



Minutitega andmed BIM-st ERP-i

Kuidas Kodumaja toob eriosade BIM-mudelist andmed ERP-i build.works'i abil

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BIM Seminar 2026

- Mitmekorruselised puitkarkassist moodulehitised
 - Korterid korrus- ja väikeelamutes, hooldekodud, tudengikorterid ning hotellide eluruumid
 - Tegutseme alates 1995. aastast
 - 95% toodangust eksport: Norra, Rootsi, Soome, Taani, Madalmaad
 - Tehaseline võimekus ~1000 eluruumi aastas
 - Kogu projektdokumentatsioon valmib ettevõttesiseselt
- Mina:** üle 15 aasta vastutanud Kodumaja IT arengu eest
<https://kodumaja.ee>

- SaaS-lahendus BIM-mudeli põhiste projektide juhtimiseks
- BIM-mudeli andmeid kasutatakse:
 - eelarvestamiseks
 - planeerimiseks
 - ajakavade loomiseks
 - tegevuste ja ressursside juhtimiseks
 - sisseostuks ja hangeteks
 - tootmise ja ehituse juhtimiseks

- Integratsioonid: Autodesk ACC, ERP-süsteemid, API

Mina: vastutan tootearenduse eest

<https://build.works>

Teekond

- Algne prioriteet: hakkame mudeldama
- BIM-mudelid tekkisid → geomeetria
- Uued eesmärgid → mudelisse sisu
- Mudel täitus infoga, kuid:
 - andmeid ei saanud otse mudelist kasutada
 - puudus seos mudeli ja ärisüsteemide vahel
- Excel + käsitöö

Probleemid

- Palju käsitööd → ajamahukas ja vigadele avatud
- Samu andmeid sisestatakse mitu korda
- Andmed paiknevad eri süsteemides
- Muudatuste haldus on keeruline
- Andmed võetakse mudelist välja → side katkeb

build.works kasutuselevõtuga

- BIM-mudel on **ainus tõeallikas**
- Andmed liiguvad süsteemide vahel digitaalselt – ilma käsitöö ja Excelita
- Muudatused on:
 - hallatavad
 - jälgitavad
- Vähem vigu
- Läbipaistvus
- Kiirus

Protsess

Revit

- MagiCAD
- Autodesk Construction Cloud

build.works

- Take-Off
- Toodete sidumine
- BoM

ERP (eKM + BC)

- Ostuprotsess

Eeldefiniitsioon

Ilma eeldefiniitsioonita ei ole automatiseerimist!

- Klassifikatsioonid
- Revit Family'd
 - Eeldefineeritud parameetrid
- Arvutuslikud parameetrid (valemid)
- ERP-liidestus

- Tooted
- Komponentid
- Tüüptooted
- Parameetrid
- Ühikuteisendused
- Alusühikud ja parameetrid

BIM-objekt = äriliselt mõistetav üksus

Take-off: import

KM_vent_T1 (V7)
Mode: Saved elements

Add Version Edit Delete Lock Share Print Copy Paste

FRONT

2128 Elements

Elements (28/2128)

Group/Name

Element type

Type Name

KM RE

KM Installation place

V_Round duct bend - short, lockseamed Lindab BKFU

GP_V0000033

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

Name

Product Code

BIM Instance

BIM Instance

BIM Instance

BIM Instance

BIM Instance

BIM Instance

BIM Instance

BIM Instance

BIM Instance

V_Round duct bend - short, lockseamed Lindab BKFU

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V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

V_Round duct bend - short, lockseamed Lindab BKFU

THB-309

THB-309

THB-309

THB-309

THB-310

THB-310

THB-310

THB-310

THB-310

THB-310

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Ruumelement

Search Take-Off elements

Import

Remove

V_Round duct bend - short, lockseamed Lindab BKFU

Parameters (48, visible 19)

Parameter

V7

Default Parameter Group

Model_Category

Name

Product Code

KM Revit

KM RE

Technical systems parameters

Angle

Insulation Type Calc

KM Angle

KM Fitting Area

KM Fitting Area Calc

KM Installation place

KM Pipe bracket Calc

Length

Length Lamell Calc

MC User Code

Middle Elevation Calc

Size

Size Calc

Size for m Insulation Calc

Type Name

Duct Fittings

V_Round duct bend - short, lockseamed Lindab BKFU

GP_V0000033

Multiple values

90.00 deg

NotSet

90.00 deg

Multiple values

Multiple values

Multiple values

NotSet

Multiple values

Multiple values

GP_V0000033

Multiple values

200-200

200.00 mm

Multiple values

V_Round duct bend - short, lockseamed Lindab BKFU

Take-off: versioonihaldus

KM_vent_T1 (V7)

