FROM
Guy Fowler
Advanced Housing Systems Ltd
The Stables
Wigford Lane
Kingsbridge
TQ7 4DX
UK
www.advancedhousingsystems.co.uk

PHONE
02071931461

COMPANY NUMBER
06611596

VAT NUMBER
937871771

FOR
Niall Douglas

COPY TO
Stephen O' Leary
Neil Bricknell

QUOTE NUMBER
524810

DATE
9 January 2023

VALID UNTIL
30 January 2023

Download PDF

New Build

SUPERSTRUCTURE - Passivhaus Certified System (MMC)

Site - Sites 29 and 30, Ard Na Si, Banteer, Co Cork

Project - PH Plus at Co Cork

About Us

If you would like to know more about us, please see the website, www.advancedhousingsystems.co.uk

particularly the time lapse videos and news:

Overview and time lapses
https://www.advancedhousingsystems.co.uk/
https://www.youtube.com/channel/UCfEtDcozygpLGPz5ZcOgN2Q

News
https://www.advancedhousingsystems.co.uk/post/thepassivhaus-achieves-top-result-in-riba-2030-climate-challenge
https://www.advancedhousingsystems.co.uk/post/build-it-awards-thepassivhaus-shortlisted-for-best-sustainable-technology-or-product
https://www.advancedhousingsystems.co.uk/post/ahs-most-comprehensive-system-phi

Advanced Housing Systems are recognised innovators in construction.
The last 12 years have seen a series of exceptional, award winning new builds for self builders, architects' own homes, and clients from Iceland and Norway to the Channel Islands.
Cliff top builds in Jersey (see Ch4), 'Homes by the Sea' (won the JeCC Sustainability Award); and a home erected in 2 days (BBC) are some highlights for us.

"The most comprehensive system"
- The Passivhaus Institute, Darmstadt

In 2021, we launched our most significant innovation to date: THEPASSIVHAUS, a passivhaus certified Total Envelope System, described by the Passivhaus Institute at Darmstadt system as 'the most comprehensive system' they've ever assessed.

This offsite, MMC system is for self builders & commercial developments alike, offering a fully customisable, complete envelope including substructure and superstructure. The system can be delivered with joinery, pre-installed electrical systems, ready to skim plaster internally and clad externally, with minimal site time required.

Uniquely, CAD and BIM details will be published and usable for free by architects and engineers in August 2021.

Leading custom sub and superstructure systems. We blend high tech with craftsmanship & traditional materials: the most advanced house building systems are now Passivhaus certified.

Made in Devon, built worldwide.







Quotation

This quote is based on conversations between:
Guy Fowler of Advanced Housing Systems (AHS)
Neil Bricknell (AHS)
and
Niall Douglas (Client)

SYSTEM
Design, engineering, manufacture and installation of a
SUPERSTRUCTURE
Package (offsite site constructed/MMC)

PERFORMANCE
Passivhaus Certified System (THEPASSIVHAUS) - SUPERSTRUCTURE

CARBON (OPERATIONAL AND EMBODIED) & PASSIVHAUS
Energy (PH) and Sustainability (Zero Carbon RIBA 2030) modelling using PHPP and PHribbon is included with THEPASSIVHAUS certified (substructure and superstructure system only).

AREAS
Based on a Gross External Floor Area of
GF 248 m2
FF 183 m2

PLANS
and strictly based on relevant plans emailed
1 Sept 2022, 21:30

Runners and Riders

Client: Niall Douglas
Phone:
Email: nialldouglas14@gmail.com
Project name: PHPlus Co Cork
Client Address:
Project Address: Sites 29 and 30, Ard Na Si, Banteer, Co Cork

AHS project managers: Neil Bricknell/Guy Fowler
Phone: 07884274556
Email: neil@advancedhousingsystems.co.uk

Superstructure Overview

The Package is aimed at the self builder or small developer aiming at a Passivhaus certified or very high performing envelope, to be fast, simple, complete and fixed price, leaving the least practicable amount to finish the house on site.

The walls (internal & external), ceilings, roofs, and all structural elements are included and quickly installed on site, usually by the same team that crafted the house in our Devon workshops.

Windows and external doors are included.

