vaso by eco

Enabling sustainable construction at volume, **globally.**

Innovate UK – Innovation Loan Application
August 2025

Our Project

Our structural composite panels made from recycled glass helps the built environment deliver structures rapidly, responsibly and sustainably by precision manufacturing and innovative technology unlike anything else.

Establish Production Line – recommission production line within a new building in Dumfries, Scotland with a view to producing structural composite panel made from recycled glass, while upskilling existing and new workforce.

Manufacturing quality control – ensure optimum efficiency of line performance and its integration with the client order/ fulfilment process.

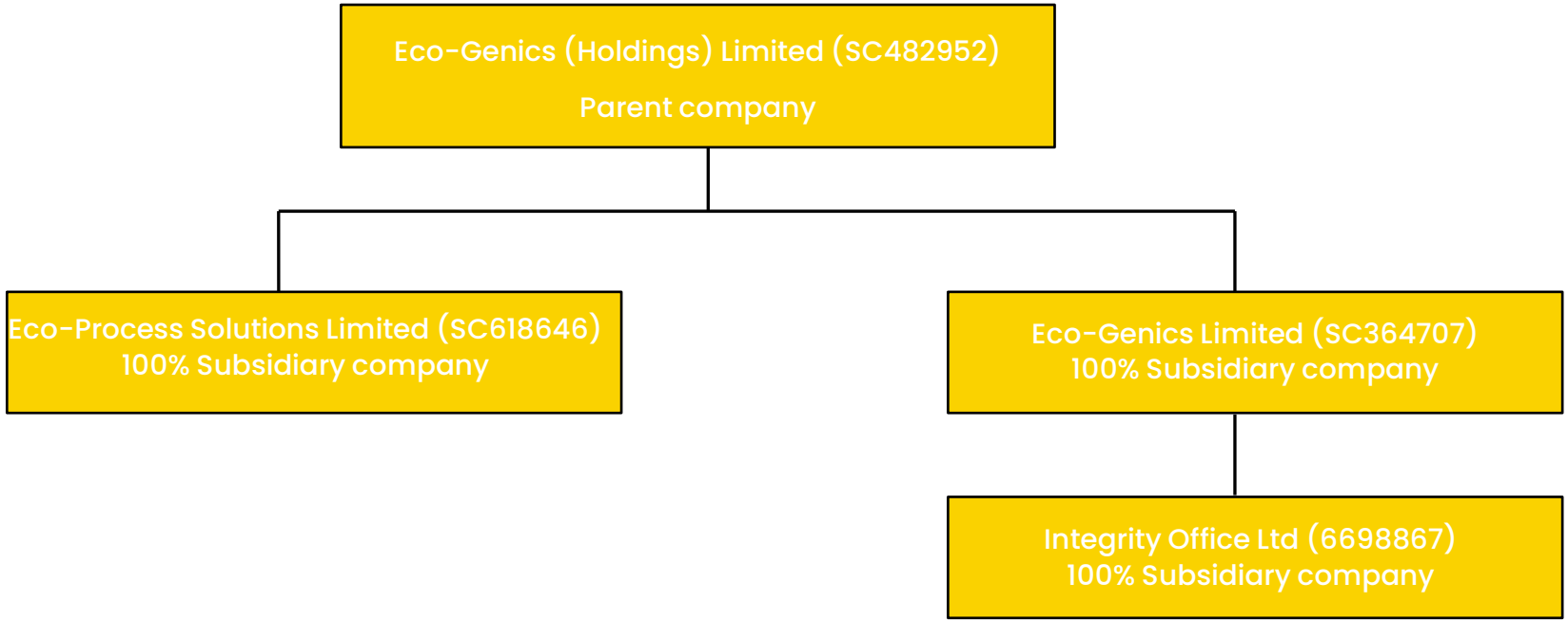
Product testing, accreditation, regulatory & standards compliance – ensure our product is passes the necessary tests and achieves accreditation standards to be accepted in the marketplace as a build component.

Design of digital interfaces – design and develop software for architects to be able to design using the VASO panels and build system. Create an SQA accreditation for construction companies to be compliant and approved to build with the product and build system.

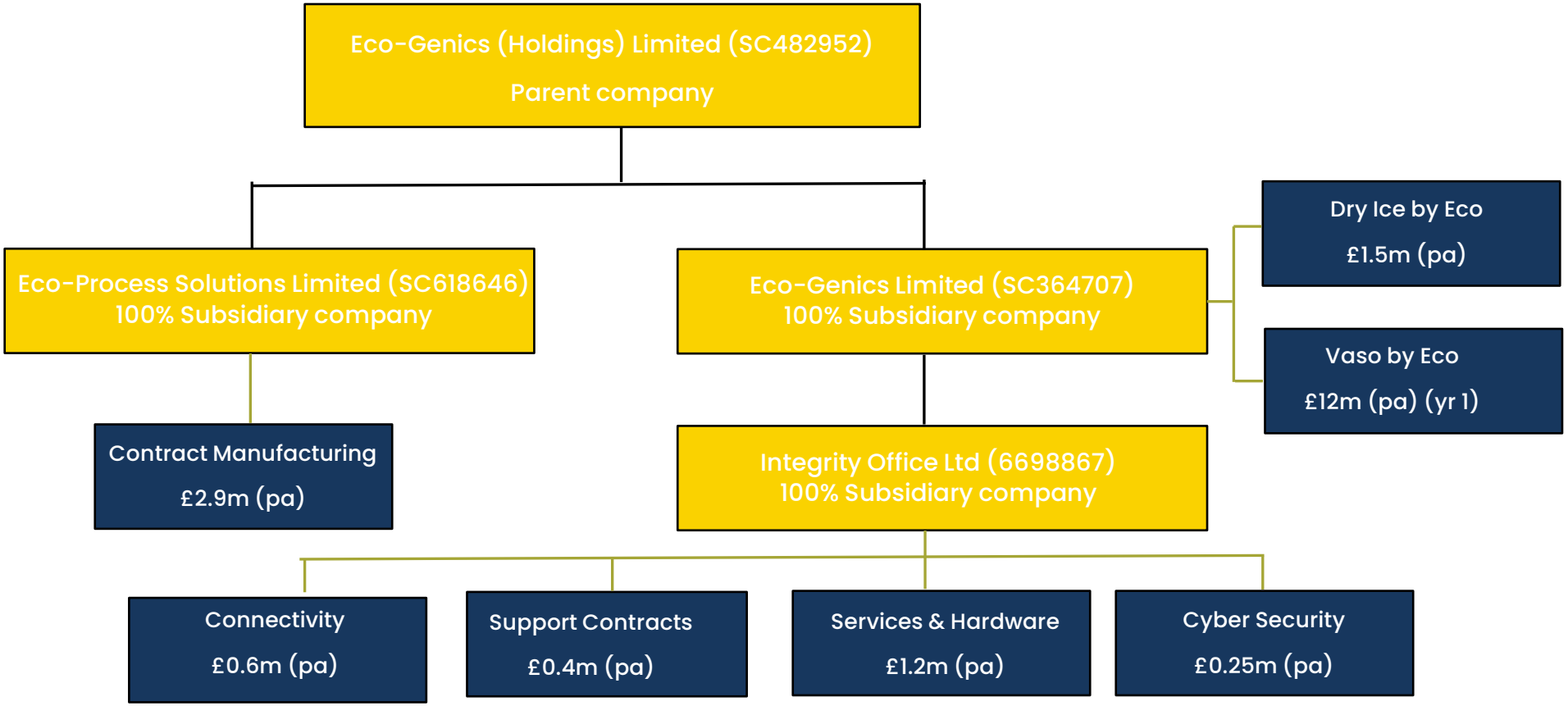
Consumer trial – Develop the South of Scotland feasibility into actual builds and end users live in the dwellings/ development.

Demonstration in real world – measure and collect home user data and building performance data collection.

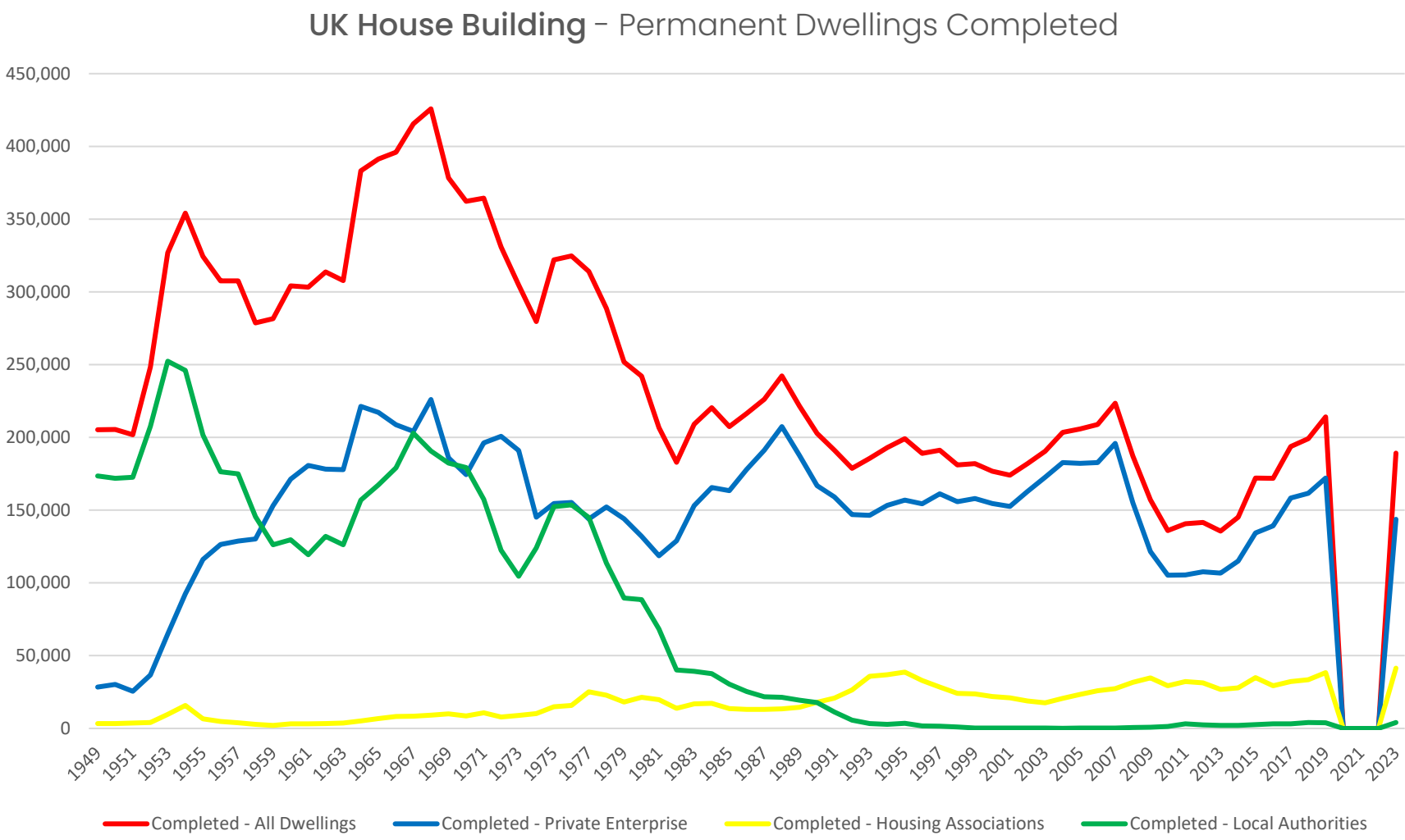
Eco Group Structure



Eco Group Revenue Drivers



ONS UK House Building, Annual Target 300k



Our understanding of the challenges

Housing shortfall – over 5 million new homes required in UK by 2040.