Mode: V3 comparison

Saved elements

Model comparison/import

V6 comparison V6

V5 comparison V5

V4 comparison V4

V3 comparison V3

V2 comparison V2

V1 comparison V1

Add Version

Edit

Delete

Lock

2128 Elements

598

474

0

1056

Added Changed Removed No Change

Elements (1/2583)

Search Take-Off elements

Import

Group/Name	Element type	Status	Type Name
> AL-C	Name	3/13/20	
> Duct Insulation	Name	31/30/33/11	
> 44544301	Product Code	31/30/0/105	INSULATION_Condensation control insulation Armaflex 19 - roll
☒ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll
☐ Duct Insulation	BIM Instance	Changed	INSULATION_Condensation control insulation Armaflex 19 - roll

Remove

Duct Insulation

Parameters (48, visible 19)

Search parameters

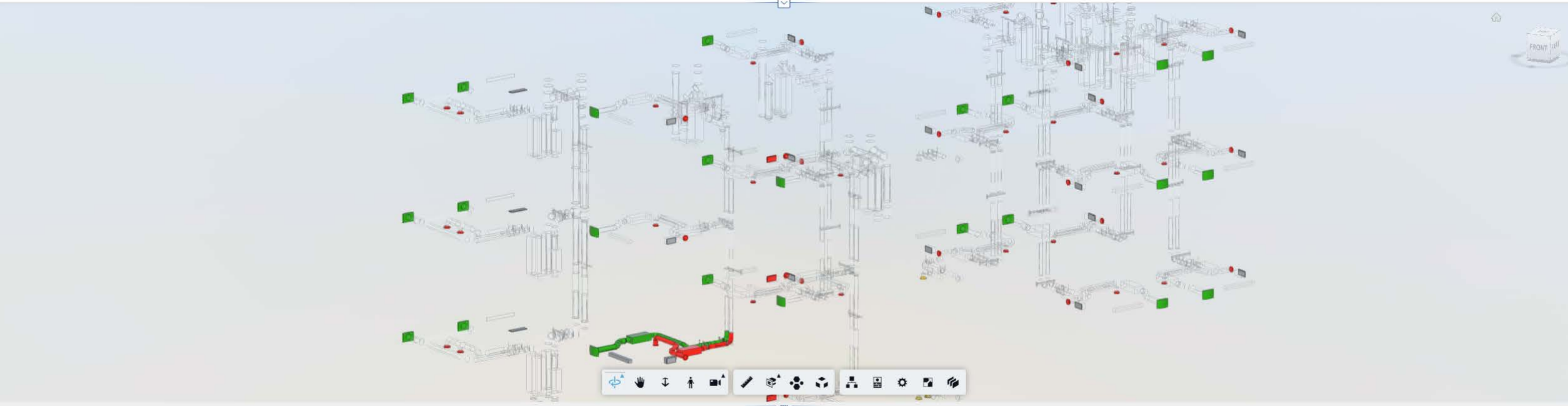
Parameter	V7	V3
Default Parameter Group		
Area	0.44 m²	0.71 m²
Model_Category	Duct Insulations	Duct Insulations
Name	Duct Insulation	Duct Insulation
Product Code	44544301	44544301
KM Revit		
KM RE	THB-310	THB-310
Technical systems parameters		
Insulation Type Calc	NotSet	NotSet
KM Pipe bracket Calc	NotSet	NotSet
Length	592.00 mm	946.01 mm
Length Lamell Calc	473.60 mm	756.81 mm
Middle Elevation Calc	NaN mm	NaN mm
Type Name	INSULATION_Condensation control insulation Armaflex 19 - roll	INSULATION_Condensation control insulation Armaflex 19 - roll

Take-off: vaated

KM_vent_T1 (V7)
Mode: Saved elements

Add VersionEditDeleteLockSharePrintDownloadClose

FRONT



2128 Elements

Elements (149/2128)