Ventilation and Heat recovery system (MVHR) is included (design and supply only)

External walls are battened over the reflective membrane ready to take cladding; highly insulated using vapour open and sustainable substrate; finished in Fermacell internally ready to take plaster; electrical conduits and back boxes are prefitted.

Floors and roofs are cassettes where the design allows.

Garage - NONE

Link Roof structure - NONE

Balconies - NONE

To allow for typical first and second fix plumbing and electrical systems, a loose material package of Fermacell (closing internal walls), acoustic insulations (internal walls, ceilings and floating floors), plasterboard (two layers to ceilings), roof VCL and plasterboard battens are included.

Illustrative Assistance for Quotes D2

Summary Performance and Specification

Superstructure Package Type:
THEPASSIVHAUS envelope system Larsen Truss Closed Panel
Average Envelope U value: 0.10 W/m2.K (u) passivhaus
Windows: 0.77 W/m2.K (u) Viking SW14 aluminium clad timber; triple glazed (Passivhaus Certified component)
MVHR: system >85% heat recovery
Thermal Bridges: zero (thermal bridge free) W/m/K (Psi)
Airtighness: <0.6 AC/hr at superstructure completion stage (Passivhaus)
Sound proof: >55 dB very to extremely high
Sustainability: A+ RIBA 2030 Carbon Challenge calculated using PHRibbon

The Passivhaus Institute calculations and detailed performance/specification for THEPASSIVHAUS is attached below.

If there are Price options below, see the relevant specification change; usually only the External Wall construction changes

Performance Specification b_AHS_20210727

Payment Schedule for THEPASSIVHAUS Larsen Truss

424,966.00
x 1
424,966.00

THEPASSIVHAUS passivhaus certified superstructure (Larsen truss)
U <0.1 W/m2.K opaque average envelope
thermal bridge free
PH certified windows and external doors
MVHR
Design, engineering, manufacture and erection
Ext wall thickness 345mm

MILESTONE EVENT DRIVEN PAYMENT SCHEDULE
11. acceptance of the quote £50,995.92
2. provision of structural engineering calculations and layout drawings £50,996
3. commencement of manufacture of the superstructure £93,493
4. placement of order with our suppliers for windows and external doors £38,247
5. commencement of delivery of superstructure to site £84,993
6. arrival of erection team on-site £42,497
7. delivery to site of windows £16,999
8. erection of main superstructure ground floor £33,997
9. erection of the main superstructure roofs £12,749

Total GBP	**£424,966.00**

Scope of Work & Timing (anticipated from date of frozen plans)

Design and Engineering 12 weeks
Manufacture of envelope including all external and internal walls, roof and floors joist platforms 8 weeks
Erection/Installation envelope to weather proof stage 4 weeks
Heat Recovery and whole house ventilation design and supply
Loose materials called off by client
Windows and external doors (client requested changes allowed with requote this item) 5 day installation on site (these may be factory installed)
Rooflights N/A
Garage N/A
Conservatory N/A
Garage door N/A
Outbuildings N/A
Balconies/Pergolas/Low Level Roofs N/A

Required Prior to Commencement of Works

These items must be provided by client, although we can advise or specify:
Site WC & welfare facilities;
Adequate storage space for our equipment and materials;
Setting out of building and datums;
Firm level access from the road to the area of new build, including removal of paving, concrete, other impediments;
Substructure in place to correct specifications and level to < +/- 3mm over entire base;
Services need to be clearly marked or moved away from the working area (we will not accept any responsibility for services that have not been clearly marked out prior to works commencing);
Adequate and suitable protection to any retained units, structures or decoration;
Firm and level hardstanding as required.

Responsibilities On Site

What we are responsible for

When the complete package is ready for delivery and has arrived at site, we will commence to erect/install the envelope to a weather resistant stage. This comprises the following:
1. Offloading the items that we supply and fix.
2. Erect all external and internal load bearing wall panels including non-load bearing partitions.
3. Erect structural floor and roof components.
4. Fix windows and external doors as required only if supplied by us.
5. Leave the site in tidy and reasonable condition with all rubbish and packaging being placed in skips.
6. Follow your Health and Safety protocols (unless we are Principal Contractor)

What you are responsible for

Some of these items are critical in which case we must arrange and specify, but they are paid for by you to the specific supplier (if we pay the supplier, we add 5%):
1. Independent scaffolding to be fully erected prior to delivery of the superstructure and amended by the scaffolder at our request for the duration of the superstructure erection program to our specification.
2. Suitable crane and other plant in some circumstances as requested by us during parts of the erection phase for off loading and erection.
3. Suitable access for delivery vehicles and a hard standing area for crane is required immediately adjacent to the proposed building as requested by us.
4. Accepting the loose materials packages and items such as the MVHR system which are designed and supplied by us and fitted by the finishing trades. We will arrange delivery when you call these off according to your program.

