

# FIRE TECHNICAL ASSESSMENT

<b>Name of sponsor:</b>	NIC Denmark A/S		
<b>Product name:</b>	Wall panel system (WPS)		
<b>File no.:</b>	PHA11503A	<b>Revision:</b>	6
<b>Date:</b>	15-02-2022	<b>Expiry date:</b>	15-02-2024
<b>Pages:</b>	5	<b>Encl.:</b>	7
<b>Ref:</b>	MRD / CAN		

<b>Revision chronology</b>				
Rev. no.	Date	Description	Author	Approved
0	18-06-2021		MRD	CAN
1	29-06-2021	Correction in board size	MRD	CAN
2	02-07-2021	Adding of Danish text about "Bygningsreglementet" at bottom of page 5.	MRD	CAN
3	13-10-2021	Adding "wall panel system no. 2" (fer & not system with screws).	MRD	CAN
4	06-12-2021	Correction on wall panel system no. 2 thickness.	MRD	CAN
5	14-12-2021	Change in board size length from 2500 mm to 3000 mm	MRD	CAN
6	15-02-2022	Adding material thickness to include 18 mm	MRD	CAN

## Alternative fixation methods

NIC Denmark A/S has asked the Danish Institute of Fire and Security Technology (DBI) about a fire technical assessment regarding alternative fixation methods for one type of FERMACELL gypsum fiberboard for a covering, tested under file no. PG11522. The Fermacell gypsum fiberboards in the covering (PG11522) were mounted with 35 mm staples, c/c approximately 200 mm in rows per c/c 625 mm for further information see test report.

NIC Denmark A/S wants DBI to assess if the FERMACELL gypsum fiberboards tested under PG11522 can be installed with alternative mechanical fasteners such as clamps with 35 mm screws in a not system or 35 mm screws in fer & not system. - See costumer drawings no. 1 and 2.

### Fire technical documentation

NIC Denmark A/S has referred to the following accredited documentation:

Test report	Date	Standard	Mechanical fasteners
PG11522	15-11-2016	EN 14135:2003	Staples – (Type: unknown Size: 35 mm)

Classification report	Date	Standard	Based on test report	Classification
PC10069	06-10-2005	EN 13501-2:2016	PG11522	K1-10

### Mobile furnace test and additional assessment

#### Wall panel system no. 1 (not system with clamps and screws):

For details see costumer drawing in enclosure no. 1

NIC Denmark A/S have made a small scala test stored under file no. PGM10041A on an FERMACELL gypsum fiberboard measuring 600 x 300 x 14 mm (length x width x thickness) the test follows the principle described in EN 14135:2004 when testing an K1-10 covering. The goal was to see if it was possible to reduce the size of the board, cut a not with a thickness of app. 5 mm, increase the board thickness and change the fixation method.

The photo file. and the graphs show the results of the test where the thinner board at the not and the fixing method (clamps with 35 mm screws) passed the criteria stated in EN 14135. - **See photo sheet in enclosure 2 – 4**

The decrease in c/c per row for 625 mm to 300 – 310 mm will secure an increase fixation, as the boards are made in a smaller width of 300 mm.

An increase in overall board thickness increases the board performance regarding the insulation criteria.

#### Wall panel system no. 2 (fer & not system with screws):

For details see costumer drawing in enclosure no. 5

The system consists of a FERMACELL gypsum fibre board, with a fer in one side and a not in the other side. Board dimensions are 618 x 3000 x 15 mm. The board is fastened on the fer and not gathering with a 35 mm screw at a c/c 200 mm in row per c/c 616 mm

The decrease in c/c per row from 625 mm to 618 mm will secure an increased fixation, as the boards are made in a smaller width of 618 mm. The fer and not system will increase the fire protection ability for the supporting system as the boards fully closes around each other.

An increase in overall board thickness from 10 mm to 15 mm will increase the board performance regarding to the insulation criteria.

## Variation:

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NIC Denmark A/S has asked DBI to assess the following variations:

### **Wall system no. 1 (not system with clamps):**

- Change from stapels (35 mm) to (metal clamps with 35 mm screws), with c/c 200 mm in row per c/c 610 mm
- Reduce the size of the board from 3000 x 1250 mm to 3000 x 600 mm
- Cut a not with a thickness of approx. five mm at the board edges.
- Increase the overall board thickness from 10 mm to a board thickness of 14 mm or a board thickness of 18 mm.

