

Harpan



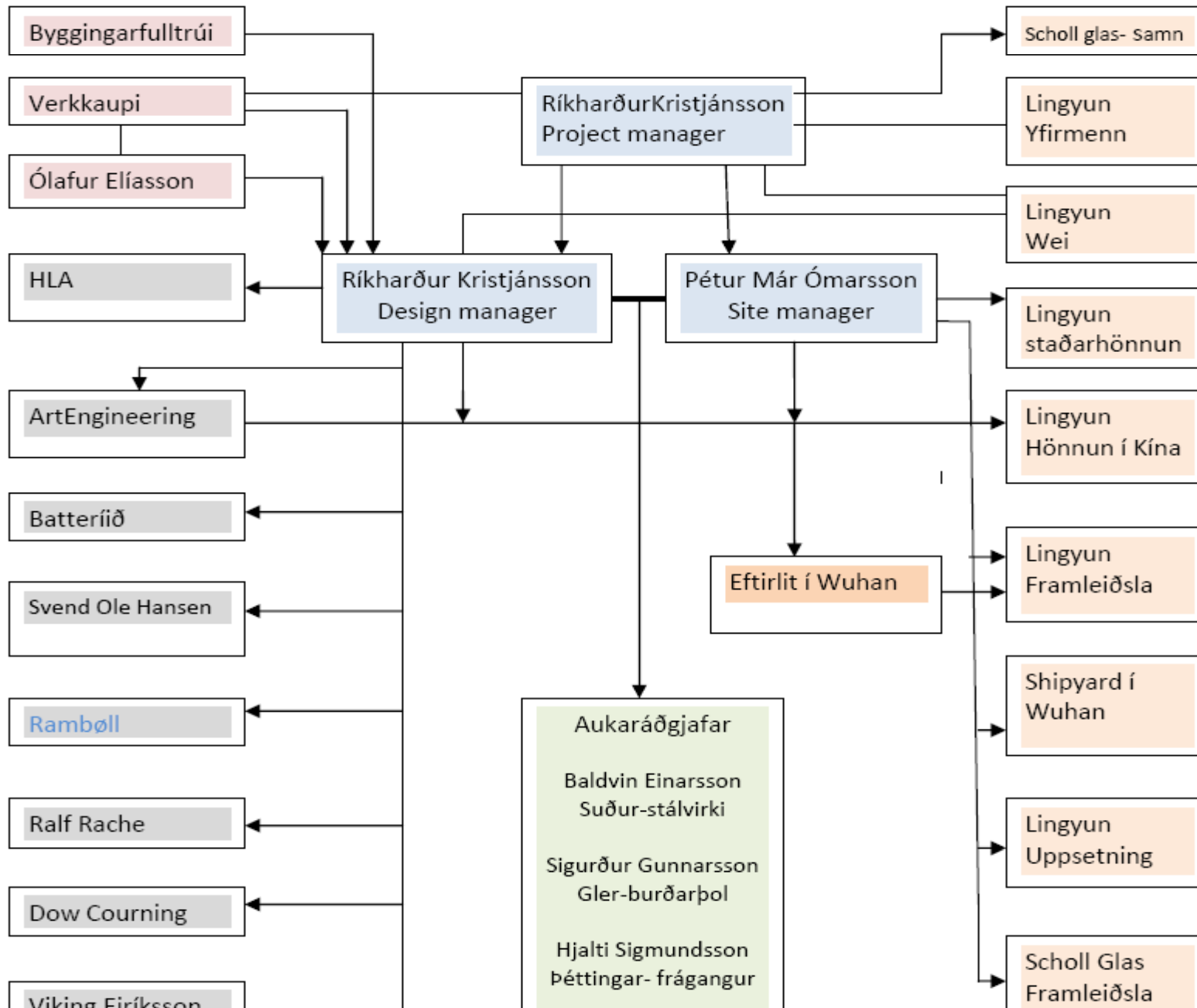


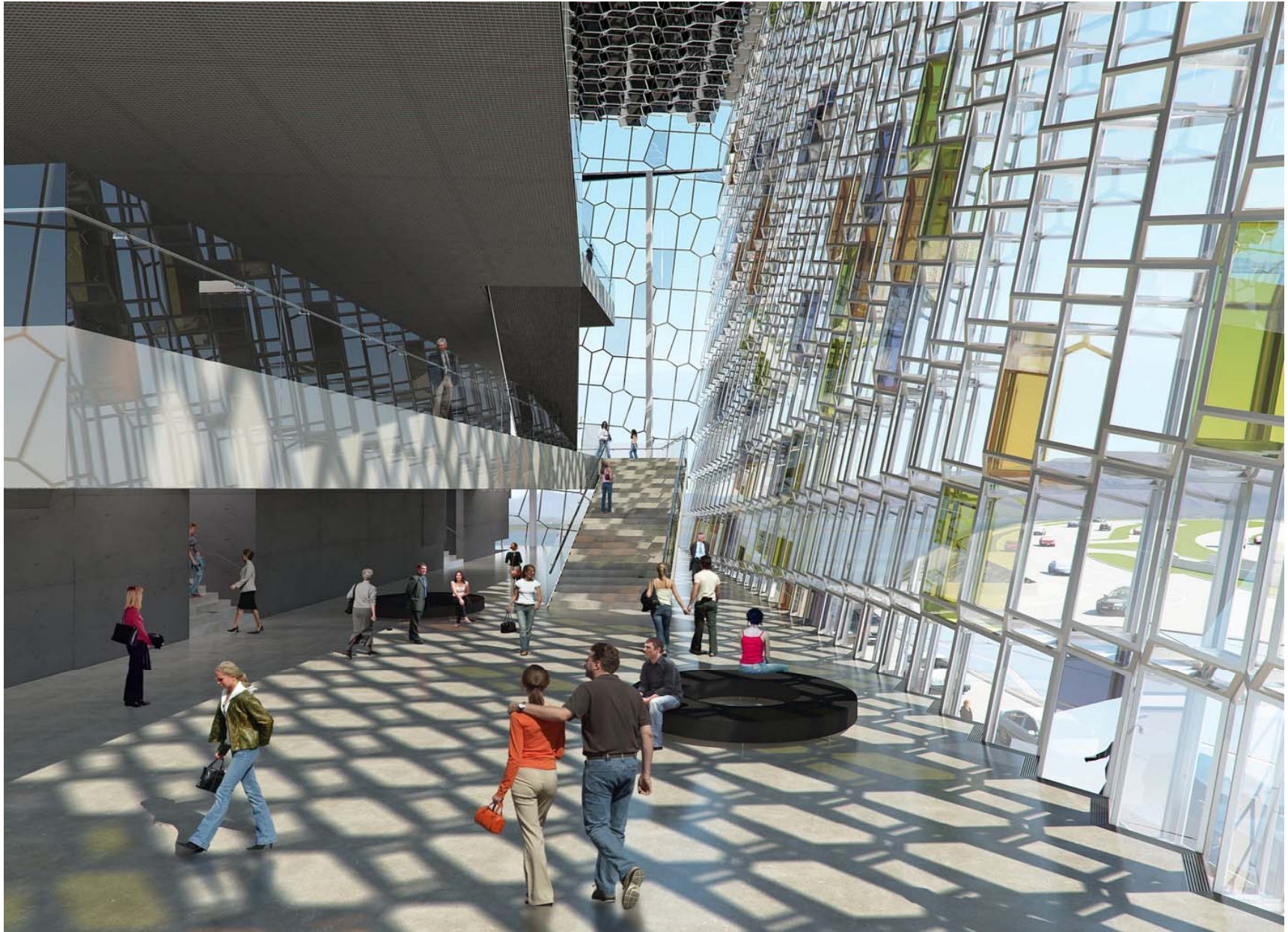
