

BIM Involvement of Manufacturers

Project Examples for complete Life
Cycle Support

This is Hilti

Founded

1941 in Schaan, Liechtenstein

Family owned company

All shares and participation certificates are held by the Martin Hilti Family Trust

Construction technology

World market leader for professional fastening and demolition technology

Global reach

Present in more than 120 countries

International team

Some 23,000 worldwide employees

Unique characteristic

Direct sales model



System solutions for construction professionals

Engineering	Measuring and aligning	Drilling and demolition	Cutting and grinding	Fastening and installation	Firestop and insulation	Services
						
<ul style="list-style-type: none"> • Design • Specifications • Consulting • Software 	<ul style="list-style-type: none"> • Distance measuring • Leveling and aligning • Detection 	<ul style="list-style-type: none"> • Drilling and chiseling • Diamond systems 	<ul style="list-style-type: none"> • Cutting and grinding • Diamond systems 	<ul style="list-style-type: none"> • Direct fastening • Screw fastening technology • Anchor technology • Installation 	<ul style="list-style-type: none"> • Construction chemicals • Firestop 	<ul style="list-style-type: none"> • Fleet management • Repair service • Lifetime service • Delivery service • Training and consulting

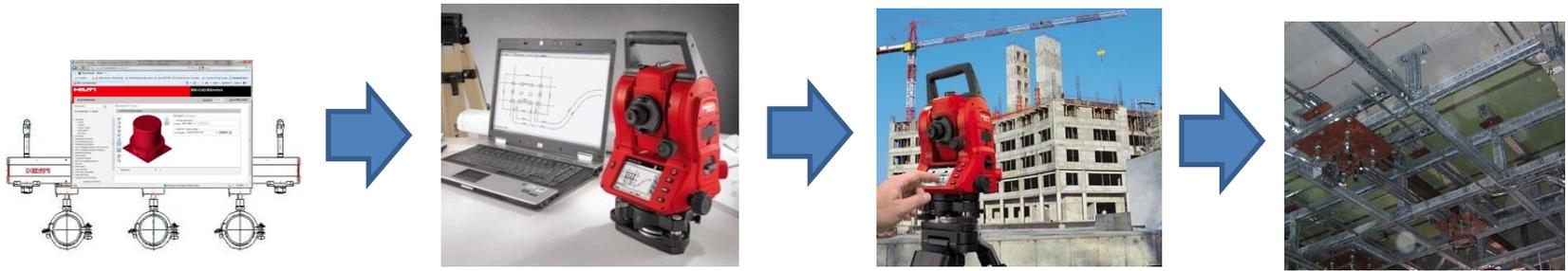
Virtual Design

Manufacturers: Driver or supporter for BIM?



Hilti will **not** be the **driver** of BIM. But the **supporter** for the driver.

Hilti BIM solutions



Planning and Design

Transferring

Execution

Validation

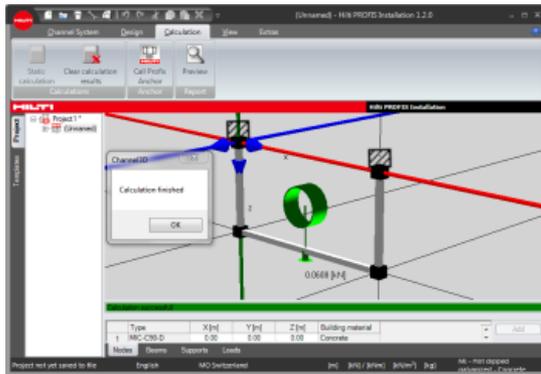
Hilti BIM Solution - Design

Hilti BIM Solution - Operation

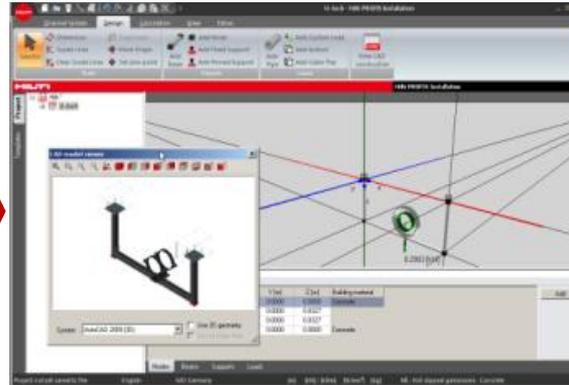
Hilti BIM Solution - Execution

PROFIS, Content Library	Total Station	Firestop Documentation
Engineering & Modelling Support	JIT; Kitting/Cutting/Preassembly	Maintenance Support

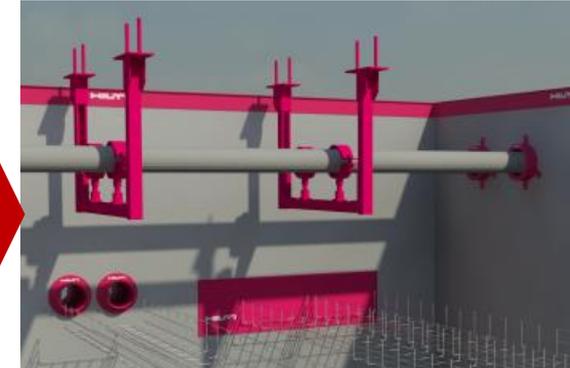
Calculation Tools: PROFIS Software



Step 1: Calculate according to your specs



Step 2: Generate BIM export



Step 3: Integrate into BIM software

PROFIS Software is a free design software provided by Hilti for easy design of the required products. The benefits are:

- Proven calculation and optimization for correct product selection
- Develop specific BIM elements based on detailed calculations
- Direct population and transfer of BIM information
- Verified usage by state of the art elements

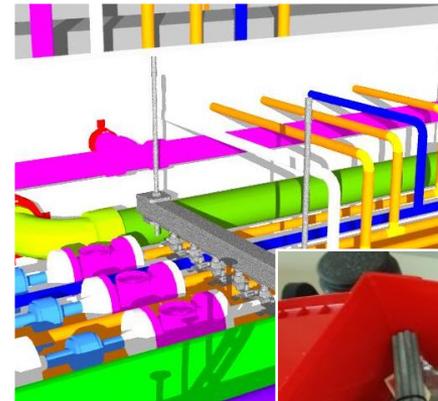


Intelligent BIM elements are now part of the regular engineering process

Jobsite support by manufacturers

During execution manufacturers can provide a big support by:

- Model based quantity-take-off
- Just-In-Time logistics
- Cutting, Kitting, Pre-assembly



Total Station – BIM to Field / Field to BIM



The Total Station brings the **BIM** model to the site.

