

ÚRS/DEK BIM TOOLBOX

SIMPLE INFORMATION FLOW FROM DESIGNERS TO COST ESTIMATORS AND CLIENTS

Ing. Daniel Cihelka ÚRS CZ a.s., Czech Republic



- Introduction
- Cost information ÚRS price system
- ÚRS/DEK BIM TOOLS for design & estimate
- Overview and outlook

ABOUT ÚRS CZ a.s.



- Czech Republic Europe
- 58 years of history in the area of cost estimating and cost accounting
- Creator of ÚRS price system and SW vendor



- ► 6 000 active users
- ► 50 employees mostly engineers

- Since 2018 part of DEK holding
 - DEK holding 17 companies focused on construction industry
 - The biggest company is DEK a.s. vendor of building materials – 90 branches



- About 300 main partners manufacturers
- 2 600 employees

ÚRS price system (CS ÚRS) – construction cost of a project



Planning phase

Study/Preliminary design

Building permission, basic design

Tender documentation, detailed design

Contractor cost calculation (for bidding)

Level of estimate

First rough estimation

Price schedule in aggregate items

detailed bill of quantity Price for m2 thin

of external walls, etc.

Price schedule with a

silicone grained plaster

Price schedule (bid) + contractor's cost account

Examples

Price for m3 space, m2 built-up areas, etc.

Price for m2 facade, electro per rooms, etc.

> B - Agregates (RYRO, KOSTO)

and works

C - Constructions

D - Cost analysis; materials, labor cost, machines, etc.

Range of data

(databases)

Parts of CS ÚRS

1 300 Construction

A – Price index

(KUBIX, RUSO)

1 200 items

100 000 items

for each item

Speed of estimating

Level of project detail / Cost accuracy

C – Database of construction and works



- Each Item has a unique 9-figures code
- Structured (classified) mainly according to:
 - the type of construction (buildings, roads, bridges, etc.) and the structure (foundation, vertical construction – walls etc., horizontal construction, etc.)
 - the profession (earthworks, bricklayer, isolator, plumber, carpenter, etc.)
 - cost significance
- For both public and private works (public works without names of the products)
- Examples of items:

Code	Description	Unit	Unit price (CZK)
279113125	Foundation wall, thickness 400 mm, of permanent formwork blocks including filling of concrete class C 12/15	m2	1 490,00
279113124	Foundation wall, thickness 300 mm, of permanent formwork blocks including filling of concrete class C 12/15	m2	1 170,00
279361221	Reinforcement for foundation wall, reinforcing steel 10216 (E)	t	38 400,00
711141559	Fixing insulation against soil moisture by fusing horizontal asphalt strip AIS	m2	86,90
711142559	Fixing insulation against soil moisture by fusing vertical asphalt strip AIS	m2	100,00
311235511	Single-layer masonry brick laid on foam, strength P10, thickness 440 mm	m2	1 460,00
622531021	Thin silicone grained plaster, thickness 2.0 mm, including penetration of external walls	m2	297,00

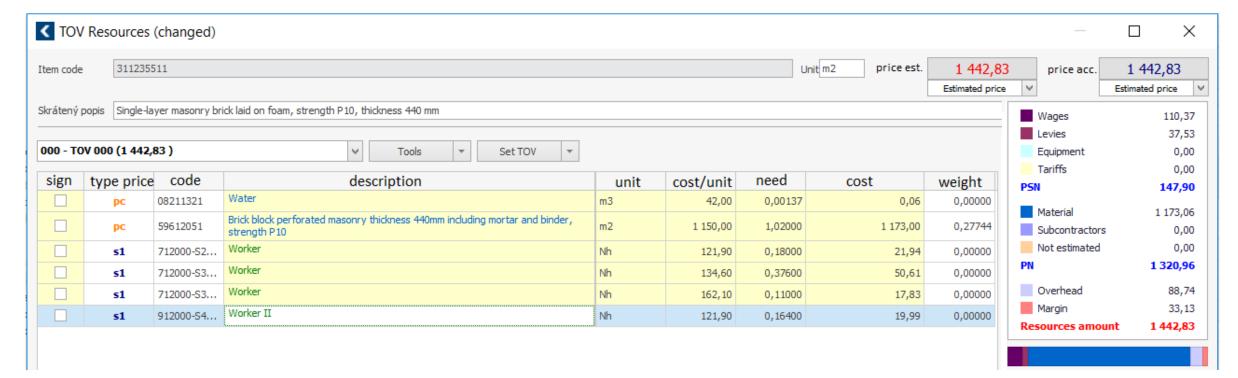
D – Cost analysis



Each Item has cost analysis:

- Materials and their needs/per construction unit
- Wages with times/per construction unit
- Machines with times/per construction unit
- Rate of overhead, profit

Example of cost analysis for 1 construction - Single-layer masonry brick laid on foam, strength P10, thickness 440 mm

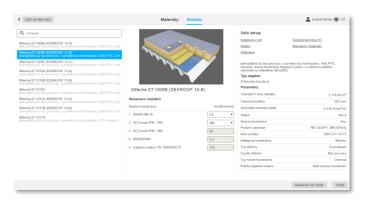




ÚRS/DEK BIM TOOLBOX

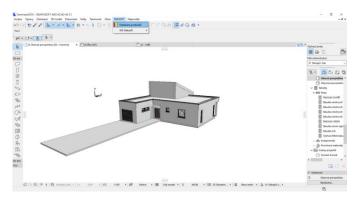
1

LIBRARY



- SOURCE OF INFORMATION
- MATERIALS, PRODUCTS, STRUCTURES
- TECHNICAL, ECONOMIC, GUARANTEES
- SEARCHING AND CONFIGURATING

2 PLUG IN - 3D BIM SW



- INSERTING MATERIALS, PRODUCTS, STRUCTURES
- ARCHICAD, REVIT, ALLPLAN





- VISUALIZATION OF IFC MODEL
- SHARING AND ORGANIZING DATA
- VIEWING PROJECT COST IN 3D STRUCTURE
- CONNECTION TO THIRD-PARTY SOFTWARE

SPECIALIST'S SOFTWARE

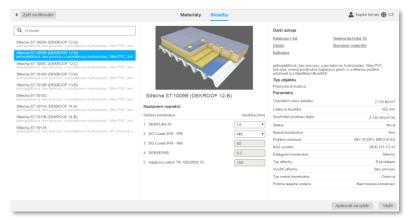


- COST AND TIME SCHEDULES
- ENERGETICS, THERMAL, ACOUSTICS, PHOTOVOLTAIC ...
- CONTRACTS, SITE DIARY, CHANGE ORDERS

1

LIBRARY

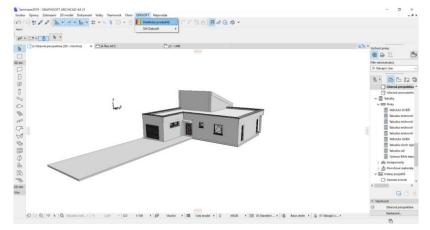
designer, manufacturer





PLUG IN - 3D BIM SW

designer



3

BIM CLOUD

designer, client, cost estimator, etc.





