TT 2021-11-02 SIMM Part2, I.Cassidy, S.Hessler

Ilka Cassidy, Steve Hessler, Single Integrated Manufacturing Model Part 2: Digital alignment, SIMM vs BIM, CLT components, light framed hp wall panels: 2021-11-02

In this evening's talk, Holzraum System's Ilka Cassidy and Steve Hessler describe how their **S**ingle **I**ntegrated **M**anufacturing **M**odel (SIMM) process captures structural, building fabric, energy performance, manufacturing, and mechanical systems details and data prior to the cost-effective offsite manufacture of PH buildings. The SIMM's delivery of detailed drawings ensures that every aspect of their PH buildings meet client expectations.

Summary of the Links and Product references in the chat:

00:13 Ian Robertson — This is you, Tom, right? http://www.maddenbaughman.com/

00:18 Jason Carter — Hello everyone. Do we have any offsite folks here? I am Jason Carter The Mod Coach. https://www.themodcoach.com/ Very excited to see what you guys are doing. I build and design new factories around the world

00:22 Shannon | New Hope PA USA — Follow Holzraum on Linked In: https://www.linkedin.com/company/holzraum-system-llc/

00:24 Shannon | New Hope PA USA — Connect with Steve Hessler, https://www.linkedin.com/in/steve-hessler-81214833/; & Ilka Cassidy, https://www.linkedin.com/in/ilka-gronert-cassidy-a8653831/.

00:24 Shannon | New Hope PA USA — https://www.holzraumsystem.com/

00:40 Shannon | New Hope PA USA — Connect with Tom :) https://www.linkedin.com/in/tom-baughman-103b023/

00:42 Shannon | New Hope PA USA — Connect with Patrick Clark @ Stolze Timber Systems https://www.linkedin.com/in/patrick-clark-78137722/

00:46 Mark Wille — "The Client & The Contractor Relationship with Jake Bruton of Aarow Building & the unbuildit podcast and The Build Show Network is LIVE on 11/5/21 at 10 am Pacific: Please join us ~ https://www.linkedin.com/events/theclient-thecontractorrelation6853770265038606336/ *(Editor: This event has now ended.)*

00:51 Patrick Clark-Stoltze — https://www.rothoblaas.com/

01:05 David Hessler — if folks have questions about the model data or what we are trying to accomplish by surfacing this data to our project teams with a webapp, please feel free to email me at david@holzraumsystem.com; https://www.linkedin.com/in/davidhessler/

01:14 Zack Semke — Here's a link to register for Friday's virtual tour and kick off for International Passive House Days. Please join us! https://passivehouseaccelerator.com/event-announcements/engine-16-virtual-tour-and-kick-off-of-international-passive-house-days. *(Editor: This event has now ended.)*

01:44 Shannon | New Hope PA USA — Urban Mining Index https://urban-mining-index.de/en/: Defab Prefab Defab repeat

01:45 Patrick Clark-Stoltze — Light Frame Prefabricator on this project: https://collectivecarpentry.com/

01:49 Michael Davis | Seattle (he/him) — Mercer International Mass Timber in Spokane WA (former Katerra Facility): https://mercerint.com/

01:54 Eric Reinhard RDH Building Science (https://www.rdh.com/) is holding an all-day symposium on mass timber enclosure systems November 16 in New England. Learnbuildingscience.com

01:55 Rich Do we have a link for Crescent Tools too? https://www.crescenttool.com/

For the Global audience: Abbreviations / Acronyms; Proper names; Technical Terms; and Slang used in the chat:

badass – a tough, uncompromising, or intimidating person or attitude.

BIM – **B**uilding **I**nformation **M**odelling - a building design, construction planning, and lifecycle management system based upon the collaborative generation of 3D digital designs; interim and final drawings; analysis, documentation, and management of all the physical and functional attributes of a building, and the installation, running, and maintenance of its plant and equipment. (https://bimvision.eu/about/)

#BOOM - An exclamation used to draw attention to (or to praise) an excellent idea or result. For added emphasis, the speaker may use one hand to imitate something being quickly and forcefully thrown down.

CADD - **C**omputer **A**ided **D**esign and **D**rafting: software used to create 2-D and 3-D drawings and plans for architecture, mechanical engineering, and other purposes. (https://www.autodesk.com.au/solutions/cad-software)

CadWork – A proprietary 3-D design software for timber construction, framing, and carpentry. (https://www.cadwork.com/cwen/Home)

CAM – Computer **A**ided **M**anufacturing: 3-D design software which guides CNCs in the automatic shaping of raw materials into precisely formed products; CAM software interprets CADD drawings for use by CNC machines.

change orders – contract variations or amendments, agreed to by both contractor and client, altering the original scope of work.

