AUSTRALIAN HEMP MASONRY

Newsletter issue # 2, 2024

Feature Build: Dick Clarke's Award Winning build in Mudgee, N.S.W.

Hemp not only ticks all the existing regulatory boxes, it ticks several boxes that don't yet exist.

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Commercial Build:

Mildura Powerhouse Project

The first major public example of hempcrete construction in Australia.

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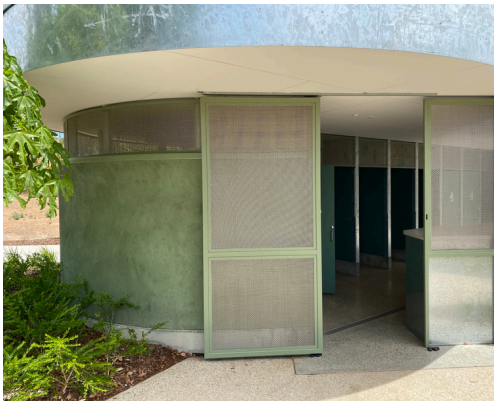

Research :

ARC Linkage Grant

Update on our final year of joint research with UTS

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Hemp processing:

Western Australia

Gary Rogers, Margaret River Hemp Processing

Now I'm understanding it's not just about the hurd, it's about all the other fragments.

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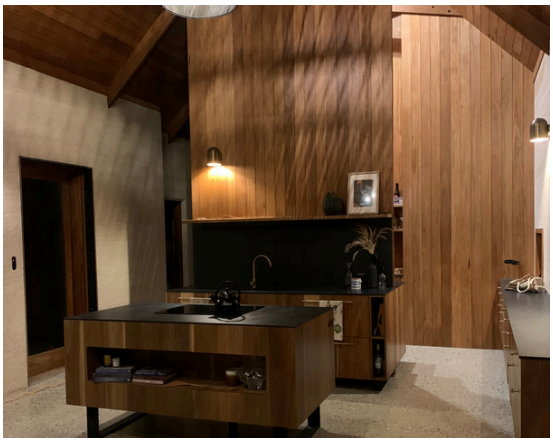

Builder's tip:

James Isaacs of Belubula Hemp Homes discusses the importance of meticulous form work and shares some tips on how to achive it.

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Australian Hemp Masonry
&
House of Bamboo
co-winners of
MECLA Innovative Building Materials Challenge

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Feature Build: Mudgee house

Designed by Dick Clarke, principal of Envirotecture

Winner of Building Designers Association of Australia National Design Award

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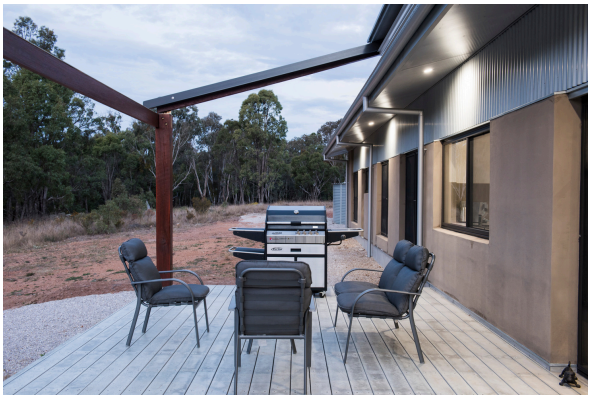
Klara: You have designed quite a lot of hemp homes and you've been actively working to get hemp construction to the government's attention. What is it about hemp that makes you so passionate and why do you think it's important that government takes notice and gets behind hemp construction ?

Dick: Because hemp has demonstrated benefits to building health, carbon sequestration, and reduced farm costs and benefits to soil, it not only ticks all the existing regulatory boxes, it ticks several boxes that don't yet exist!

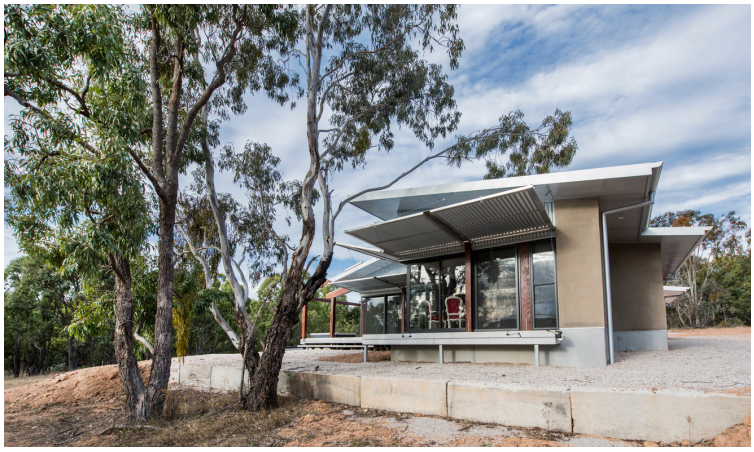
Governments wield very blunt instruments in the various policies and pieces of legislation that they enact. That's just the nature of theevery nuance and situation that will arise as a result, but if the general impact is as intended and there are very few perverse outcomes that is considered to be about as good as the average government can achieve.

