreseen in the applicable EAD

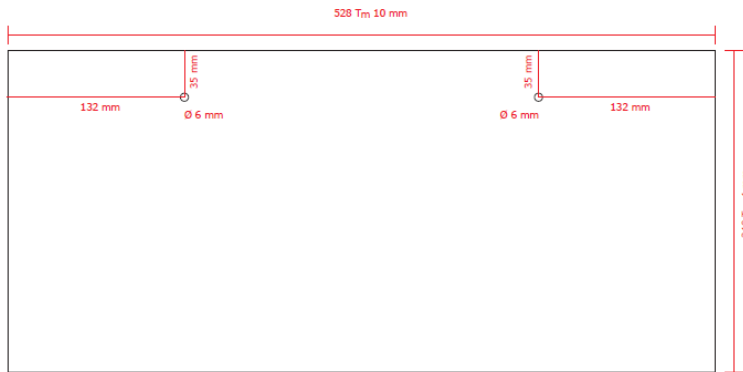
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark prior to CE marking

Issued in Copenhagen on 2017-06-29 by

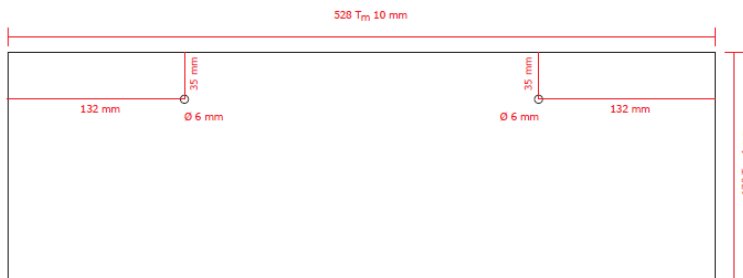
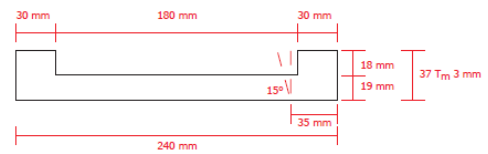


Thomas Bruun
Manager, ETA-Danmark

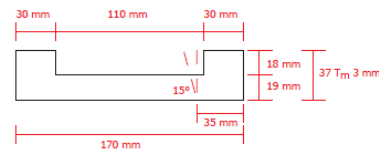
Annex A
Product specification
Tiles in accordance with EN 1304



PETERSEN COVER 24 CM



PETERSEN COVER 17 CM



Characteristics of the tiles:

The tiles comply with the requirements for impermeability for category 1 tested after method 2 in EN 1304
 The tiles comply with the requirements for frost resistance according to method E in EN 1304 after 150 cycles, level 1 in EN 1304
 The tiles comply with the requirements for flexural strength subjected to a load of at least 1200 N. The bending strength for 528 x 170 x 37 mm tiles with support spacing of 350 mm is 2,23 kN and for 528 x 240 x 37 mm tiles with support spacing of 350 mm is 3,53 kN

The behavior after pulsating loads is considered covered by the wind load test

The behavior after immersion in water, dimensional stability (by temperature and by humidity), chemical and biological resistance, UV radiation resistance and corrosion of metal components are considered not to be relevant and have not been assessed.

Wind load resistance of the tiles

Mechanical resistance against wind suction resistance has been determined taking into account the mechanical resistance of components (see below) and wind suction tests on the basis of EN 14437.

The maximum permissible deflection for the Petersen Cover with the dimensions 528 x 240 x 37 mm:

$$d_{\max} = \frac{75 * l_h}{400} = \frac{75 * 240}{400} = 45 \text{ mm}$$

Where l_h is the hanging length of the tile in mm.

Lifting resistance of "Petersen Cover" 528 x 170 x 37 mm:

$$R_{(\alpha)} = m_{\text{fixing}} * R_{k,f} + W_k * \frac{\cos \alpha}{\cos(0^\circ)} = 2 * \frac{464}{2} + 42 * \frac{\cos(73^\circ)}{\cos(0^\circ)} = \mathbf{433 \text{ N}}$$

Lifting resistance of "Petersen Cover" 528 x 240 x 37 mm:

$$R_{(\alpha)} = m_{\text{fixing}} * R_{k,f} + W_k * \frac{\cos \alpha}{\cos(0^\circ)} = 2 * \frac{464}{2} + 63 * \frac{\cos(78^\circ)}{\cos(0^\circ)} = \mathbf{410 \text{ N}}$$

With:

$R_{(\alpha)}$ the average resistance of partially or completely fixed tiles with a slope α per tile;

m_{fixing} the average number of fixings per tile;

$R_{k,f}$ the characteristic lifting resistance of each fixing according to E.1 in EN 14437 in N;

W_k the theoretical force required for the lifting of an unfixed tile from the battens with a slope of 0° according to E.1 in EN 14437;

α the slope.