CLT – **C**ross-**L**aminated **T**imber – an engineered, structural, solid wood product; within each layer, the wood grain runs in a single direction; when laminated together, the grain of each layer runs at right angles to that of the previous layer; similar to plywood but with much thicker layers.

CLT beams – structural beams made from CLT

CNC – **C**omputer **N**umerical **C**ontrol machines – machines guided by CAM software to shape raw wood, metal, or plastics into precisely formed products; typically, CNCs are automated routers, lathes, or milling machines; lasers, plasma torch, electrical discharge, or high-pressure water cutters; or 3-D printers.

c u l8tr! – phonetic abbreviation for ‘See you later!’

defab – to **de**-**fab**ricate, unbuild, or take apart for the purpose of re-using materials.

dig / digging – appreciate / appreciating.

geek – an intellectually gifted person obsessed with complex technical or technological ideas, objects, or processes.

Glulam – Glue-**Lam**inated Timber – solid structural engineered wood, generally long, made from parallel-grained bonded timber laminates glued together with polyurethane adhesive or other modern resins.

GLTNG - **G**lue **L**aminated **T**ongue a**n**d **G**roove **–** Glulam shaped with tongue-and-groove edges for smooth assembly.

hp – **h**igh **p**erformance

Holtzraum Catch – Holzraum System’s proprietary software for the accumulation, presentation, and use of SIMM data. (https://www.holzraumsystem.com/)

icky and ew – expressions of disgust; indicating here extreme reluctance to go out on a dark and rainy night.

IPD - Integrated **P**roject **D**elivery – collaborative project management, integrating people, systems, and business structures and practices to harness all participants' knowledge, talents, and insights, thereby optimizing project value, efficiency, and results while reducing waste during all phases of design, fabrication, and construction.

Kool Aid - an American powdered drink mix; based on the 1978 Jonestown massacre, a reference to Kool-Aid indicates accepting an idea due to overwhelming persuasion. (https://en.wikipedia.org/wiki/Kool-Aid).

KVH – **K**onstruktions**v**oll**h**olz - solid structural timbers typically made from lengths of kiln-dried, finger-jointed, insect-resistant fir, larch, spruce, or pine, glued together for use as load-bearing components in timber construction. (https://www.holzland.de/konstruktionsvollholz/)

LCA – **L**ife **C**ycle **A**ssessment - an internationally accepted scientific method used to quantify the embodied carbon and other environmental impacts of buildings.

Lincoln Logs – A wooden building toy: miniature logs of varying lengths with regularly-spaced square notches on their upper and lower surface. Logs could be interlocked at right angles to form log cabin walls. Named for US President Abraham Lincoln, said to have been born in a log cabin.

LOL – **l**augh **o**ut **l**oud

material quantity takeoff schedule – a complete list, generated by BIM or CADD software, of all the materials to be used in a construction project, including their dimensions, costs, and locations in the finished building.

Minotair – a proprietary brand of PH-suitable ventilation equipment; Minotair is a founding sponsor of the Passive House Accelerator website. (https://www.minotair.com/home_en/)

ON – **On**tario.

platform frame vs balloon frame – platform framed wall studs extend the height of one storey only, separated by the ceiling from successive storeys; in balloon framed walls, timber studs extend from the foundation to the roof.

Prefab – to **pre-fab**ricate or build offsite.

Revit – A proprietary brand of BIM software. (https://www.autodesk.com.au/)

ROM pricing – **R**ough **O**rder of **M**agnitude: an imprecise estimate for the costs of goods or services; a ROM estimate will not include all final cost elements (e.g. labour, travel and transport, special licenses, extra equipment, etc.).

SIMM - **S**ingle **I**ntegrated **M**anufacturing **M**odel: a process whereby building design information is compiled to produce detailed data sets and 3-D drawings of a building's structural, building fabric, energy performance, manufacturing, and mechanical systems for analysis and confirmation by all designers and stakeholders prior to the efficient offsite production of pre-fabricated building elements. (https://www.holzraumsystem.com/s-i-m-m)

tongue-and-groove – Ridges (the tongues) and channels (the grooves) carved along alternate sides or edges of the lengths of wooden boards or panels. Designed to interlock, they are used to fit adjacent pieces of wood together.

went down a rabbit hole – spent more time than intended following an idea, project, or situation that became more detailed, chaotic, or bizarre than originally anticipated; from Lewis Carroll's book, *Alice in Wonderland*.