Housing disrepair costs – how can this be reduced or eliminated?

Retrofitting challenge – where do people go while home is being retrofitted?

Building warranty timeframe – is 10 years long enough?

Social Housing providers returning unspent budgets

Skills – diminishing skills, retraining, upskilling, increase multi-trades.

Financing, Planning, Pricing inflation, Rising Homelessness.

"The giant national branded housebuilders, with their standard layouts and house types, have successfully squeezed out so many of our small and medium sized local and regional building companies to the extent that government is dependent on them to produce the promised numbers, while desperately needed local authority and housing association social housing, decimated by "the right to buy" policy has become a threatened species."

- "The Economy of Place, Building regional communities". The Kings Foundation.

EXECUTIVE SUMMARY

VASO Build Limited designs, develops and manufactures structural composite panels from recycled glass, creating build systems that deliver greater opportunities.

Led by the expertise of **seasoned Advanced Manufacturing and Composite Technology industry insiders**, VASO Build's scalable manufacturing platform is set to positively disrupt the market, attracting interest from governments, social housing providers, commercial developers, ensuring substantial growth, economic, and social value creation.

Advance manufacturing scalable solution for **seamless global expansion**

- Massive global growth demand for sustainable construction.
- Excellent opportunity to establish market leading position.
- Net Zero legacy, circular innovation at the core of the business.
- Enriching VASO Build with a team of seasoned industry insiders.

Our structural composite panels made from recycled glass helps the built environment deliver structures rapidly, responsibly and sustainably by precision manufacturing and innovative technology unlike anything else.

The creators of our mission

Proven track record and expertise from alternative industries creating solutions for the built environment.

Simon Parrish

Founder & Inventor

Simon is the second Generation of a composite materials and process engineering legacy.

Drawing on over 50 years' experience developing composite products, materials and production systems, Simon possesses a strong entrepreneurial and manufacturing skill set and is sole custodian of over fifty years' worth of technology IP and trade secret.

Eddie Black

Founder & MD, Eco Group

Eddie established Eco-Genics Limited in 2009 and looks at the continued growth and development of the Eco Group by exploring new technologies to future-proof Eco's offer and creating career opportunities.

An entrepreneur and positive disruptor, Eddie is driving the growth and development of VASO Build. Highly skilled in establishing long term partnerships with world- wide blue-chip companies, project management and a proven track record in the design, implementation and operation of contract advanced manufacturing facilities.

The ECO Group

Go-To-Market Team

Eco Group has 15 years' experience in dealing with global blue-chip clients; designing, developing and providing advanced and innovative manufacturing solutions with confidentiality at the heart of this. Eco Group bring the infrastructure required to fully facilitate a project of this significance.

Team Eco are fully focussed on sustainable innovation that can operate on a global scale.

Supporting Partners

Circular and Sustainable Materials Accelerator

VASO Build is one of the chosen partners on this BE-ST (formerly known as the Construction Scotland Innovation Centre) programme for companies who have developed a solution for a sustainable building material that will help to decarbonise our built environment by having a lower embodied carbon than current alternatives.

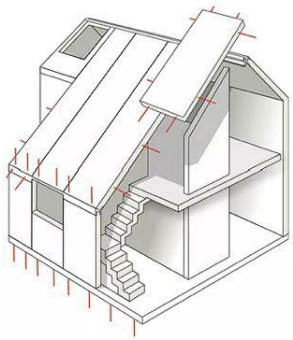
Showcase Event Climate Tech Innovation in Concrete & Buildings Materials

VASO Build was one of 14 companies from across the UK invited to attend this showcase at the British Antarctic Survey headquarters in Cambridge to demonstrate innovation which is offering alternative, low carbon solutions to current build environment products.

FUTURE CITIES - AFRICA GREEN BUILDING SUMMIT 2024

VASO Build was asked to be one of 3 companies to join the UK delegation to the Green Building Council Nigeria event in Lagos. The knowledge exchange trip was organised by Innovate UK and UK Development International. The trip provided an opportunity for UK-Nigeria knowledge exchange and create platforms to explore innovation collaborations for the prosperity of the construction ecosystem.

Structures



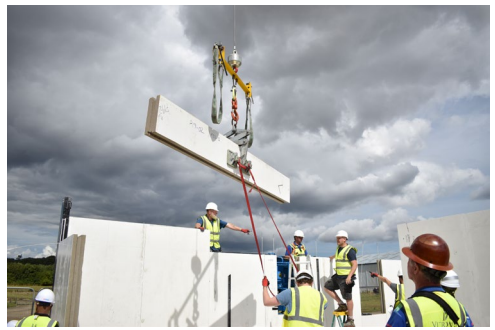
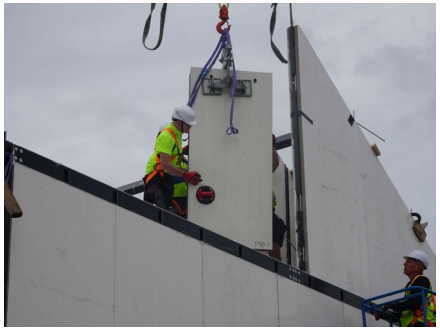
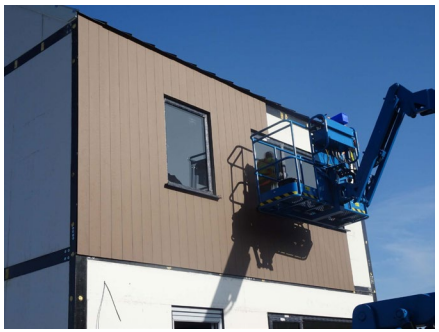
The efficiency of offsite construction:

- 4 Day build
- 4 Bedroom House
- Precision manufactured panels sent to site , increasing site efficiency and reducing waste.

Homes






Industrialised Construction

A vision where technology fully integrates with human expertise and ecological goals.

Digital Design

Bespoke Digital Design Service

Common Data Environment

Building Information Modelling

Integrated Manufacture

Digitally Pre-fabricated

Precision Components

Ready Made or Flat Packed

Circular materials

Semi-Autonomous Construction

Quick to build

Low Skill Construction

Augmented Human Labour

VASO Build designs, develops, and manufactures composite panels from recycled glass, creating build systems that deliver greater opportunities.

Enabling sustainable construction at volume, globally.

- Interweave embodied carbon reduction for generations.
- Composite material construction, not subject to traditional supply chain market fluctuations.
- Fast track build deployment, a solution to the worldwide affordable and adequate housing crisis.
- Resilience to extreme weather conditions.
- Advancing construction sustainability, performance and affordability.

Led by the expertise of seasoned **Advanced Manufacturing and Composite Technology** industry insiders, VASO Build's scalable manufacturing platform is set to positively disrupt the market, attracting interest from governments, social housing providers, commercial developers, ensuring substantial growth, economic, and social value creation.

Massive global growth demand for sustainable construction.

Excellent opportunity to establish market leading position.

Net Zero legacy,circular innovation at the core of the business.

Enriching VASO Build with a team of seasoned industry insiders.

Our Product

The core of our panel is made from recycled glass.

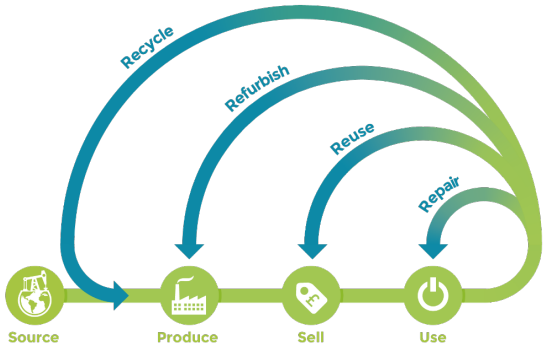
2 mm thermoset GRP sheets on outer faces