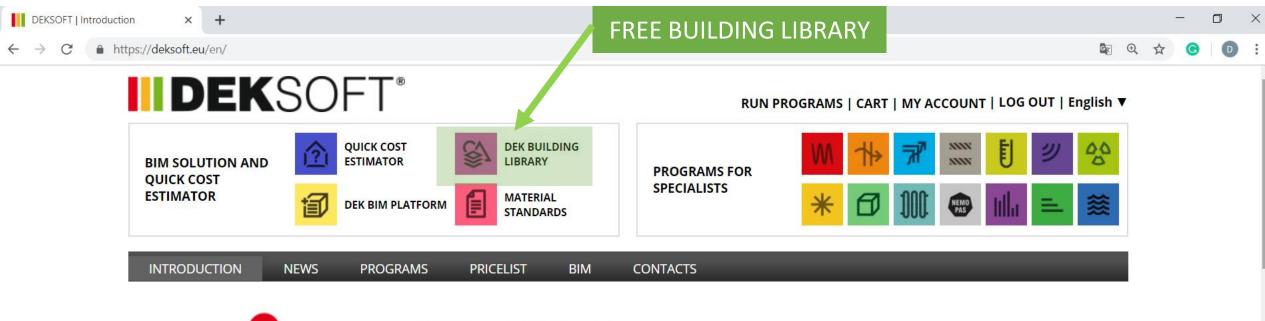
SPECIALIST'S SOFTWARE



cost estimator, ...



LIBRARY: ON WEBSITE: WWW.DEKSOFT.EU

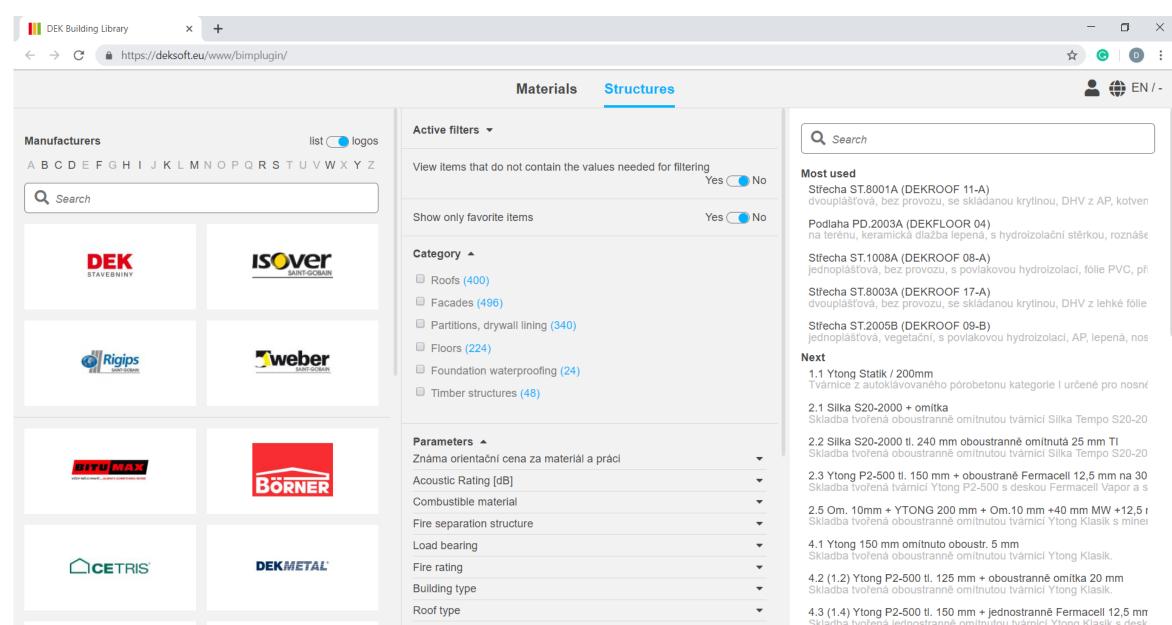




BIM DEKSOFT

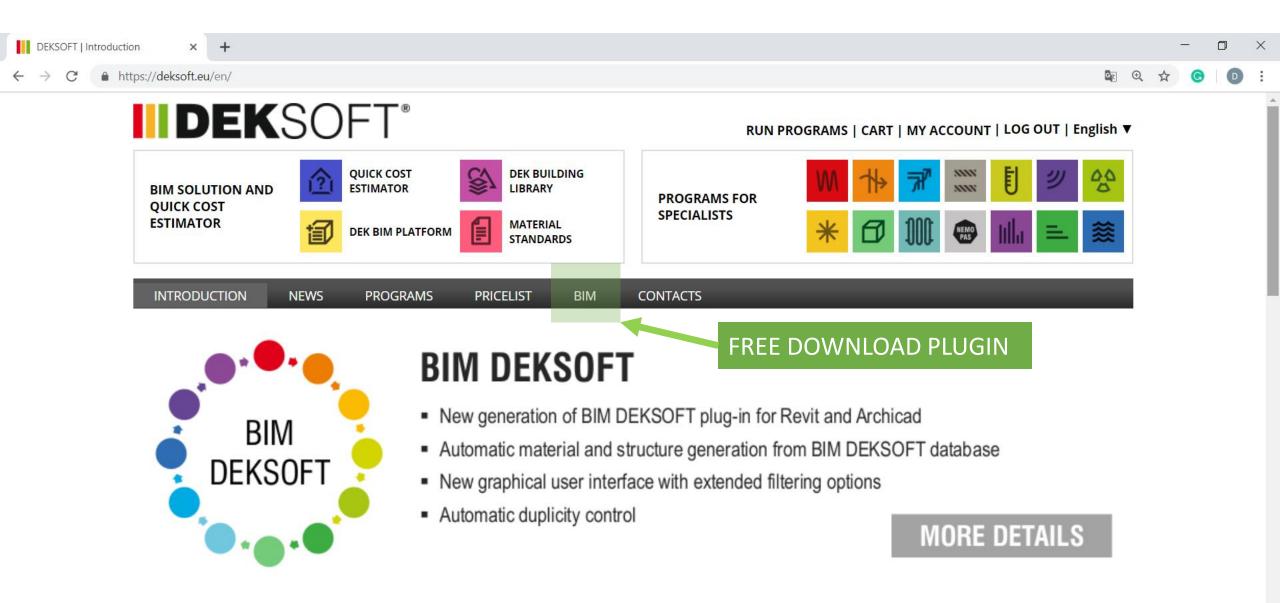
- New generation of BIM DEKSOFT plug-in for Revit and Archicad
- Automatic material and structure generation from BIM DEKSOFT database
- New graphical user interface with extended filtering options
- Automatic duplicity control