The various government policies around the country that affect the building industry exist in all three tiers of government, and while many of them aim to improve the quality and performance of buildings, very few consider building health, and only one considers embodied carbon. None consider off-site production impacts beyond carbon emissions.



Australian Hemp Masonry

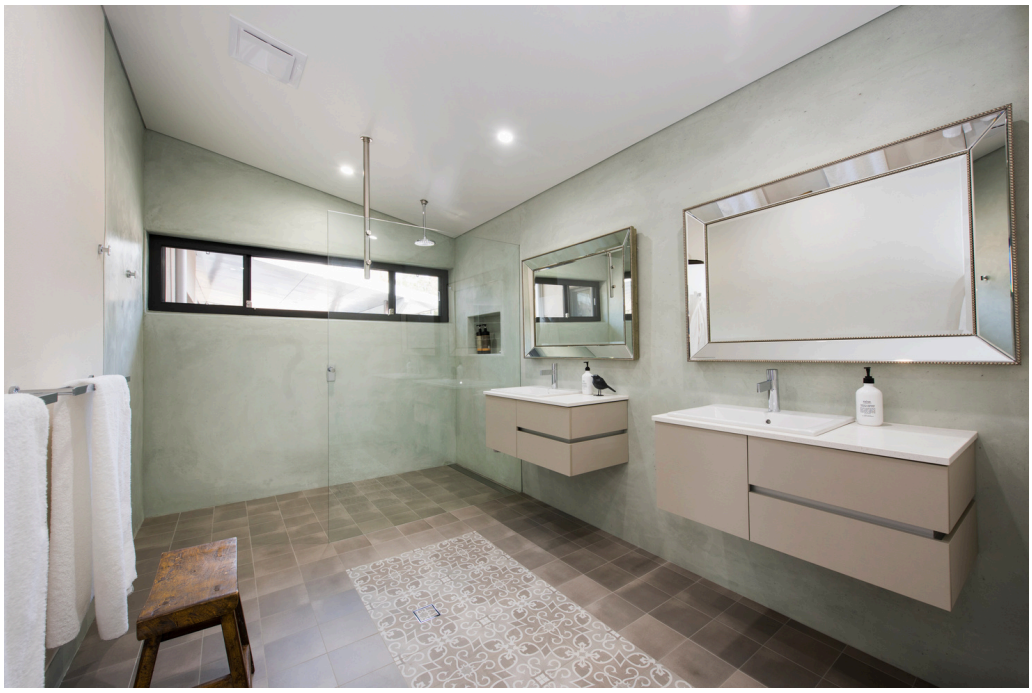
You're an award-winning sustainable designer and you work with multiple sustainable materials, what made you promote hemp to the owners of the Mudgee home? Was bushfire a concern at that location? If so how did that affect the design?



The site at the time was not classified as bushfire prone, which blind Freddy could see as ludicrous, so we took it almost to the highest level of protection, including operable hybrid fire and shade shutters on the most exposed north-western corner. There were a number of factors: thermal performance, internal moisture and condensation control, bushfire resistance, and of course the farming benefits.

Has the hemp performed to their expectations?

Chris and Kerrie love it. The internal temperature is very stable, and the humidity is quite low without feeling too dry. The acoustics are another benefit, assisted by the double glazing.



What is the feedback about the 'lived experience' that you've received from the owners of the Mudgee Home?

Envirotecture
interview by Klara Marosszeky
photographs by Amber Hooper

Builder's tip: James Isaacs on meticulous formwork

interview by Tara Jones

Tara: Why is it important to be meticulous with form work when doing a hempcrete build?

One benefit of building with hempcrete (compared with other alternative construction materials) is you can get perfectly straight and plumb walls.

There's a few benefits in concentrating on making a good form for it.