General

Comfort, Health & Wellbeing
The industry leading levels of thermal bridge free insulation, airtightness, embedded MVHR, acoustic insulation, vapour permeability (like Gore Tex, the building is weather resistant but breathes), implemented in safe and sustainable materials, result in the most comfortable and healthy home environment.

Completeness
The package is more complete than almost all UK offerings, although not as complete as one or two German ones such as Huf Haus. The disadvantage of super complete packages is that the factory is making decisions that in practice are best left to after the system has left the factory (mandatory acrylic cladding, wall colours and wall mounted TVs, for instance); and it is impossible to exactly match more complex planning drawings in highly automated factories. Our packages are custom built to exactly follow even the most interesting designs. We use closed external panels ready to be decorated internally and to take any cladding type or masonry externally.
Electrical conduits and back boxes are also factory installed by us. This is the highest level of factory finish that our experience suggests is sensible for most projects.

Sustainability, Energy and Passivhaus
The Passivhaus Standard is thought to be the ultimate international standard for high performance, energy-efficient construction, providing high standards of occupant comfort and health. This standard looks first at the materials the building is made from and makes insulation and airtightness a priority. This does mean that the detailing is very
considered, especially around windows and doors. In addition, a clever, but simple and reliable, system (Mechanical Ventilation Heat Recovery or MVHR) is used to heat and cool the building. An MVHR is the lowest cost, highest impact device to save energy and promote healthy buildings. Living in a Passivhaus does not mean you cannot open windows: just that you might not wish to so often because the air quality and temperature is perfect at all times of
the year. The Passivhaus standard is the best starting point for a truly healthy home. But it does not cover everything that sustainable and ecological building design can be.

Carbon footprint
Passivhaus design is an excellent place to start when designing healthy buildings, however, it is important to also consider what products are used in its construction and the impact these have on our planet. It is important to avoid using fossil-fuel-based foam insulation in the superstructure where possible (PIR and PUR found in most SIPS)
as these have a high carbon footprint and can outgas volatile compounds. Not only are they bad for the environment, but they also risk creating moisture issues within your building if installed incorrectly. The use of natural, recyclable materials and those with a small carbon footprint are better alternatives, and will also reduce the risk of mold growth within the construction. We use Passivhaus design principles in all of our projects which allow these benefits
whether or not you formally certify your project. We are the only company in the UK, possibly the world, that makes both substructures (foundations) and superstructures (the bit above ground) that are Passivhaus Certified.
Our THEPASSIVHAUS system and the majority of our systems have an A+/A++ Carbon footprint.

Speed of Installation
This is a feature of all Offsite system builds. Our use of cassettes (essentially horizontal panels) to form roofs and floors increases the speed of erection.

Off Site/MMC
https://www.designingbuildings.co.uk/wiki/Offsite_manufacturing lists the following advantages: Speed of production; Speed of build on site; Cost, quality and uniformity of build; Sustainability and waste reduction; Validation and testing; Health and safety.

Longevity
Kevin McCloud said on Grand Designs that our panels will last hundreds of years. We think they can last a thousand. There are many examples of timber frame buildings circa 1000 AD. Despite these expectations, our systems are eligible for third party structural warranty insurances; we carry £2M Professional Indemnity insurance, as do our designers and engineers.