MORE DETAILS

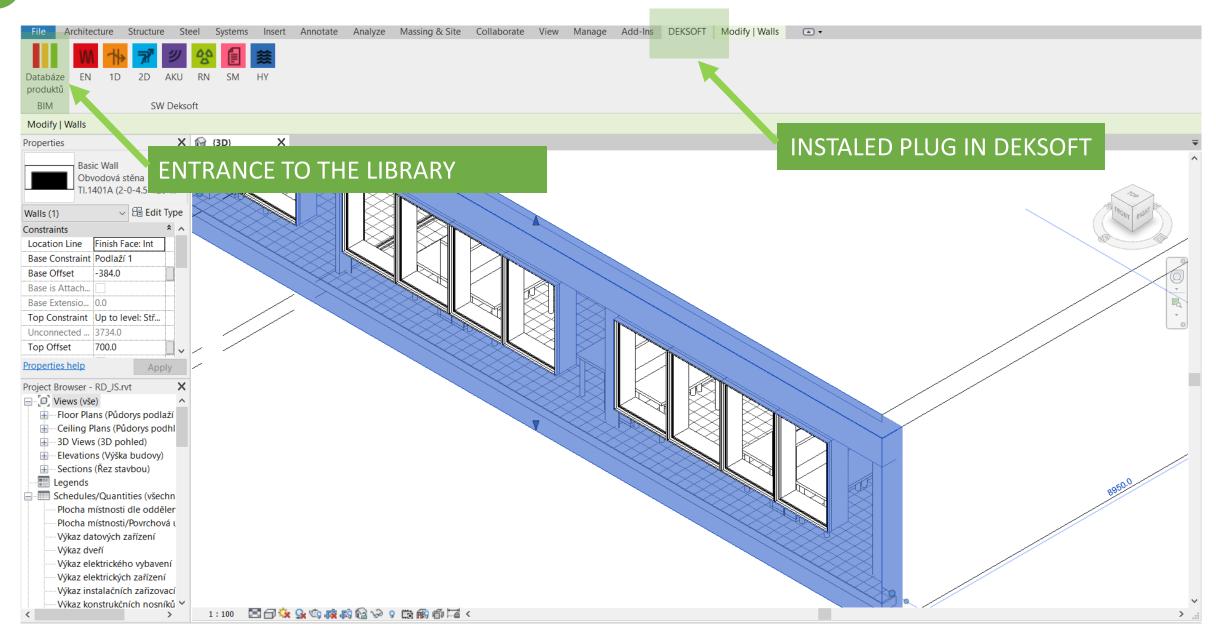




PLUG IN 3D BIM SW: ON WEBSITE: WWW.DEKSOFT.EU

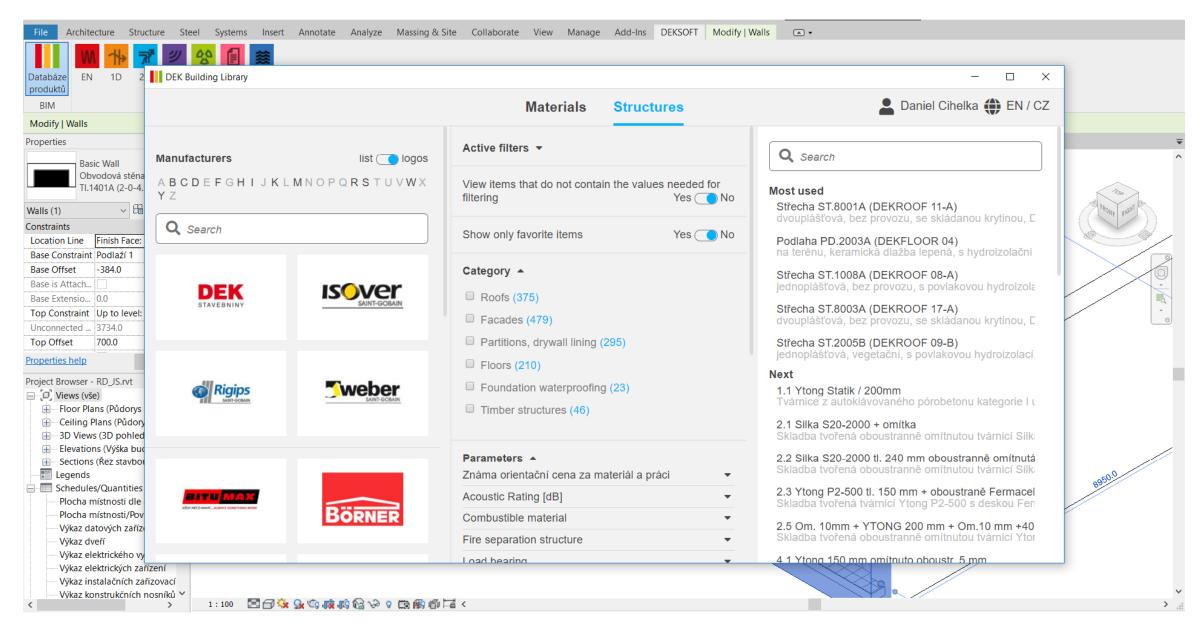


PLUG IN - 3D BIM SW

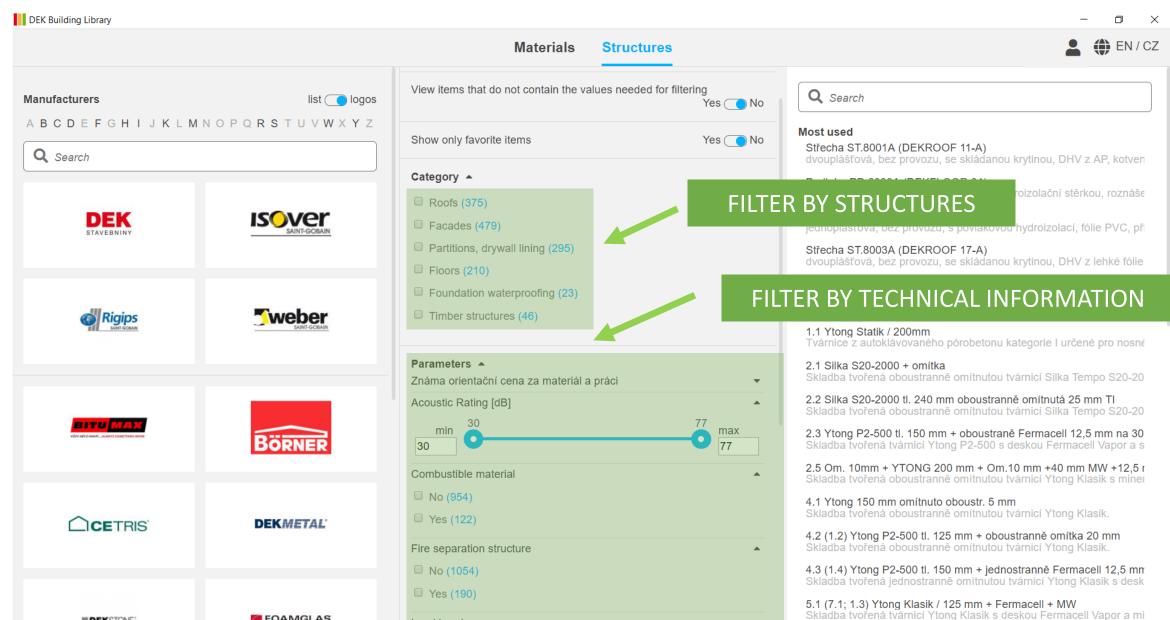


LIBRARY - OPENED FROM PLUG IN (the same as





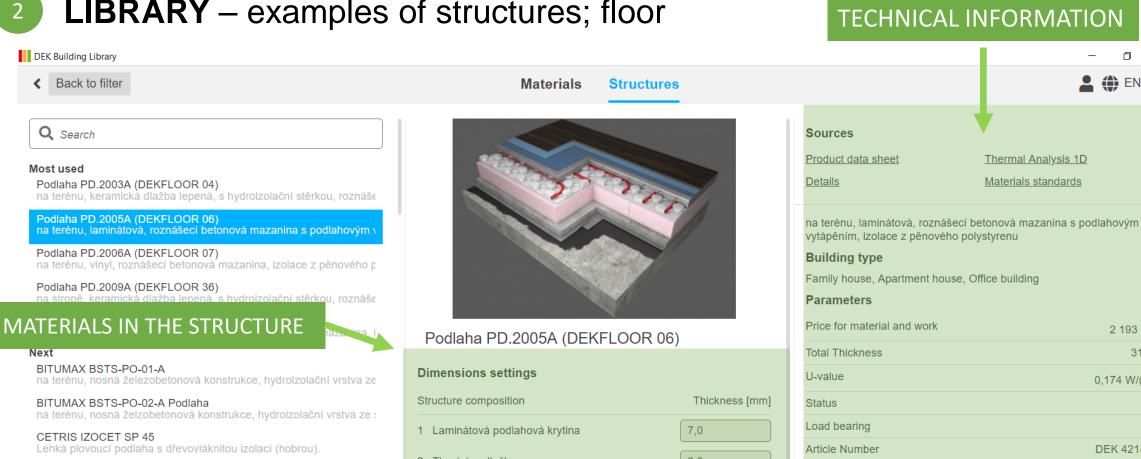
DEKSTONE



FOAMGLAS

Load bearing

TECHNICAL INFORMATION



CETRIS IZOCET SP 65

Lehká plovoucí podlaha se zdvojenou dřevovláknitou izolací (hobrou)

CETRIS PD 16-18 mm podlahová deska na záklopu

Cementotřískové desky CETRIS® PD uložené na nosném podkladu

CETRIS PD 18-28 mm podlahová deska na nosnících

Klasická pevná konstrukce podlah se skládá z nosníků jedno nebo ol

CETRIS PDB 16-18 mm broušená podlahová deska na záklopu

Cementotřískové desky CETRIS® PDB uložené na nosném podkladu

CETRIS PDB 18-32 (38) mm broušená podlahová deska na nosnícíc Klasická pevná konstrukce podlah se skládá z nosníků jedno nebo ot

CETRIS PDI podlahový izolační dílce

Dimensions settings	
Structure composition	Thickness [mm]
1 Laminátová podlahová krytina	7,0
2 Tlumicí podložka	3,0
3 DEKSEPAR	0,2
4 roznášecí betonová mazanina	50
5 DEKPERIMETER PV-NR75	50
6 DEKPERIMETER SD 150	140 ▼
7 ochranná betonová mazanina	60

Building type		
Family house, Apartment house, Office building		
Parameters		
Price for material and work	2 193 Kč/m ²	
Total Thickness	314 mm	
U-value	0,174 W/(m ² .K)	
Status	New	
Load bearing	No	
Article Number	DEK 421-11-15	
Structure category	Floors	
Maximum uniformly distributed imposed load [kN.r	n-2] 3	
Maximum concentrated imposed load [kN]	2	
Room characteristics	Living room, Office	
Space use type	Dry	
Underfloor heating	Yes	
Structure location	In contact with ground	

Ignore layers ---

Apply to selection

Insert

♠ EN / EN



Materials

Structures