Group/Name

Element type

LoI validation

Type Name

☒	RE-peale viimistlust	Custom	Unvalidated (149)	
☒	Air Terminals	Classification	Unvalidated (102)	
☒	Duct Accessories	Classification	Unvalidated (4)	
☒	Duct Fittings	Classification	Unvalidated (14)	
☒	Ducts	Classification	Unvalidated (25)	
☒	Mechanical Equipment	Classification	Unvalidated (4)	V_Hanger 2x UVH30-125 + 4x nut with flange M10 + thread bar M10 + 2x Fisher connector FSH Clix M10
☐	Ruumetelement	Custom	Unvalidated (1535)	
☐	Tehase komp.	Custom	Unvalidated (231)	
☐	Unassigned	Custom	Unvalidated (213)	

Search Take-Off elements

Import

build.works

 KODUMAJA

Toodete sidumine: automaatne

Activity sets

Execution (10)

Activity sets (10)

Name	Status
> Henri-proof	OK
> KM_heating and cooling	OK
> KM_heating and cooling - ehi...	OK
> KM_Sanitary_T2	OK
> KM_tap water_T1	OK
> KM_tap water_T2	OK
> KM_vent_T1	OK
> KM_vent_T2	OK
> SEWER_T1	OK
> Vent-esialgne	OK

KM_vent_T1

Filtered by none

2128 Elements

1670

Assigned

258

Not applicable

0

Not assigned

Take-Off elements (169/2128)

Name	Type	Status	Scope
☒ > THB-307	KM RE	160/0/0	Own Work
☒ > AL-C	Name	1/0/0	Own Work
☒ > DSK-P	Name	1/0/0	Own Work
☒ > H_Hanger_Test	Name	0/4/0	Own Work
☒ > OTHER_Mounting console Fischer ALK 37	Name	2/0/0	Own Work
☒ > OTHER_Mounting console Walraven RapidStrut 600	Name	2/0/0	Own Work
☒ > Rectangular Duct	Name	0/1/0	Own Work
☒ > Round Duct	Name	74/0/0	Own Work
☒ > V_Circle fire damper EI60 - mechanical butterfly COSMO SC60	Name	2/0/0	Own Work
☒ > V_Extarxt air valve Lindab KSU	Name	2/0/0	Own Work
☒ > V_Hanger UVH30 + Fisher connector	Name	6/0/0	Own Work
☒ > V_Round duct access floor FM Lindab EPFH	Name	1/0/0	Own Work
☒ > V_Round duct bend - short Lindab BKU	Name	1/0/0	Own Work
☒ > V_Round duct bend - short Lindab BKU1	Name	1/0/0	Own Work

Auto assign

Remove not applicable

Remove all assignments

Multiple values

Filtered by none

34

Assigned

0

Suggested

0

Classification

155...

All

Elements with multiple classification codes selected

Product assignment is disabled while elements with different product assignment selected

Product list (34)

Code	Name	Price	Procurement group
44511032	ventilatsioonipõlv BKFU 200-90 (257268) ①	NA	Project based
44511100	ventilatsioonipõlv BU 160-45 ①	NA	Stock based
44511400	ventilatsioonikolmik TCPU 125-125 ①	NA	Stock based
44511700	ventilatsioonimuhv 200 siselitmik NPU ①	NA	Project based
44516500	ventilatsioonipõlv BU 125-90 ①	NA	Stock based
44516600	ventilatsioonitoru 125 a'3m ① ⚠	NA	Stock based
44518100	ventilatsiooni üleminek RCU 160/125 ①	NA	Stock based
44518205	ventilatsiooni kompensatsioonimuhv 200/150 SNPU ①	NA	Project based
44518500	ventilatsioonitoru 160 a'3m ① ⚠	NA	Stock based
44523600	ventilatsioonitoru 200 a'3m ① ⚠	NA	Stock based
44529200	ventilatsioonipõlv BU 125-60 ①	NA	Stock based
44531401	ventilatsiooni kompensatsioonimuhv 160/500 SNPU ①	NA	Stock based
44533400	ventilatsioonipõlv BU 200-90 ①	NA	Project based
44535400	ventilatsioonipõlv BU 125-15 ①	NA	Stock based
44539301	ventilatsioonikolmik TCPU 200-200 ①	NA	Project based
44542100	ventilatsioonipõlv BU 200-45 ①	NA	Project based
44545200	ventilatsiooni puhastusluuk Lindab EPFH 125 ①	NA	Project based
44546410	ventilatsiooni puhastusluuk Lindab IPLR 100-125 GAL... ①	NA	Project based
44553402	ventilatsiooni üleminek RCFU 200/160 ①	NA	Project based
44553406	ventilatsiooni üleminek RCFU 200/125 ①	NA	Project based
70215	mürasummuti KVDPX-125-600-GALV-3 (kandiline mür... ①	NA	Project based
71451	mürasummuti Lindab KVDPX-200-1000-GALV-3 (kan... ①	NA	Project based
72191	liug lülmik SMFU-125-150-GALV (00266) ①	NA	Project based
72961	ventilatsioonikolmik Lindab TCPMU 125-125 GALV ①	NA	Project based
74463	õhujaotaja DSK 160, valge (RAL 9003) ①	NA	Project based
74493	ventilatsioonirest Lindab AL-1-0-C-300-150 Nordic ①	NA	Project based
74544	kinnituskonsool Fischer ALK 37-600 (538745) ①	NA	Project based
74545	kinnituskonsool Walraven 41x21/600mm (vertikaal pa... ①	NA	Project based
KO-0004	KSU 125 (RE-peale viimistlust) ①	NA	Stock based
KO-0578	Hanger 2x UVH30-125 + 4x nut with flange M10 + thr... ①	NA	Stock based
KO-0581	Hanger 2x UVH30-200 + 4x nut with flange M10 + thr... ①	NA	Stock based
KO-0584	Fire and smoke damper COSMO SC60-125 + Sealant... ①	NA	Stock based