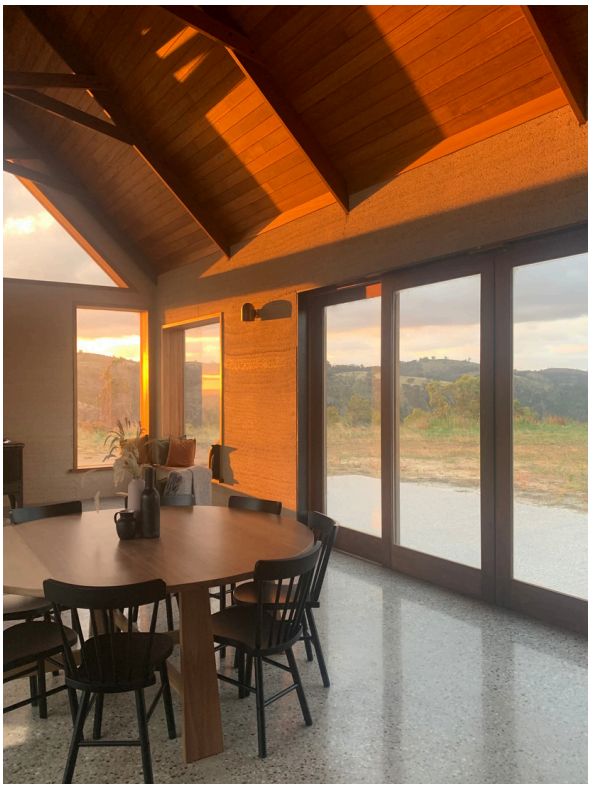
On the inside quite often people want to see the hemp exposed as a feature. In that case it is quite important to make sure that you've got pretty neat form work because with hemp you don't know what it will look like until you remove the form work.

Once removed there's nothing you can do to fix it if it's not up to scratch, so by making the form work as good as possible in the initial stages it gives you a much better chance of a true, flat, straight wall without seeing imprints of form boards or anything like that.

If something is going to be an off -form finish I'll actually go around and put tape over all the joints so you don't see the line of where the form board has been in the wall when it's finished.

It does make a big difference because on a big wall that's off form you will often see the imprint of the size of the sheet used to form it up with. Even if you've got the joint tight it still leaves a line or the outline of the sheet.

I mean it looks o.k when it's straight off the form, but if you see the lines of all the bits of form work it just spoils it a bit.



What sort of tape are you using?

Just PVC duct tape just straight over it, it doesn't take long to run it over the joints, and that way it gives you a perfectly flat smooth, wall without imperfections... depending on how good people put the hemp in behind it.

How do you set up your spacers? What's your technique and what are you using?

I basically just use a spacer that is the required thickness of wall. Most cases the walls are 300mm thick so I've got a heap of spacers that I cut perfectly to 300mm.

And once I've got the inside formed up perfectly straight, plumb and true I'm sure then that I can be guaranteed of having the outside wall the same if I duplicate with 300mm spacers.

A lot of people you'll find will just put a spacer

Builder's tip: meticulous formwork

on the wall at the distance off the stud, whether its 95 or 105mm off the stud, and run a board up against it, which is ok, but if the studs in the wall are not perfectly straight, true and plumb then you'll get an undulation in the finished hemp wall as well – it'll follow the shape of the stud wall and you never get timber stud work that's going to be perfectly true and straight. It's quite often that you'll get a stud that's bent or curved or whatever and if you space off that with your wall thickness then the outside finish of the wall is going to look the same.

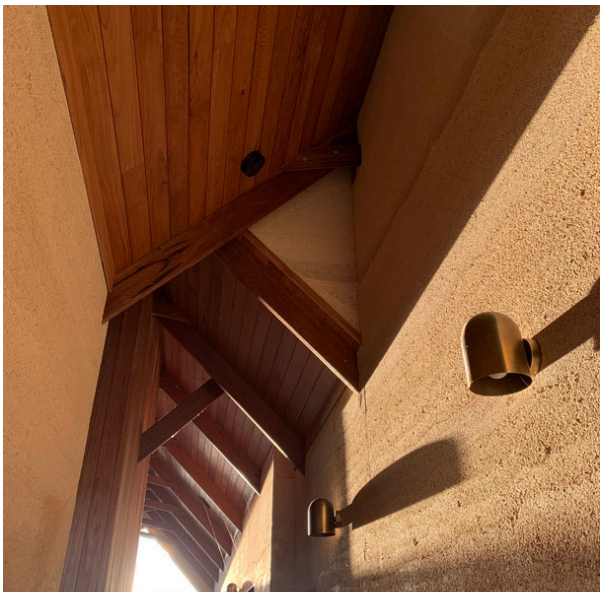
So, by doing the inside formwork first and getting it perfectly straight and plumb and then spacing off that form board to the outside form board you're duplicating the inside to the outside regardless of what the stud wall in the middle is doing.