- Easy BIM data conversion to Field information
- Use of field proofed technology
- Augmentation of your construction site



But also verifies the installation

- Storing of the actual measurement
- Compare actual location with planned location



The Hilti Total Station is **the BIM Link** of the design and the construction.

Total Station – BIM to Field / Field to BIM

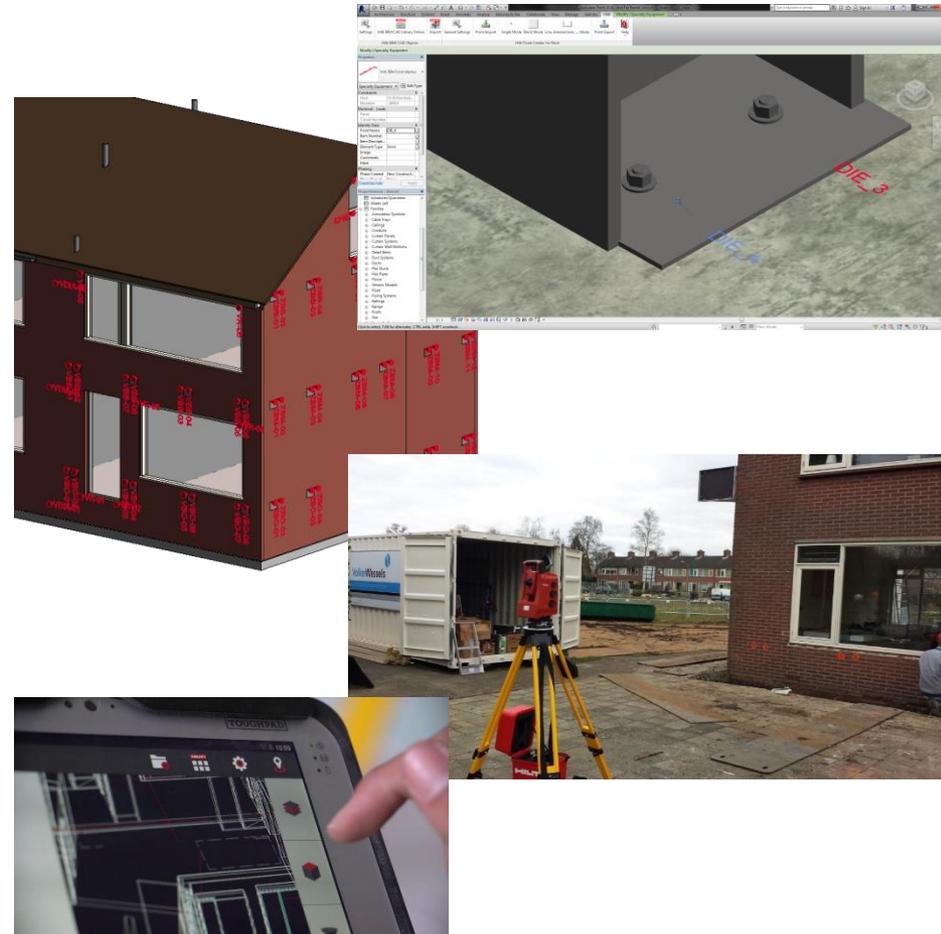
The BIM-model can be prepared for the jobsite and builds the foundation for the execution.

 POINT LAYOUT



This includes detailed product data for the specific application.

	A	B	C	D	E	F	G	H	I
1	PID	N(y)	(Mete E(x))	(Mete H(z))	(Mete Layer)	Item No	Naming	Element	Color
2	DIE_1	5.467	3.612	-2.479	0	2018411	Anchor rod HIT-Z M12x105	INSERT	white
3	DIE_2	5.318	3.612	-2.48	0	2018411	Anchor rod HIT-Z M12x105	INSERT	white
4	DIE_3	3.013	3.61	-2.484	0	2018411	Anchor rod HIT-Z M12x105	INSERT	white
5	DIE_4	2.865	3.607	-2.48	0	2018411	Anchor rod HIT-Z M12x105	INSERT	white
6	DIE_5	4.469	4.14	-2.5	Foundation			INSERT	32
7	DIE_6	6.269	4.14	-2.5	Foundation			INSERT	32
8	DIE_7	6.269	2.94	-2.5	Foundation			INSERT	32
9	DIE_8	4.469	2.94	-2.5	Foundation			INSERT	32



Jobsite Documentation of installed products



1

Prepare the project

The project is planned using the user-friendly application. All information to be documented is specified individually according to the project or building. Users are defined, plans of the building integrated as necessary and all necessary data set out.



2

Record the fire seal

All information and photos relevant to each firestop seal are recorded on the spot using a smartphone or tablet computer. This data is transferred straight to the database and the installation is clearly marked with an identification label carrying the corresponding QR code.



3

Create a report

After completion of the project, or in an intermediate step, all data from the project is retrieved and a report then produced automatically. Information about the project can be supplemented at any time. The report can also be personalized. Details of the firestop seal can be printed out in a list and subsequently processed. All reports created are saved automatically.