### **Wall system no. 2 (fer & not system with screws):**

- Change from stapels (35 mm) to (35 mm screws), with a distance of c/c 200 mm in row of approx. 616 mm c/c
- Reduce the size of the board from 3000 x 1250 mm to 3000 x 618 mm.
- Not max opening 4 mm. - **see costumer drawing in enclosure no. 6**
- Fer min thickness 3.8 mm. - **see costumer drawing in enclosure no. 6**
- Increase the overall board thickness from 10 mm to a board thickness of 15 mm or a board thickness of 18 mm.

## Assessment I

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### **Wall panel system no. 1 (not system with clamps and screws):**

It is the opinion of DBI based on the above mentioned that the metal clamps with 35 mm screws an c/c of 200 mm in rows of c/c 600 – 610 mm can be used, as alternative mechanical fastener for the gypsum fibreboards designated "Fermacell" and still have the same fire technical probertiesas a covering with the classification:

#### **Assessed DK K<sub>1</sub>-10 and K<sub>2</sub>-10**

On condition that:

- FERMACELL gypsum fiberboards with a maximum size of 3000 x 600 mm (length x width).
- One layer of FERMACELL gypsum fiber boards with a thickness of 14 mm or one layer of FERMACELL gypsum fiber boards with a thickness of 18 mm
- Horizontal, vertical and sloped application of the covering.
- With a closer spacing between the fixings (metal clamps with screws) than tested
- Minimum length of screw is 35 mm
- The covering is installed on substrates with a density more than 300 kg/m<sup>3</sup> for a covering designated K<sub>1</sub>-10
- The covering may be installed on all substrates for a covering designated K<sub>2</sub>-10

## Assessment II

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### **Wall panel system no. 2 (fer & not system with screws):**

It is the opinion of DBI based on the above mentioned that the 35 mm screws with c/c of 200 mm in rows of c/c 616 mm can be used, as alternative mechanical fastener for the gypsum fibreboards designated "Fermacell" and still have the same fire technical properties as a covering with the classification:

#### **Assessed DK K<sub>1</sub>-10 and K<sub>2</sub>-10**

On condition that:

- FERMACELL gypsum fiberboards with a maximum size of 3000 x 618 mm (length x width).
- One layer of FERMACELL gypsum fiber boards with a thickness of 15 mm or one layer of FERMACELL gypsum fiber boards with a thickness of 18 mm
- Horizontal, vertical, and sloped application of the covering.
- With a closer spacing between the fixings (screws) than tested.

- Minimum length of screw is 35 mm.
- The covering is installed on substrates with a density more than 300 kg/m<sup>3</sup> for a covering designated K<sub>1</sub>-10
- The covering may be installed on all substrates for a covering designated K<sub>2</sub>-10

## Validity

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This assessment is issued on the basis of test data and information available at the time of the issue. If contradictory evidence becomes available to DBI the assessment will be unconditionally withdrawn, and the manufacturer will be notified in writing. Similarly, the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion.

The assessment is valid for 2 years from the date of issue. DBI must reassess the validity after this period.

The assessment is only valid provided that no other modifications are made to the tested construction, other than those described in this report.

## Limitation

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This is a national assessment and cannot be equated with a classification based on EN 13501-2.

Bygningsreglementets vejledning og bilag til kapitel 5 – Brand beskriver, at præ-accepterede løsninger forudsætter anvendelse af byggevarer og bygningsdele indenfor de forudsætninger, der er fastlagt for produktets klassifikation. Anvendelse af byggevarer og bygningsdele uden for det anvendelsesområde, der er defineret for produktet, kan have betydning for den brandstrategi, der udarbejdes for det konkrete byggeprojekt. Det er derfor vigtigt, at byggeprojektets brandrådgiver er informeret om disse forhold. Der henvises i øvrigt til bygningsreglementets vejledning til kapitel 5 – Brand, Kapitel 8.6 omkring eftervisning og brandklasse. Det er DBI's vurdering, at denne bedømmelse falder under b) i afsnit 8.6, hvorved dokumentet kan anvendes som dokumentationsform for bygninger i alle brandklasser, uden at denne bedømmelse ændrer bygningens brandklasse.

### Danish Institute of Fire and Security Technology



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**Mathias Revall Delcomyn**  
BTecMan & Mar.Eng



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**Christian Bjerglund Andersen**  
Civ.Eng (M.Sc)