Toodete sidumine: manuaalne

Activity sets

Execution (10)

Activity sets (10)

Name	Status
> Henri-proov	🔊
> KM_heating and cooling	🔊
> KM_heating and cooling - ehi...	🔊
> KM_Sanitary_T2	🔊
> KM_tap water_T1	🔊
> KM_tap water_T2	🔊
> KM_vent_T1	🔊
> KM_vent_T2	🔊
> SEWER_T1	🔊
> Vent-esialgne	🔊

KM_vent_T1

Filtered by none

2128 Elements

1870

Assigned

258

Not applicable

0

Not assigned

Take-Off elements (74/2128)

Search by name

☐

Name

Type

Status

Scope

KM Installation place

KM RE

Length

☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	337.29 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	349.24 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	1 079.15 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	144.52 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	115.87 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	464.54 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	1 225.00 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Tehase komp.	THB-307	870.00 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	424.06 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Tehase komp.	THB-307	145.50 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Tehase komp.	THB-307	649.50 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	938.50 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Ruumelement	THB-307	330.00 mm
☒	Round Duct	BIM Instance	Assigned	Own Work	Tehase komp.	THB-307	874.00 mm

Auto assign

Remove all assignments

Round Duct

Filtered by none

3

Assigned

12

Suggested

0

Classification

155...