Fixed Price
Using MMc/Off Site building methods means our price is fixed for the Design, Engineering, Manufacture and Installation of the Project and will not vary providing that the Plans used for this quote are finalised and the scope of work remains the same. We will endeavor to accommodate any changes in plans & specification if they
arise but may vary the price accordingly. There are a few costs we charge you that are additional to the fixed Price above. These variable costs reflect indeterminates such as the distance to site from our bases in Devon and the cost of accommodation/subsistence for our installation team for the short period when we erect/install the system. Thus, these costs are generally higher for a project in Norway than for one in the Cotswolds. The season makes a difference
too, as accommodation is more expensive in high season summer than winter. Thus, the price is FOB our Devon facility and does not include delivery, travel & accommodation/subsistence to and from Site. When we arrange for and pay for these expenses on your behalf, we will invoice you for reimbursement plus 5%. Site equipment and plant hire costs are treated in the same way for similar reasons. We can usually estimate these variable costs in advance and determine together how to minimise them. If requested, we can sometimes include them in the fixed Price. As a
percentage of the Price, these variable costs usually range from 5% for a larger project, to 12% for a smaller one.
This quote assumes that delivery, travel & accommodation/subsistence plus site hire of plant including scaffolding is a variable cost.

Access to Staff
You will have direct access to Neil Bricknell and Guy Fowler at all reasonable times during the project. We will also provide a reasonable amount of free general advice on all aspects of your project to the best of our ability, but we cannot be held liable for any advice given that is not directly related to items specified in the Contract.

Project Planning
Project progress and planning for our part of the project is included in the Price. We use professional online systems that you can access. This information can be integrated with your other subcontractors' plans. Guy and/or Neil along with some of our senior staff should only need to visit the site 5 times. 5 visits are included in the Price and these attendances are allowed for as follows:
1) Initial site inspection prior to Groundworks sign off
2) Groundworks sign off (prior to construction team arriving on site)
3) Sole Plate stage
4) Wall plate/Roof
5) Hand over - visit the site together to agree if any further work is required by us.
Once we have completed this, the final stage is achieved!

Further advice and finishing
In addition to design, engineering, manufacture and installation of custom superstructures and substructures/foundations/basements, we can undertake or advise on all parts of the project cycle. A non-exhaustive list includes architecture, planning, surveying, engineering, landscape architecture, geoengineering, project management, passivhaus and building physics. We also offer Design & Build and Total Build services for certain projects in some locations. If requested to undertake any of these additional services, we will charge an hourly rate under our Terms and Conditions of Professional Services which is available upon request.

Process and program

a. Design and engineering is undertaken by us to faithfully reproduce the architect's planning drawings. We do not generally need drawings beyond the planning stage from the architect. Preparation of the superstructure design
package, including full and certified structural engineering calculations and related information as required for your submission to the Local Authority Building Control Department are included. You are responsible for obtaining all
necessary planning, certifications and consents that may be required.
b. Our design and engineering package includes full working drawings for the superstructure and a soleplate layout drawing which is to be used by your contractors for the groundworks setting out which is your responsibility. Your
groundwork or substructure engineer will need this information to design and engineer the substructure.
c. Having manufactured your house in our Devon facility at Butterleigh Sawmill, we transport by lorry/ship to site where the panels are craned into position on sole plates that we fit to your foundations (substructure). Please refer to our
website to see videos of this process.
d. Generally, we erect ground floor panels in one day, and associated floor cassettes the next day. More complex and demanding buildings with many subframes, sway frames, curved walls and complex vaulted roofs increase this
time. A straightforward 2 storey home up to 500m2 will usually be erected in less than 2 weeks including window installation. We built a house, well, more like an extension, in one day for the BBC DIY SOS.
e. The system can resist bad weather for several months, but the final weather resistant roofing finish by others should be programmed to follow immediately after erection of the superstructure.
f. We will install in bad weather unless high winds or poor visibility make it unsafe to do so.

Detailed Specification

The superstructure system includes all components that allow us to erect the weather resistant superstructure onsite.
The design and engineering we undertake specifies the exact configuration and type of the components.
The structural envelope comprises a panel and cassette system with additional structural elements that are minimised by design, preferably in engineered timber but in steel as necessary.

Sole Plate
Sole plates are a vital element in a panel system. Their installation has a direct effect on the building's service life, line, level and plumb, and contributes to the speed of construction.
Single layer treated sole plates included to match panel types.
IMPORTANT NOTE : The sole plates form the footprint for the superstructure and it is important that the substructure beneath them is dimensionally accurate and level across the entire area to a tolerance of < +/- 3 mm. Should you or your builders need further information or advice on how to achieve this please ask. Most tolerance errors can be cured by packing under the soleplate but we might charge for the additional work.
We design, engineer, manufacture and install substructure systems (foundations) as well as superstructures and would be happy to quote for this element of your project.