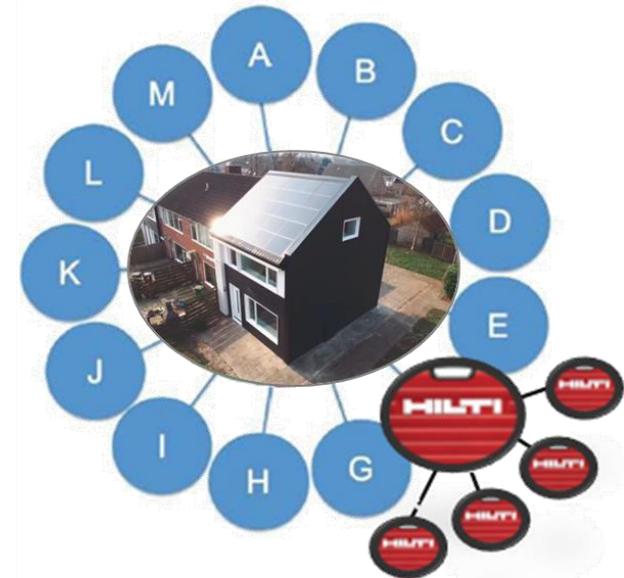
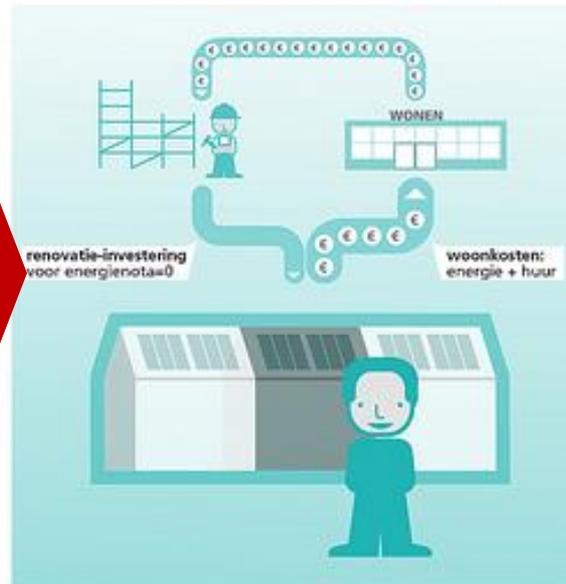
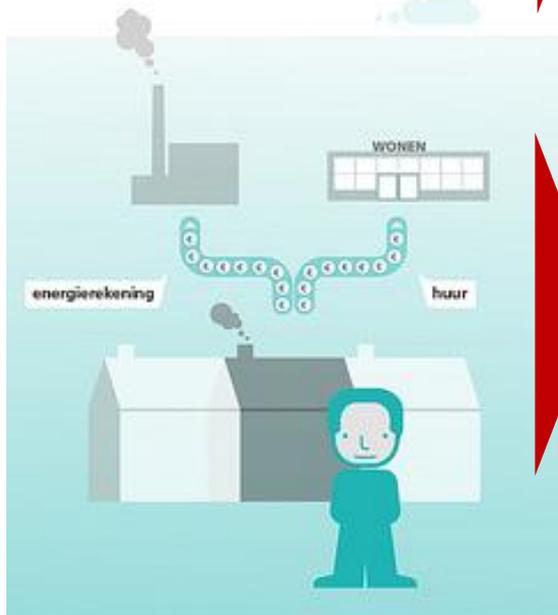
BIM project examples from Hilti

Stroomversnelling – Unique renovation project

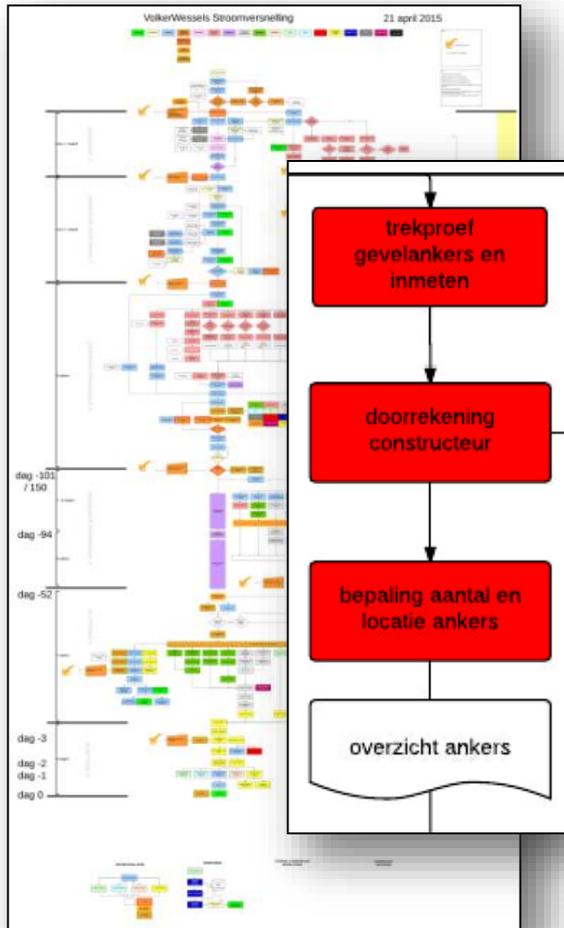


Rijksoverheid

- CO2 ambition for NL
- 111.000 houses to '0'
- 2020 ready
- Minimum onsite time
- Industrial / scale



Hilti was selected by products, services



1. Engineering services

- a) Pull-out tests on site
- b) Consultancy
- c) BIM modelling
- d) Field-2-BIM & BIM-2-Field prep + support

2. Products

- a) HIT270 / mech.anch / installation system
- b) Kitting just in time logistics
- c) Container management (consumables)

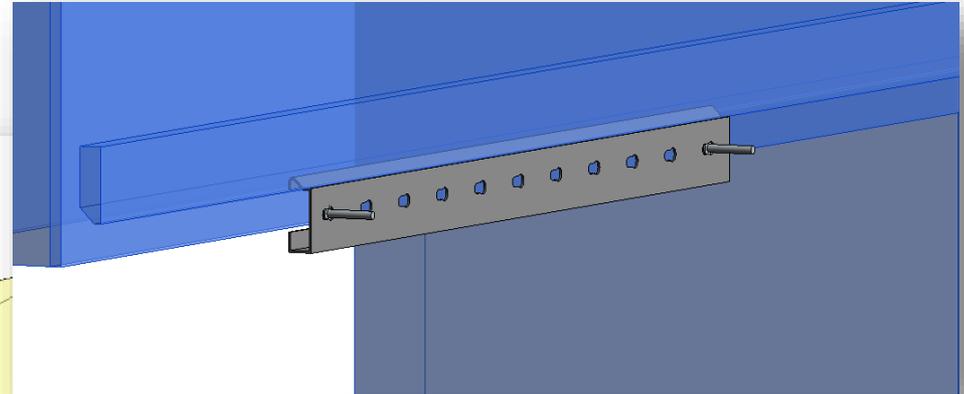
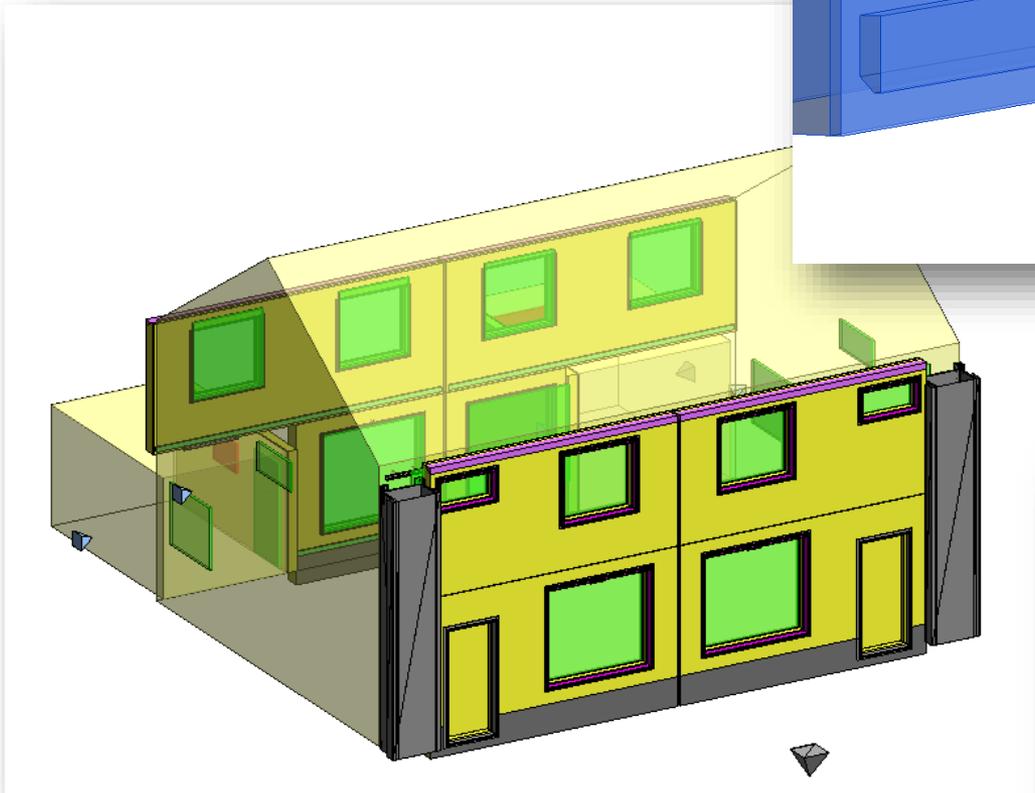
3. Tool management