Most used

Podlaha PD.2003A (DEKFLOOR 04)

na terénu, keramická dlažba lepená, s hydroizolační stěrkou, roznáše

Podlaha PD.2005A (DEKFLOOR 06)

na terénu, laminátová, roznášecí betonová mazanina s podlahovým v

Podlaha PD.2006A (DEKFLOOR 07)

na terénu, vinyl, roznášecí betonová mazanina, izolace z pěnového p

Podlaha PD.2009A (DEKFLOOR 36)

na stropě, keramická dlažba lepená, s hydroizolační stěrkou, roznáše

Podlaha PD.2001A (DEKFLOOR 01)

na terénu, keramická dlažba lepená, roznášecí betonová mazanina. i

Next

BITUMAX BSTS-PO-01-A

na terénu, nosná železobetonová konstrukce, hydroizolační vrstva ze

BITUMAX BSTS-PO-02-A Podlaha

na terénu, nosná želzobetonová konstrukce, hydroizolační vrstva ze :

CETRIS IZOCET SP 45

Lehká plovoucí podlaha s dřevovláknitou izolací (hobrou).

CETRIS IZOCET SP 65

Lehká plovoucí podlaha se zdvojenou dřevovláknitou izolací (hobrou)

CETRIS PD 16-18 mm podlahová deska na záklopu

Cementotřískové desky CETRIS® PD uložené na nosném podkladu

CETRIS PD 18-28 mm podlahová deska na nosnících

Klasická pevná konstrukce podlah se skládá z nosníků jedno nebo ot

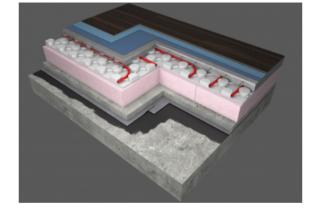
CETRIS PDB 16-18 mm broušená podlahová deska na záklopu

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CETRIS PDI podlahový izolační dílce



Podlaha PD.2005A (DEKFLOOR 06)

Dimensions settings

PRICE FOR MATERIAL AND WORK

1 Laminátová podlahová krytina

2 Tlumicí podložka

3 DEKSEPAR

4 roznášecí betonová mazanina

5 DEKPERIMETER PV-NR75

6 DEKPERIMETER SD 150

7 ochranná betonová mazanina

7,0

3,0

0,2

50

50

140

60

Sources

<u>Product data sheet</u> <u>Thermal Analysis 1D</u>

<u>Details</u> <u>Materials standards</u>

na terénu, laminátová, roznášecí betonová mazanina s podlahovým vytápěním, izolace z pěnového polystyrenu