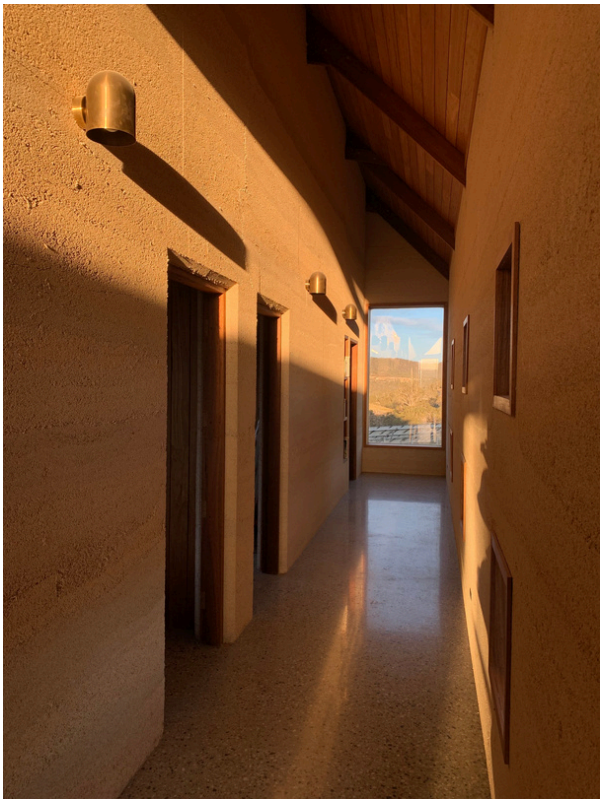
Can you tell me about the Truffle Barn build?

The Truffle Barn build (2-3yrs ago) was a very detailed job. They had an internal hemp wall right down the middle of the building, and that was exposed on both sides.

One side was exposed in the rooms, and the other side went down the hallway, and I think from memory it was about 4 metres high.

It was a big wall, and we had to spend a lot of attention to detail with the form work through





there because it was so high and so long and everyone's eye goes straight to it.

That building was a bit like 3 buildings joined together at 1 point to make one big house, and there was a lot of detail in the connections between each pod, where hemp was exposed on the inside and following the rake of the roof, meeting up with exposed rafters.

Did you have to cut your formwork around all those rafters?

Yeah, in some instances, you know we'd trim around, we'd take the formwork all the way up to the ceiling line above the rafters, cutting formwork around each rafter. That sort of thing is fiddly but it's but not too bad, you don't have to be airtight with your formwork because the hemp is a bit forgiving around that sort of thing. And it's also up very high. It turned out really nicely.

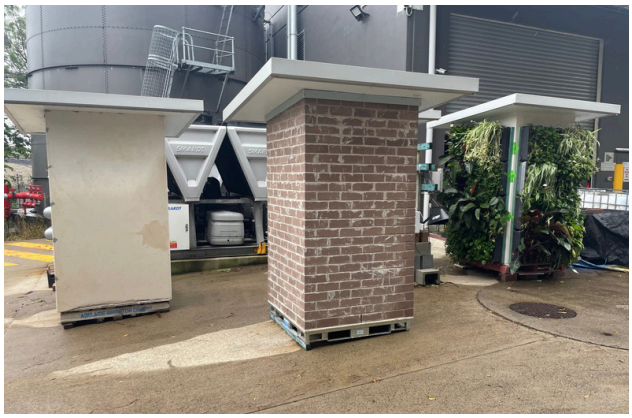
Belubula Hemp Homes
photographs courtesy of
The Truffle Barn

UTS ARC Linkage Grant update

by Klara Marosszeky

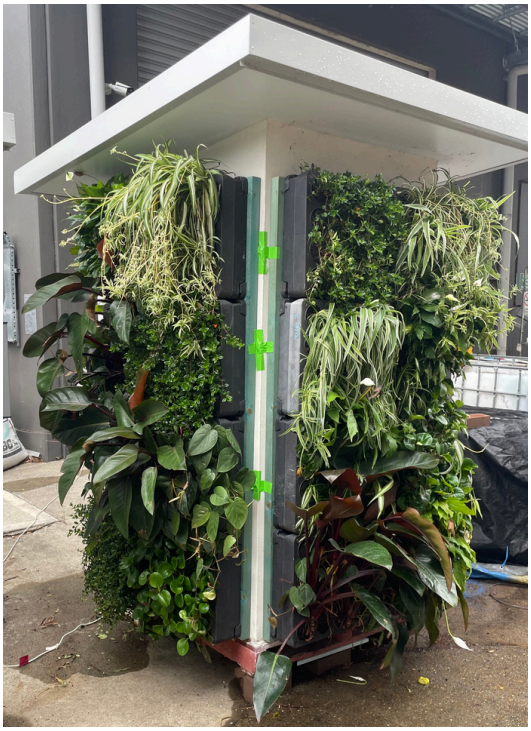
We're entering the final year of our 3 year research partnership with UTS which has been co-funded by an Australian Research Council Grant.