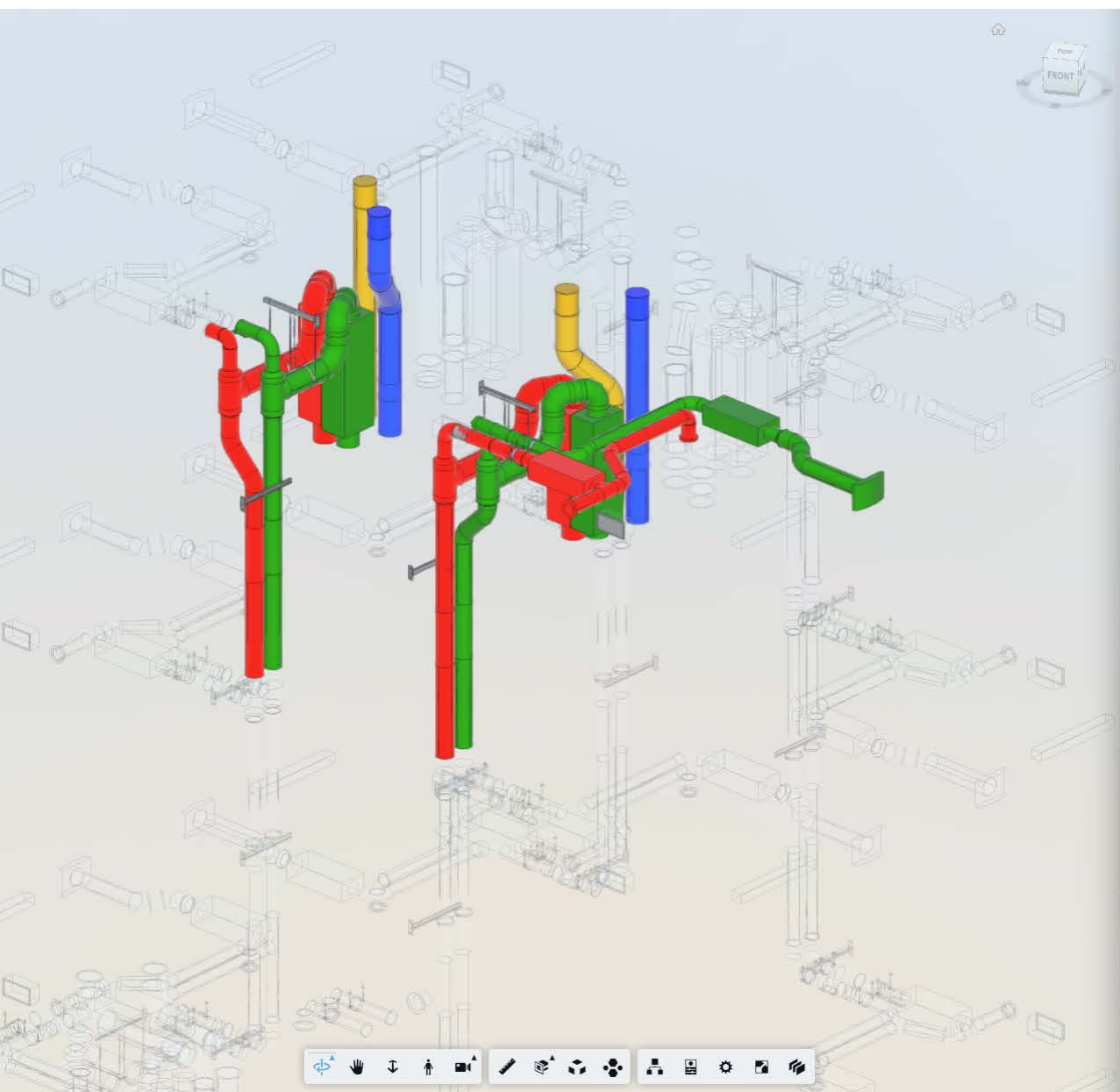
All

Product assignment is disabled while elements with different product assignment selected

Product tree (4)

Code	Name	Price	Procurem...	Product ty...
▼ Unclassified	Unclassified		NA	
▼ GP_V0000005	V_Duct round 3 meters (Lindab)		NA	Stock Based Generic P...
44516800	ventilatsioonitoru 125 a'3m		NA	Stock Based Purchased
44518500	ventilatsioonitoru 160 a'3m		NA	Stock Based Purchased
44523600	ventilatsioonitoru 200 a'3m		NA	Stock Based Purchased

BoM: dünaamiline



3D model of a building ventilation system, showing various components like pipes, ducts, and filters, color-coded (red, green, blue).