Building type

Family house, Apartment house, Office building

Parameters

Price for material and work	2 193 Kč/m ²	
Total Thickness	314 mm	
U-value	0,174 W/(m ² .K)	
Status	New	
Load bearing	No	
Article Number	DEK 421-11-15	
Structure category	Floors	
Maximum uniformly distributed imposed load [kN.m-2]	3	
Maximum concentrated imposed load [kN]	2	
Room characteristics	Living room, Office	
Space use type	Dry	
Underfloor heating	Yes	
Structure location In	contact with ground	

Ignore layers --- ▼

Apply to selection



Podlaha PD.2006A (DEKFLOOR 07)

na terénu, vinyl, roznášecí betonová mazanina, izolace z pěnového p

Podlaha PD.2009A (DEKFLOOR 36)

na stropě, keramická dlažba lepená, s hydroizolační stěrkou, roznáše

Podlaha PD.2001A (DEKFLOOR 01)

na terénu, keramická dlažba lepená, roznášecí betonová mazanina, i

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BITUMAX BSTS-PO-01-A

BITUMAX BSTS-PO-02-A Podlaha

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na terénu, nosná železobetonová konstrukce, hydroizolační vrstva ze

CETRIS IZO CHANGE THICKNESS OF THERMAL INSULATION

CETRIS PD To-To mm podianova deska na zakiopu

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CETRIS PDI podlahový izolační dílce

Dimensions settings Structure composition Thickness [mm]

Podlaha PD.2005A (DEKFLOOR 06)

1 Laminátová podlahová krytina

80 100 120 140 160 200 220 240 140

7 ochranná betonová mazanina

4 roznášecí betonová mazanina 5 DEKPERIMETER PV-NR75 6 DEKPERIMETER SD 150

60

7,0

60

vytápěním, izolace z pěnového polystyrenu

Building type

Family house, Apartment house, Office building

Parameters

Price for material and work	2 193 Kč/m²
Total Thickness	314 mm
U-value	0,174 W/(m ² .K
Status	Nev
Load bearing	No
Article Number	DEK 421-11-15
Structure category	Floors
Maximum uniformly distributed imposed load [kN.m	-2]
Maximum concentrated imposed load [kN]	2
Room characteristics	Living room, Office
Space use type	Dry
Underfloor heating	Yes
Structure location	In contact with ground

Ignore lavers ---

Apply to selection



DEK Building Library

Back to filter

Materials

Structures





Most used

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na terénu, keramická dlažba lepená, s hydroizolační stěrkou, roznáše

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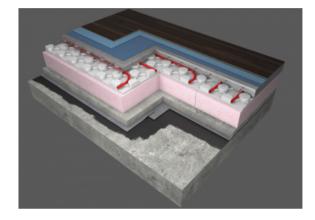
CETRIS PDB 16-18 mm broušená podlahová deska na záklopu

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CETRIS PDI podlahový izolační dílce



Podlaha PD.2005A (DEKFLOOR 06)

Dimensions settings

7 ochranná betonová mazanina

Structure composition	Thickness [mm]
1 Laminátová podlahová krytina	7,0
2 Tlumicí podložka	3,0
3 DEKSEPAR	0,2
4 roznášecí betonová mazanina	50
5 DEKPERIMETER PV-NR75	50
6 DEKPERIMETER SD 150	180 ▼

Sources

Details

Product data sheet Thermal Analysis 1D

na terénu, laminátová, roznášecí betonová mazanina s podlahovým vytápěním, izolace z pěnového polystyrenu

Materials standards

Building type

Family house, Apartment house, Office building

Parameters

Price for material and work

CHANGED PRICE

0.145 W/(m².K)

2 357 Kč/m²

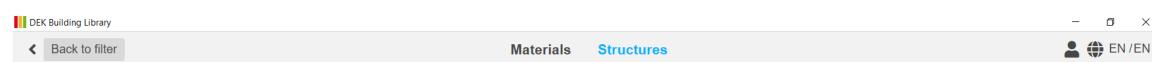
354 mm

	0,110 11/(11 111)
Status	New
Load bearing	No
Article Number	DEK 421-11-15
Structure category	Floors
Maximum uniformly distributed imposed load [kN.m	1-2] 3
Maximum concentrated imposed load [kN]	2
Room characteristics	Living room, Office
Space use type	Dry
Underfloor heating	Yes
Structure location	In contact with ground

Ignore layers --- ▼

Apply to selection

LIBRARY – examples of structures; masonry





Most used

Wienerberger ST 1.1b Wall Porotherm 44 T Profi

Porotherm 44 T Profi clay blocks are used for single layer coated load t

Wienerberger ST 1.1c Wall Porotherm 44 T Profi, paint Interior plaster and paint for clay blocks wall.

Next

ST 1.1a Wall Porotherm 44 T Profi, tiles

Exterior tiles for clay blocks wall.

Wienerberger ST 1.1 Plinth Porotherm 38 TS Profi, plaster, paint Porotherm 38 TS Profi clay blocks with plasterwork on both sides for pa

Wienerberger ST 1.1a Wall Porotherm 44 T Profi, plaster Exterior plaster for clay blocks wall.

Wienerberger ST 1.1c Wall Porotherm 44 T Profi, tiles Interior tiles for clay blocks wall.

Wienerberger ST 1.2 Lintel Porotherm KP 7

Porotherm 44 Profi Dryfix hollow clay blocks are used for single layer or

Wienerberger ST 1.2 Lintel Porotherm KP Vario UNI

Reinforced concrete bond beam.

Wienerberger ST 1.2 Plinth Porotherm 25 AKU Z Profi, plaster, paint Porotherm 25 AKU T clay blocks with plasterwork on both sides for parl

Wienerberger ST 1.2 Wall Porotherm 30 T Profi, plaster, paint

Porotherm 30 T Profi clay blocks are used for single layer coated load t

Wienerberger ST 1.2 Wall Porotherm 30 T Profi, tiles, paint

Porotherm 30 T Profi clay blocks are used for single layer coated load t

Wienerberger ST 2.3 Bond beam

Reinforced concrete bond beam.



Wienerberger ST 1.1 Plinth Porotherm 38 TS Profi, plaster, paint

Dimensions settings

Structure composition

INSERT INTO THE MODEL 1 Baumit NanoporTop

Thickness [mm]

3.0

2 PremiumPrimer

3 Baumit MultiRenova

4 StarTex

Porotherm 38 TS Profi clay blocks with plasterwork on both sides for partitions with higher acoustics requirements or for external wall combined with thermal insulation.