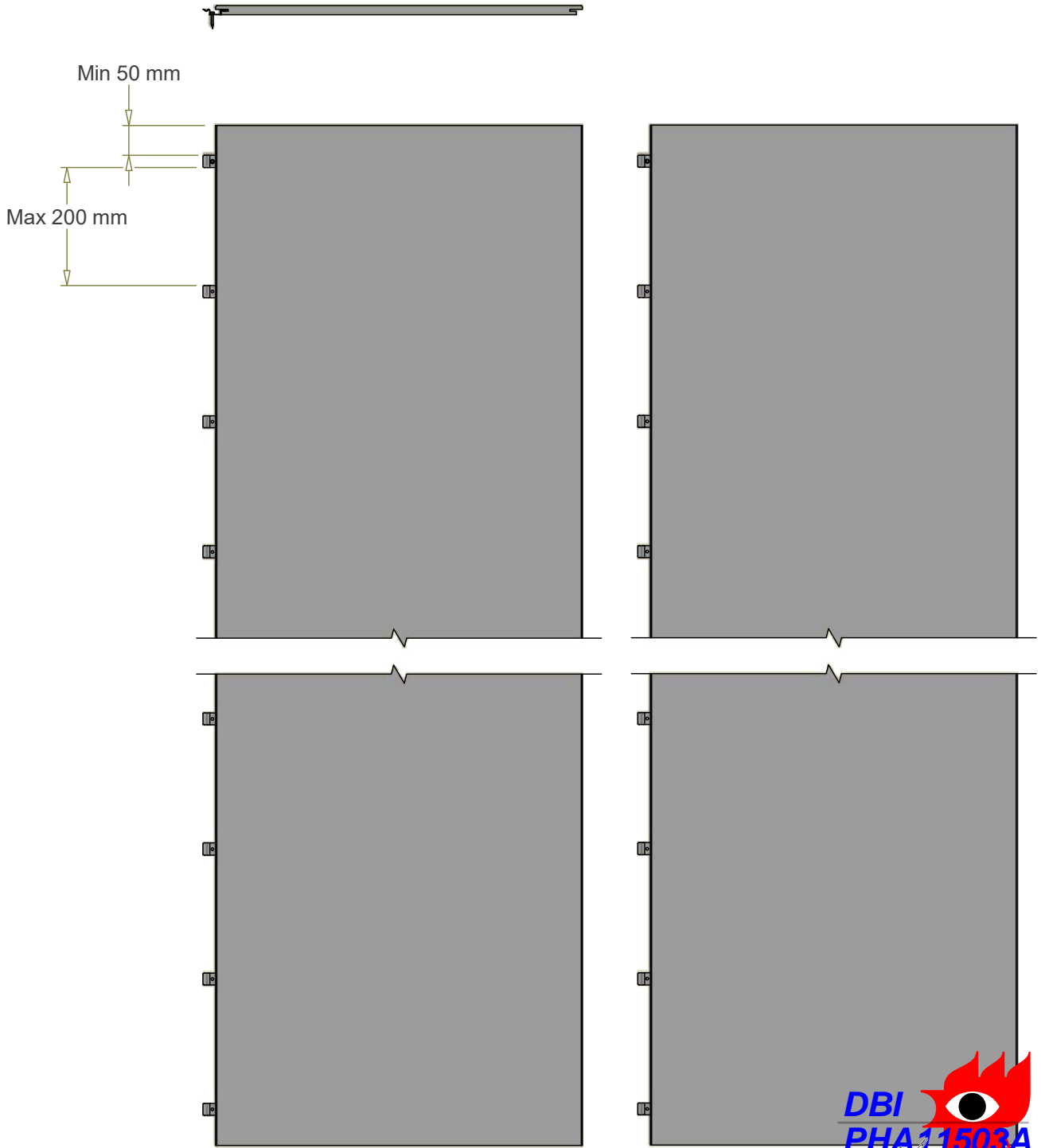
### NIC Denmark ApS

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Elmevej 16, Glyngøre

7870 Roslev

Denmark



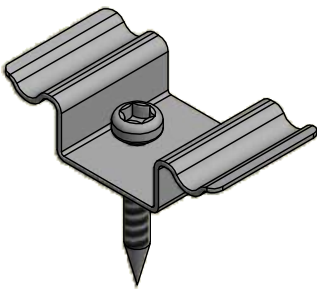
**DBI**  
**PHA11503A**

*J.R. Pedersen*

NIC Denmark anbefaler!

Panhoved Skruer  
3,5 x 25 mm

Tolerance ±0.2




 <b>NIC Denmark</b> Nordic InnerCore		Date: 04-10-2021	Sign: JN
		Draw.no.:	
Art.number:	<b>Assembly3</b>	Rev.Date:	Sign:
Titel:			
Wall Panel System (WPS)			
Placering Beslag			
Montage på træ			
All materials:		NIC Denmark. www.NordicinnerCore.dk clipon@NordicinnerCore.dk	
Surfaces:			
S:\Tegninger\WPS\WPS Groove\Assembly3.iam			