Þegar strengir Hörpunnar slitna

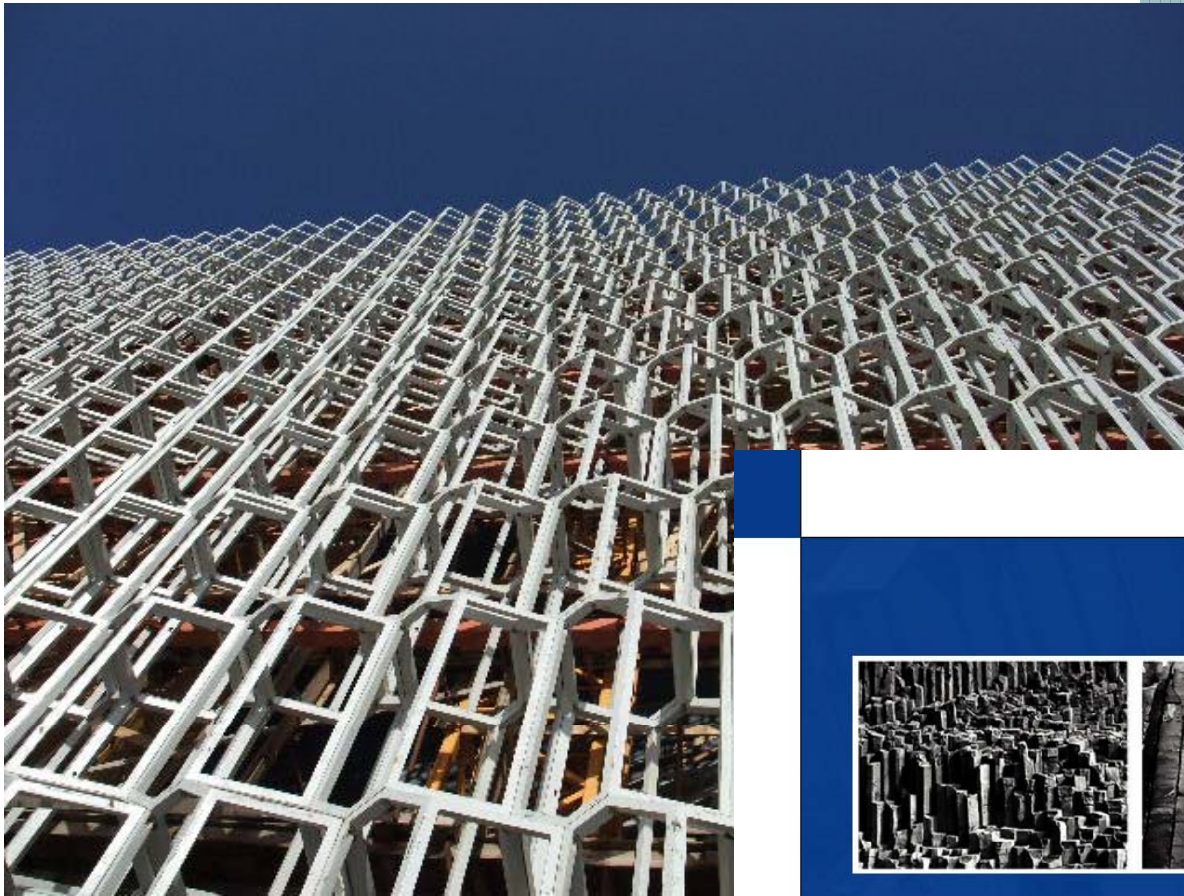
Ríkharður Kristjánsson

Hönnunarstjóri Hörpunnar og sviðsstjóri þróunar
og tæknisviðs ÍAV.

Frá ársbyrjun 2010 Project manager glerhjúps
Hörpu.