Alongside a lot of data collection to investigate the comparative thermal, acoustic and indoor air quality of in situ hempcrete compared to a hemp structural panel system, a hemp green wall panel system and brick veneer construction (which remains the predominant and one of the least efficient forms of residential construction in Australia) we've been investigating alternative low carbon binders.



Comparitive construction models for data collection at UTS

Two of the PhD students recently accompanied Professor Sara Wilkinson Professor of Sustainable Property, Faculty of Design Architecture & Building, University of Technology Sydney to present on three of her interests at the Narara Ecovillage Open Day on the NSW Central Coast:



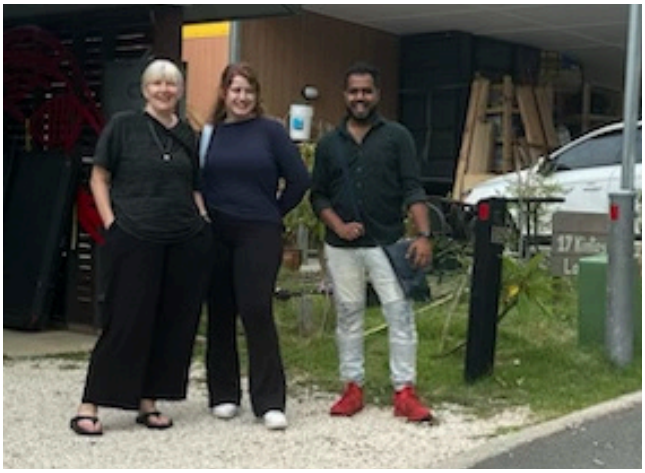
Hemp green wall panel system

The ecovillage is home to several hemp homes which in past years have been opened to the public on Sustainable House Day, has a strong commitment to educating the community about all aspects of sustainability

Blocks of land in Phase 2 of the ecovillage are now being sold.

Narara Ecovillage

- Hempcrete and Green Walls
- Making our homes more flood and fire proof (based on 2 current projects)
- Algae Building Technology – it's time for slime.



Professor Sara Wilkinson and PhD students at Narara Ecovillage open day

Former Indigenous UTS PhD student Allan Teale, also spoke about his paint company Yibirmarra where a percentage of all sales go to Indigenous communities.

Australian Hemp Masonry

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Hemp Processing: Gary Rogers, Western Australia

interview by Tara Jones

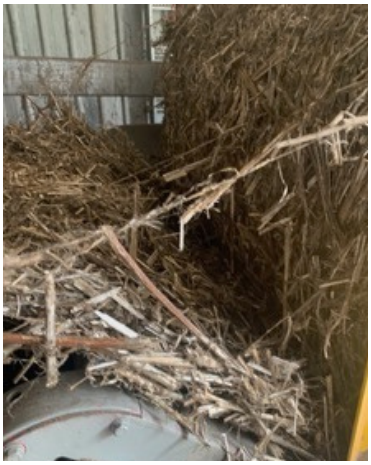
Tara: I'm more familiar with your work as a builder using Australian Hemp Masonry's binder. You've done some beautiful builds. Tell me about how you got into processing.

Gary: I never set out to do processing. I got the big Russian decorticator from Croatia & started to learn.... then we had a house to build in W.A, Dungog had closed the mill and COVID hit... it hit England first & you couldn't get any hurd "Oh God, here we are; hemp builders and no hemp!"

I started looking at shaker tables, thought what else can I piece this decorticator together with so I can actually build something? I made an offer and pieced back together the original ecofibre processing mill. It's been 3 years and I'm neck deep in. I've got to make it work, and that's why building housing has to stop for me.

How much are you processing?

Gary: Not much, as much as I



can... it's the markets. I've gone from learning about the growing, learning about the building, now I'm learning about marketing.

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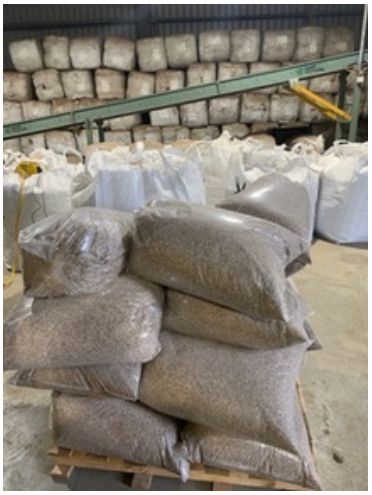
You can't survive on getting the market just for hempcrete. We need markets... it goes from cottage industry to 100 tonne/ month! There's a hole in the middle for entrepreneurial people.



Processing is a whole different ball game, everything I read is not true... it's the logistics, trucking, storing, bailing... I can store 100 odd bales, get through them pretty quick. It's the other end of the markets, it's the fibre that's starting to pile up.

Now I'm understanding it's not just about the hurd, it's about all the other fragments. I'm capturing every single thing that comes off that plant.