Photo No. 1 Test specimen seen after test end



Photo No. 2 Damages on the wooden lath

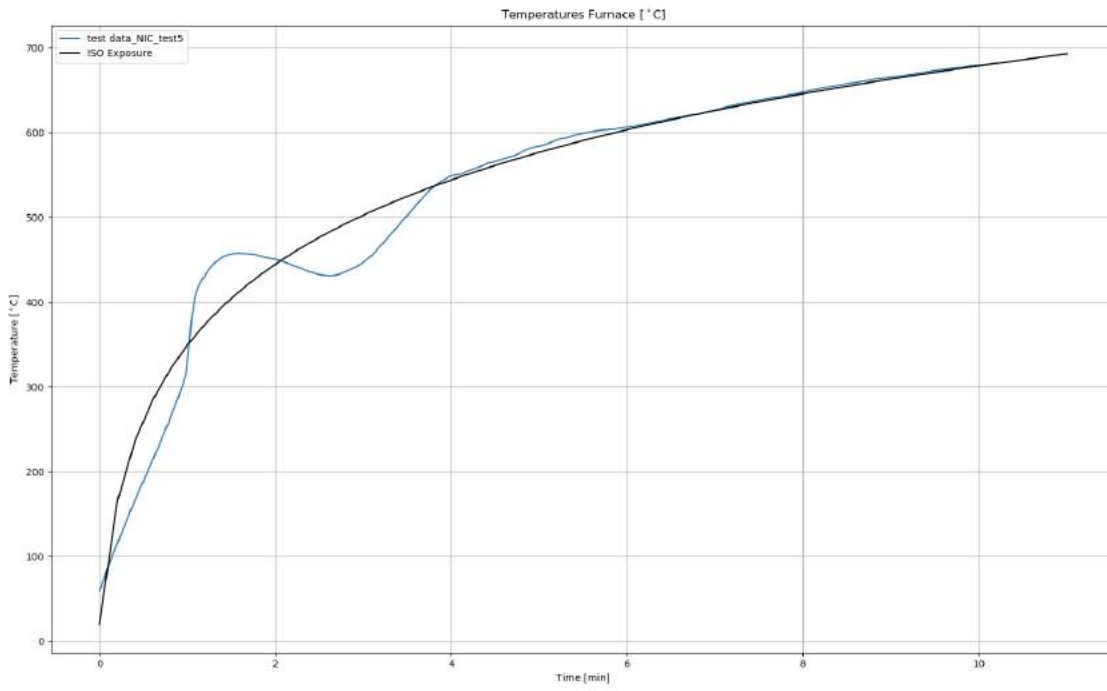