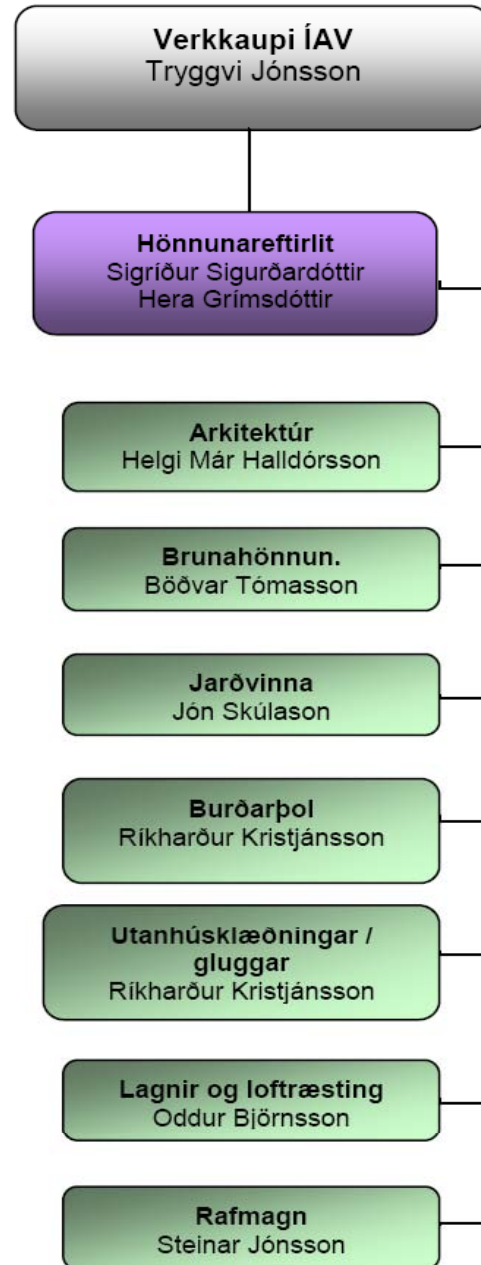
Stuðlaberg



Hönnunareftirlit:

Samið við Línuhönnun um stýringu .

Eftirlitsaðilar valdir sem persónur.







C	Zr	Si	Mn	P	S	Al	Nb
0,41	-	0,32	0,56	0,022	0,008	0,025	< 0,005
Ti	Sn	Mo	W	Cu	Ni	Co	Cr
< 0,005	< 0,005	0,02	< 0,005	0,03	0,37	0,02	0,47
V	Fe	Ta	Y	Au	Ag	Pt	Pd
< 0,005	Rest/Bal	-	-	-	-	-	-
Mg	B	Be	Sb	As	N2	Ir	Cd
-	< 0,005	-	-	-	-	-	-
Zn	Pb	Sr	Sc	Ca	Bi	H2	O2
-	< 0,005	-	-	-	-	-	-
Ce	Sm	Na	Fe2O3	SiO2	Al2O3	Se	Ceq
-	-	-	-	-	-	-	-

Table 5: Chemical composition of specimen 03a [%]

C	Zr	Si	Mn	P	S	Al	Nb
0,16	-	0,25	1,49	0,021	0,008	0,02	< 0,005
Ti	Sn	Mo	W	Cu	Ni	Co	Cr
< 0,005	< 0,005	0,02	< 0,005	0,05	0,01	0,02	0,04
V	Fe	Ta	Y	Au	Ag	Pt	Pd
< 0,005	Rest/Bal	-	-	-	-	-	-
Mg	B	Be	Sb	As	N2	Ir	Cd
-	< 0,005	-	-	-	-	-	-
Zn	Pb	Sr	Sc	Ca	Bi	H2	O2
-	< 0,005	-	-	-	-	-	-
Ce	Sm	Na	Fe2O3	SiO2	Al2O3	Se	Ceq
-	-	-	-	-	-	-	-

Table 12: Chemical composition of specimen HP 04a [%]