51 mm structural core made from recycled glass

Width: 1200 mm

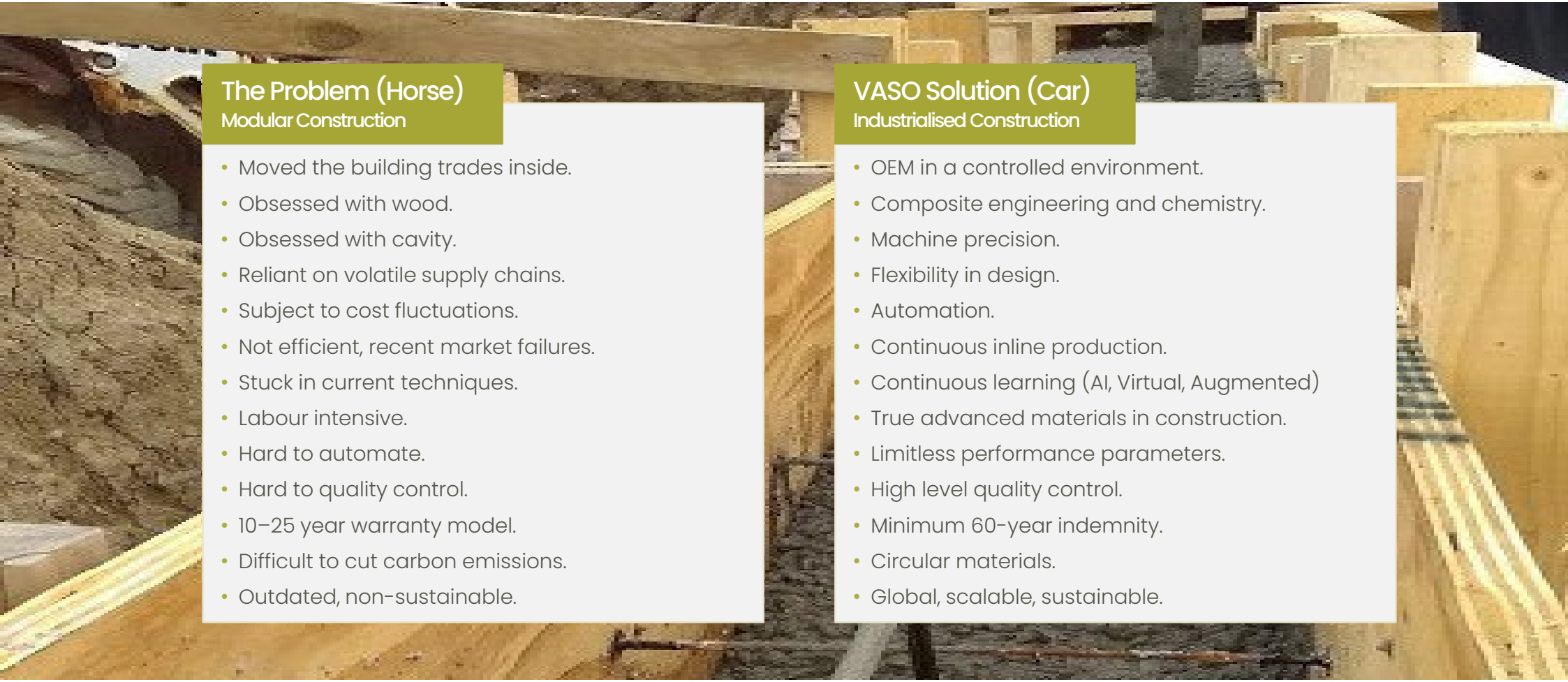
Depth: 55 mm

Length: 500 – 4,000 mm



Problem vs Solution

"If I had asked the people what they wanted, they would have said faster horses"
– Henry Ford



The Problem (Horse)
Modular Construction

- Moved the building trades inside.
- Obsessed with wood.
- Obsessed with cavity.
- Reliant on volatile supply chains.
- Subject to cost fluctuations.
- Not efficient, recent market failures.
- Stuck in current techniques.
- Labour intensive.
- Hard to automate.
- Hard to quality control.
- 10–25 year warranty model.
- Difficult to cut carbon emissions.
- Outdated, non-sustainable.

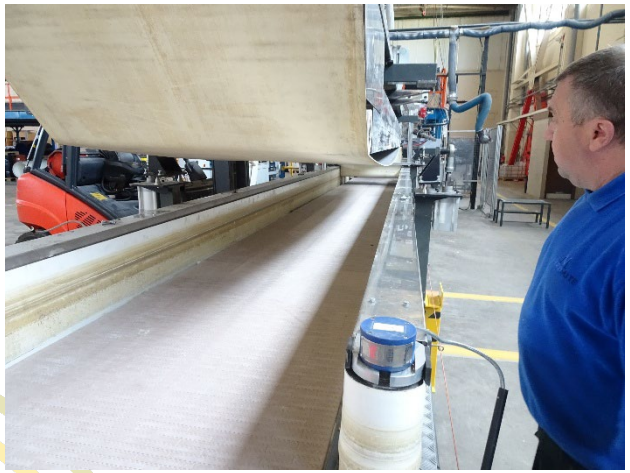
VASO Solution (Car)
Industrialised Construction

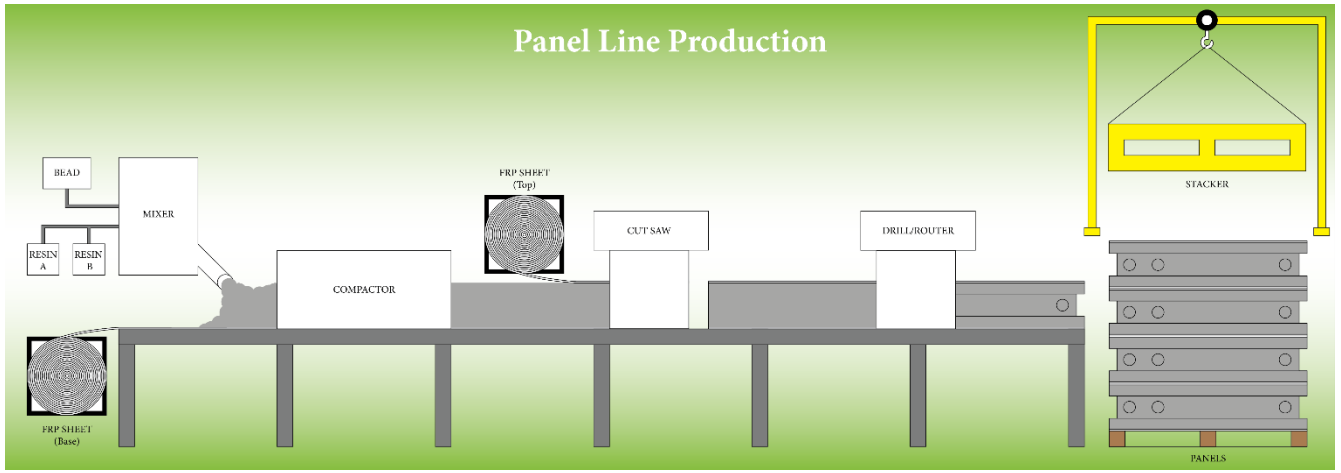
- OEM in a controlled environment.
- Composite engineering and chemistry.
- Machine precision.
- Flexibility in design.
- Automation.
- Continuous inline production.
- Continuous learning (AI, Virtual, Augmented)
- True advanced materials in construction.
- Limitless performance parameters.
- High level quality control.
- Minimum 60-year indemnity.
- Circular materials.
- Global, scalable, sustainable.

"The definition of insanity is doing the same thing over and over again and expecting different results"
– Albert Einstein

Production

- The VASO manufacturing Panel Line, is made up of 8 main zones all connected linear and controlled from one operating system.
- Separate to this operating system is a mixing system which is used to mix a glass bead with a two-component urethane polymer and deliver it to the production line.

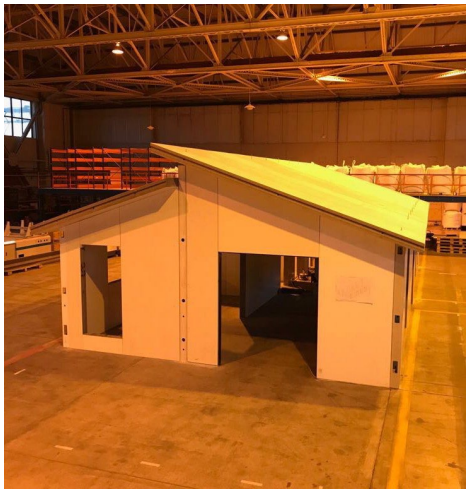




Production



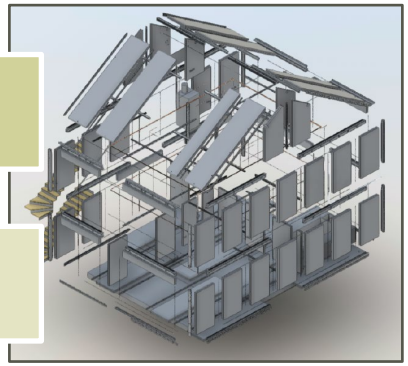


Establishing the Henry Ford of construction

Unleashing Unmatched Returns with Worldwide Impact

- **396 m² of component** required to build a 4-bedroom house
- Factory set up and industrialisation of 2 production lines (original plus new next gen. line). Plus 1 heavy duty panel line.
- Capable of producing **1,967,616** square metres of structural recycled glass panel low density per annum. Plus **1,229,760** square metres of high-density floor panel.
- Enough panel to construct **6242** of the houses per annum.
- Super structure of house erected in **4 days**.
- A standard panel sells at **£215** per square metre.

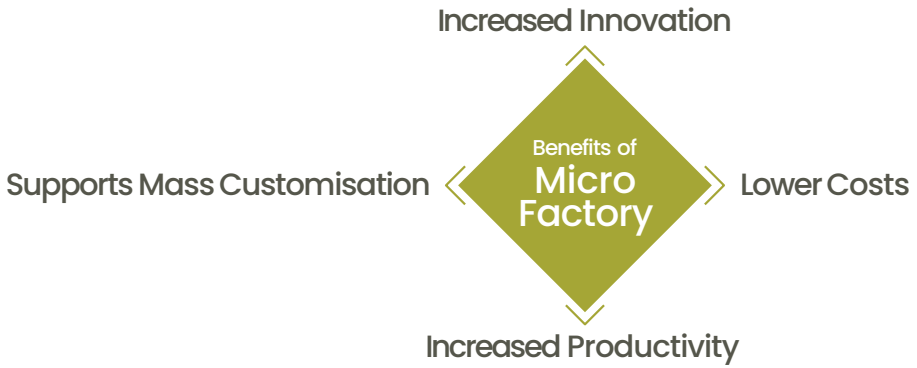


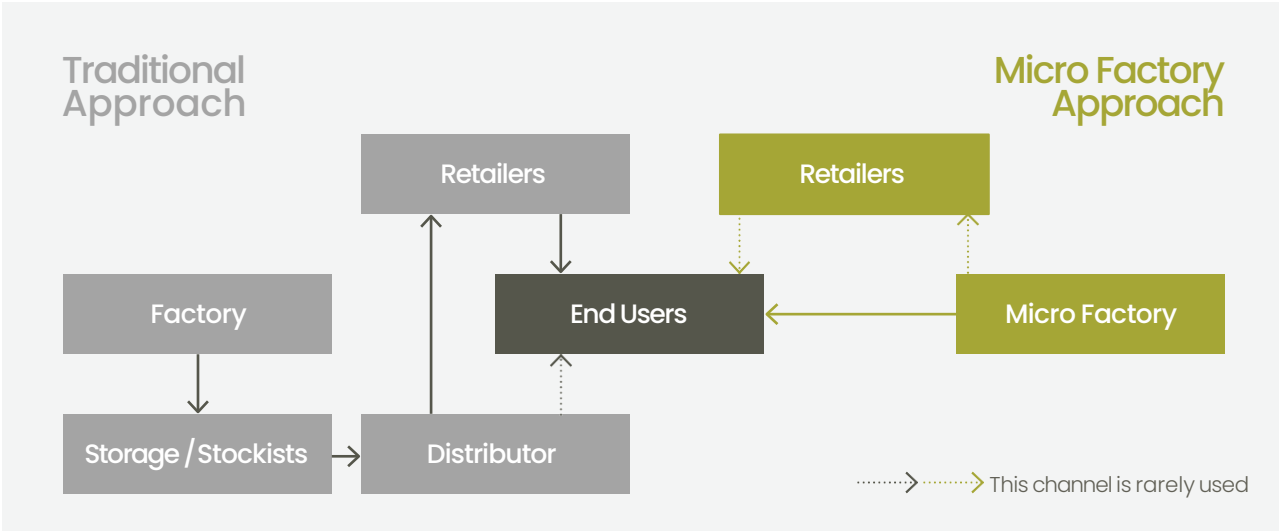
Manufacturing model

The traditional manufacturing concept advocates reducing costs by building a large factory to achieve economies of scale and mass production; however, it needs an extensive and costly distribution network to make products available to customers.