- a) Fleet Management
- b) Asset Management

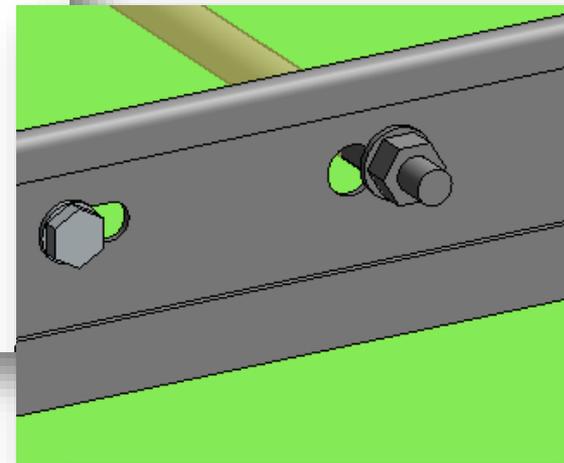
Pull-out testing



Calculation/Modelling



Modelling according to
engineering advice



Communication and clash detection

▼ Geïmporteerd op 27-10-2015

- ▶ 6074BX-B012-PRE-Dagkantafwerking.ifc
- ▶ 6074BX-B012-TGN-Daken en Goten.ifc
- ▶ 6074BN-B024-TGN-Daken en Goten.ifc
- ▶ 6074BX-B012-HIL-Verankeringen.ifc
- ▶ 6074BX-B012-TGN-Wanden en Zetwerken.ifc
- ▶ 6074BX-B012-JM-Referentiemodel.ifczip
- ▶ 6074BX-B012-ADB-Basismodel.ifc
- ▶ 6074BX-B012-ZAV-Werkzaamheden.ifc

▼ Geïmporteerd op 2-11-2015

- ▶ 6074BX-B012-DGV-Wanden.ifc
- ▶ 6074BX-B012-TGN-Installatiekasten.ifc
- ▶ 6074BX-B012-DGV-Bergingen.ifc
- ▶ 6074BX-B012-DMS-Kozijnen.ifc
- ▶ 6074BX-B012-TGN-WTW en Boorgaten.ifc

afgehandeld

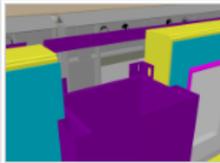
Vlaar bart_02-

Loonstra T.

VTW-0005_Bart

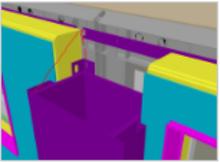
- de verticale ophangbeugels installatiekast verlengen
Hiltianker.
- achterwand en de zijwand ook verlengen ivm isol
staalconstructie

Object(en): 0



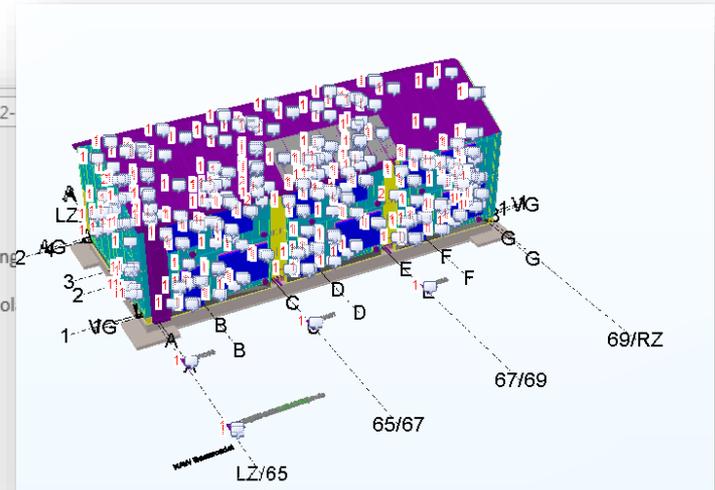
Loonstra T. ongeveer 5 dagen geleden

Bart,
kan er een schuine vlak worden gemaakt onder de goot?



Een antwoord schrijven...