The chat: (Note: time signatures refer to Zoom call length)

00:05 Hans Eich | SIGA	Shaun, you didn't visit me when you were in ON, now I'm in BC. Coming for you lol
00:09 Peter Molenaar | CPHT	CADworks is great
00:10 Shannon | New Hope PA USA	Nice shirt Mark!

00:13 Ian Robertson This is you Tom, right? http://www.maddenbaughman.com

00:14 Patrick Clark-Stoltze yes that is Tom's website

00:14 Shannon | New Hope PA USA Welcome Everyone!

00:15 Alex De Gagné / Minotair Hello all!

00:17 Zack Semke Hi Alex!

00:18 Jason Carter Hello everyone. Do we have any offsite folks here I am Jason Carter, The Mod Coach. www.themodcaoh.com Very excited to see what you guys are doing. I build and design new factories around the world

00:19 Zack Semke Thanks for joining us, Jason!

00:20 Jason Carter New ones will be Net Zero and products we are building are going to be net zero as well

00:21 Mark Wille Thank YOU all for being here tonight.

00:22 Shannon | New Hope PA USA Follow Holzraum on Linked In: https://www.linkedin.com/company/holzraum-system-llc/

00:22 Reid Rowlands I like the architects name:-)

00:23 Shannon | New Hope PA USA @ Reid sounds familiar ;)

00:24 Shannon | New Hope PA USA Connect with Steve Hessler, https://www.linkedin.com/in/steve-hessler-81214833/ ; & Ilka Cassidy, https://www.linkedin.com/in/ilka-gronert-cassidy-a8653831/

00:24 Shannon | New Hope PA USA https://www.holzraumsystem.com/

00:25 Shannon | New Hope PA USA I know that guy!

00:28 Shannon | New Hope PA USA Wow an excavation contractor that supplies a 3d site!

00:29 Bob in Chicago The load path is probably the coolest part of a plan I would hope for. Normally the framer has to imagine the layout.

00:29 Shaun St-Amour @ Vancouver Sustainable Lego for adults!

00:30 Shannon | New Hope PA USA Circular use and reuse of every part of the building defab prefab defab & repeat!

00:30 Shannon | New Hope PA USA Great presentation ILKA!

00:31 Shannon | New Hope PA USA @Ian the lower left ones look familiar!

00:32 Ian Robertson @Shannon ... GLTNG (Glue Laminated Tongue and Groove) for the win!

00:33 Shannon | New Hope PA USA Am I remembering right you had something near a 36' clear span?

00:35 Shannon | New Hope PA USA Great explanation PAT thank you!

00:36 Shannon | New Hope PA USA Steve wins for most tabs ;)

00:37 Mark Wille A M A Z I N G

00:37 Shannon | New Hope PA USA True digital Twin

00:38 Shaun St-Amour @ Vancouver Integrated Design Process at its best, right here! WOW

00:39 Mark Wille If Lincoln Logs came out today they would be perfect for SIMM.

00:39 Shannon | New Hope PA USA Great Navigating Steve!

00:40 Shannon | New Hope PA USA Connect with Tom :) https://www.linkedin.com/in/tom-baughman-103b023/

00:40 Peter Molenaar | CPHT I've pulled apart a few roof systems, sometimes three layers at a time. :-)

00:42 Will Pritikin +1 IPD for residential!

00:42 Shannon | New Hope PA USA Connect with Patrick Clark @ Stolze Timber Systems https://www.linkedin.com/in/patrick-clark-78137722/

00:44 Shannon | New Hope PA USA SIMM = the new Kool Aid

00:45 Shannon | New Hope PA USA PHantastic Tom! Thank you

00:46 Mark Wille "The Client & The Contractor Relationship with Jake Bruton of AArow Building & the unbuildit podcast and The Build Show Network is LIVE on 11/5/21 at 10 am Pacific: Please join us ~ https://www.linkedin.com/events/theclient-thecontractorrelation6853770265038606336/

00:46 jeff spiritos It seems like there are a lot of parties involved in the design. Who's got design responsibility and how's the cost for this group working out? Seems like there would be a premium for the extra participants.

00:47 Shannon | New Hope PA USA Thermally Decoupled Roof Panels 160#/ft w/ 3'-0" overhangs

00:47 JJ are there gutters on the end of the 3ft overhang?

00:47 Mark Wille "well you know we kinda took it up a notch"

00:47 Shannon | New Hope PA USA Good question JJ I'll add your question to the queue

00:49 Mark Wille a wood fiber sandwich #PHorgetaboutit

00:49 Shannon | New Hope PA USA KVH (Konstruktionsvollholz) is solid structural timber typically made from spruce softwood and used in modern timber construction.

