NTF- Produksjonskurs – trekonstruksjoner med spikerplater

13. og 14. januar 2015

Quality Airport Hotel Gardermoen

Produksjonsutstyr og leverandørnytt

Morten Grinderud

Kartro - ITW Constuction Products AS

- ITW = Illinois Tool Work
  Børsnotert i USA
- Representert i 58 land
- Omsetning på 17 milliarder i USA dollar
- Omsetning i Norge er 140 millioner

- Markedsledende innenfor luft- og gasspikring
- Komplett systemleverandør innenfor festeteknikk som omfatter spikerplater, spiker, skruer, plugger, bygnings-beslag, bolter …
- Vi designer, utvikler og produserer våre egne merkevarer for den profesjonelle sluttbruker som distribueres via ITW`s egne distribusjonsenheter
- Salgsorganisasjonen dekker hele landet

- ITW Tremontasje

	Kartro	DUO-FAST	Haubold	Paslode	Cullen
Inntrykker	✓				
Luftverktøy		✓	✓	✓	
Gassverktøy				✓	
Spikerplater	✓				
Spiker	✓	✓	✓	✓	
Kramper		✓	✓	✓	
Dykkert & Pin-spiker		✓	✓	✓	
Byggbeslag				✓	✓
Adjufix	✓				

ITW – Takstol commitment

	Nord Amerika	South Africa	UK	Nordic	Australia N.Zealand
Alpine	✓		✓		
Truswal Systems	✓				
Pryda					✓
Kartro				✓	
Gang-Nail		✓	✓		

Gassverktøy

Paslode IM 45CW

Paslode IM50 F18

Paslode IM90i

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Luftverktøy

CNP75.1 – spikerpistol coil

S150 W16 - krampepistol

KCF100 - bølgestiftpistol

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TOOLMATIC®

AUTOMATED FASTENING SYSTEMS

10 – LONG MAGAZINE

20 – TOP LOADER

30 – SIDE LOADER

40 – CASSETTE LOADER

50 – HORIZONTAL COIL

50 – VERTICAL COIL

60 – HOPPER FEED

70 – ROBOT STATION

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Kompressorer

Betongfestemateriell

- Spikerplugg/slagplugg
- Div. andre plugger
- Ekspresspiker og betongspiker
- Isoholder
- Exbolter
- Betongskruer

Boltepistol - skuddmontasje

Stort utvalg av forbruk f. eks:

- Krutt
- Gass
- Feste i stål og betong

Skruer og bolter

Vi leverer skruer og bolter til bruk både inne og ute, f. eks.:

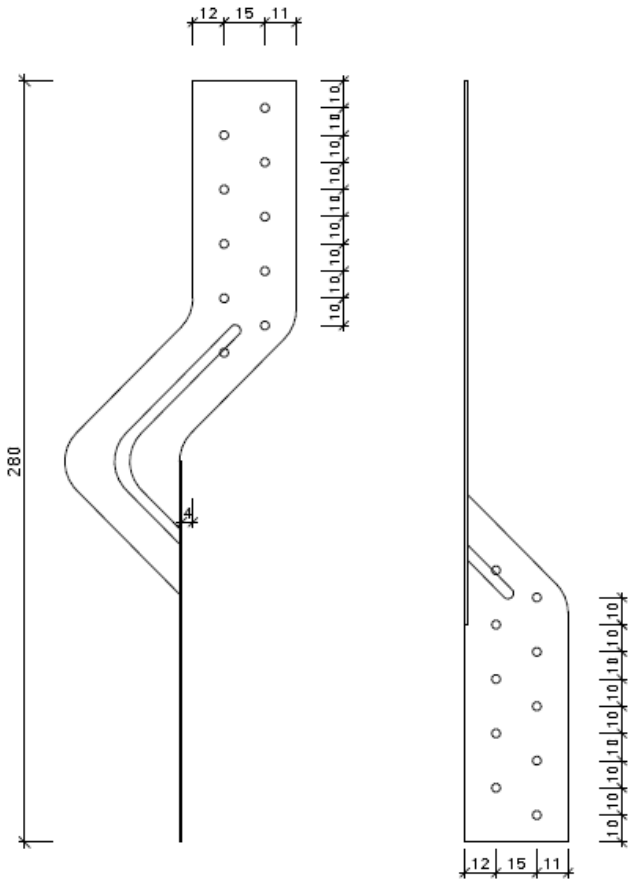
- Treskruer
- Gipsskruer
- Sponskruer
- Terrasseskruer
- Div. spesialskruer (justerskrue, distanseskrue, karmanker o.l)
- Låsbolter
- Franske treskruer
- Div. gjengestenger, skiver og muttere