THEPASSIVHAUS Larsen truss system

Vertical wall panels
See Summary Performance section above.
All timber is FSC certified for environment and sustainability.

Closed External Wall Panels
THEPASSIVHAUS certified panel is a based on a Larsen Truss. This closed panel system has extremely high thermal and acoustic performance characteristics which are further enhanced by stringent airtightness and thermal bridge detailing.
The panels are constructed from vac vac treated 89mm x 38mm FSC certified CLS softwood twin framing with gusset connections forming a Larsen Truss.
The vertical and horizontal panel size is determined by our engineering.
Thickness of wall excluding battens - 345mm.
Make up of vertical panels (from exterior to interior):
50x50mm treated timber batten to carry cladding
Reflective Low emissivity breathable membrane rain screen
External racking board - 12.5mm Panelvent racking board to the exterior (a strong, breathing, natural wood based racking sheet) which is factory faced with a reflective (temperature mitigation) water tight breather membrane secured behind external treated cladding battens.
Insulation - Internal factory fitted glass/mineral wool, vapour open, high recycled content.
VCL - Low emissivity vapour control layer.
The internal panel face comprises a 12.5mm Fermacell board which is ready for skim plaster finish.
Internal Racking board - Fermacell 12.5mm is made from recycled newsprint with gypsum and is stronger, denser and more moisture and fire resistant than plasterboard.
Service Cavity prepopulated - between the VCL and the Fermacell board is a closed service cavity into which we factory install conduits for electrics. Electrical back boxes are factory installed into the Fermacell board.

Internal Wall Panels
The internal wall panels are closed one side in the workshop with Fermacell. This makes them suitable for all wet rooms. The loose material package has the acoustic insulation and board for simply closing the panel after first and second fix by your plumber and electrician and includes resilient bar acoustic isolation.
Thickness of wall excluding battens - 131mm.
FSC Certified timber
The panels are constructed from 89mm x 38mm CLS softwood studwork.
First side racking board - Fermacell 12.5mm is made from recycled newsprint with gypsum and is stronger, denser and more moisture and fire resistant than plasterboard.
Second side (closing board) - Fermacell 12.5mm.
Insulation in loose materials package - glass/mineral wool, vapour open, high recycled content.
Acoustic Isolation Enhancement - Resilient bar isolation one side 17mm
No glazed screens have been allowed for within the internal wall panels.
Any curved walls maybe supplied as loose components.

First Floor Structure
Engineered joists, either metal web or timber i joists form cassettes contained within engineered timber glulam rim boards. Further steel or engineered timber products acting as beams may be incorporated as determined by our structural engineering.
Floor cassettes are factory decked with 22mm weather resistant flooring sheets, glued with a tongue and groove edge profile.
Depth - according to span.

Roof structures
Engineered joists, either metal web or timber i joists form cassettes contained within engineered timber glulam rim boards.
Depth - according to span
Sarking - Roof cassettes are factory sarked with 18mm tanalised ply.
Supply only in as loose materials for second fix installation by you:

Insulation - Internal factory fitted glass/mineral wool, vapour open, high recycled content.
VCL - Low emissivity vapour control layer.
Counter Battens - 63x38mm CLS timber.
Final waterproofing to all roof areas by others.

Loose Materials
Internal walls, ceilings and roofs cannot be ‘closed’ when electricians and plumbers need access well after we have completed the superstructure installation. Consequently, to maintain the standard of materials and for efficiency, we have included the additional materials required for your finishing team to finish these items at the appropriate time later in the build. We supply these but do not fit them.
Internal Walls:
Acoustic Insulation - 100mm quilt glass/mineral wool, vapour open, high recycled
content.
Second side (closing board) - 12.5mm Fermacell.
Acoustic Isolation Enhancement - Resilient bar isolation.
Floor cassettes:
Acoustic decoupling layer supplied loose in rolls.
18mm chipboard sheets to form an acoustically decoupled deck over the 22mm subdeck of the cassette.
Acoustic Insulation - between joist 200mm quilt glass/mineral wool, vapour open, high recycled content.
Plasterboard - x2 layers.
Acoustic Isolation Enhancement - Resilient bar isolation.
Roof cassettes:
Plasterboard - x2 layers.