Micro factory, on the contrary, challenges this concept by setting up multiple small, but high-tech manufacturing units, within close proximity to customers, which can function as retail outlets providing a customised product.

This concept will allow scalable replication of plant in communities where jobs and skills are required to underpin these settlements and create sustainable supply chains.





Product opportunity

Buildings are:

Affordable
Capital costs akin to traditional construction, can be specified as 'Energy Positive' buildings.

Unique/Ultra Sustainable
Predominately made from recycled waste glass.

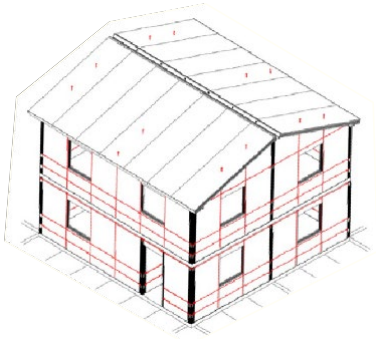
Superior Performance
Resists fire, mould, floods, insect, freeze thaw and thermal. Engineered for hurricane and earthquake protection. Extreme weather tested (+40°C to -40°C).

Design In Mind
Flexible floor plans for all budgets. Designed to replicate traditional build styles and practicality.

Quick To Manufacture
Standard 3-bedroom house is manufactured in 3 hours offsite.

Fast & Uncomplicated
Onsite Build The 'White Box' a typical 3-bedroom house can be erected in a matter of hours, utilising minimal onsite labour and mechanical equipment.

Durable and Long Lasting
Exceeds industry performances. Build System comes with a 60 year manufacturer's warranty.



Testing:

Extensive design and testing ensures that no matter the requirements, the Build System has the flexibility to perform to any design brief.

Resistant to:

Fire
Class 0/AA Rating

Impact
Category 5 Hurricane Projectile Resistance

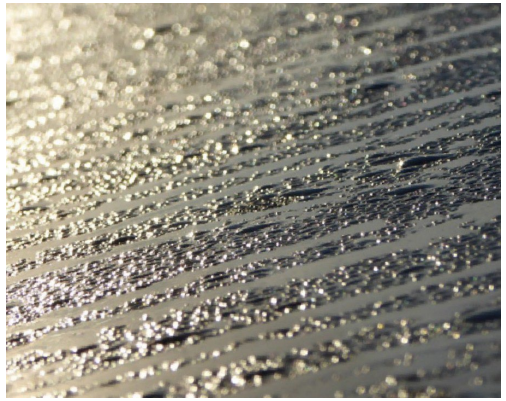
Flooding
Ideal for Flood Proof Housing Schemes

Structural issues
Meets the most demanding of criteria

Corrosion:

Buildings situated near the coastline are at high risk from the effects of saltwater corrosion, leading to costly maintenance and deteriorating structural performance.

As part of the Build System, our composite materials are completely unaffected by this factor, as well as superior structural resistance to extreme forces such as earthquake, hurricane, tidal wave and tsunami.



Warranty

pib-insurance.com Follow us

pib insurance brokers

06/08/2024

TO WHOM IT MAY CONCERN

We are able to confirm that VASO is actively working, through us as intermediaries, on developing a bespoke insurance policy that will safeguard their products against failure.

This policy is currently being actively underwritten via insurance providers in Lloyds of London, and other London Market based providers. We expect that this insurance will be in place well in advance of the production of VASO's panels beginning.

This insurance, as a class, serves to guarantee the holder of said insurance, that they will be indemnified against significant loss resulting from manufacturing errors, design faults, or other issues that might slip through the established quality control measures – resulting in the panels failing to perform in their expected function. This insurance works hand in hand with other types of insurance to enable VASO to offer their customers guarantees against the quality of their panels.

Yours faithfully,

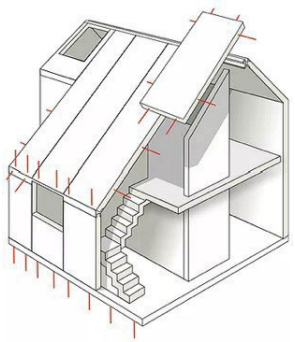
Charles Fossey Cert CII
Account Director
E: Charles.Fossey@pib-insurance.com

PIB Insurance Brokers
T 0333 400 0700 W www.pib-insurance.com

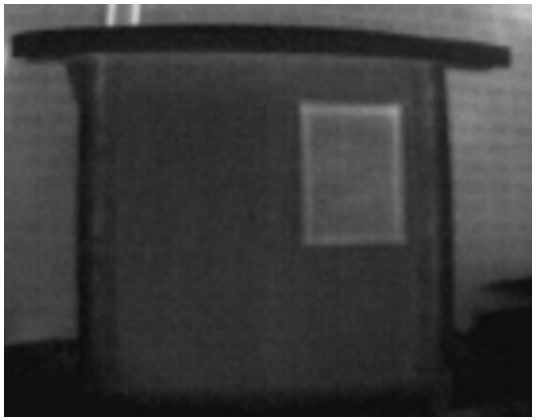
PART OF pib Group

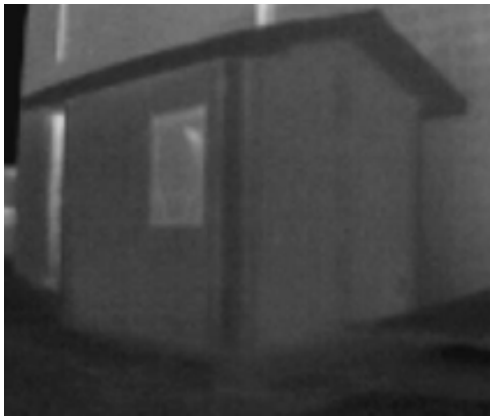
- Underwritten by **Lloyds of London**
- Indemnified against **windstorm, flooding and earthquake**.
- Inclusive of manufacturer's **warranty for a minimum of 60 years**.
- Interweave embodied **carbon reduction** for generations.
- Resilience to **extreme weather conditions**
- Composite materials in construction, not subject to traditional supply chain market fluctuations.

Thermal efficiency



Test Structure – Winnipeg, Manitoba, Canada





Survey Conditions:

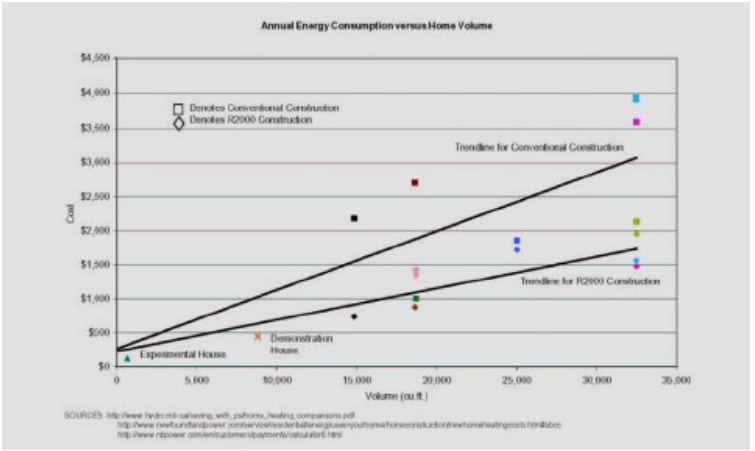
- The ambient temperature outside at time of survey was -20°C, with the interior temperature at approximately 20°C. The wind speed was noted at 7km/h at the time of survey.

Observation:

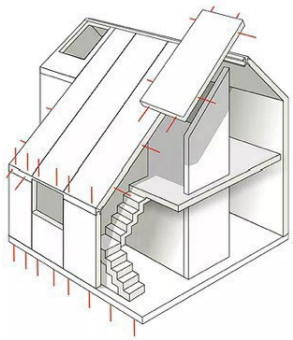
- The general condition of the building was excellent with no appreciable heat loss noted. The structure was found to be extremely efficient blocking the transfer of heat/cold.

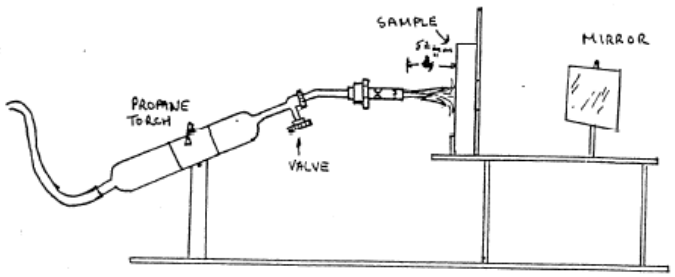
University of Manitoba | Faculty of Engineering
Department of Civil Engineering

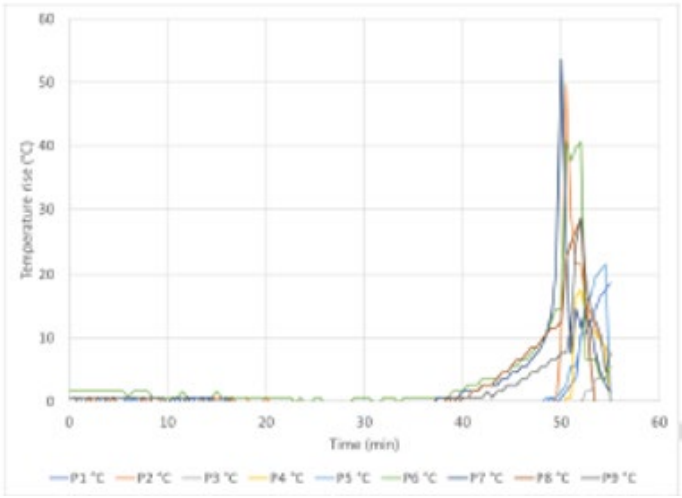
Engineering Building
Winnipeg, Manitoba
Canada R3T 5V6
Telephone (204) 474-8212/9220
Fax (204) 474-7513