Building type

Family house, Apartment house

Price for material and work

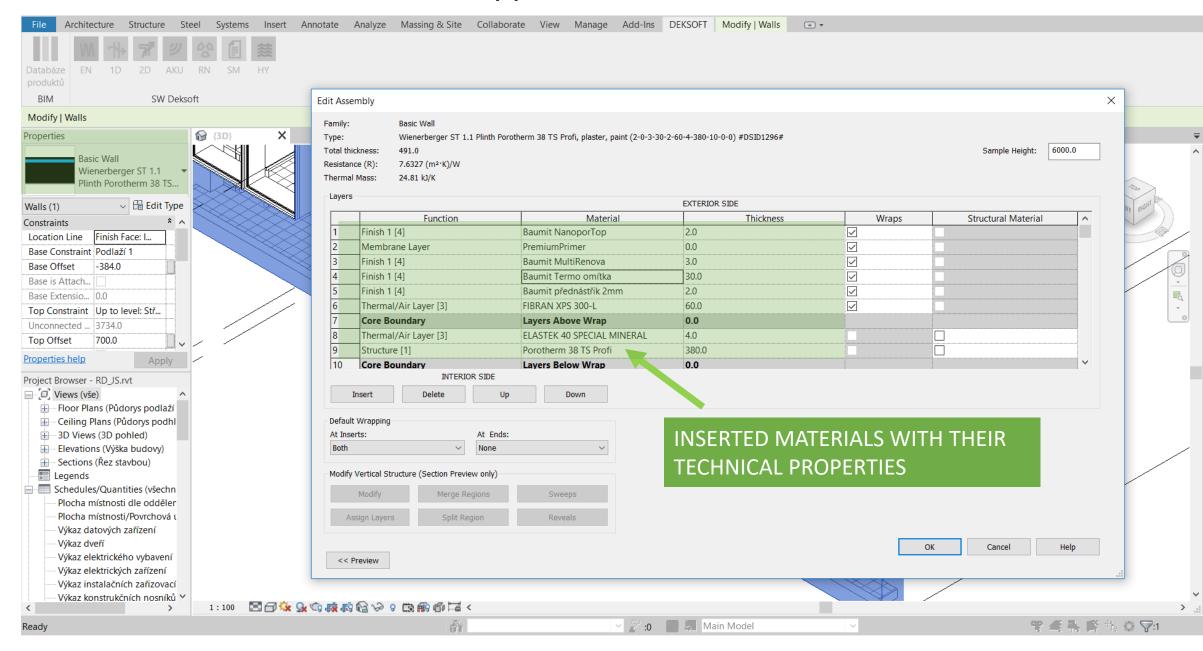
Parameters

3 902 Kč/m²	File for material and work
491 mm	Total Thickness
0,134 W/(m ² .K	U-value
New	Status
No	Combustible material
Yes	Fire separation structure
Yes	Load bearing
Wienerberge	Manufacturer
Facades	Structure category

Ignore layers ---

Apply to selection

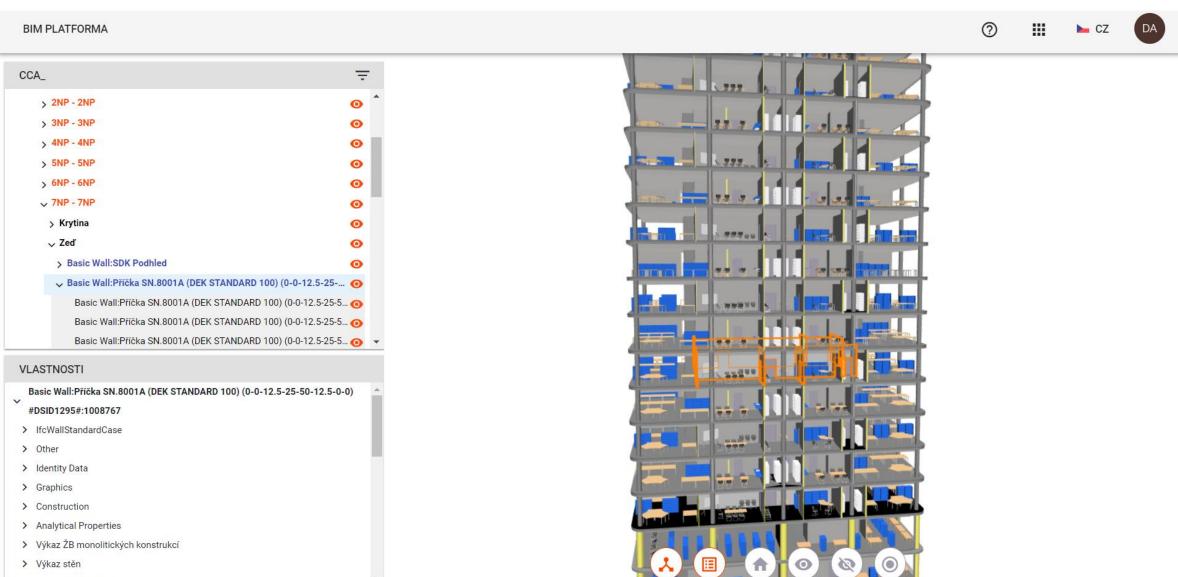
PLUG IN - 3D BIM SW - after application into the model



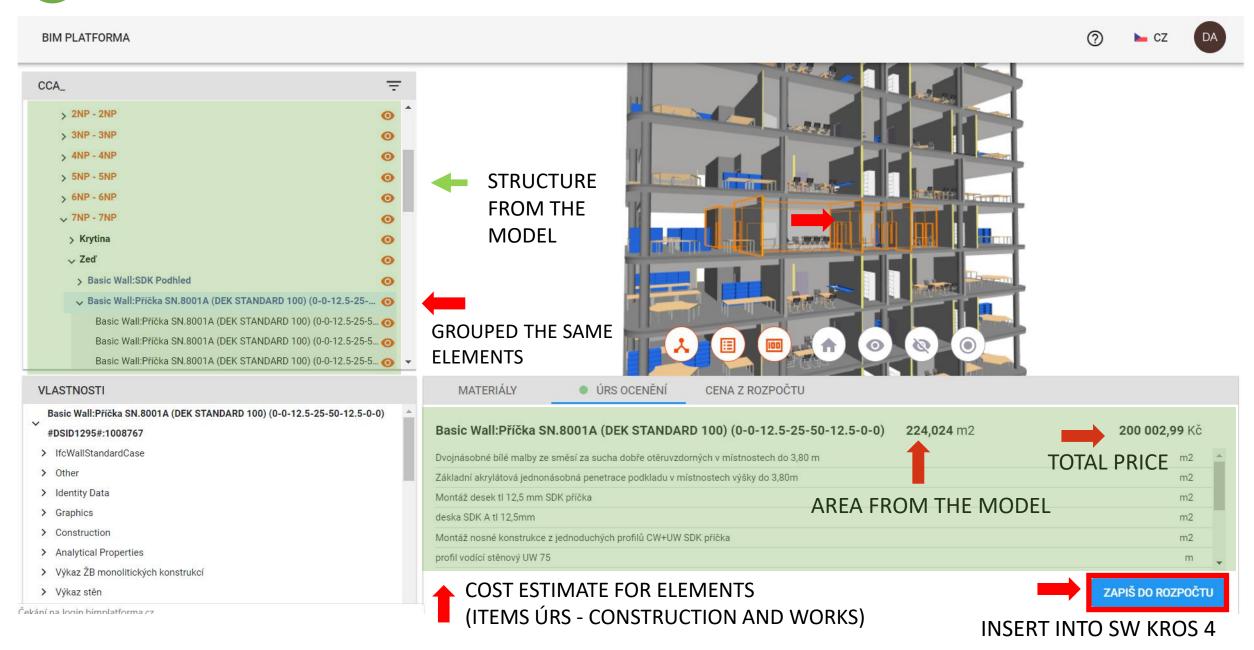
> Pset WallCommon

BIM CLOUD - WWW.BIMPLATFORMA.CZ

Sharing model, project documentation, ifc viewer, etc.