Photo No. 3 Temperatur Furnace

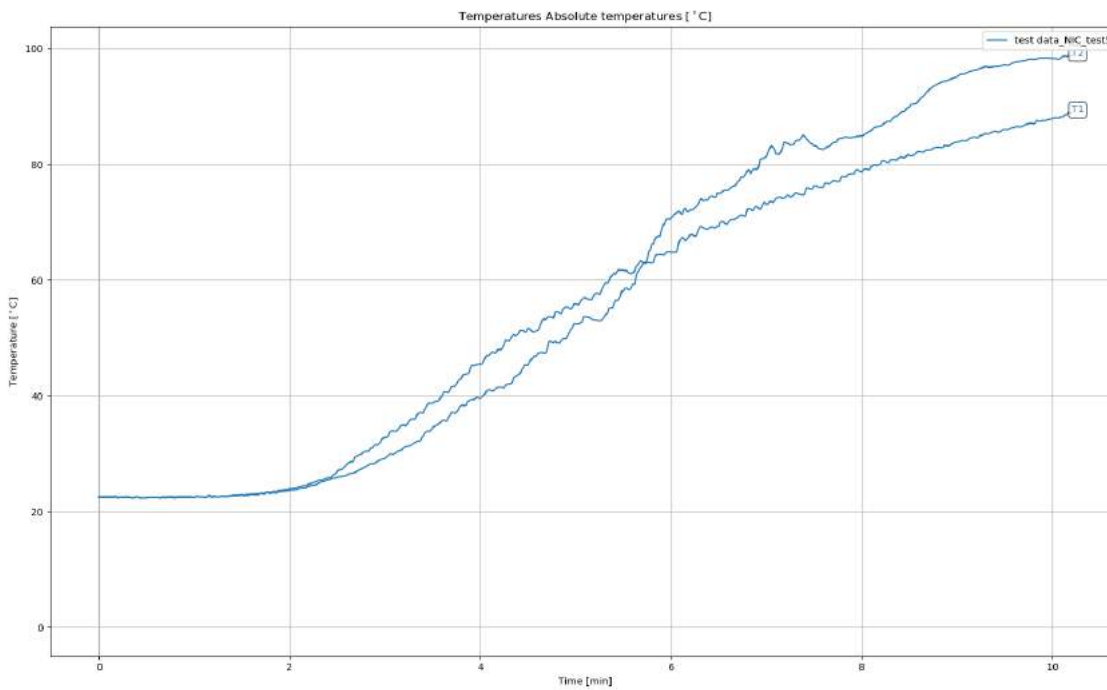


Photo No. 4 Temperatur Absolute Temperatures



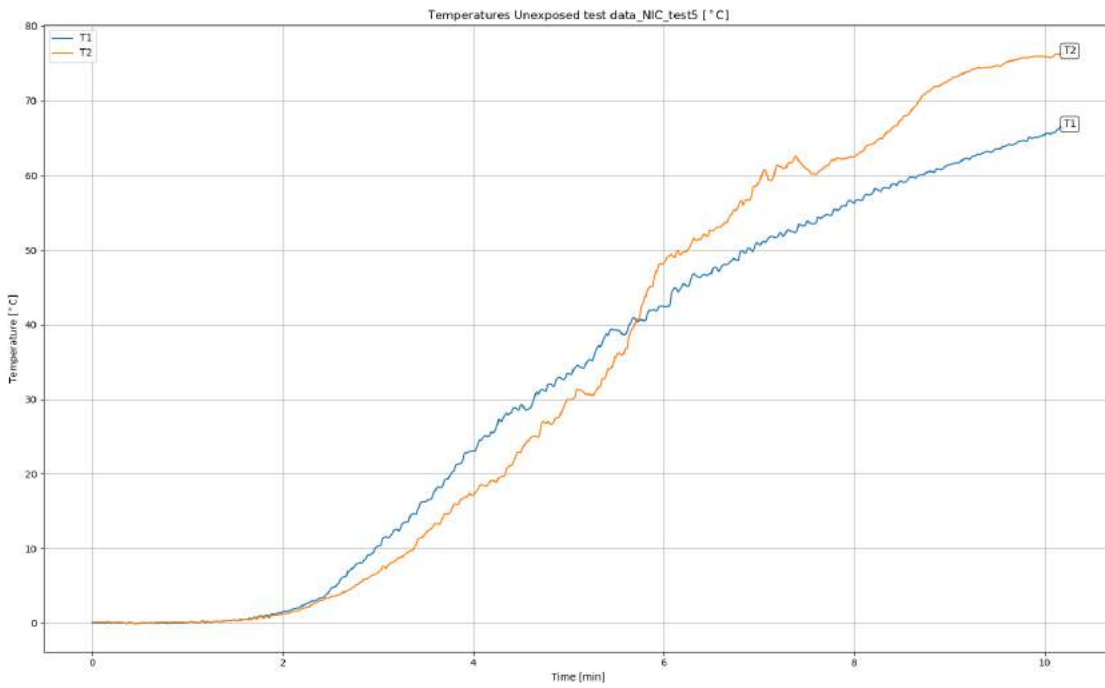