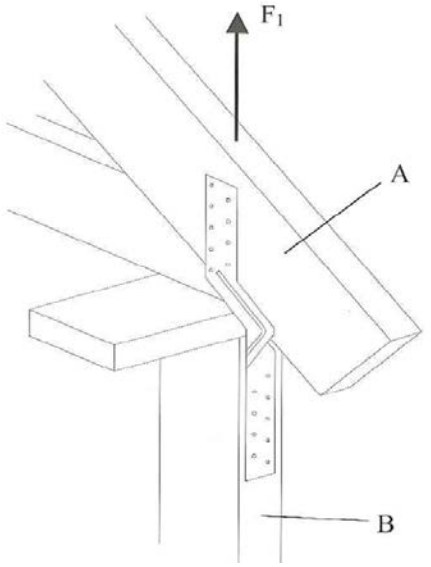
Spiker

- Håndspiker
- Coilspiker
- Stavspiker
- Kramper

Byggbeslag

- Byggvinkler
- Bjelkesko
- Hullplater
- Takstolforankring
- Gaffelanker
- Takåsanker
- Universalbeslag
- Torvtakkrok
- Rennekrok
- Søylesko

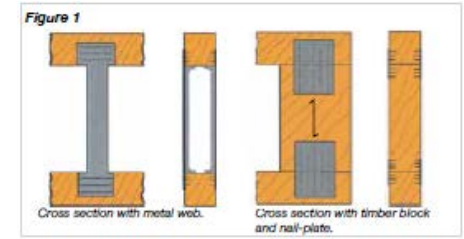


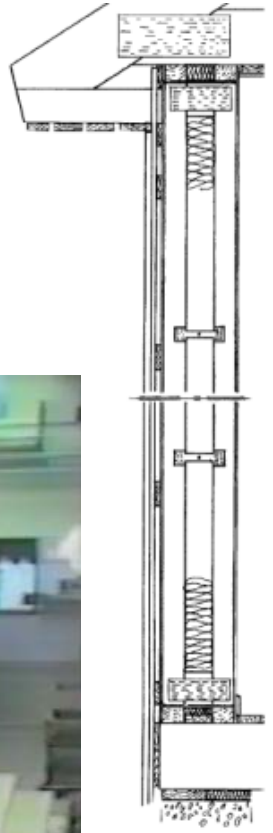


Takstolforankringsjern

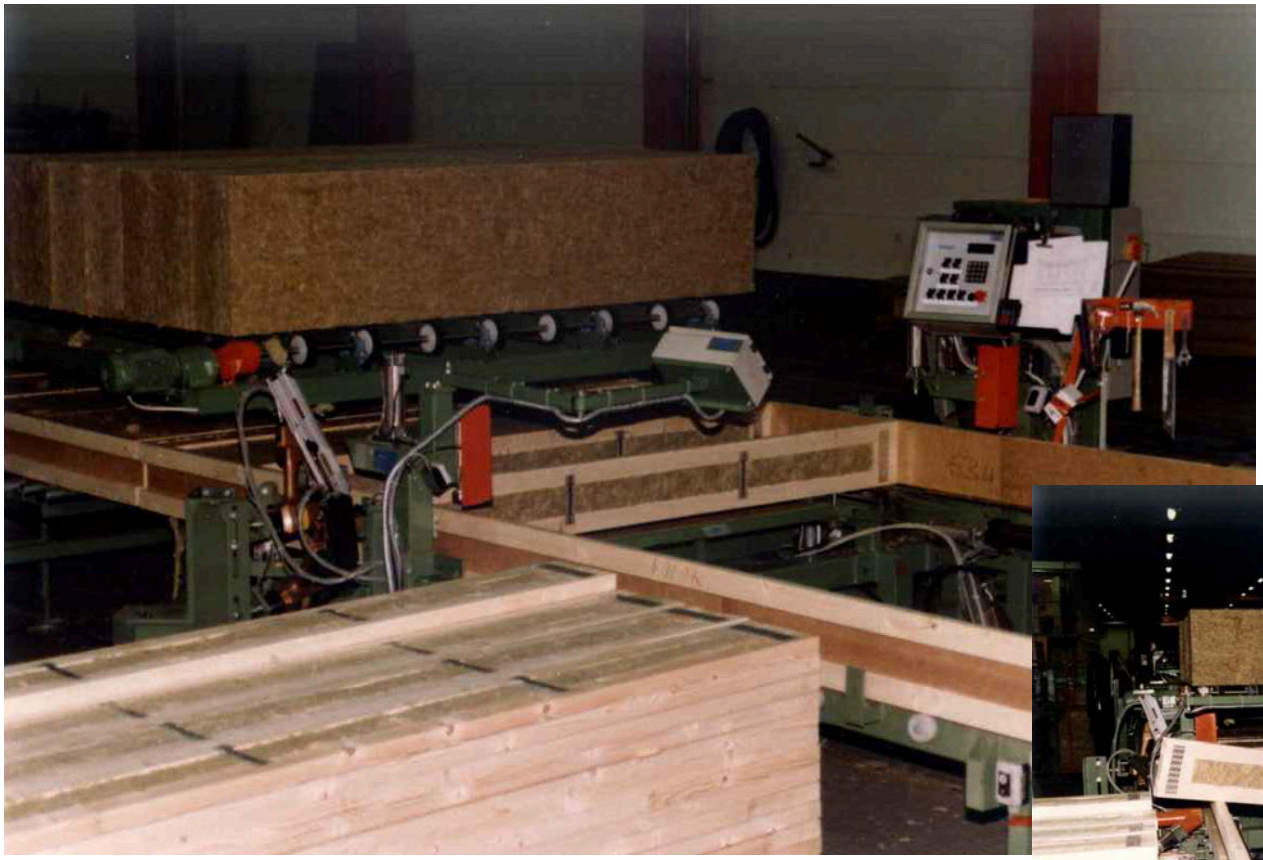
ITW Construction Products

Kartro Lettstender Presser





Kartro Lettstender i elementlinje



Kartro Lettstender - prosjekteringsunderlag

1. DESCRIPTION OF KARTRO SPACE STUD

Kartro Space Stud is a wall stud with timber flanges joined with Kartro metal web strut or timber blocks and nail-plates. Figure 1 shows different cross-sections. The web struts and the nail-plates are symmetrically mounted on both sides.

Figure 1

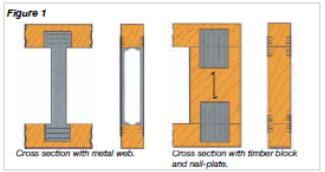


Figure 1 Example of cross sections for Kartro light stud. The space between the flanges is filled with mineral wool based on glass or stone.
Timber blocks (min. width 95 mm) between the flanges can also be used for lintels and the mounting of windows and doors. The nail-plates shall be the approved Kartro PTN, min. size 52x76 mm. ‖ direction of the grain.

Figure 2

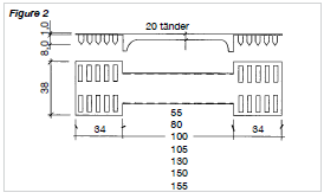


Figure 2 shows the web struts.

Material data:

Plate thickness:	1.00 mm
Yield strength min:	350 MPa
Ultimate strength min:	420 MPa
Elongation:	$A_{80mm} \geq 16$ %
Zinc coating:	275 g/m²

2. APPLICATION AREAS

Kartro Space Stud is intended for use as load-bearing element in wall structures. The stud can simultaneously be exposed to vertical loads and transverse loads from wind.