Burn through tests

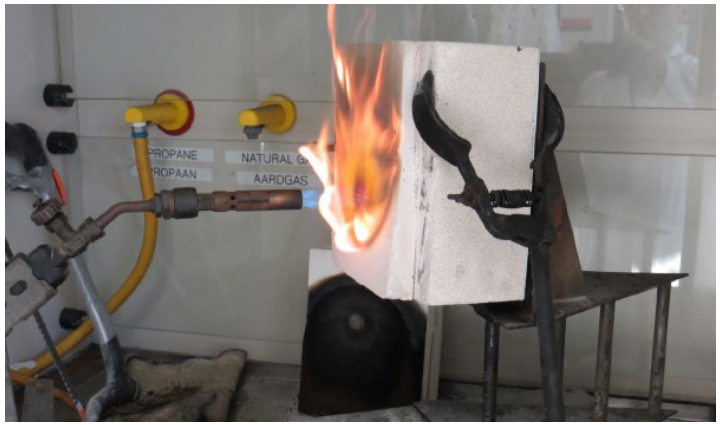






Survey Conditions:

- Indicative test
- The propane burning is tested to check whether it reached 1000^{O}C



Technological Advantages

SIP Panel Points of Failure

Moisture Management
- Condensation & Water Infiltration
- Waterproofing Challenges

Thermal Bridging

Insulation Quality

Fire Safety Concerns
- Flammability
- Code Compliance

Pest Infestation
- Vulnerability to Pests
- Preventative Measures

Structural Integrity
- Load-Bearing Limitations
- Panel Damage

Installation Challenges
- Skilled Labour Requirements
- Precision in Assembly

Cost Considerations
- Initial Costs
- Repair & Maintenance

Design Flexibility
- Design Limitations:
- Integration with Other Systems

The Composite Skin we bond to our panel can be formulated to achieve performance such as:

- Ballistic specification against projectile and armaments
- Anti-microbial, where the skin kills bacteria and virus on contact
- RF shielding, for use in telecommunications and military
- Lead lining for CT and MRI shielding
- Clean room applications such as bio-medical and electronic assembly
- Washdown areas such as abattoirs, food processing and chemical

Our Solution is Resistant to:

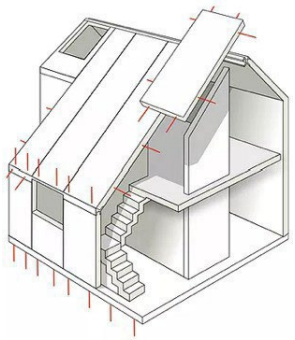
- Fire Class 0/AA Rating
- Impact Category 5, Hurricane Projectile Resistance
- Flooding & Structural resultant issues

The Buildings will be:

- Affordable
- Unique/Ultra Sustainable
- Superior Performance
- Quick to Manufacture
- Fast and Uncomplicated Onsite Build
- Durable and Long Lasting
- Exceeding Industry Performance
- Insured against Windstorm, Flood and Earthquake

Actual product depicted

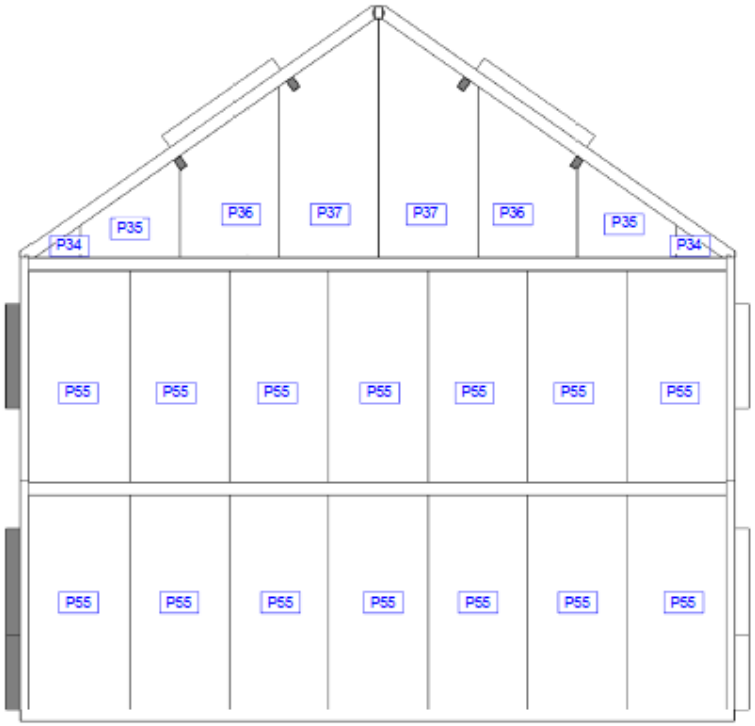
Structures



The efficiency of offsite construction:
Panelised build system

- 4 Day build
- 4 Bedroom House
- Precision manufactured panels sent to site , increasing site efficiency.

Homes



Feasibility study – Registered Social Landlord (RSL)

river clyde homes

VASO BUILD SOLUTIONS

RIVER CLYDE HOMES FEASIBILITY STUDY

AUGUST 2024

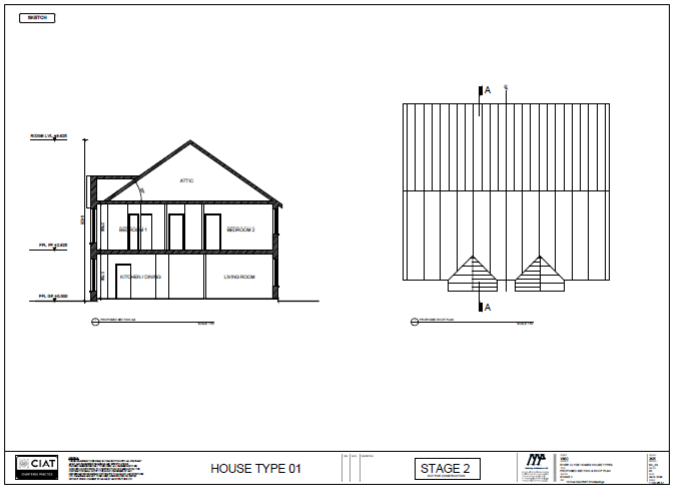
VASO | 2024

DESIGN- MANUFACTURE - DELIVER

Feasibility study – Site A

3.4
SITE A - PROPOSED SITE PLAN - 10 UNITS 3 BED

3.7
PROPOSED SECTION & ROOF PLAN



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3.8
ARTISTS IMPRESSION

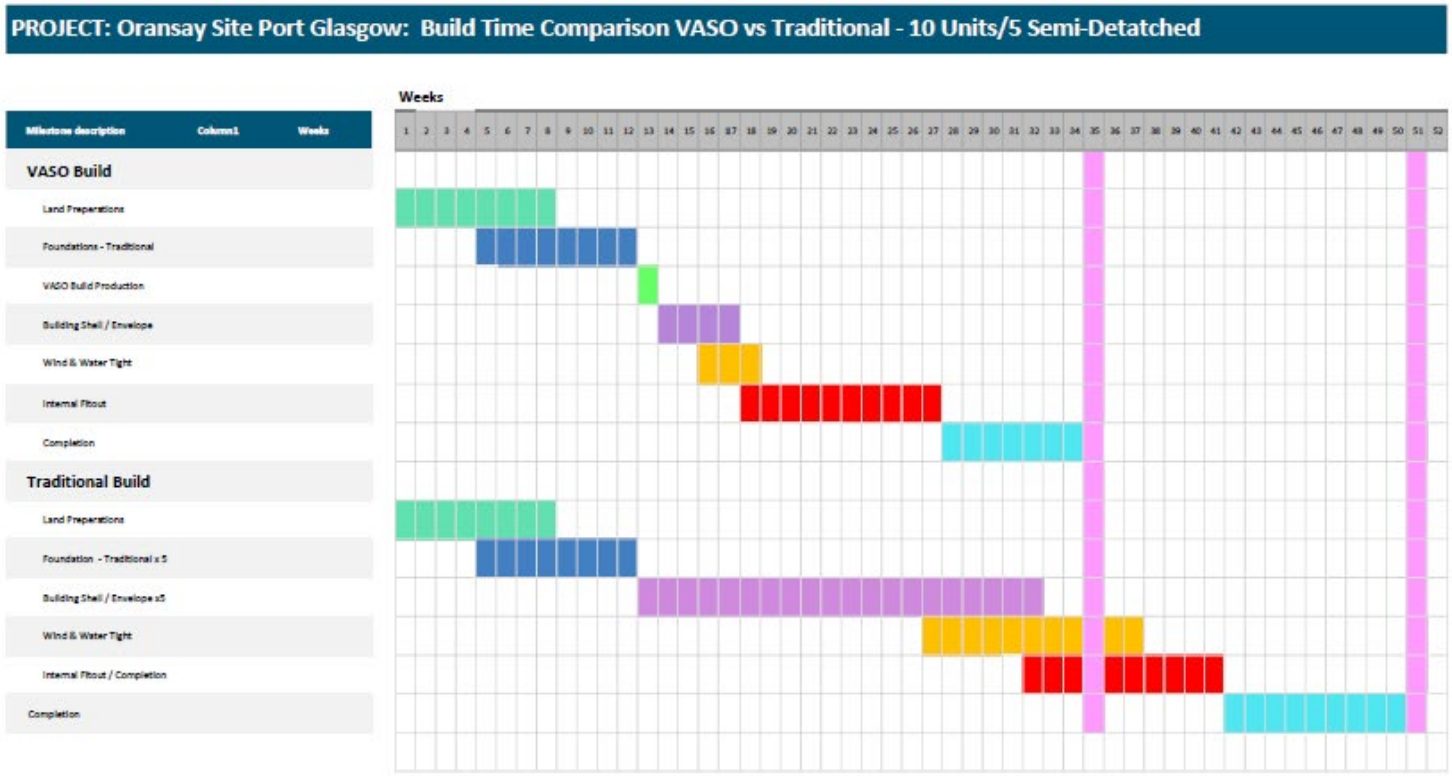
Feasibility Study :

- Site deemed too difficult to develop by RSL's current main contractors.
- 5 x 2 storey semi detached dwellings.