Photo No. 5 Temperatures unexposed side

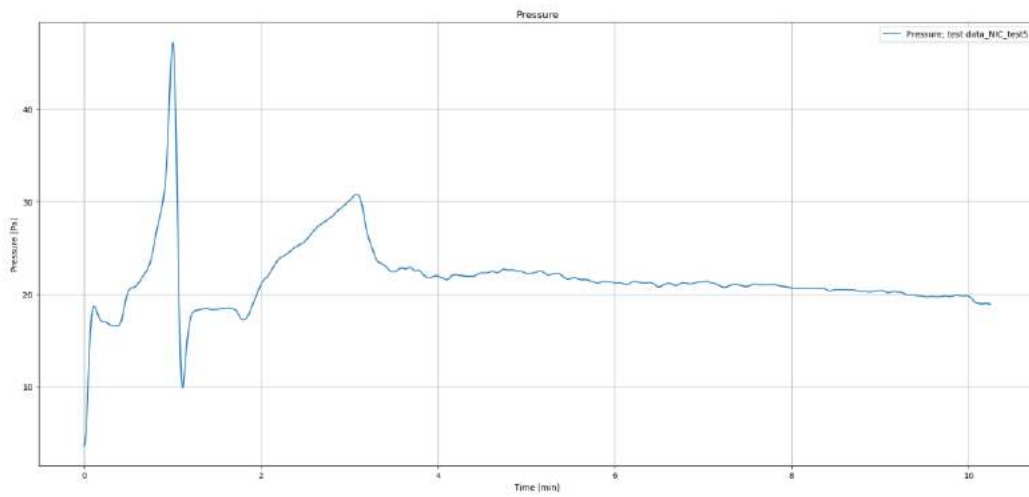
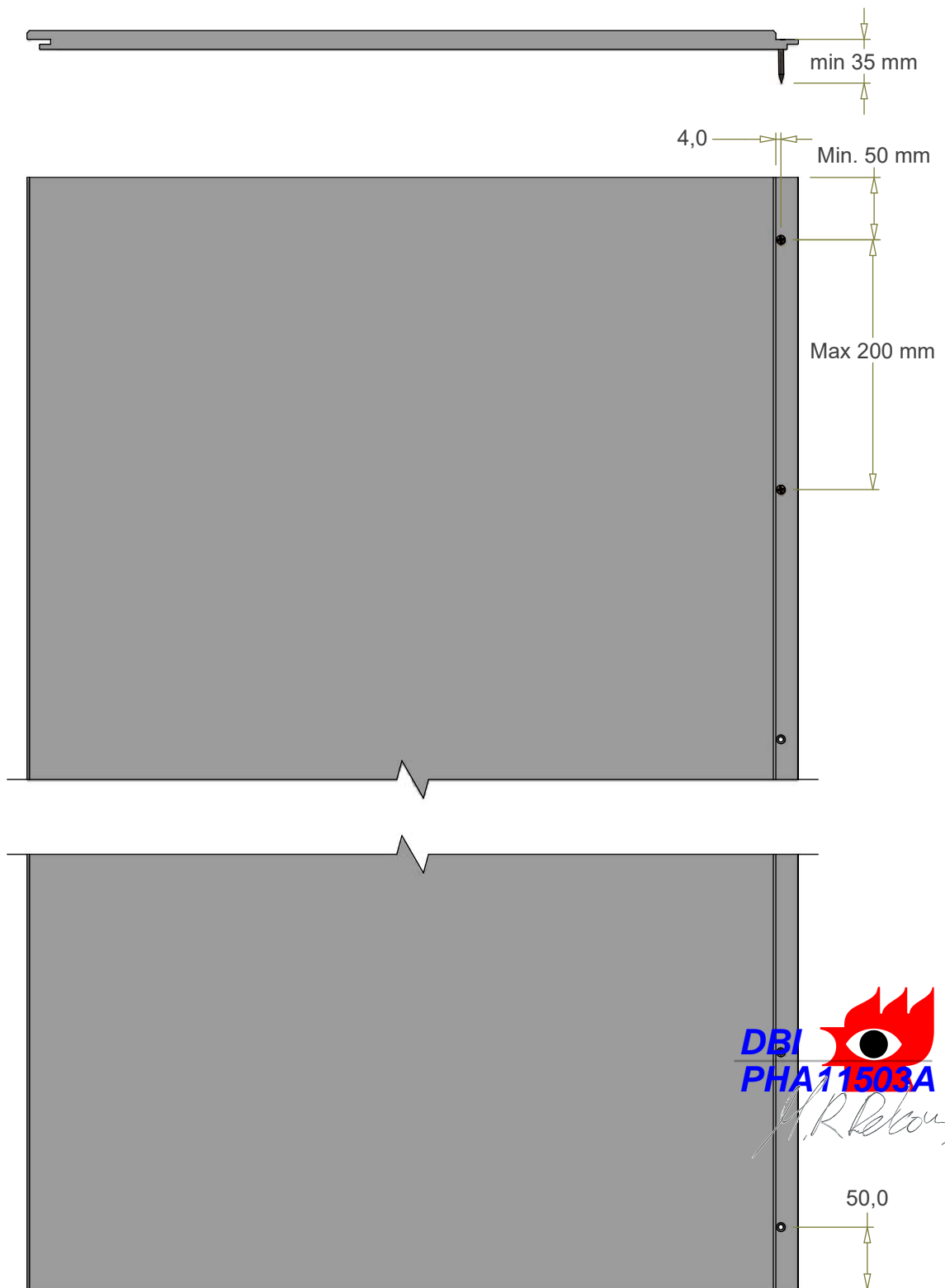