Kartro Space Stud is intended for use in Service classes 1 and 2 according to Eurocode 5 which means in constructions protected from rain except for a short period during erection. Timber for the flanges must be graded structural timber with a cross section of at least 45 x 45 mm. Thinner cross sections (min 34 mm) can be used for not load-bearing studs, f.i. nogging pieces. The flanges of the stud must be braced against lateral deflection, either with sheathing or horizontal timber bars spaced maximum 600 mm if sparser bracing is not clearly adequate.

3. DESIGN LOAD-BEARING CAPACITIES

Kartro space stud has been tested in full scale wall elements exposed to vertical and transverse load. A calculation model based on the tests has been established by SP/Trätek "Evaluation as a basis for issue of an ETA" 2009-12-18, revised 2010-09-21. The model presupposes that the flanges are braced against lateral deflection either with sheets or horizontal timber bars spaced maximum 600 mm. The load-bearing supports for studs at top and bottom must be arranged so that the vertical force is applied at the stud's center of gravity.
Today is the yield strength of the metal web 350 MPa which has been used when calculating the design load according to the model and the Appendix to the Evaluation Report.
The calculation model provides the design vertical load-bearing capacity R_d with simultaneously acting horizontal load w, e.g. wind pressure for two load types M and S according to figure M and figure S. Design value S_d for the vertical load is calculated according to SS-EN 1995-1-1:2005 (eurocode 5) and EN-1990:2002 with detailed figures from BFS: 2003:3, EKS 6 table A1.2 (B)(S) where:

k_{mod} =0.8 for load type M
=0.9 for load type S
γ_m =1.3

Design values based on above assumptions for Sweden for various studs are presented in Figures 4 to 12. The values are presented with simultaneously acting wind pressure w= 0.4, 0.5, 0.6 or 0.7 kN/m² and form factor 1.2. The load –bearing capacity is given for studs with timber flanges in strength class C18 according SS-EN 338. The length (height) of the studs is set to 2400 mm. Recalculation factors are given for other strength classes and stud lengths.

Figure 3

Web strut		Timber flanges							
Item code:	Inner depth:	45	45	70	45	70	70	95	45
R055	55	145		170		195		195	
R080	80	170		195		220		220	
R100	100	190		215		240		240	
R105	105	195		220		245		245	
R130	130	220		245		270		270	
R150	150	240		265		290		290	
R155	155	245		270		295		295	

Figure 3 shows possible combinations of flanges and web struts to achieve various insulation thicknesses for the wall, all measures in m m.

Load – bearing capacity for Kartro Space Stud

Stud design:

Flanges: 45x45+45x45 mm
Struts: 6 pairs
Location: Outer struts are located 30 mm from the end of the timber, other struts are fitted with equal C-distances between the timber ends, see figure.

C-distance: 600 mm
Length: 2400 mm
Strength class: C18
Service class: 1 or 2

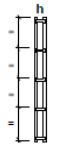


Figure 4

Characteristic velocity pressure, wind w_k = 0.40 kN/m²

		Load type M	Load type S
Height, h mm	Strut	Design load bearing capacity R_d kN	Design load bearing capacity R_d kN
145	R055	11.8	9.5
170	R080	10.8	8.6
190	R100	10.4	8.2
195	R105	10.3	8.1
220	R130	9.9	7.8
240	R150	9.8	7.6
245	R155	9.7	7.6

Characteristic velocity pressure, wind w_k = 0.50 kN/m²

		Load type M	Load type S
Height, h mm	Strut	Design load bearing capacity R_d kN	Design load bearing capacity R_d kN
145	R055	11.5	8.5
170	R080	10.5	7.6
190	R100	10.0	7.2
195	R105	9.9	7.1
220	R130	9.6	6.8
240	R150	9.4	6.6
245	R155	9.4	6.6

Characteristic velocity pressure, wind w_k = 0.60 kN/m²

		Load type M	Load type S
Height, h mm	Strut	Design load bearing capacity R_d kN	Design load bearing capacity R_d kN
145	R055	11.1	7.5
170	R080	10.1	6.6
190	R100	9.7	6.2
195	R105	9.6	6.1
220	R130	9.3	5.9
240	R150	9.1	5.7
245	R155	9.1	5.6

Characteristic velocity pressure, wind w_k = 0.70 kN/m²

		Load type M	Load type S
Height, h mm	Strut	Design load bearing capacity R_d kN	Design load bearing capacity R_d kN
145	R055	10.8	6.5
170	R080	9.8	5.7
190	R100	9.4	5.3
195	R105	9.3	5.2
220	R130	8.9	4.9
240	R150	8.8	4.8
245	R155	8.7	4.8

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NEW Uni-Roll

Open Web Beam Roller

Kartro

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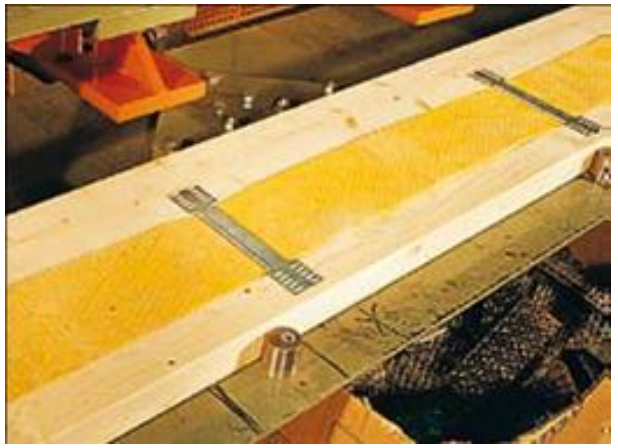
Alpine FloorTrus

PICTURE : FloorTrus JOISTS ON ANOTHER OCHIL PROJECT

PICTURE : 300mm TRIMMABLE TOLERANCE EACH END

SpaceJoist TE

Kartro Lettstender



DC600

SPL728 med stabler

Plukker

Auto Eye

Traversoppheng

Takstolpresse og pidestaller

Pidestall

Spikerplater

Kartro Introduserte spikerplater til det nordiske markedet og tilbyr i dag et komplett system for takstolproduksjon med dimensjoneringsprogram, takstolpresser og kappsager. Alle våre spikerplater er godkjente i Norden og Tyskland. De oppfyller kravene i EN14545 og er CE-sertifisert 0402-CPD-SC0567-10.