From a carbon point of view it's a pretty good thing to do.

That's why I say to Lakeland Shire here you know, they're buying in dirt, mulch, from nearly 150km away... why don't you support me? We'll put this mulch down on their playground... they're using pine mulch.

This is where I see local shires can support local processors, then you get the locals growing.

I've got a lot of different products I'm pumping out at once... superfines, dust, fertiliser, really soft fibre, micro-fines that go into render... The way I see this now, its a R & D processing facility. I'm lucky to be able to buy the hurd and keep adding to this processing side of things.

How many people are needed to run your processor?

When we started we needed 5 people to run the processor, as we got better at processing - that's understanding your bales, the material that's coming through. Most of your processing is done in the fields.

You've got to work with me because when it comes into that processing facility it's got to be at the correct standard. Learning from first bales, getting off farms from other people – oh man, i'd never again, too hard, too hard. Talk inputs/ outputs, it doesn't matter. You need to be able to cut it correctly.

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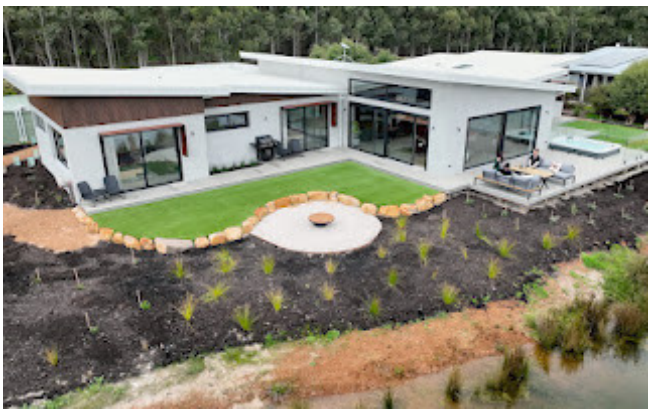
Hemp Processing: Gary Rogers, Western Australia

interview by Tara jones

So for us, and the system I set up, the game changer was getting the cutter from Lithuania, the sickle bar cutter. That changed the whole processing side of things because it actually retted differently in the field. You get a different output.

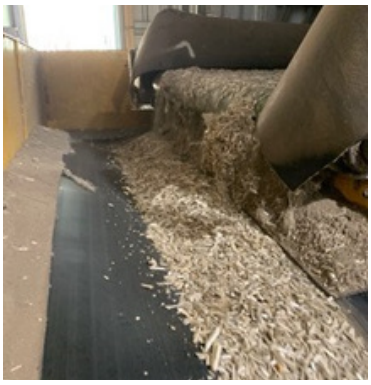
Now we've got this nearly 2 man operation, not a $20 million scale, and people can be doing this farm scale model, producing a decent return and pumping through volume. If we can grow this locally... it works



the model we've done works!

Are relationships an important part of building a sustainable industry?

Absolutely, you've got to work with processing, with the farm manager to get the specs of how it is grown and cut. You have to grow the right cultivar or it's just not going to work... has it grown too long? How can you cut it? If fibre yield is not going to



be there in the end... 2nd grade fibre, you need to find a market for that.

With the decorticator, not running it up to 6 metre lengths of clean fibre – who's buying it? The market is not there. The market now is

small bast fibre, hammer mill 25 & 30mm. That's pretty small, it's all down to the processing and who you work with.

I reckon every processing facility is going to be different, you've got to modify.

100 tonne/ month – that is so much hemp n the ground, it's all got to be up to spec, if not, there's a lot of hemp you're stuck with

Small markets may be the way to go. Start to diversify in hurd with another market, not just hempcrete... smaller feedstocks, packaging, pet bedding. We need to move stuff out the door, and hempcrete is not there yet.

Let's talk about a regional model and the sustainability of that for a moment.

As carbon sequestering you can't beat it. Indica Hemp House is a great example of this: grown it, processed and built it. Our turnaround for our crops is probably 7km, crop to processing. We've sent out enough hurd for 8 houses locally, in the region. Some to S.A, the rest locally. 8 or 9, I didn't realise till I said it actually, that's not bad really. This is while I was still building. The focus has been on Indica hemp house, so the processing took a back seat till this was done.

Are you hoping people will see Indica Hemp House and want to match that?

Indica Hemp House is high end, now its up to everybody to keep that standard or better. People come in and are blown away by how stunning it is. It's achievable.

Show builders, or anyone around that house – this is the future. Renders are beautiful, everything is beautiful. When demand comes from people builders will come.