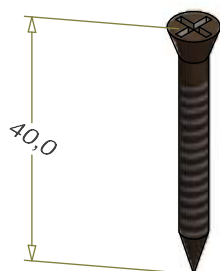
Photo No. 6 Furnace pressure




**DBI**  
**PHA 11503A**  
*J.R. Pedersen*

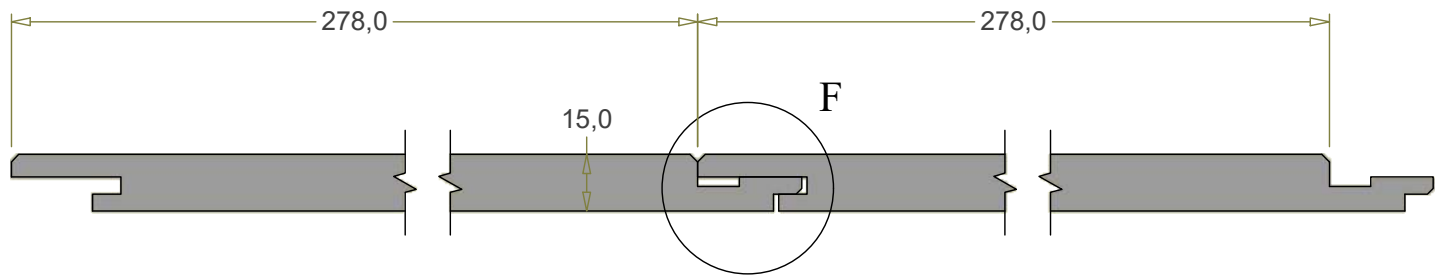
Tolerance  $\pm 0.2$

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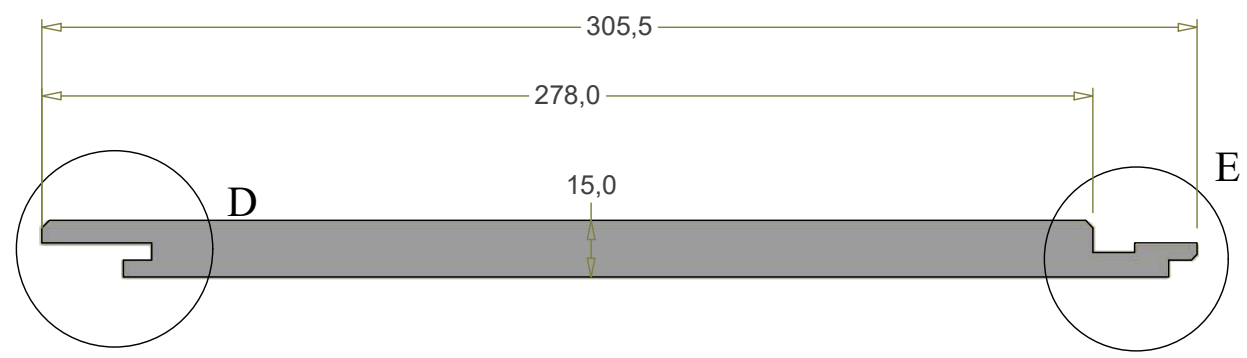
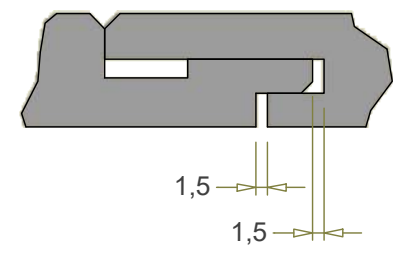


Fermacell Skrue  
3,9 x 40 mm

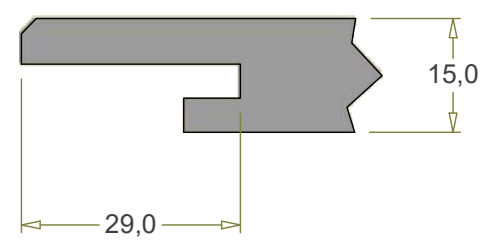
 <b>NIC Denmark</b> Nordic InnerCore		Date: 28-09-2021	Sign: JN
Art.number: Assembly board screw		Draw.no.:	
Titel: Wall Panel System (WPS) Skrueplacering Montage på træ		Rev.Date:	Sign:
All materials:		NIC Denmark. www.NordicinnerCore.dk clipon@NordicinnerCore.dk	
Surfaces:			
S:\Tegninger\WPS\Assembly board screw.iam			



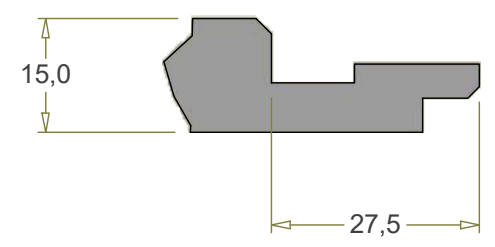
F (1 : 1)




D (1 : 1)