The following wind suction force resistance capacities are derived from the determined lifting resistance depending on the surface area of the façade tile:

Wind force resistance capacity of "Petersen Cover" 528 x 170 x 37 mm:

$$R_{ws} = \frac{0,433 \text{ kN}}{0,528 * 0,17} = \mathbf{4,8 \text{ kN/m}^2}$$

Wind force resistance capacity of "Petersen Cover" 528 x 240 x 37 mm:

$$R_{ws} = \frac{0,410 \text{ kN}}{0,528 * 0,24} = \mathbf{3,2 \text{ kN/m}^2}$$

Annex B
Build-up of cladding kits with aluminium profiles and timber battens

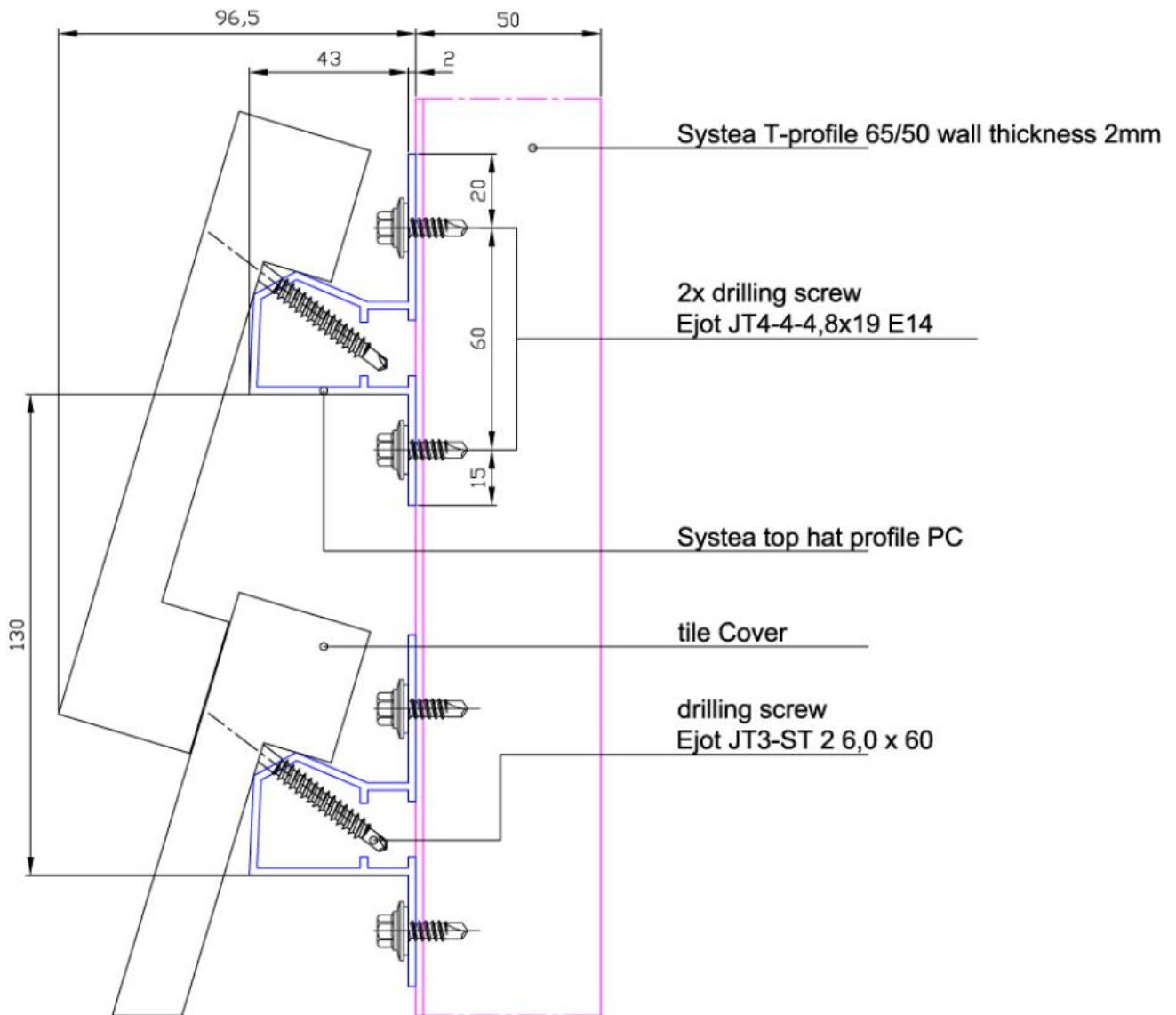


Figure B.1: Assembly items aluminum support construction

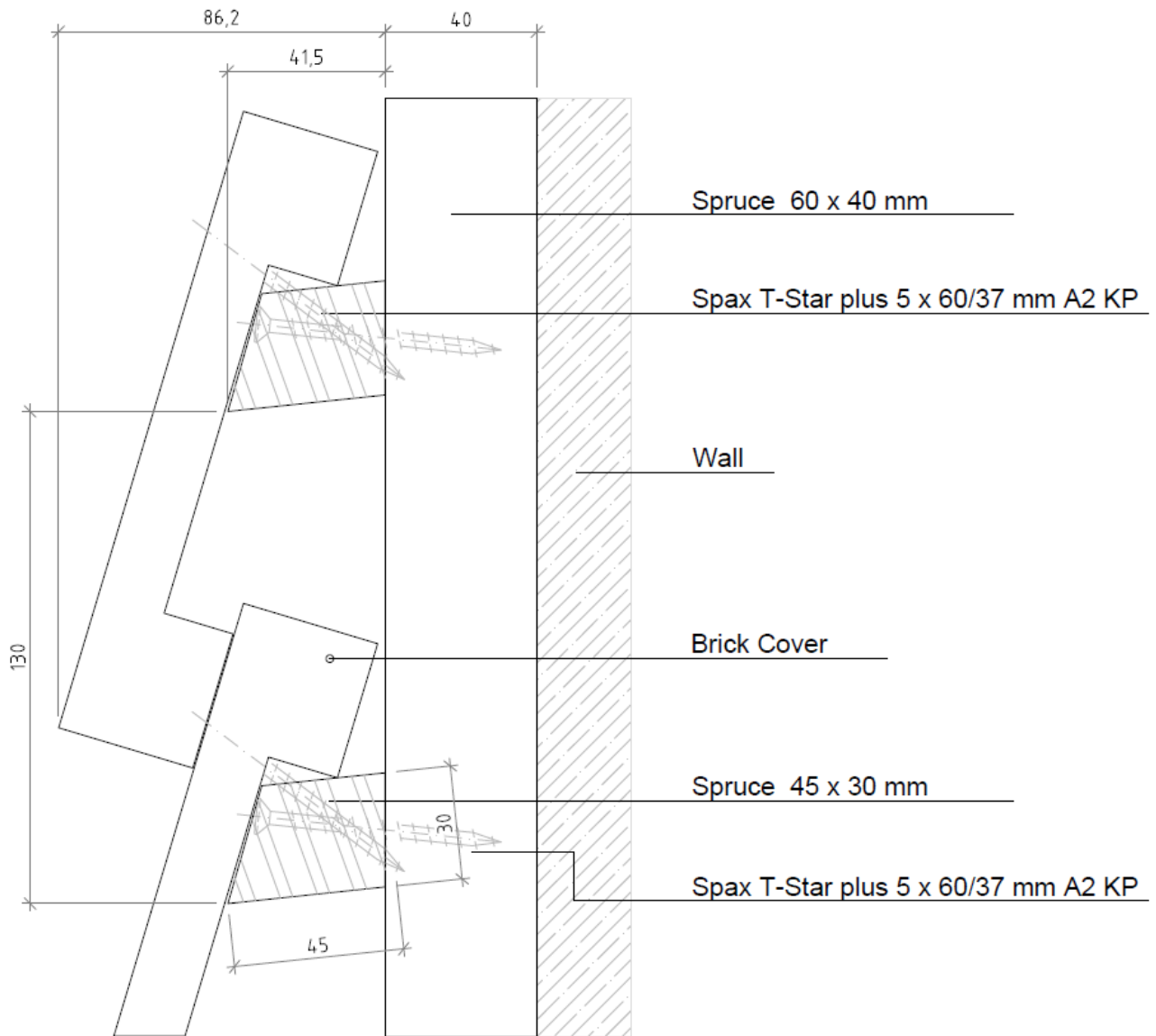


Figure B.2: Assembly with timber support construction