External Windows and Doors
Background
We have many partner manufacturers who we believe offer the best price/performance joinery packages, which include Passivhaus specification. Whereas we source in the UK where possible to save on environmental impact of unnecessary transport and other economic factors, we know of no UK manufacturers that can manufacture to matching specifications at a reasonable cost. There are some excellent custom made joiners in the UK and we work with local artisans in Devon when appropriate.
Installation
We are responsible for installation of windows to the new build structure when we supply the window. These are fitted by us to minimise thermal bridging and air leakage to work optimally with the MVHR system.
Fixed and Side hung windows
Viking SW14 triple glazed Passivhaus certified Windows
We have included these windows and doors for your quote. We can suggest other suppliers once we are engaged with you and will adjust the price up or down according to the change.
Description
High-quality laminated flush sash timber windows with a traditional design.
Made from timber, with external aluminium cladding.
Softer line to the window aesthetic.
5 year warranty - see Supplier T&C.
Over 200 colours available.
Range of configurations available.
U-value 0.77 W/m²K.
CE-marked and resistance tested to wind load, air permeability and watertightness.
FSC certified.
Secured by Design license holder.
Entrance doors and glazed doors from Viking to match Windows.
Not included - Shutters, louvres, rooflights, patent glazing, curved glass.

Mechanical Ventilation and Heat Recovery System (MVHR)
Designed for your project and supplied as part of our package to compliment the airtightness performance.
Background to MHVR
Building airtightness is the inward or outward air leakage through unintentional leakage points or areas in the building envelope. An airtight building, combined with an appropriate ventilation system such as Heat Recovery Ventilation (MVHR), has the following benefits:
Maintain a fresh atmosphere in a well-insulated home.
Removes moisture from the stale air within the house, reducing the risk of condensation problems.
Improved air quality will alleviate the symptoms of asthma sufferers.
Filtered fresh air will reduce the effects of many respiratory allergies.
Prevents damp and mould growth.
Allows the home to be tightly sealed, reducing noise entry in urban areas.
Controlled air changes mean no over ventilation, keeping heat losses to a minimum.
Heat recovery efficiency of up to 90% resulting in reduced heating requirements.
A number of studies have shown substantial energy savings by tightening building envelopes. The ASIEPI project technical report on building and ductwork airtightness estimates the energy impact of envelope airtightness in the order of 10 kWh per m2 of floor area per year, for the heating needs in a moderately cold region (2500 degree-days). Experimental data showing the energy savings of good airtightness were also published by the Building Research Establishment in the UK as well as REHVA journals' special issue on airtightness. They conclude 15% of the space
conditioning energy use can be saved in the UK context going from 11.5 m3/(m2·h) @50 Pa (average current value) down to 5 m3/(m2·h)

@50 Pa. Many new-builds in the UK do not achieve good enough air permeability values to warrant the incorporation of a whole house ventilation system - thus trickle vents, extract fans, or passive stack ventilation is commonly used. With our system, over 85% heat in the exhaust air is transferred to the incoming fresh air.

MVHR system Specification

The system and its ancillary fitting and ducts is custom designed by us based on our Design and Engineering drawings.

It is supplied by us for installation on site by your plumbing contractor which will be well within their competence.

Heat recovery efficiency >85%

Summer bypass included.

Preheating matrix included (electric).

Terms and Conditions

Your acceptance of this proposal includes your agreement to the Terms and Conditions attached.

Advanced Housing Systems Terms and Conditions of Sale of Sub and Superstructures and Associated Works 3 Jan 2022

Ask a Question

New Build

SUPERSTRUCTURE - Passivhaus Certified System (MMC)

Site - Sites 29 and 30, Ard Na Si, Banteer, Co Cork

Project - PH Plus at Co Cork

Total GBP £424,966.00

Additional comments

Optional

Your order/reference number

Optional

☐ Yes, I Niall Douglas agree to and accept this quote, on January 10, 2023 at 8:06 AM.

Accept Quote

Decline this quote…