1763 Breda 42

KM_ventilation_T1

Edik Remove

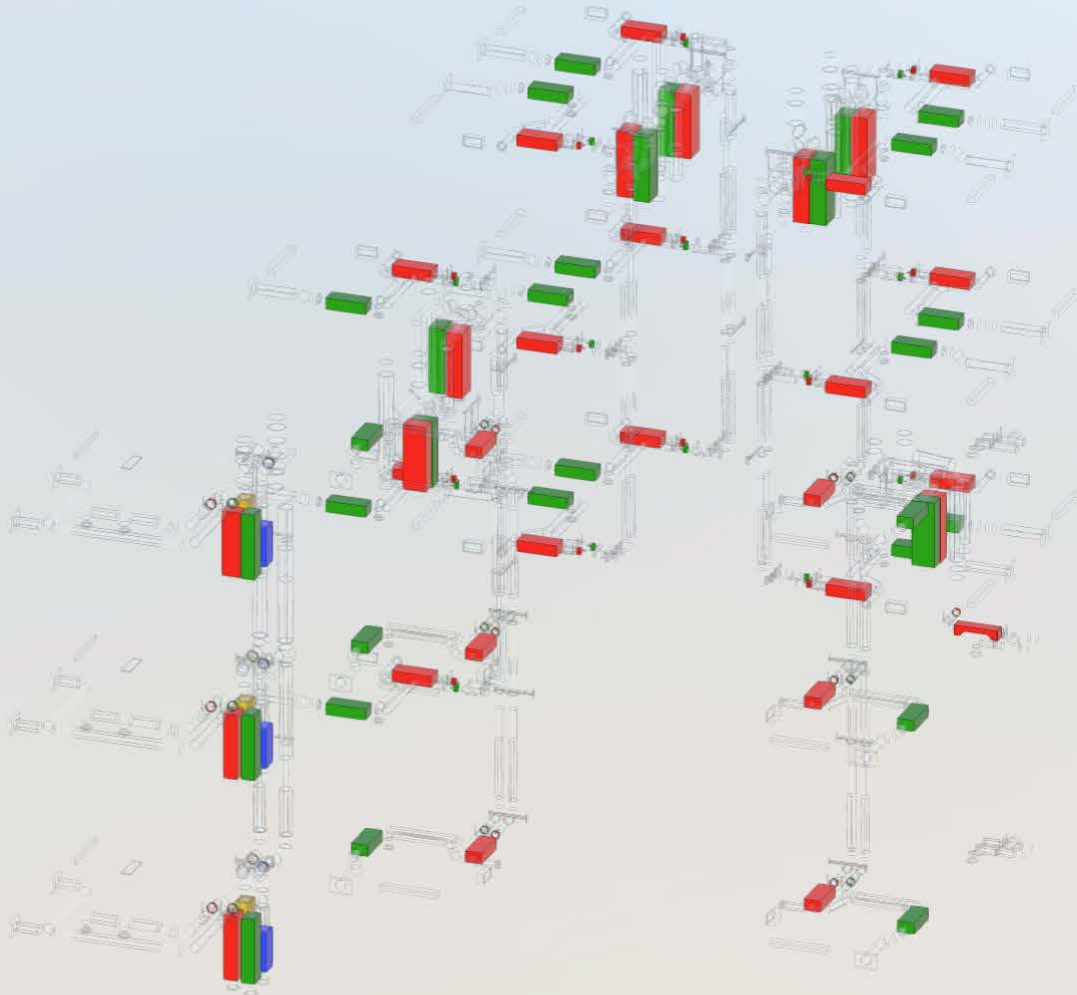
Regular Matrix

BOM elements (2458) BIM element conflicts: 0

Search BOM elements

Resource name	Resource code	KM Installation place	Base quantity	Product quantity
THB-303				
THB-305				
THB-306				
THB-307				
RE-peale viimistlust		RE-peale viimistlust	6.00 PC	6.00 PC
raam KKT 125, tihediga (VRGU)	44537200	RE-peale viimistlust	2.00 PC	2.00 PC
ventilatsioonirest Lindab AL-1-0-C-3	74493	RE-peale viimistlust	1.00 PC	1.00 PC
väljatõmbeplafoon Lindab KSU 125	44517801	RE-peale viimistlust	2.00 PC	2.00 PC
õhujootaja DSK 160, valge (RAL 90C	74463	RE-peale viimistlust	1.00 PC	1.00 PC
Ruumelement		Ruumelement		
akrüül tuletõkke grafiidipõhine Soud	74528	Ruumelement	4.00 PC	4.00 PC
isolatsioonirull Armatex 19 mm/E: 1	44544301	Ruumelement	2.57 m²	0.45 RL
keermelatt M10, 4.8, ZN, DIN97671	41770701	Ruumelement	2.80 m	2.80 m
kinnituskonsool Fischer ALK 37-600	74544	Ruumelement	2.00 PC	2.00 PC
kinnituskonsool Walraven 41x21/60	74545	Ruumelement	2.00 PC	2.00 PC
klambrikomplekt Lindab UVH30-125	44515802	Ruumelement	2.00 PC	2.00 PC
klambrikomplekt Lindab UVH30-200	44515804	Ruumelement	4.00 PC	4.00 PC
liug liitmik SMFU-125-150-GALV (0C	72191	Ruumelement	1.00 PC	1.00 PC
mutter FSM Clix M10 sinile, Fischer	74213	Ruumelement	12.00 PC	12.00 PC
mutter M10, äärisega, Zn, (DIN 6921	41777320	Ruumelement	24.00 PC	24.00 PC
mürasummuti KVDPX-125-600-GALV	70215	Ruumelement	2.00 PC	2.00 PC
mürasummuti Lindab KVDPX-200-1	71451	Ruumelement	2.00 PC	2.00 PC
tuletõkkeklapp SC60-COSMO 125	74461	Ruumelement	2.00 PC	2.00 PC
ventilatsiooni kompensatsioonihv	44518205	Ruumelement	4.00 PC	4.00 PC
ventilatsiooni puhastusluuk Lindab	44545200	Ruumelement	1.00 PC	1.00 PC
ventilatsiooni puhastusluuk Lindab	44546410	Ruumelement	1.00 PC	1.00 PC
ventilatsiooni üleminek RCFU 200/1	44553406	Ruumelement	3.00 PC	3.00 PC
ventilatsiooni üleminek RCFU 200/1	44553402	Ruumelement	3.00 PC	3.00 PC
ventilatsiooni üleminek RCU 160/12	44518100	Ruumelement	1.00 PC	1.00 PC
ventilatsioonikolmik Lindab TCPMU	72961	Ruumelement	1.00 PC	1.00 PC
ventilatsioonikolmik TCPU 125-125	44511400	Ruumelement	1.00 PC	1.00 PC
ventilatsioonikolmik TCPU 200-200	44539301	Ruumelement	4.00 PC	4.00 PC
ventilatsioonihv 125 siseliitmik N	44510900	Ruumelement	2.00 PC	2.00 PC
ventilatsioonihv 200 siseliitmik N	44511700	Ruumelement	2.00 PC	2.00 PC
ventilatsioonipõlv BKFU 200-90 (25	44511032	Ruumelement	4.00 PC	4.00 PC
ventilatsioonipõlv BKU 125-90 (222	44511002	Ruumelement	1.00 PC	1.00 PC
ventilatsioonipõlv BU 125-15	44535400	Ruumelement	1.00 PC	1.00 PC
ventilatsioonipõlv BU 125-60	44529200	Ruumelement	2.00 PC	2.00 PC