Feasibility study – Site A example

Speed of project delivery using VASO innovation versus traditional build

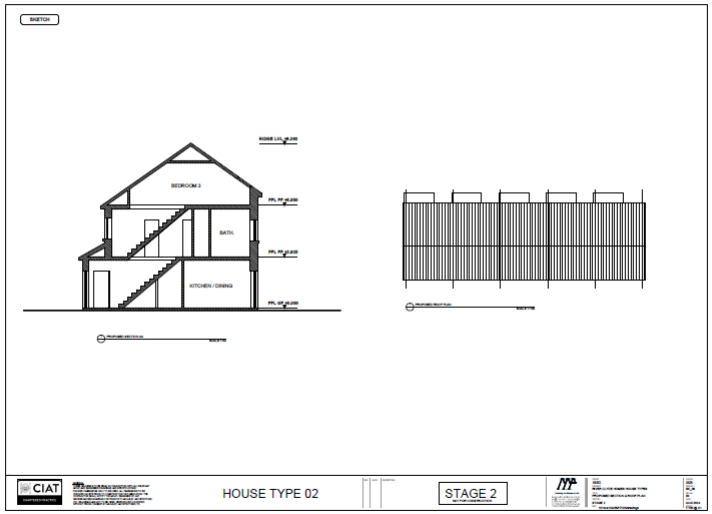
5.6
DELIVERY PROGRAM VASO BUILD VS TRADITIONAL BUILD



Feasibility study – Site B

4.4
SITE B - PROPOSED SITE PLAN - 7 BLOCKS / 35 3 BED UNITS

4.10
HOUSE TYPE 02 - PROPOSED SECTION & ROOF PLAN



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4.11
HOUSE TYPE 02 - ARTISTS IMPRESSION

Feasibility Study :
- Site deemed too difficult to develop by RSL's current main contractors.
- Located next to a primary school and a central point within the catchment area.
- 35 x 3 storey semi detached dwellings.

Feasibility study 2.0 – Site B

Residential Accommodation				
	Number	Size	Bedrooms	Basement
Apartments				
	5	75 m²	2	
Total	5	375 m²		
Town House Apartments				
	6	70 m²	2	
	4	90 m²	3	
Total	10	780 m²		
Detached House				
	1	88 m²	3	Yes
Total	1	88 m²		
Semi-detached house				
	10	74 m²	2	Yes (6)
Total	10	740 m²		
Terraced House				
	7	70 m²	2	Yes (5)
	3	80 m²	3	Yes
	2	90 m²	3	Yes
	2	110 m²	4	Yes (1)
Total	14	1130 m²		
Total	40	3113 m²		

Community Space	
Space 1	40 m²
Space 2	102 m²
Space 3	150 m²
Space 4	270 m²
Space 5	29 m²
Space 6	615 m²
Total	1206 m²

Plot No.	Type	Accommodation	Proposed GIFA (m²)	Required GIFA (m2)
1	Detached	3b 4p	88	84
2	Semi-Detached	2b 3p	74	70
3	Semi-Detached	2b 3p	74	70
4	Terraced	2b 3p	70	70
5	Terraced	2b 3p	70	70
6	Terraced	2b 3p	70	70
7	Terraced	2b 4p	80	79
8	Terraced	2b 4p	80	79
9	Terraced	2b 4p	80	79
10	Terraced	2b 3p	70	70
11	Terraced	3b 4p	90	84
12	Terraced	3b 4p	90	84
13	Terraced	4b 6p	110	106
14	Terraced	2b 3p	70	70
15	Semi-Detached	2b 3p	74	70
16	Semi-Detached	2b 3p	74	70
17	Semi-Detached	2b 3p	74	70
18	Semi-Detached	2b 3p	74	70
19	Semi-Detached	2b 3p	74	70
20	Semi-Detached	2b 3p	74	70
21	Terraced	4b 6p	110	106
22	Semi-Detached	2b 3p	74	70
23	Semi-Detached	2b 3p	74	70
24	Terraced	2b 3p	70	70
25	Terraced	2b 3p	70	70
26	Apartment	2b 4p	75	70
27	Apartment	2b 4p	75	70
28	Apartment	2b 4p	75	70
29	Apartment	2b 4p	75	70
30	Apartment	2b 4p	75	70
31	Town House Flat	3b 4p	90	84
32	Town House Flat	3b 4p	90	84
33	Town House Flat	3b 4p	90	84
34	Town House Flat	3b 4p	90	84
35	Town House Flat	2b 3p	70	70
36	Town House Flat	2b 3p	70	70
37	Town House Flat	2b 3p	70	70
38	Town House Flat	2b 3p	70	70
39	Town House Flat	2b 3p	70	70
40	Town House Flat	2b 3p	70	70

Feasibility Study 2.0:

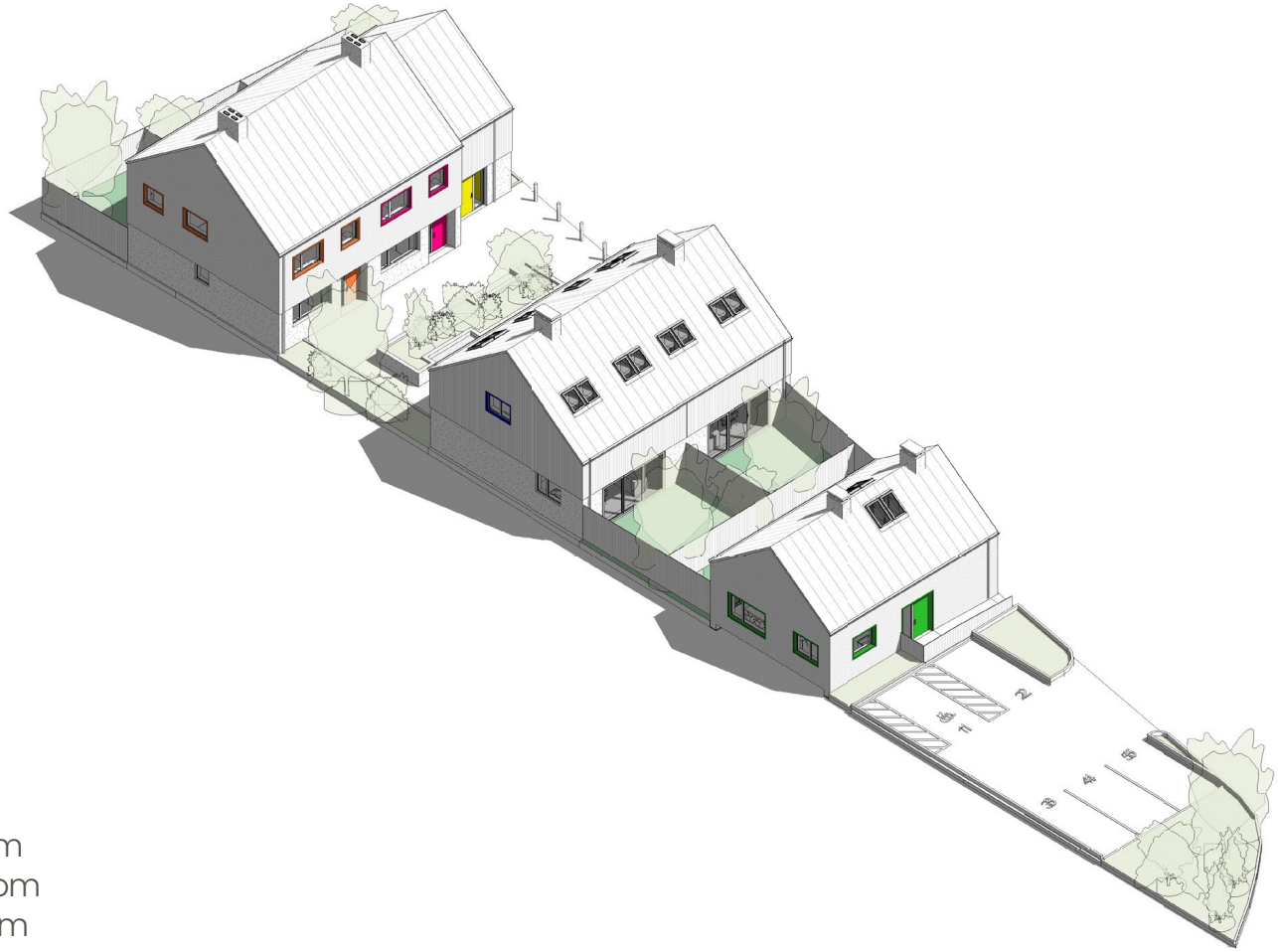
- Push boundaries of innovation and build system, explore art of possible.
- Create community density while increasing number of dwellings.
- Multi Generational living accommodation.
- Community spaces between dwellings acting as hubs.
- Shared community buildings to enable remote working, overnight guests, community multi use, bring businesses into the community.
- All car parking moved under ground with allocated parking to each resident.

Feasibility study – South of Scotland

Feasibility Study :

- South of Scotland Community Housing and Nith Valley Leaf Trust
- Village in South of Scotland which has 3 passive house dwellings delivered by SOSCH/NVLT.
- Multi Generational living accommodation.
- Community spaces between dwellings acting as hubs.
- Shared community building to enable remote working, overnight guests, community multi use, bring businesses into the community.

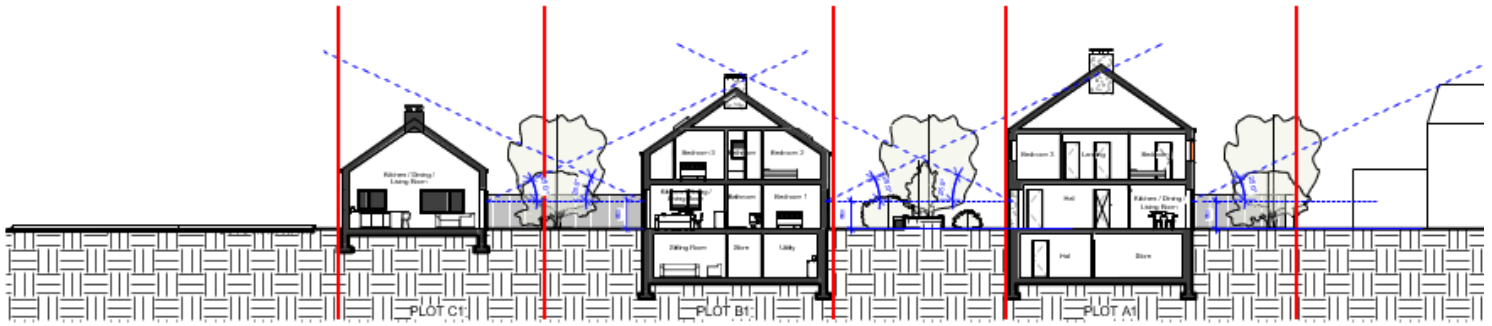
Feasibility study – South of Scotland



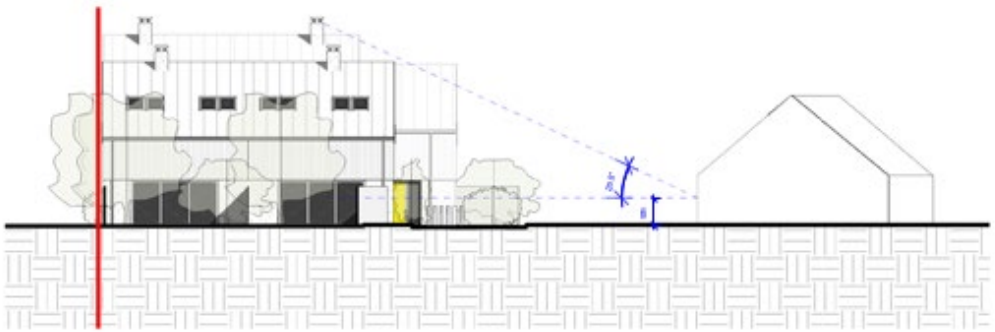
Feasibility Study :