Huidig venster toevoegen

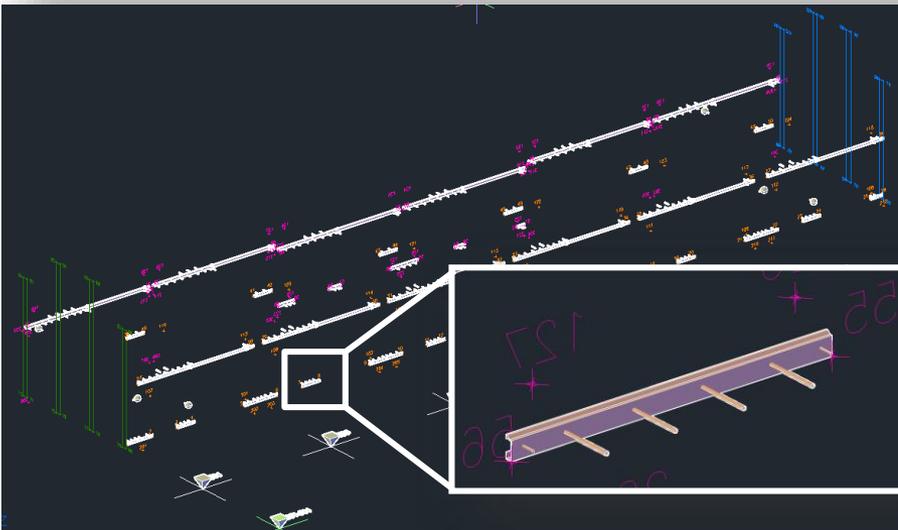
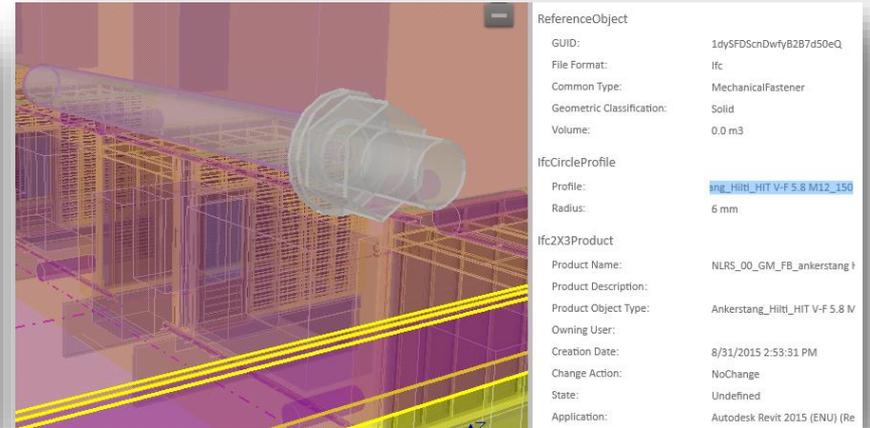
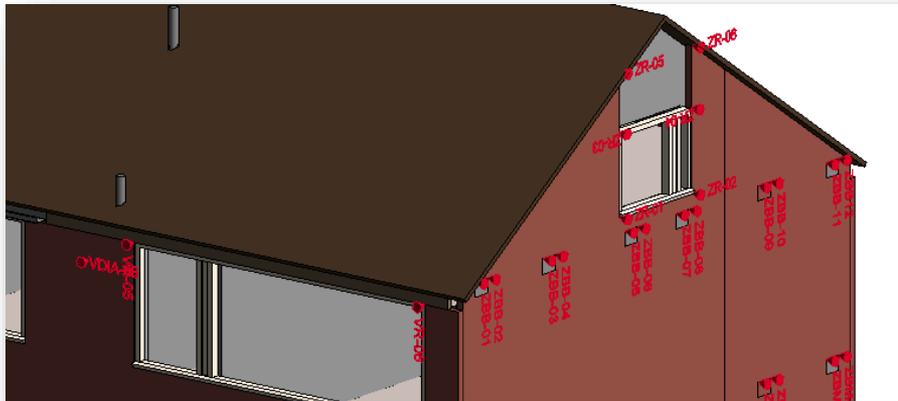


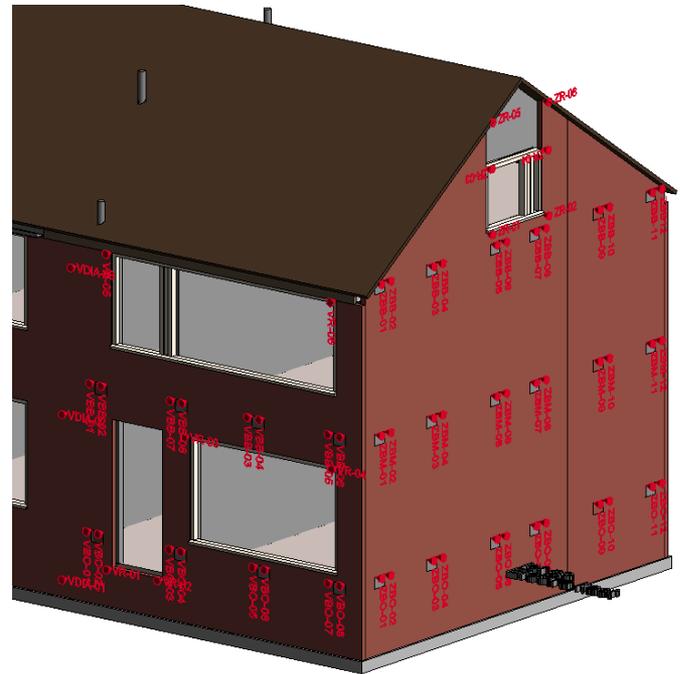
▼ Loonstra T. (7)

- ▶ OPM-0015_Bart nu de... Loonstra T. Vandaag
- ▶ VRA-0005_Bart, Loonstra T. Vorige week of ee...
- ▶ VTW-0005_Bart, Loonstra... Vorige week of e...
- ▶ OPM-0007_Bart, Loonstra... Vorige week of e...
- ▶ OPM-0009_collega's k... Loonstra... Vorige week of e...
- ▶ VTW-0001_Graag aand... Loonstra T. Vorige week of ee...
- ▶ OPM-0001_beton gaat... Loonstra... Vorige week of e...
- ▶ Meijer Martijn (5)
- ▶ Rick Hartog (20)
- ▶ Vlaar bart (5)

Communication and clashing within project collaboration platform

BIM-to-field to set-out all anchors











BIM project examples from Hilti

Hilti involvement for support systems (CH)

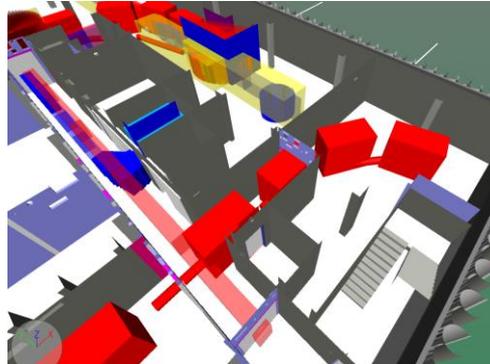
- Project description: Design the supports for all MEP
- Consult and coordinate with the MEP designers to find the best support
- Result is a coordinated 3D model for the supports including information for construction
- Hilti is part of the design team and works onsite in the project design office