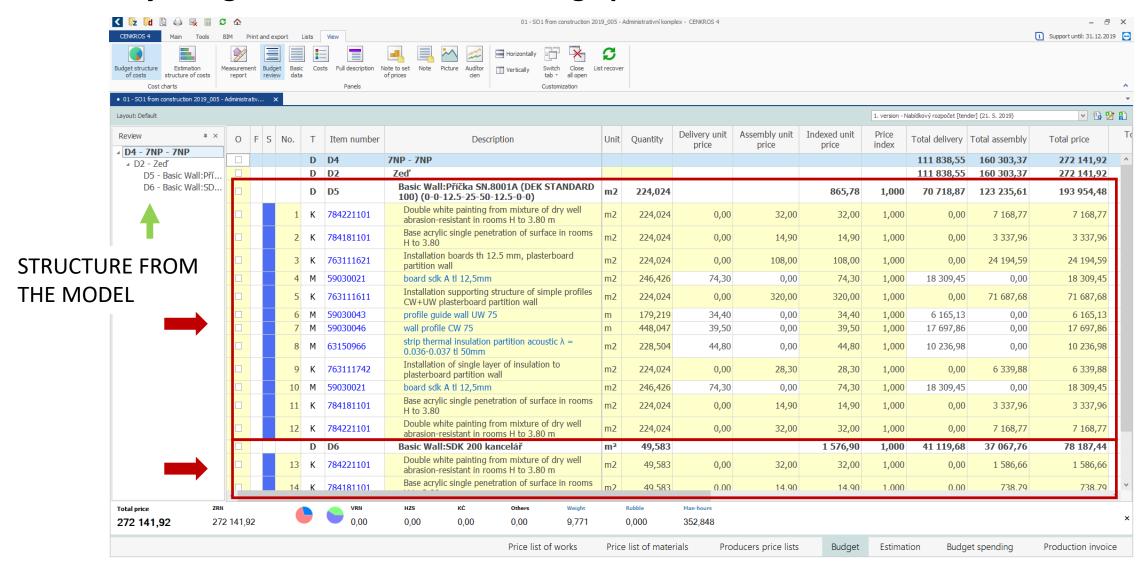
BIM CLOUD – COST ESTIMATER'S VIEW



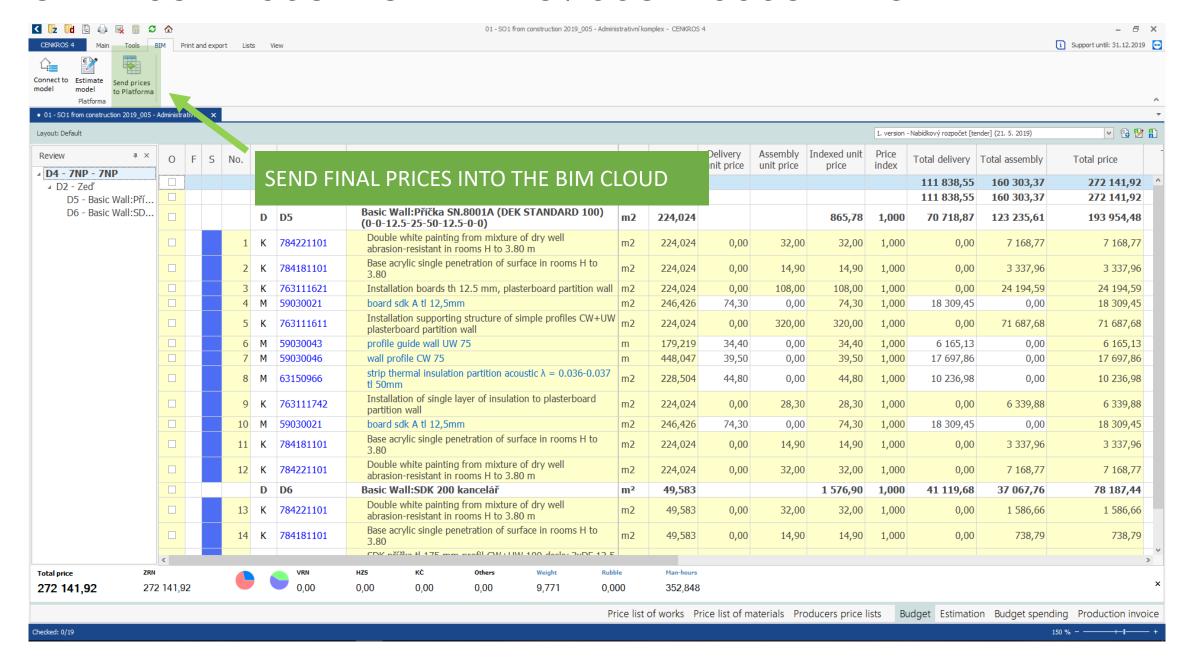
SW KROS 4 – COST ESTIMATING / COST ACCOUNTING

Cost estimate for each group of the same elements:

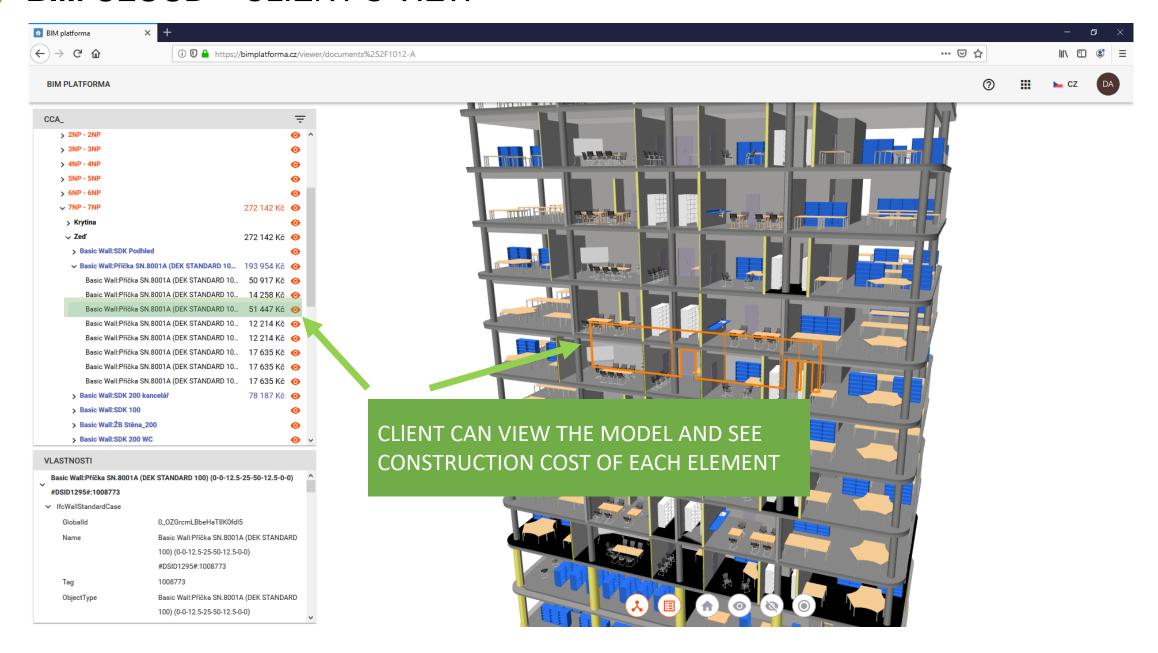
- adjusting items - add, delete, change prices, cost account, etc.