BoM: validatsioon



1763 Breda 42

KM_ventilation_T1

Regular Matrix

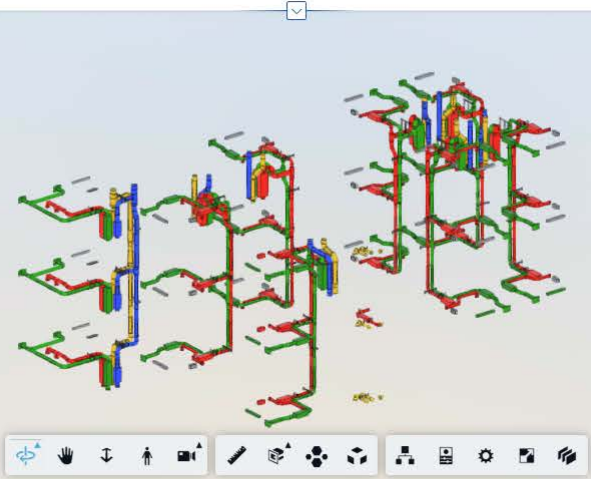
BOM elements (2458) BIM element conflicts: 0

Search BOM elements

☐	Resource name	Resource code	KM Installation place	Base quantity	Product quantity
☐	> Air Terminals			155.00 PC	155.00 PC
☒	> Duct Accessories				
☒	> RE-peale viimistlust		RE-peale viimistlust	8.00 PC	8.00 PC
☒	> akrüül tuletõkke grafiidipõhine Soudi	74528	RE-peale viimistlust	4.00 PC	4.00 PC
☒	> mürasummuti KVDPX-125-600-GALV	70215	RE-peale viimistlust	2.00 PC	2.00 PC
☒	> tuletõkkeklapp SC60-COSMO 125	74461	RE-peale viimistlust	2.00 PC	2.00 PC
☒	> Ruumelement		Ruumelement		
☒	> akrüül tuletõkke grafiidipõhine Soudi	74528	Ruumelement	111.50 PC	111.50 PC
☒	> isolatsioonirull iseliimuv Armatex XG	73147	Ruumelement	5.64 m²	0.93 RL
☒	> mürasummuti KVDPX 160-600 GALV	70518	Ruumelement	3.00 PC	3.00 PC
☒	> mürasummuti KVDPX-125-600-GALV	70215	Ruumelement	40.00 PC	40.00 PC
☒	> mürasummuti KVDPX-160-1000-GALV	70216	Ruumelement	9.00 PC	9.00 PC
☒	> mürasummuti Lindab KVDPX-200-1C	71451	Ruumelement	6.00 PC	6.00 PC
☒	> tuletõkkeklapp SC60-COSMO 125	74461	Ruumelement	42.00 PC	42.00 PC
☒	> tuletõkkeklapp SC60-COSMO 160	74462	Ruumelement	11.00 PC	11.00 PC
☒	> vent. mõõdavik ETS Nord NTL-125-4	72419	Ruumelement	1.00 PC	1.00 PC
☒	> Tehase komp.	71451	Tehase komp.	8.00 PC	8.00 PC
☒	> mürasummuti Lindab KVDPX-200-1C	71451	Tehase komp.	8.00 PC	8.00 PC
☐	> Duct Fittings				
☐	> Ducts				
☐	> Mechanical Equipment				