- 3 Blocks
- 2 x 2 storey 3 bedroom
- 2 x 1.5 storey ¾ bedroom
- 1 x 1.5 storey 2 bedroom
- Car parking
- Shared community area
- Community building

Feasibility study – South of Scotland



Site Section - North/South
1 : 200



Site Section - East/West
1 : 200

Feasibility Study :

- South facing buildings
- Opportunity to create energy generation
- 863 Panels
- 2388 Square meters

Conclusion

2024-101_NITH VALLEY DEVELOPMENT

FEASIBILITY REPORT

CLIENT	SOSE
SITE ADDRESS	Firmuir Avenue, Closeburn, Thornhill, DG3 5HX

roost architects.com

CONCLUSION

The proposed developments aim to provide five dwellings, offering a variety of sizes and housing types to cater to different needs within the community. This diverse mix will ensure that the homes meet the preferences and requirements of a wide range of potential residents.

In addition to the housing, the developments will feature a multi-purpose community space. This flexible area can be adapted to suit the evolving needs of the community over time. Whether it's used for gatherings, events, or other local activities, the space is designed to grow with the community, offering a valuable resource for years to come.

The development also includes several pockets of green space, which can provide a community benefit. One possibility is a community garden, where residents can come together to grow plants and share resources.

The designs aim to help connect various community nodes, improving access and fostering a sense of unity within the area.

Parking for five cars will be provided, with each space equipped with electric vehicle chargers. This solution has been carefully validated through swept path analysis, ensuring that the design allows for smooth vehicle movements and accommodates the needs of electric vehicle owners.

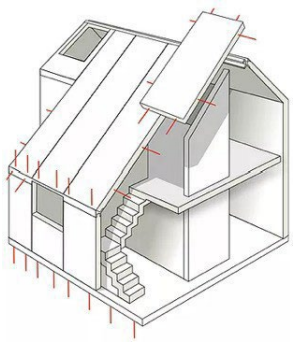
Following the Geotechnical report we understand that the construction of basements may be technically challenging. It may be that in future iterations of the design that due to the high ground water these basements are omitted.

In terms of costings if traditional methods of construction were used then it would tale approximately 33 weeks to complete and the total cost of the development is expected to be around £1.83 million.

Using the VASO method of construction the contract period is expected to take approximately 13 weeks to complete and the total cost of the development is expected to be around £ 1.47 million.

The VASO method of construction is currently estimated to result in a cost saving of around £370,000 and a time saving of approximatley 20 weeks. In this scenario a time saving of 20 weeks could relate to approximately £14,585 of additional rental income for the NIth Valley Leaf Trust based on the average rental costs put forward in the Just Transition report for Dumfries and Galloway.

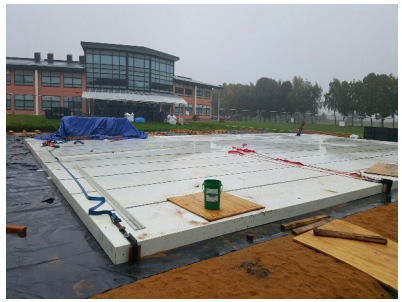
Structures



Commercial and Public Buildings:

- School building in Norfolk, constructed 2015.
- No maintenance spent on building in 9 years.
- VASO Build innovation ideal for Commercial and Public Buildings, Data Centres and Prisons.

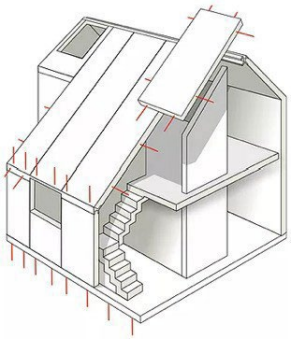






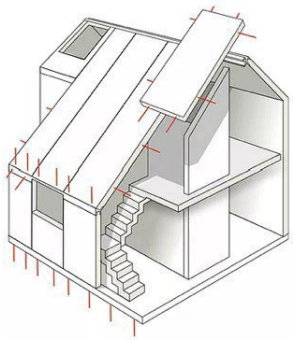

Structures



Commercial & public buildings

Garden rooms

Structures

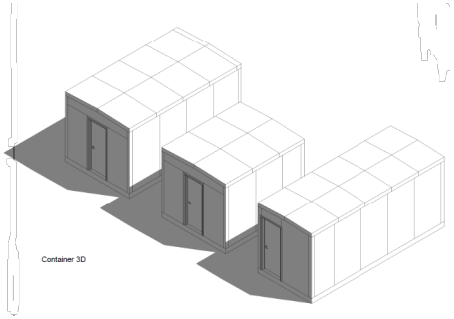


Rapid Build Temporary Housing

Stabilise and Repair.
Mere existence to living.
Disaster to hope.
Tolerable to comfortable.
Site Establishment .
Temporary Worker Accommodation.

- Permanent house appearance and performance
- All composite components
- Flat packed with lifelong storage
- Fast build with unskilled labour and without the need for heavy lift equipment
- Can be disassembled, and re-packaged for re-use
- At end of life for project, buildings can be repurposed for community benefit.

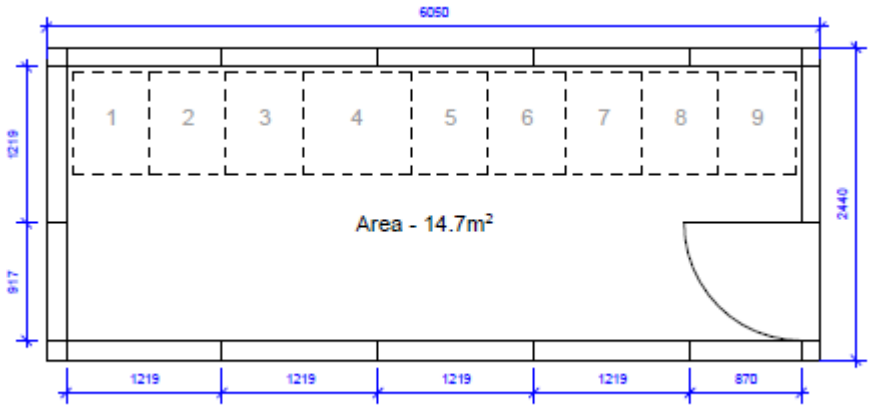
Battery Energy System Storage (BESS) Units



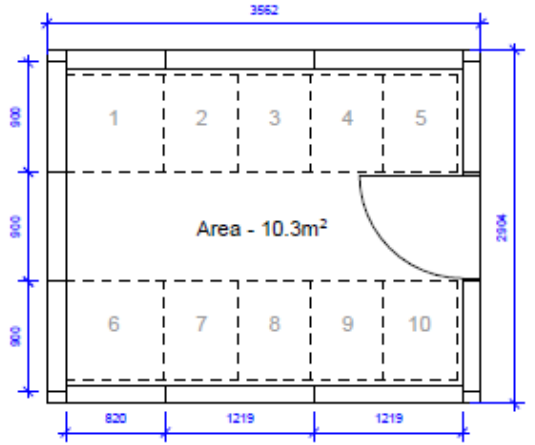
Transforming Battery Storage Units

Storage Containers come with width and height restrictions.
Cost of adding insulation and fire suppression to unit and general customisation.
Cost of transport.

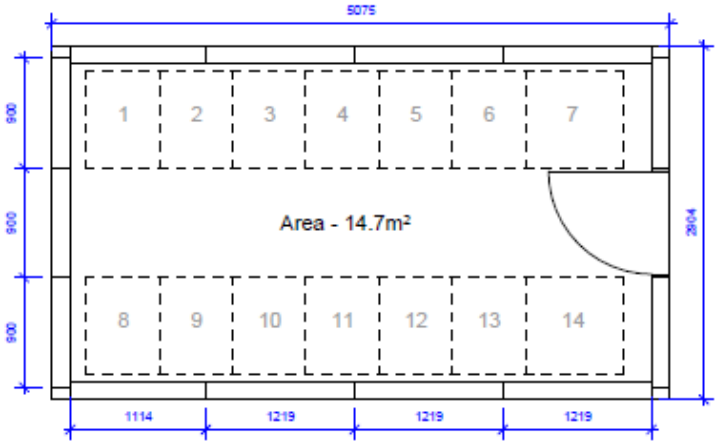
VASO BESS Units can be produced to create standard sizes, be deployed on site and offer protection to client premises should there be any risk of fire.



Standard Shipping Container Size



Proposed Container Size - Matching Shipping Container Unit No.

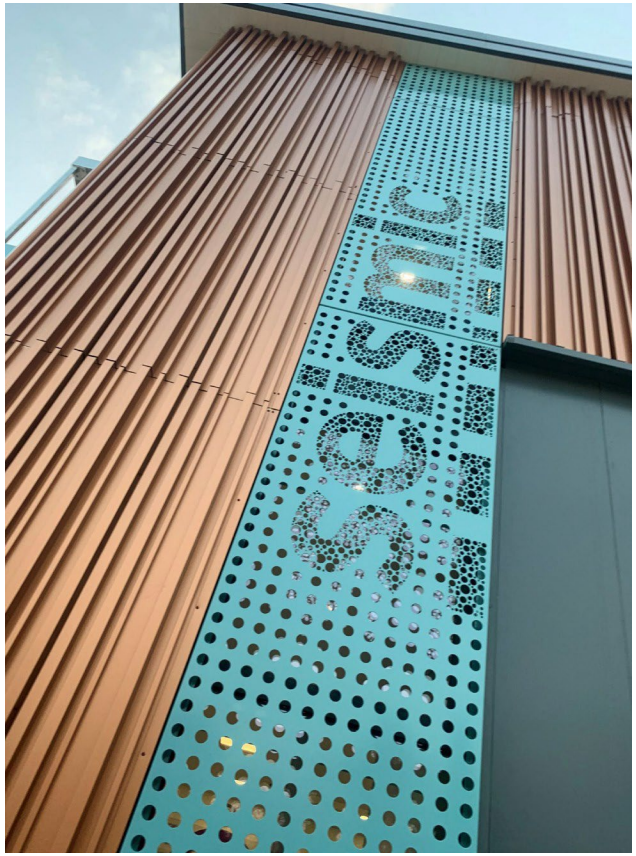


Proposed Container Size - Matching Shipping Container Area

Flooring

Delivering a solution to replace the need for poured concrete.