Is the WA hemp building market stepping up? If you're stepping back,

Australian Hemp Masonry

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Hemp Processing: Gary Rogers, Western Australia

interview by Tara jones

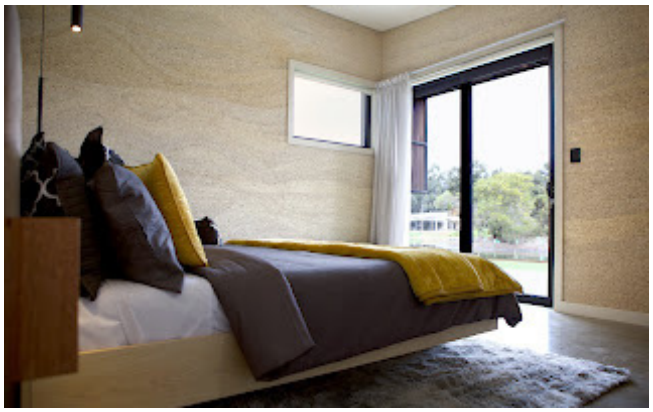
how will that affect it?

I'm happy to show good builders how to do it. At the moment there's a few cowboys and I'm not liking what I'm seeing. There's an ecovillage here, they never asked me to supply hurd. They're greenwashing, bringing it in from France.

But if you get a good reputation, good builders come on board.

Now I can supply the builders with material. I blend my hurd as I want it as a building grade hurd. I don't get cracking through our walls, and that's understanding the material that you're using. And our thermals are working extremely well in these houses, and that's part of getting the machinery to do the blend that I want. It's what I want as a builder. I'll always have 5 tonne ready, you need stock to sell stock.

If you want any advice, I'm here. I want to see the industry succeed and I will help you if you are going to buy from me. But if you're going to get all your materials from France and think you can save a dollar by not supporting Australia, well, I'm not going to help you. You're not helping the Australian industry, so I'm not going to help you. Because that's what it's about. It's gotta be, especially processing. That's the price, stick to your price. Not this undercutting of yesterday.



This is building grade hurd, so that's the price. If you don't want your house to have cracking, that's the standard, that's what it is, like any other industry.

Building in hempcrete – it's for your thermals and hurd is your main ingredient.

Gary Rogers
Margaret River
Hemp Processing

Indica Hemp House is a luxury short stay rental in the Margaret River region.

I spoke with proprietor Sharlene Mavor about why she decided to build with hemp.

I wanted this property to be as eco-friendly and sustainable as possible. Gary's passion for using this material, as well as the obvious attributes of hempcrete completely won me over and after seeing 3 of his previous builds, I was even more inspired by it's beauty and what I could physically feel. We hope it can be an ongoing tool to educate and raise awareness about hempcrete, it's potential and the impact it can make on the Industrial Hemp Industry in Australia.

The house achieves an impressive 8.7 NAThers rating from the plans alone and the Life Cycle Analysis was very positive as well.

People will get to experience what it feels like to stay/live in a hempcrete house, and it will raise awareness of how healthy, as well as versatile hempcrete is as a building material.

info@indica.au

Australian Hemp Masonry

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Commercial Build: Mildura Powerhouse Project

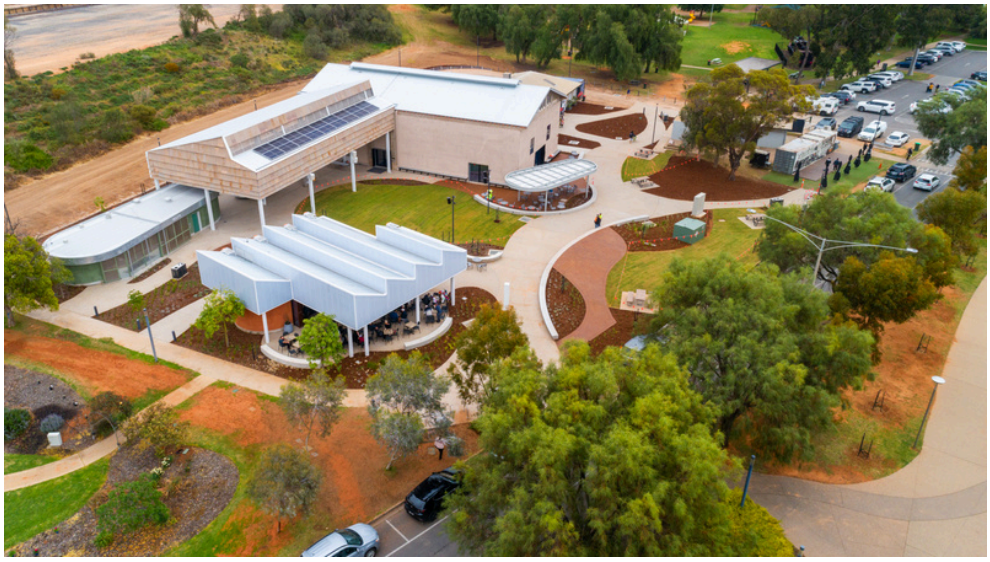
by Klara Marosszeky

It's very exciting to see this project which includes 3 hempcrete buildings completed and open to the public. It's the first major public example of hempcrete construction in Australia.