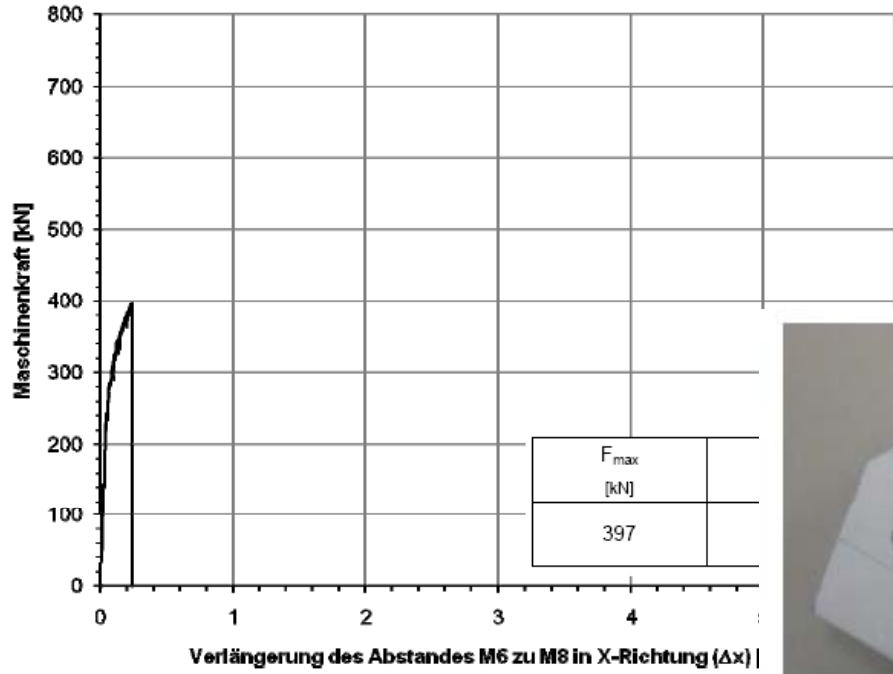


Fig. 5: Load- horizontal elongation between M6 and M8, specimen 03a

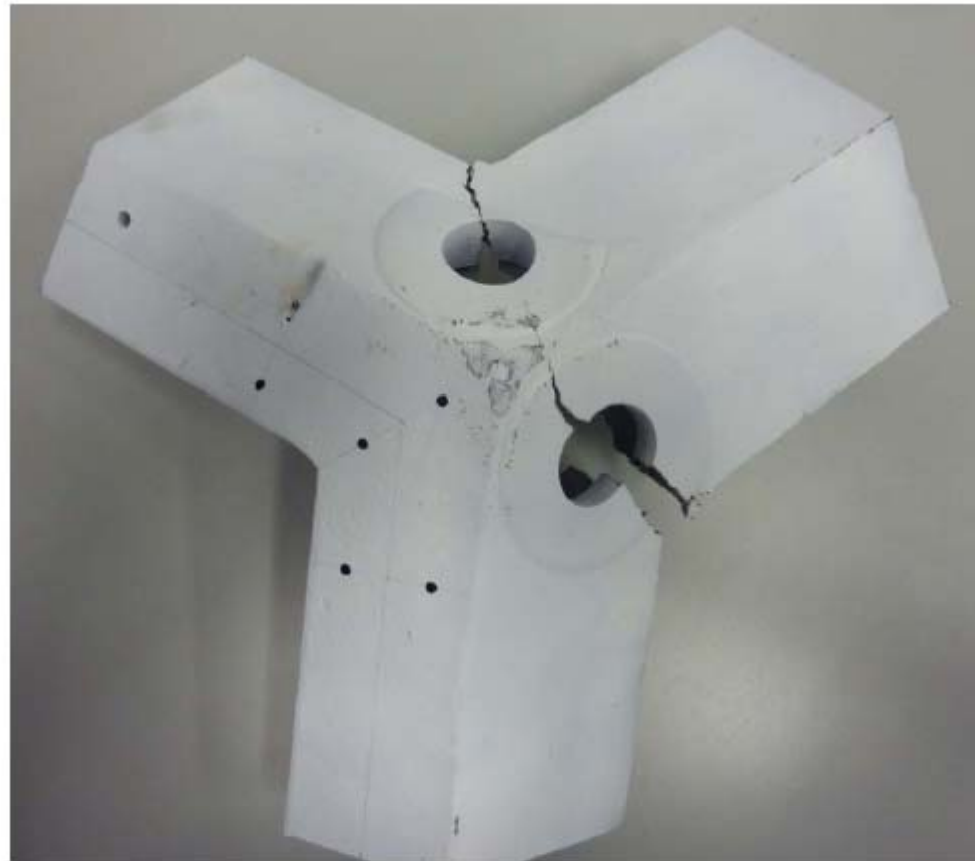