Our innovative, high density glass composite panel has been used as a floor panel in the Seismic 2 program based at BRE Innovation park. Delivering a solution to replace the need for poured concrete.



TATA Steel, along with the National Composite Centre, commissioned us to manufacture a series of test panels.

Non-Combustible Cladding Panel

Ensuring no repetition of the Grenfell Tower Fire

The rapid spread of the fire was largely due to the building's exterior cladding, which was highly flammable.

The cladding included combustible materials that allowed the fire to spread quickly up the building.

Over 1800 buildings in the UK still need to be made safe.

Collaboration with TATA

Following on from project to develop a replacement for concrete flooring, TATA commissioned us to manufacture a series of test panels utilising the bead core material, laminated between two TATA Steel sheets, Replicating TATA's own brand Continuum cladding panel.

- 1200mm x 800mm panels
- Minimal Calorific value
- Objective is to achieve A1 fire rating.
- Letter of intent to purchase received.

Supported by BE-ST, Scotland's construction innovation centre.

Heat Pump Base Panel

Decarbonising the installation of Heat Pumps

The UK government aims to significantly increase heat pump installations, targeting **600,000 installations per year by 2028.**

This ambitious goal is part of the broader strategy to decarbonize heating and achieve net-zero emissions by 2050.

Using concrete in built environment projects significantly increases the embodied carbon due to its highly intensive production process, the energy used to produce the products and the water wastage in production.

The amount of concrete used for heat pump installations can vary depending on the type and scale of the installation. Typically, concrete is used for the base or foundation of the heat pump unit. The installation process involves creating a stable base, which might require a concrete pad, especially for outdoor units.

The VASO Heat Pump Base Panel (VASO HPBP) can not only contribute significantly to energy efficiency in air source heat pump (ASHP) applications, but it also plays a crucial role in an integrated system that enhances mass performance while reducing the carbon footprint of the installation.

VASO HPBP Advantage

- **Vibration Damping:** Our innovative base is designed to absorb vibrations more effectively than concrete. This can reduce noise and wear on the heat pump, potentially extending its lifespan.
- **Weight and Flexibility:** Composite materials are generally lighter than concrete, making them easier to install and adjust. This flexibility can be beneficial in ensuring the heat pump is perfectly level, which is crucial for optimal performance.
- **Thermal Insulation:** Our composite base innovation offers better thermal insulation properties compared to concrete. This can help maintain a more stable temperature around the heat pump, improving its efficiency.
- **Durability:** Our high-quality composite materials will be more resistant to cracking and settling compared to concrete, ensuring long-term stability and performance.
- **Environmental Impact:** Our composite bases is made from recycled glass, making them a more environmentally friendly option compared to concrete.

Concrete Disadvantage

- **Heat Retention:** Concrete can retain heat, which might not be ideal in warmer climates. This could potentially reduce the efficiency of the heat pump during cooling cycles.
- **Cracking & Settling:** Over time, concrete slabs can crack or settle, which might affect the stability and alignment of the heat pump. This could lead to increased vibrations and noise.
- **Installation Cost:** Installing a concrete slab can be more expensive and labour-intensive compared to other mounting options like plastic or composite pads.
- **Drainage Issues:** If not properly designed, a concrete slab might not provide adequate drainage, leading to water accumulation around the heat pump. This can cause issues, especially in colder climates where water can freeze.
- **Weight:** Concrete slabs are heavy and might require additional structural support, especially if installed on elevated surfaces or rooftops.

Product Range

Unlike traditional modular house builders, Vaso by Eco will have an extensive range of revenue drivers.

Core Product Range	Unlimited Markets		Versatile Build Systems			
Floor Panel (Concrete Replacement)	Heat Pump Base Panels	Homes Extensions	Social Housing	Commercial Buildings	Rapid Response Buildings	Agricultural Buildings
Internal Floor panels	Loft Board Panels	Garages	Private Development Homes	Educational Buildings	Emergency Shelters	Agricultural Structures
Roof Panels	Refrigeration Boxes	Office Pods		Public Buildings	Site Establishment Units	Slurry Pits
External Wall Panels	Battery Energy Storage System Encasement Units (commercial & residential)	Home Leisure Pods		Data Centres	Toilet Pods	
Internal Wall Panels	Building Bases	Basements		Prisons	Fire Barriers	
Non-Combustible Cladding Panels	Conservatory Bases	Swimming Pools		Battery Storage Units	Acoustic Barriers	
Composite Rebar (VBAR)	Patios	Event Stages				
	Internal Room Partitions	Steam/ Sauna Rooms				
	Bespoke Building Components					
	Bathroom plasterboard replacement					

Advancing construction sustainability, performance & affordability

In the UK, the Total Addressable Market (TAM) size measured by revenue of the residential building construction industry was £96.3bn in 2023. More than 212,000 new homes were completed in 2023, significantly below the government's target of 300,000 new homes per year.

Recycled glass in construction contributes to the circular economy concept, where materials are reused or recycled instead of being discarded. Recycled glass increases product durability, structural integrity and ultimately performance. Waste glass as a source product is in plentiful supply.

VASO Build **manufacturing** will produce the panel for a 4-bedroom house in **3 to 4 hours**, constructed in 4 days. Only **16 VASO Build production lines** would be required to solve the 88,000 shortfall on the UK Government annual target.

VASO Build panel and build structures will come with a 60-year warranty and indemnity, underwritten by **Lloyds of London.**

Our manufacturing model will allow scalable replication of plant in communities where jobs and skills are required to underpin these settlements and create sustainable supply chains within proximity of our customers. Our initial facility will become our training and R&D headquarters, and resultant plants will operate under exclusive licence across the globe.

A product and system build produced in Scotland and exported to the globe, the potential to significantly increase the UK's current £8,559m export revenue, as opposed to the £22,748m of construction materials currently imported.

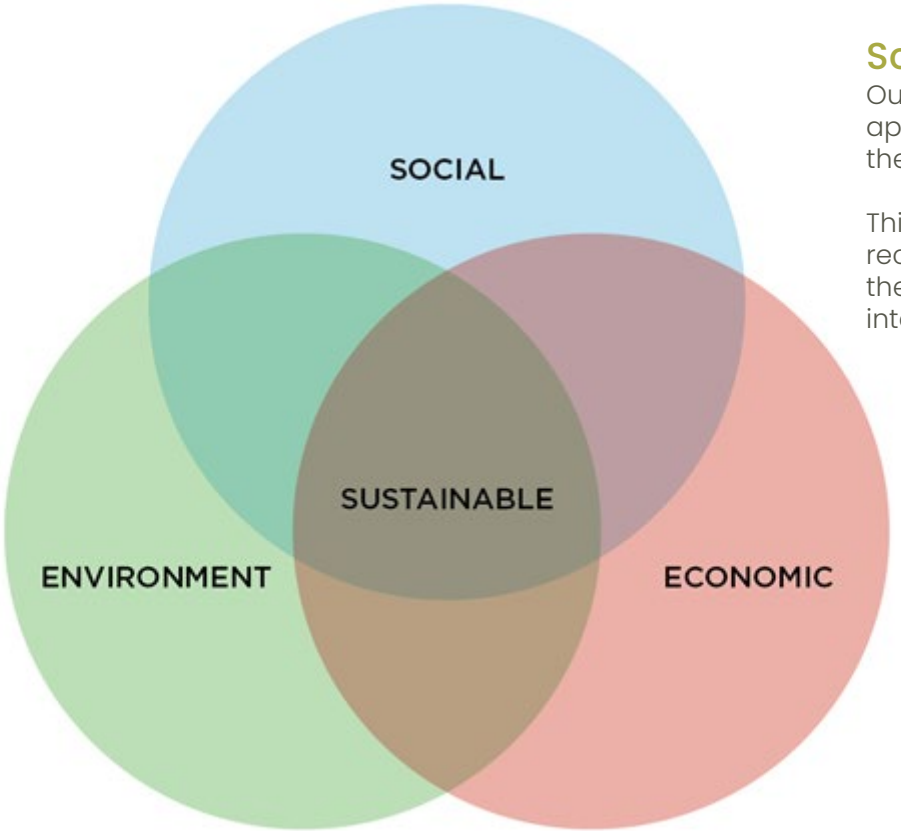
Licensing Model

Critical Pillars

Our licensing model in built on five critical pillars:

- owning intellectual property,
- conducting research and development,
- providing training,
- Warranty and indemnity
- licensing to vendors for sales and manufacturing.

These pillars form a comprehensive solution to meet the needs of our vendors and generate revenue for our company.



Scalable Approach

Our licensing model offers a scalable approach that can be tailored to meet the specific needs of each vendor.

This approach ensures that each vendor receives a solution that is customised to their needs while also protecting VASO intellectual property.

Territory Impacts

Scalable replication of plants in communities where jobs and skills are required to underpin these settlements. This approach helps create local manufacturing roles by establishing production facilities in various locations, providing employment opportunities and training for local workers.

Additionally, VASO Build's innovative construction methods enable localised construction roles by using these composite panels to build structures quickly and efficiently. The panels can be produced in a matter of hours and assembled into buildings within days, allowing for rapid deployment of construction projects. This not only supports local construction jobs but also contributes to the overall sustainability and affordability of housing.

Global Opportunity

Projects VASO Build has been asked to be a collaborative partner, exporting a Scottish product globally.

- USA – 2 MoU's received to build out industrial innovation units and related housing.
- India – Housing solutions which keep heat out.
- Sudan – support rehousing of 1 million displaced people
- Ghana, Nigeria & Kenya – Housing and Smart City innovation ambitions
- LATAM- Caribbean Trade Gateway
- MENA – Industrial and residential housing.
- Australia – Housing to support industrial growth.

vaso by eco

Developing inspirational solutions for the built environment challenges, **helping our customers enhance the lives of their customers.**

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