Model use-cases

3D-Modell



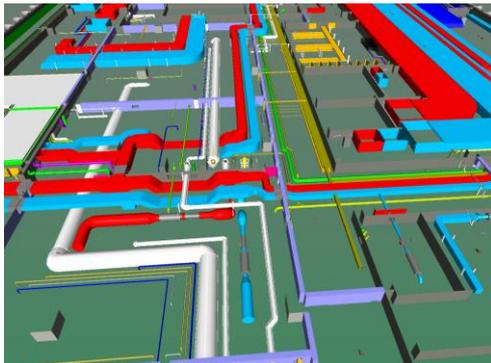
Space testing



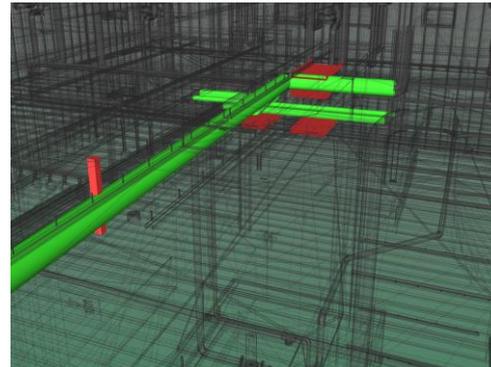
Samplung



Concept design



Design Coordination

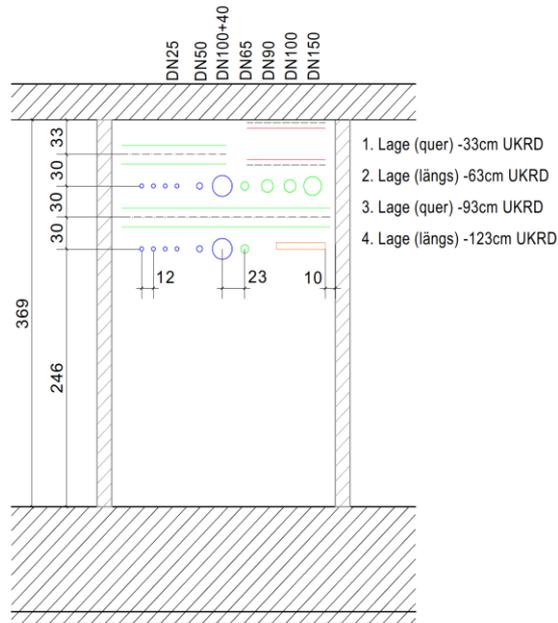


Bill of material

Luftart				Zuluft	
Kanäle				L	
A	B	Dämmung		Auszug NOVA	zusät
mm	mm			m	
Ra1RI	Ra2RI	Material	Stärke	Kanallänge	
100	200			3	
100	300			1	
100	400			6	
150	200			3	
200	200			3	
200	300			3	
400	600			2	
200	200	E130		7	