Fig. 8: Specimen 03a after the test

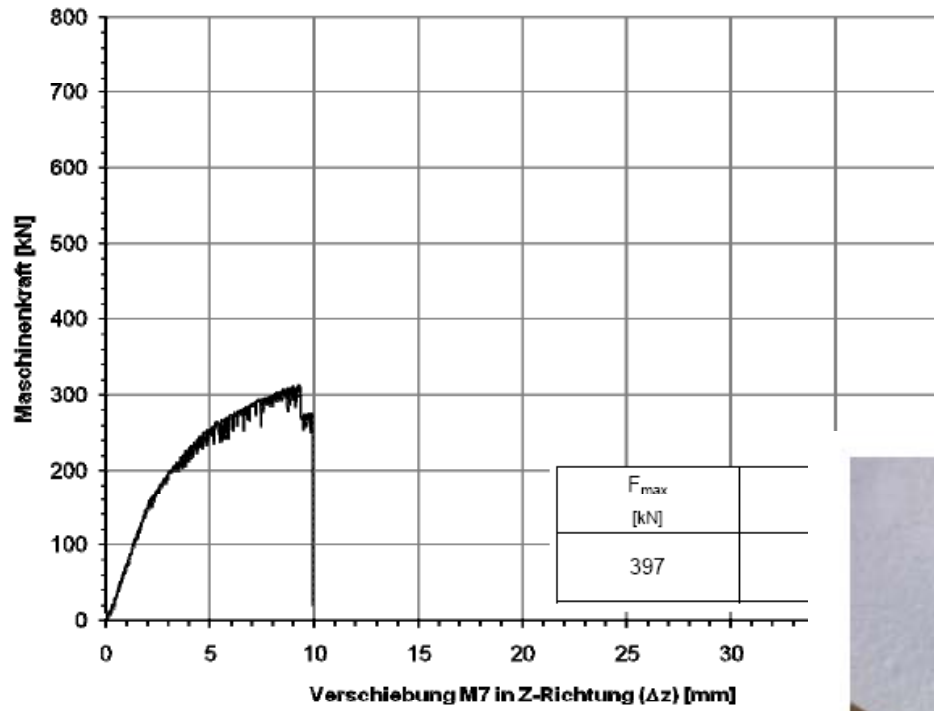
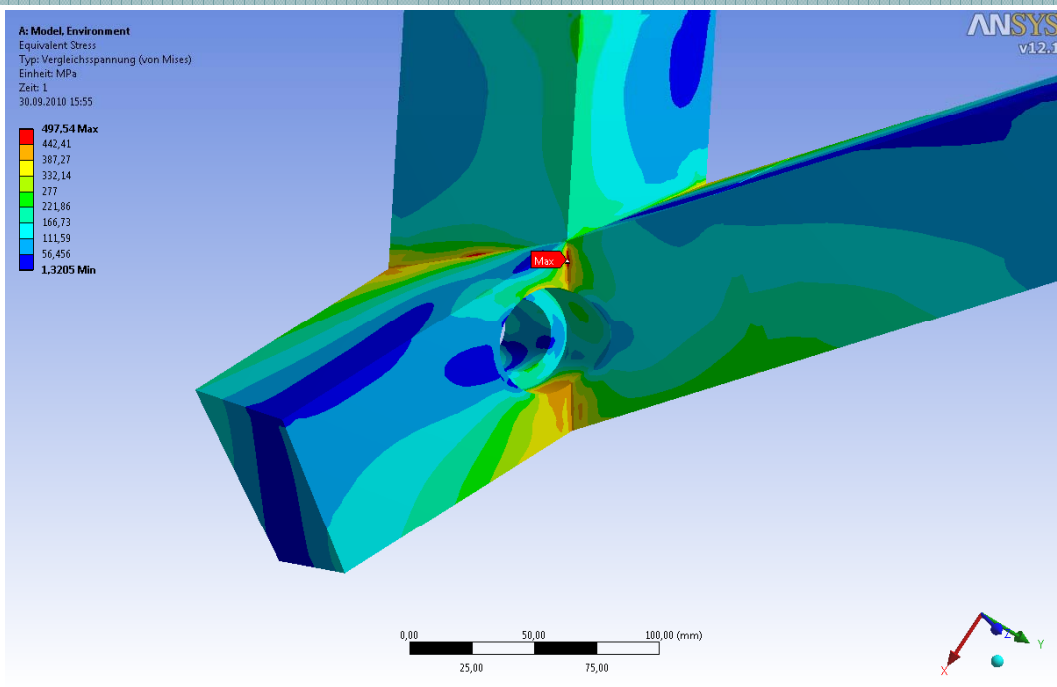