00:50 Bob in Chicago Phookin Phabulous

00:51 Patrick Clark-Stoltze https://www.rothoblaas.com/

00:51 Shannon | New Hope PA USA Data attached PHasteners…. I've died and gone to geek heaven

00:51 Brian Keech in Pittsburgh Are there many contractors and engineers "on board" with the SIMM software? And, like with Revit, can you export to CADD for engineers and consultants who are still on CADD?

00:52 Shannon | New Hope PA USA Good Q Brian ~ got it :)

00:52 Patrick Clark-Stoltze SIMM is a process and not necessarily a software, although the "CATCH" concept is their software

00:52 Shannon | New Hope PA USA "We can't have the screws, screw us"

00:52 Shaun St-Amour @ Vancouver t-shirt - don't let your screws screw you

00:53 Shaun St-Amour @ Vancouver steve and pat went down a rabbit hole, glad they came back out

00:53 Peter Molenaar | CPHT @Steve: a great idea to use placeholder images for simplicity!

00:54 Michael Ingui Brooklyn Beautiful

00:54 Shannon | New Hope PA USA (BeautiPHul)

00:55 Peter Molenaar | CPHT PHabulous rooPH layout !

00:56 Peter Molenaar | CPHT comPHortable PHlooring

00:57 Reid Rowlands If anybody can do it Collective Carpentry can

00:57 jeff spiritos Looks like all panelized walls are platform framed (not balloon frame), right?

00:58 Shannon | New Hope PA USA What does the SIMM model say to Steve Hessler? A: You complete me :)

00:58 Michael Ingui Brooklyn I am in love

00:58 Alex De Gagné / Minotair indeed!

00:58 Scott Kennedy Vancouver Q What is the time commitment for the 3D modelling?

01:00 Bob in Chicago I'm still digging the structural layout. It's badass

01:00 David Hessler don't have audio here

01:01 Shannon | New Hope PA USA Thx David ~ We'll miss having your live comments but PHeel Phree to type in your thoughts to share with everyone

01:01 Shaun St-Amour @ Vancouver Big thanks David, impressive work

01:02 Shaun St-Amour @ Vancouver Thank you for coming out of retirement

01:04 Ian Robertson This is so cool ... I'll need to follow the rest in the video because its rainy (dark and icky and ew) trail run time! Yay!

01:04 Zack Semke Have fun, Ian!

01:04 Shannon | New Hope PA USA Run PHast Ian c u l8tr!

01:04 Shaun St-Amour @ Vancouver stay safe Ian

01:05 David Hessler if folks have questions about the model data or what we are trying to accomplish by surfacing this data to our project teams with a webapp, please feel free to email me at david@holzraumsystem.com

01:07 Sean Borman Are the custom CLT beams made using CAM?

01:07 Vlad @ Boston Are KVH imported, or there is a manufacturer also here in North America?

01:07 Michael Davis | Seattle (he/him) I'd love to have them back when they are under construction.

01:08 Shannon | New Hope PA USA Circular use and reuse of every part of the building: defab prefab defab & repeat!

01:09 Shannon | New Hope PA USA @Michael Davis ~ Agreed

01:10 Michael Davis | Seattle (he/him) Thank you Steve and Ilka, amazing project/process!

01:11 Alex De Gagné / Minotair Wunderbar Ilka and Steve!

01:12 Ilka Cassidy Danke schoen, Alex!

01:14 Zack Semke Here's a link to register for Friday's virtual tour and kick off for International Passive House Days. Please join us! https://passivehouseaccelerator.com/event-announcements/engine-16-virtual-tour-and-kick-off-of-international-passive-house-days

01:14 Zack Semke Alex, thank you for Minotair's support!

01:15 Mark Wille: #digitaldocuments

01:16 Alex De Gagné / Minotair Glad and proud to be part of the movement Zack!

01:17 Reid Rowlands Minotair is such a great PH product

01:17 Michael Davis | Seattle (he/him) I'm curious as to how this process integrates with the permitting? Does this fall into means and methods?

01:18 Alex De Gagné / Minotair @Reid Rowlands: thanks for your support!

01:18 Scott Kosmecki Permitting has a 2d standard language to submit projects with.

01:19 Shannon | New Hope PA USA Next questions from: Scott Kennedy Vancouver; Sean Borman; Vlad @ Boston; Michael Davis

01:21 Mark Wille Value Added > Quality Lost and Do Overs

01:22 Shannon | New Hope PA USA & no substitutions or change orders

01:24 Shaun St-Amour @ Vancouver what are the costs of change orders on a project?