Development of Support System

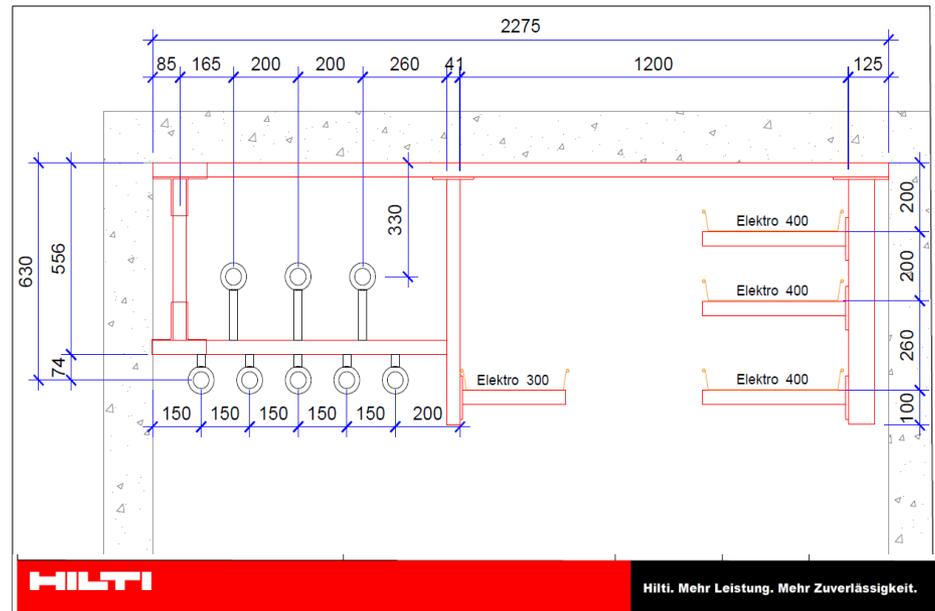
Basic/Concept Design



Lagekonzept 3. + 4.UG

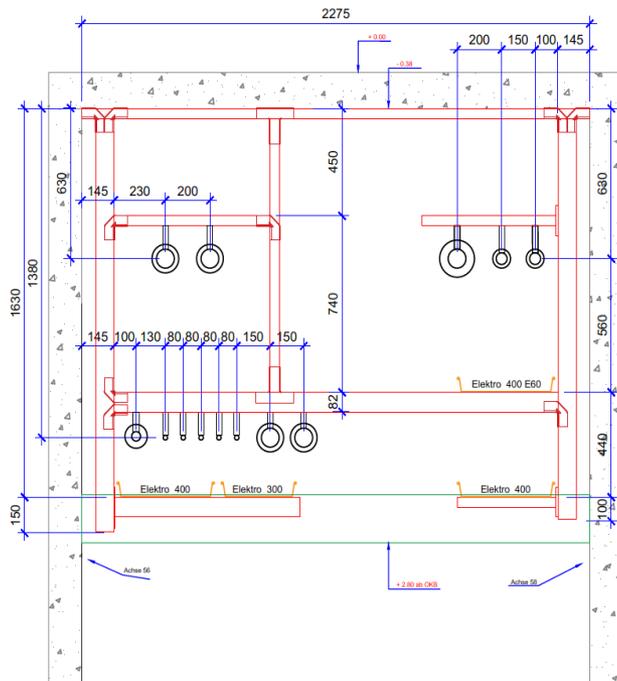


Detailed Design

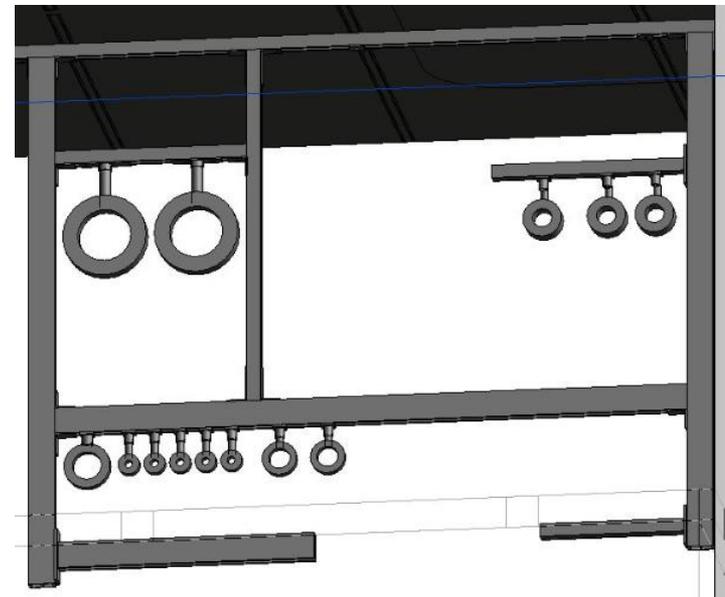


Modelling of Support Systems

Final concept/calculation

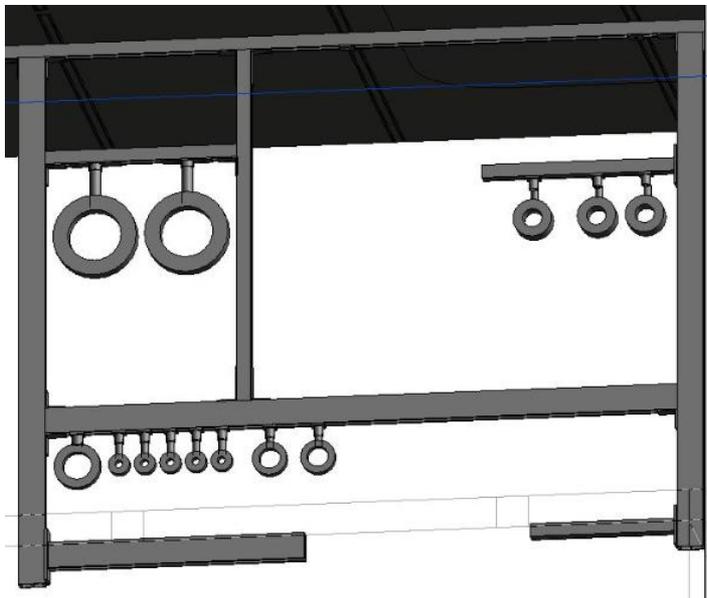


Model development

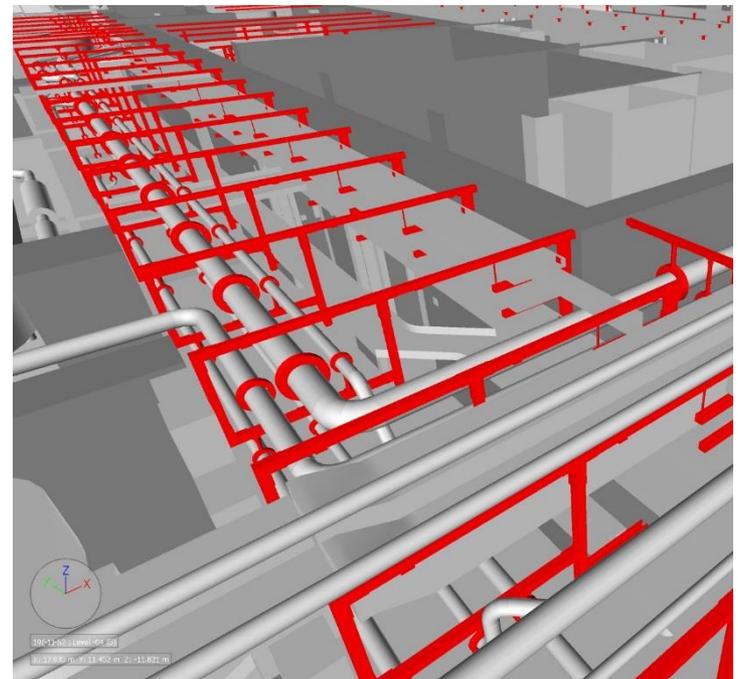


Modelling of Support Systems

Model development

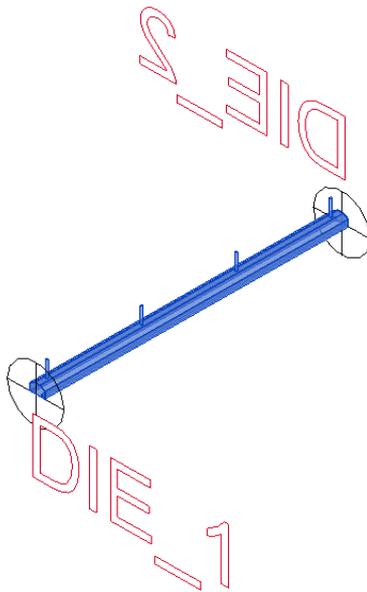


Integration into building model



BIM-to-Field process

Measuring points can be integrated into the model. The export of the point list includes also the product information which will be also displayed on the Robotic Total Station (RTS).



Measuring points in the model



Export of the points

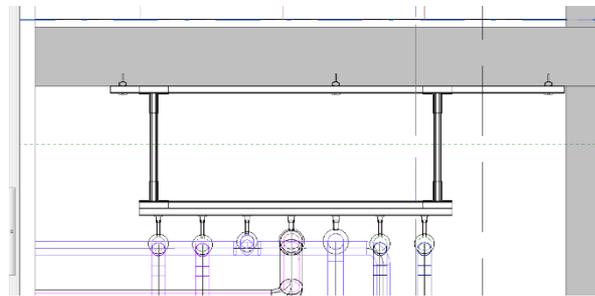
PtID	N(y)	E(x)	H(z)	Level	Item Naming
DIE_1	2.587	3.269	3.200	Level 1	HAC-30 68/800 F
DIE_2	3.390	3.275	3.200	Level 1	HAC-30 68/800 F