Fig. 12: Load - vertical displacement of point M7, specimen 04a



Fig. 15: Specimen 04a after the test



Spennutoppar í boltagötum



Fig. 15: Specimen 04a after the test

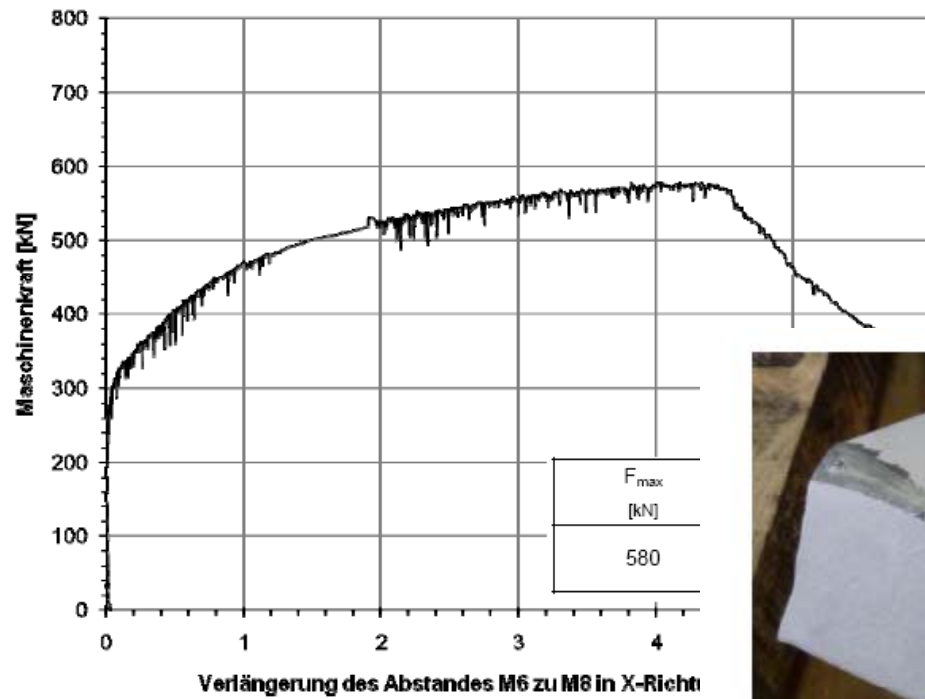


Fig. 35: Load – horizontal elongation between M6 and M8, specimen 09



Fig. 39: Specimen 09a after the test

specimen no.	specimen- ∅ [mm]	R_{eH} ($R_{p0,2}$) [N/mm ²]	R_m [N/mm ²]	elongation at fracture A [%]
03a	10,0	348	658	6,0
04a	10,0	294	616	10,3
08a	10,0	364	694	8,4
08	10,0	383	596	11,9
09a	10,0	373	700	6,2
09	10,0	307	493	26,3
05	10,0	337	545	19,9

Table 1: Results of the tensile tests made of steel cast according to DIN EN 10002-1

specimen no.	specimen thickness [mm]	R_{eH} ($R_{p0,2}$) [N/mm ²]	R_m [N/mm ²]	elongation at fracture A [%]
HP 04a	9,4	420	574	25,2
HP 08a	9,5	410	582	25,4
HP 08	9,4	385	571	25,4

Table 2: Results of the tensile tests made of hollow sections according to DIN EN 10002-1

specimen designation	specimen no.	test temperature [C°]	notched bar impact value [Joule]
03a	1	RT = +22	10
	2	RT = +22	9
	3	RT = +22	7
04a	1	RT = +24	10
	2	RT = +24	10
	3	RT = +24	16
08a	1	RT = +22	12
	2	RT = +22	8
	3	RT = +22	10
08	1	RT = +22	10
	2	RT = +22	28
	3	RT = +22	40
09a	1	RT = +22	10
	2	RT = +22	11
	3	RT = +22	10
09	1	RT = +22	70
	2	RT = +22	96
	3	RT = +22	76
05	1	RT = +23	13
	2	RT = +23	15
	3	RT = +23	14

Table 3: Results of the notched bar impact tests according to DIN EN 10045-1

Hér þurfti ég að taka ákvörðun.

- Ég labbaði út í skóg í Karlsruhe. Það sátu þrjár englar á öxlunum á mér. Einn var verktaki, annar var eigandi og sá þriðji var byggingarfulltrúi.
- Og eftir langa göngu og rök fram og til baka sagði byggingarfulltrúaengillinn:
- *Þú tekur enga áhættu fyrir almenning. Þú hefur ekkert leyfi til slíks.*
- Og ég hringdi til Íslands og sagði: *Alea iacta est*