01:24 Mark Wille #PHorgetaboutit

01:25 Shannon | New Hope PA USA Sean is asking "Are the custom CLT beams made using CAM?

01:28 JJ Are the panels rated for wind force?

01:29 Shannon | New Hope PA USA More Value not less data

01:29 Peter Molenaar | CPHT Q: does the Holtzraum Catch or CADwork software provide you with a material quantity takeoff schedule?

01:32 Alex De Gagné / Minotair Congratulations all: once again some great passionate people out there pushing the PH envelope! Good night to you all!

01:32 Shaun St-Amour @ Vancouver Goodnight Alex

01:32 Shannon | New Hope PA USA Sweet Dreams Alex!

01:33 Shannon | New Hope PA USA #BOOM

01:35 Bob in Chicago Vapor open …. Awesome completely healthy ALWAYS.

01:35 Scott Kosmecki awesome! Thank you everyone!

01:35 Shaun St-Amour @ Vancouver Goodnight Scott

01:39 Sean Borman LOL! I was going ask about LCA too but felt I had monopolized enough time already :-)

01:40 Patrick Clark-Stoltze Mass timber is not just for Timber Towers!! 75% of European CLT is used in Residential construction

01:41 Shannon | New Hope PA USA @Pat ~ That's so much bigger than I thought thank you!

01:41 Holzraum System Peter, we can do deliver various levels of material takeoffs when it adds value to the client. one area we are focusing re: takeoffs is early ROM pricing of panelization from specific manufacturing partners so that the design and build team can determine early if that approach is feasible

01:42 Patrick Clark-Stoltze so excited to see the 2nd generation of the Hessler family on this presentation!!

01:42 jeff spiritos Great presentation. Great process. Thank you PHA and Construction tech and Ilka, Steve and the Team. Wishing you a smooth install experience. Goodnight all

01:42 Shaun St-Amour @ Vancouver me to Patrick. Night Jeff.

01:42 Holzraum System me too

01:42 Shannon | New Hope PA USA Goodnite Jeff!

01:44 Shannon | New Hope PA USA Urban Mining Index https://urban-mining-index.de/en/: Defab Prefab Defab repeat

01:45 Michael Davis | Seattle (he/him) Great! disassembly instructions! Thinking ahead!

01:45 Patrick Clark-Stoltze Light Frame Prefabricator on this project: https://collectivecarpentry.com/

01:46 Peter Molenaar | CPHT The decision to use removable fasteners is a strong consideration for deconstruction. Keep in mind the value of shear strength vs ease of removal.

01:46 Sean Borman It's insane that we have to import CLT from Europe. Last time I checked we still have forests, sawmills, and manufacturing here in the US. Looking forward to having local manufacturers Let's go Stoltze! More suppliers, more choices, more economical to use in projects.

01:47 Shannon | New Hope PA USA Pat how about spans for GLTNG Glue Laminated Tongue and Groove

01:49 JJ Great presentation. thank you.

01:49 Michael Davis | Seattle (he/him) Mercer International Mass Timber in Spokane WA (former Katerra Facility)

01:50 Shaun St-Amour @ Vancouver Thanks for the update @Michael

01:51 Sean Borman In an earlier presentation there was also a good discussion on designing for serviceability / maintainability. Being able to take the building assembly apart non-destructively would be a huge win.

01:52 buckmoorhead Excellent presentation and discussion!

01:52 Michael Davis | Seattle (he/him) Thank you all, I'm new here, and really enjoying these amazing and informative presentations!

01:53 John Thanks for another great, inspiring session.

01:53 buckmoorhead Thank you all

01:54 Holzraum System Super grateful for the opportunity to hang out with you all! Thank you so much.

01:54 Eric Reinhard RDH Building Science (RDH.com) is holding an all-day symposium on mass timber enclosure systems November 16 in New England. Learnbuildingscience.com

01:55 Shannon | New Hope PA USA Thanks to Steve Ilka Tom & Patrick & everyone for the great questions tonight!

01:55 Rich Do we have a link for Crescent Tools too?

01:56 Sean Borman Thanks everyone. Great presentation.

01:56 Moe I'm always inspired listening to these specific presenters.

01:56 NEST design build Very satisfying thing you guys are doing :) Super awesome - thanks to everyone

01:57 Cara Thank you all

01:58 Rich Great work!!!

01:59 Eric Reinhard Awesome show tonight! Thanks ;-)

01:59 Peter Molenaar | CPHT TeriPHPHic presentation! Thank you

01:59 Shannon | New Hope PA USA See you all next week