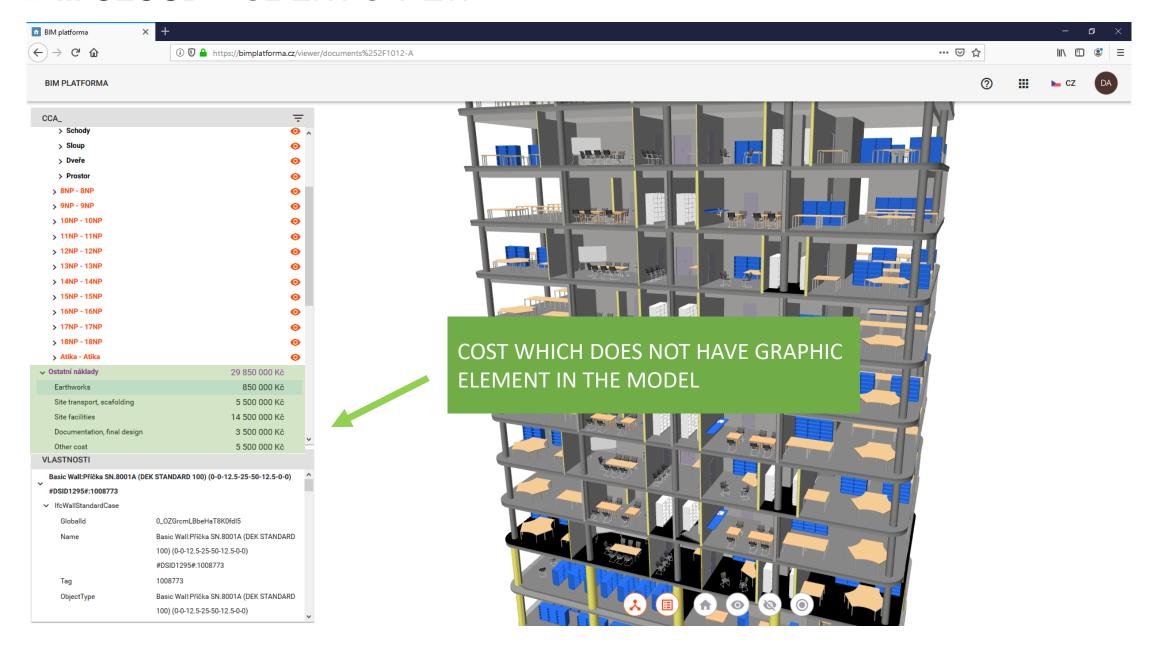
SW KROS 4 – COST ESTIMATING / COST ACCOUNTING



BIM CLOUD – CLIENT'S VIEW



BIM CLOUD – CLIENT'S VIEW



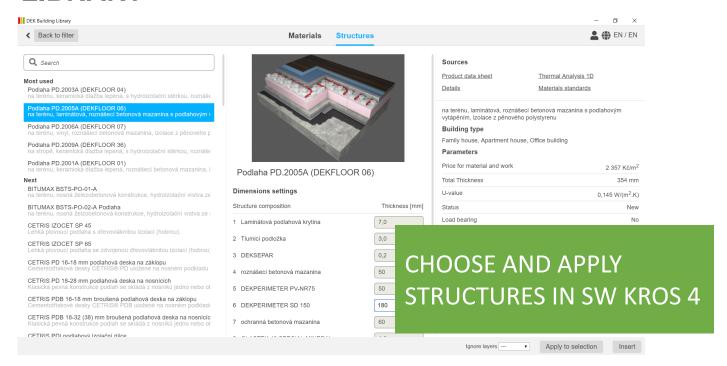


ALSO FOR 2D PROJECT

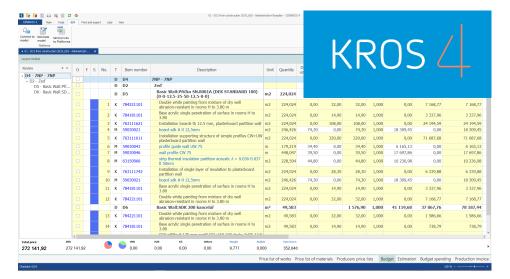
CONSTRUCTION FOR 2D PROJECT



LIBRARY



COST ESTIMATING SW



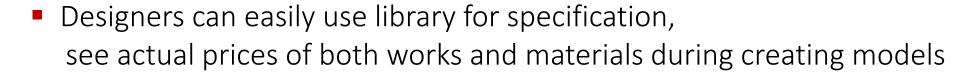


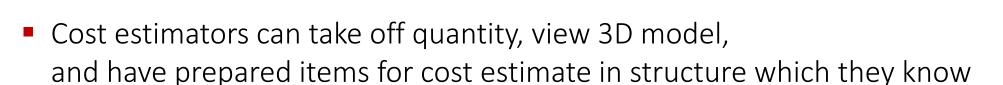
OVERVIEW AND OUTLOOK

OVERVIEW



- Current SW can be used
 - Designer 3D BIM SW
 - Cost estimator Cost estimating SW





- Clients can view 3D model with cost
- Free Library, free BIM cloud, compatible with IFC









OUTLOOK



- Verification on pilot projects
 - The main issue is the quality of models the principles of modeling elements, level of the detail according to design, etc.
- Adaptation to the Czech BIM Classification depending on the outputs of Czech authorities (Government strategy to implement BIM for big public work since 2022). There is no mandatory classification now.
- Next SW and data development
 - Time scheduling
 - Life-cycle costs, environmental cost
 - etc.



Thank you for your attention



CONTACT

Ing. Daniel CihelkaProject manager

00 420 724 585 843 daniel.cihelka@urs.cz