Despite the size and scope of the Powerhouse Place project, it has great environmental sustainability credentials.

the few remaining examples of early riverfront industry.

Originally called the Machine Room, it was one of many buildings that made up the Mildura Power Plant. That's now a versatile and unique venue that can cater to a wide range of commercial, community and private gatherings.



The project was co-funded by the Federal and Victorian state governments along with contributions from the Mildura Council and multiple local organisations.

Located in Hugh King Drive on the riverfront in Mildura the site pays homage to its place in the region's riverfront history by retaining the iconic Powerhouse building, which is one of

The Powerhouse Precinct has become the Council's only all-electric facility, powered by 100% renewable energy and there's extensive use of recyclable materials throughout, including recycled glass for all paving, and 3 buildings constructed of hempcrete.

Powerhouse Place is powered by a 39kW solar PV system and will be home to Council's first electricity battery storage system.

Adjacent to Mildura Art Gallery, the location incorporates cafes and event and workshop spaces. The hemp buildings which were designed by Victorian design company Public Realm Lab are an Events Kitchen, an Events Venue and a Public Amenities building.

Construction of the overall project was undertaken by Indigenous building company, Rork Projects who subcontracted the hemp installation to a crew experienced installers from Victoria and South Australia.

Australian Hemp Masonry

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MECLA Innovative Building Materials Challenge

by Klara Marosszeky

Australian Hemp Masonry was one of 7 companies selected from 21 innovative building materials suppliers around Australia, to present information to construction industry leaders and 4 judges in the Innovative Building Materials Challenge hosted by Laing Rourke and the Materials and Embodied Carbon Leadership Forum (MECLA) in Sydney last August. We were co-winners of the Challenge with House of Bamboo.

MECLA is funded by the NSW Government and managed by WWF Australia, Presync and Climate-KIC Australia. Through their partnerships their charter is to drive reduction of embodied carbon in the building and construction industry to reach Net-Zero emissions to align with the Paris Agreement and principles of circular economy.

According to MECLA "the built environment accounts for roughly 40% of global emissions. Using lower carbon and innovative materials in construction is a crucial part of the decarbonisation journey for the industry." Hemp obviously has a significant contribution it could make and it was wonderful to have that acknowledged.

The Judges' decision focused on the 2 winners being members of a regenerative supply chain to the building sector "...the biomaterials, that circular industry, a regenerative material really captures the nature based solutions that I think are a big part of the answer for the climate challenge that we face".

The prize for winning the MECLA Innovative Building Materials Challenge is a stand at Sydney Build, we'd love to see you there!

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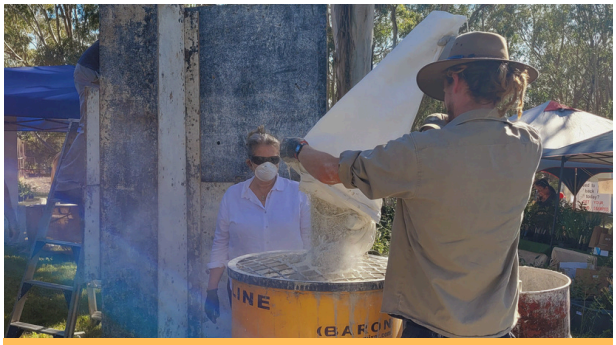
Visit us at Sydney Build Stand P22 May 1st & 2nd!



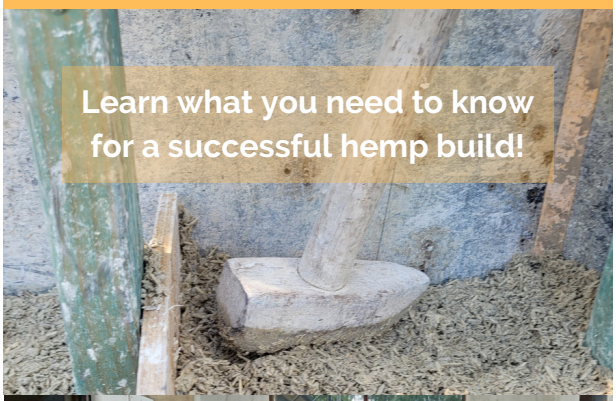
Hemp construction workshops

Practical workshop 4th May
Cressy, Tasmania

Practical workshop 6th July
Dungog, N.S.W

Online theory workshop
8, 15 & 22nd August

more workshops & information is on our workshops page



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