Kartro PTN-plate produseres i 1,0 mm tykk plate med strekkgrense 350N/mm². Tennene er 9 mm lange.

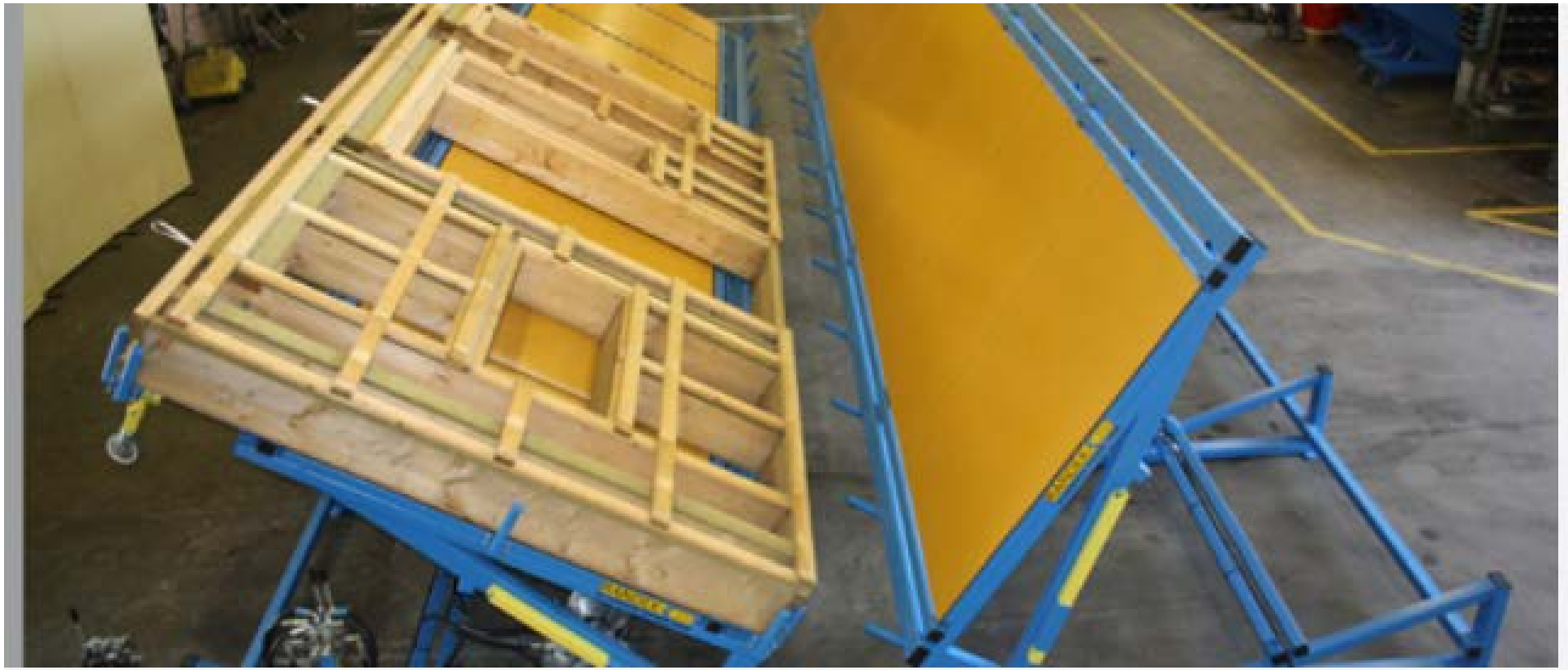
Kartro H-plate produseres i 1,25 mm tykk plate med strekkgrense 450N/mm². Tennene er 15 mm lange.

Kartro Kombi-plate har H-plate tenner på den ene halvdelen og hull for byggbeslagspiker på den andre.

Alle spikerplatene er varforsinket med minst 275 g zink/m².

Spikerplatene produseres i Sverige under regelmessig kontroll.

Elementjigg



Elementjigg/vendebord

Jigg for gulv/tak elementer

Presse