BoM: maatriks

KM_ventilation_T1



Regular

Matrix

Resources (72)

Code	Name	Average	Sum	Base quant...	THB-101	THB-102	THB-103	THB-105	THB-106	THB-107	THB-108	THB-109	THB-110	THB-123	THB-201	THB-202	THB-203	THB-205	THB-206	THB-207	THB-208	THB-209	THB-210	THB-301	THB-302	THB-303	THB-305	THB-306
44518100	ventilatsiooni üleminek RCU 160/125	1.00	21.00	PC	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00
44544301	isolatsioonirull Armaflex 19 mm/E; 1 x 6m (ru...	3.98	31.82	m²				2.10										4.85									6.22	5.30
44518108	ventilatsiooni üleminek RCU 200/160	2.00	2.00	PC																								
44518211	vent.kompensatsioonimuhv SNPU 200/500 (...)	2.00	2.00	PC																							2.00	
44531401	ventilatsiooni kompensatsioonimuhv 160/500...	2.67	16.00	PC														2.00										4.00
44524500	ventilatsiooni kompensatsioonimuhv 125/500...	2.80	14.00	PC															4.00	4.00	2.00	2.00	2.00					
44533400	ventilatsioonipõlv BU 200-90	3.17	19.00	PC																							1.00	4.00
44511002	ventilatsioonipõlv BKU 125-90 (222212) lühe...	1.48	31.00	PC	1.00	1.00	1.00		2.00	1.00		1.00	3.00		1.00	1.00	1.00		1.00	1.00		1.00	2.00	1.00	1.00	1.00		3.00
44517801	väljatõmbeplafoon Lindab KSU 125 (507234)	2.00	42.00	PC	2.00	2.00	2.00		2.00	2.00		2.00	3.00		2.00	2.00	2.00		2.00	2.00		2.00	1.00	2.00	2.00	2.00		2.00
44537200	raam KKT 125, tihendiga (VRGU)	2.00	42.00	PC	2.00	2.00	2.00		2.00	2.00		2.00	3.00		2.00	2.00	2.00		2.00	2.00		2.00	1.00	2.00	2.00	2.00		2.00
44517802	väljatõmbeplafoon Lindab KSU 160	2.00	6.00	PC				2.00										2.00									2.00	
44655530	vent.plafooni kinnitusraam KKT 160 (tihendiga)	2.00	6.00	PC				2.00										2.00									2.00	
74494	ventilatsioonirest Lindab AL-1-0-C-500-150 N...	1.00	3.00	PC				1.00										1.00									1.00	
74493	ventilatsioonirest Lindab AL-1-0-C-300-150 N...	1.00	21.00	PC	1.00	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00
74547	mutter FCN CLIX M10, Walraven konsoolile, ...	52.00	52.00	PC	52.00																							
72191	liug liitmik SMFU-125-150-GALV (00266)	9.60	96.00	PC	69.00				4.00	4.00									4.00	4.00		2.00	2.00					4.00
74544	kinnituskonsool Fischer ALK 37-600 (538745)	2.53	48.00	PC	24.00			1.00	2.00	2.00	1.00	1.00	1.00					1.00	2.00	2.00	1.00	1.00	1.00			1.00	2.00	
74545	kinnituskonsool Walraven 41x21/600mm (ver...	2.00	26.00	PC		10.00												1.00	2.00	2.00	1.00	1.00	1.00			1.00	2.00	
44546410	ventilatsiooni puhastusruuk Lindab IPLR 100-...	1.70	39.00	PC	1.00	1.00	1.00		3.00	3.00	1.00	2.00	2.00		1.00	1.00	1.00		3.00	3.00	1.00	2.00	3.00	1.00	1.00	1.00		2.00
44521700	ventilatsioonimuhv 250 siseliitmik NPU	2.00	2.00	PC																								2.00

BIM ei ole eesmärk, vaid vahend

Automatiseerimine algab andmete korrastamisest

Kui eeldefiniitsioon on paigas, liigub info minutitega

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