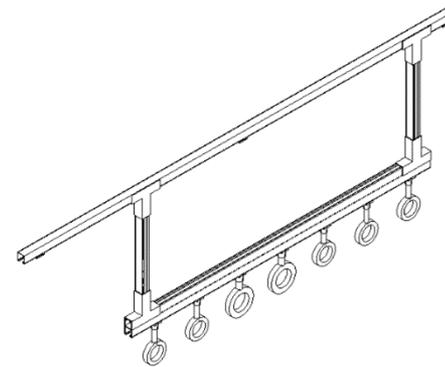
RTS on the jobsite

BIM information for Logistic and Installation

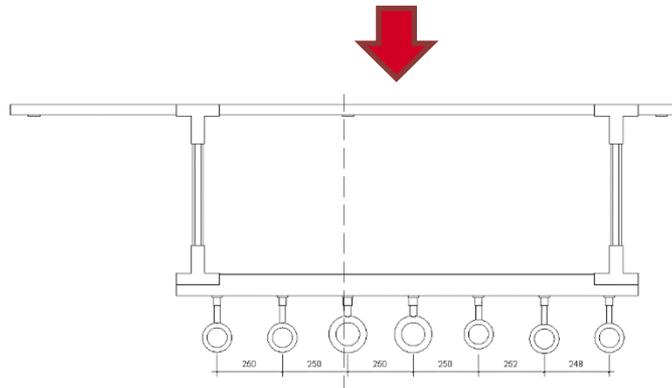
The installation information within the model can be used to support logistics



Building model



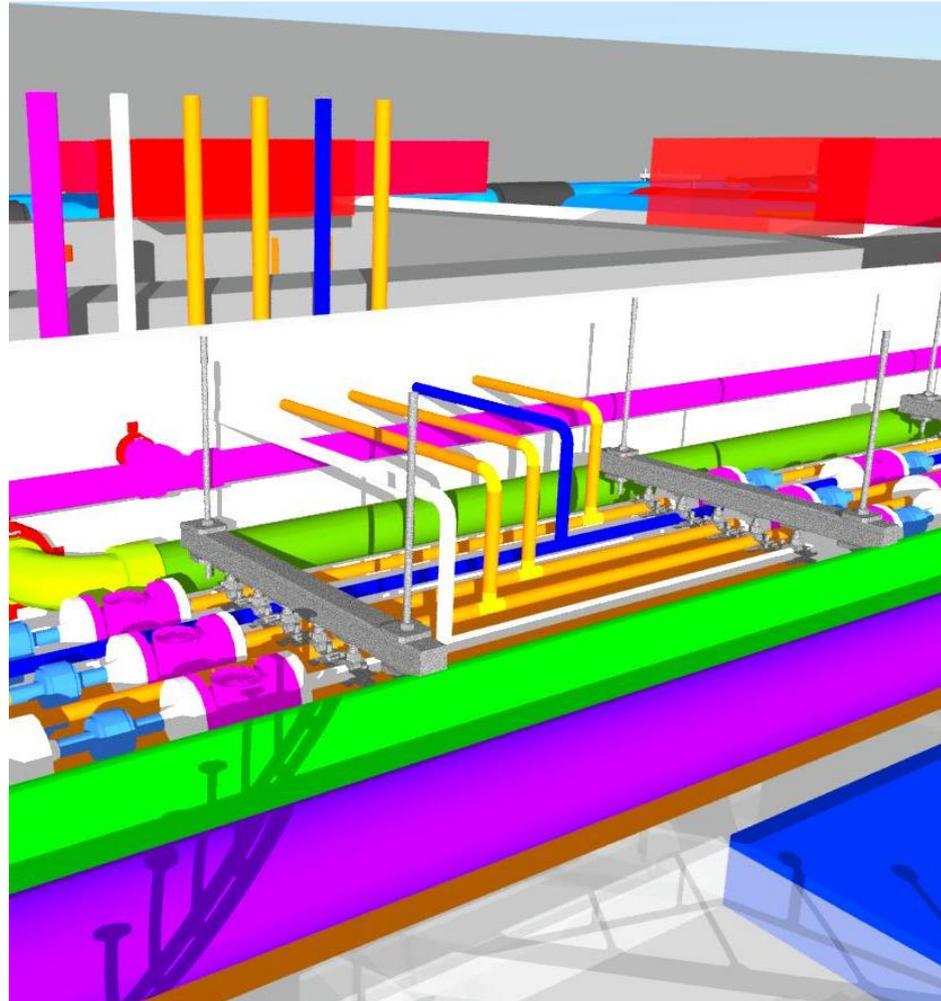
3D views



Assembly drawings

<Teilleiste>						
A	B	C	D	E	F	
Anzahl	Model	Hersteller	Typ	Ebene	Schnittlage	
1	369640	Hilti	Veranker MVV-S2 D	Level-04		
1	369640	Hilti	Veranker MVV-S2 D	Level-04		
1	369640	Hilti	Veranker MVV-S2 D	Level-04		
1	369640	Hilti	Veranker MVV-S2 D	Level-04		
1	369604	Hilti	Montageschraube MG-41 D 80	Level-04	1,787	
1	369562	Hilti	Montageschraube MG-41 80	Level-04	616	
1	369562	Hilti	Montageschraube MG-41 80	Level-04	616	
1	53149	Hilti	WPA-0 7' EL	Level-04		
1	53149	Hilti	WPA-0 7' EL	Level-04		
1	229882	Hilti	WPA-S2 1/2"	Level-04		
1	229882	Hilti	WPA-S2 1/2"	Level-04		
1	229882	Hilti	WPA-S2 1/2"	Level-04		
1	229882	Hilti	WPA-S2 1/2"	Level-04		
1	369597	Hilti	Montageschraube MG-41 D 80	Level-04	2,580	
1	369579	Hilti	Lochplatte MG2-L11	Level-04		
1	369579	Hilti	Lochplatte MG2-L11	Level-04		
1	369579	Hilti	Lochplatte MG2-L11	Level-04		
1	369533	Hilti	Schellenanbindung MG-A-12"	Level-04		
1	369534	Hilti	Schellenanbindung MG-A-24"	Level-04		
1	369534	Hilti	Schellenanbindung MG-A-24"	Level-04		
1	369533	Hilti	Schellenanbindung MG-A-12"	Level-04		
1	369533	Hilti	Schellenanbindung MG-A-12"	Level-04		
1	369533	Hilti	Schellenanbindung MG-A-12"	Level-04		
1	369533	Hilti	Schellenanbindung MG-A-12"	Level-04		
1	56428	Hilti	Gewindestift GR-G 1_20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 3/4 20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 3/4 20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 1_20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 1_20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 1_20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 1_20x200 4.8 2s	Level-04		
1	56429	Hilti	Gewindestift GR-G 1_20x200 4.8 2s	Level-04		

Bill of material



**Thank you
for
your attention**

Dr. Nils Krönert
Dr. Oliver Geibig