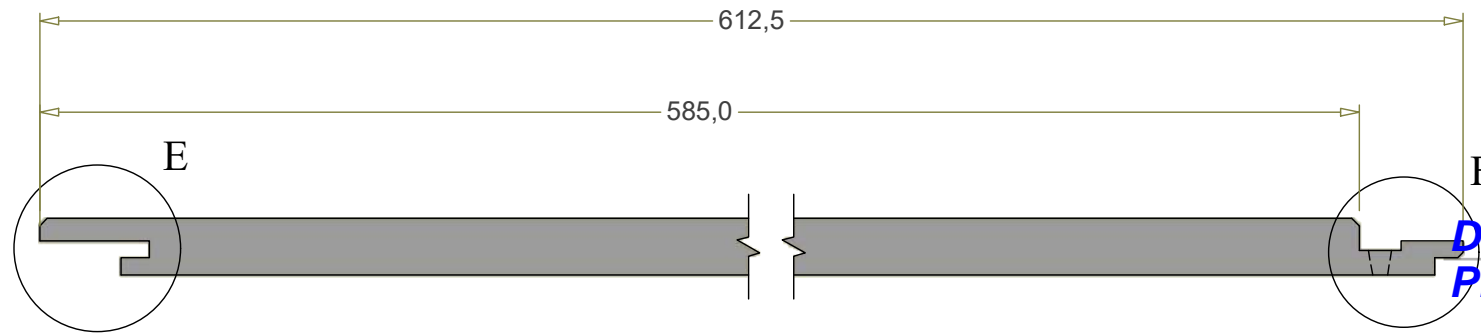
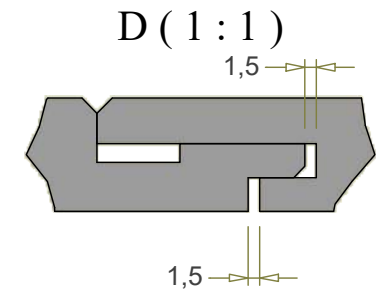
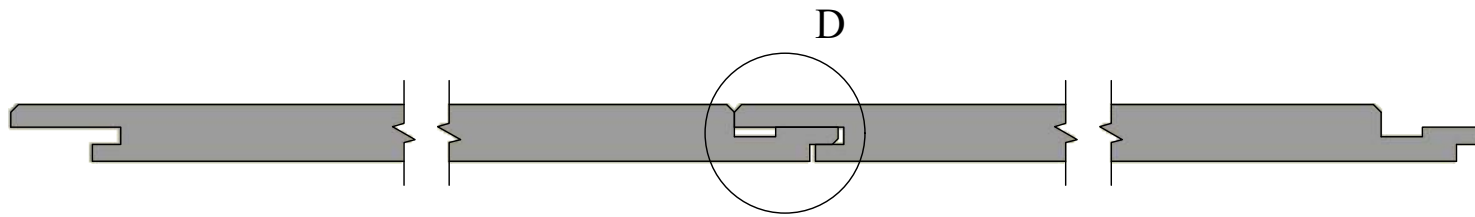


E (1 : 1)



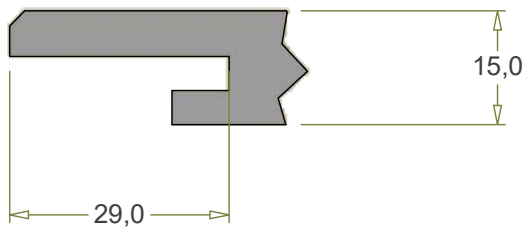
Tolerance ±0.2

 <b>NIC Denmark</b> Nordic InnerCore	Date: 27-10-2021	Sign: JN
	Draw.no.:	
Art.number: <b>Assembly300</b>	Rev.Date:	Sign:
Titel: Wall Panel System Fer & Not samling WPS 15mm	<b>30-11-2021</b>	<b>JON</b>
All materials:	NIC Denmark. www.NordicinnerCore.dk clipon@NordicinnerCore.dk	
Surfaces:		
S:\Tegninger\WPS\Assembly300.iam		

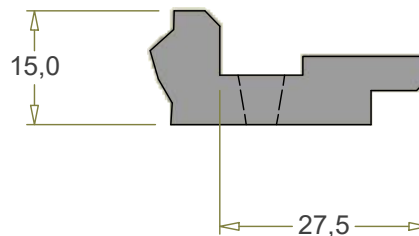


**DBI**  
**PHA11503A**  
*J.R. Pedersen*


E (1:1)



F (1:1)



Tolerance ±0.2

 <b>NIC Denmark</b> Nordic InnerCore	Date: 18-10-2021	Sign: JN
	Draw.no.:	
Art.number: <b>Assembly 15mm</b>	Rev.Date:	Sign:
Titel: Wall Panel System Fer & Not samling WPS 15mm	<b>30-11-2021</b>	<b>JON</b>
All materials:	NIC Denmark. www.NordicinnerCore.dk clipon@NordicinnerCore.dk	
Surfaces:		
S:\Tegninger\WPS\Assembly 15mm.iam		