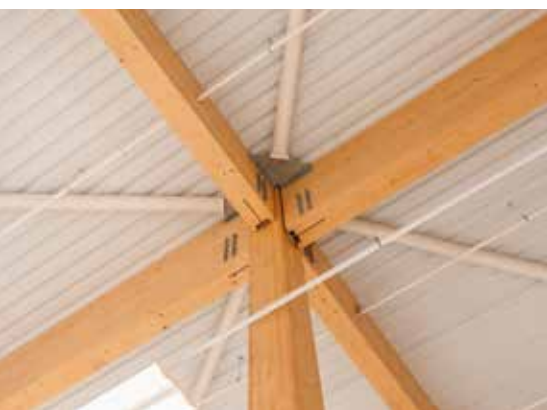




ROOF AND WALL CASSETTES

The Complete Panelised Timber Solution



RUBNER
holzbau

B&K STRUCTURES
OPTIMISED HYBRID SOLUTIONS

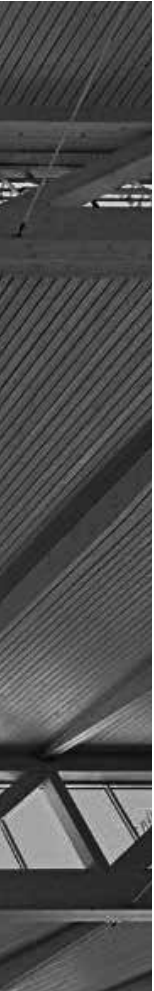
www.bkstructures.co.uk



Versatile Offsite Solutions for Rapid Onsite Installations



Engineered timber roof and wall cassettes deliver sustainable buildings at a rapid rate, without compromising on quality or efficiency. Our systems offer high levels of prefabrication and integration for accelerated build programmes.



Speed, Versatility and Custom-Made Performance

By exploiting our in-depth industry knowledge and extensive experience, these innovative timber systems have been developed to meet the demands of future projects in the fast moving construction sector. Advancements in prefabricated timber cassettes has led to our partnership being recognised as pioneers of custom-made, large format roof and wall elements that deliver precise dimensions and enhanced performance values. Detailed research and development positively contributes to building physics - ensuring actual onsite performance meets design expectations.

Due to the wide range of possible applications, timber cassettes are used in both high profile projects, which demand enhanced properties over and above standard Building Regulations in such areas as fire and noise protection, together with commercial applications requiring fast and cost efficient construction.



Fast and Cost Efficient
Construction -

ROOF CASSETTES

Versatile roofing cassettes can be specifically adapted to meet various physical and loadbearing requirements. The structure consists of loadbearing timber ribs, with glass wool or mineral wool thermal insulation, clad top and bottom. The moisture-adaptive vapour barrier, applied seamlessly across the full width of the cassette, ensures the desired performance of the building can be met.

The design of the roofing elements allows for a wide range of coverings to optimally fulfil the specific requirements of the project team. In the construction of flat roofs and flat inclined roofs, it is possible to use PVC, FPO, EPDM membranes (rubber) and bitumen waterproofing (two-layers) as well as more traditional corrugated steel or aluminium profile roofing systems. For pitched roofs, any covering can be installed onsite or factory applied. The standard version of the roofing cassette is used for a maximum single span of 7.50m and is 160-280mm thick - depending on the load specification, but cassettes can be produced up to 22m in length, double or even triple spanning across the structure. Versions with modified designs are also achievable for gravel surface or green roofs.

Standard roofing cassettes are supplied with factory fitted external coverings which are finished and sealed onsite. Roofing elements are therefore fully functional - loadbearing and watertight, when fitted - making installation less weather dependent, allowing subsequent interior fitting works to start sooner and support rapid building envelope construction.



Speed, Versatility and
Custom-Made Performance -

WALL CASSETTES



Due to the well-established prefabrication techniques, timber wall cassettes offer countless possibilities for interior and exterior wall surface finishes. With various types of paneling available for walls and facades – timber cassettes can be customised to meet each project's design and performance specifications.

The cassette base is made up of loadbearing wood joists with functional insulation layers, covered inside and out and connected by profiles at the top and bottom. To meet the structural and architectural needs of the project, together with the degree of prefabrication required - the wall and facade elements are then finished with further layers of building boards or cladding panels to satisfy design requirements.

Using wall elements of single-storey height, buildings are erected one floor at a time, starting with the internal and external walls, followed by the roof. This is a distinctive construction technique, as no supporting frame is required. Each element has a maximum width of approximately 4.50m and a maximum length of 22m. The wall elements retain load transfer and racking resistance capabilities.



Versatile Solution to Meet Performance Requirements

Engineered timber cassettes can be designed and manufactured to ensure that the required performance specification for fire, thermal, acoustic transfer and acoustic absorption are met through the build-up of the cassette.

Due to the high degree of prefabrication involved, all of the necessary components needed to meet the required performance specification, such as cladding and insulation, are installed in the factory with no additional onsite works needed.

Upon leaving the factory, each engineered timber cassette combines the blend of products specifically selected to meet the exacting requirements of a project with soffits designed not only to meet the architectural aspirations of the project, but with a bespoke matrix of holes and screw patterns making them readily equipped for any purpose.



Fire Resistance

The behaviour of buildings in relation to fire is one of the most important features of any development. Our timber cassettes have been regularly subjected to fire safety testing in a variety of installation scenarios by an accredited testing agency.

The timber cassettes are rated for fire resistance classes REI 30, REI 60 and REI 90 in accordance with EN 13501-2. All elements with a thermal insulation thickness of at least 180mm fulfil the requirements of fire resistance class REI 30. Even the strict requirements of the European Standards, effective since 2010, have long since been exceeded by our timber cassette systems. Higher fire resistance classes can be achieved at relatively low additional costs. Early coordination with the building control authorities in the approval process can avoid the need for other, significantly more expensive fire protection measures.

Sound Insulation

Sound insulation and sound absorption are of particular importance for the quality of any space – whether it be for commercial, educational or residential use. Official requirements relating to permissible sound emissions and employee protection provisions concerning sound absorbing surfaces are constantly being expanded.

Timber cassettes have excellent sound insulating properties, as have been proven during extensive testing. Results by an accredited testing agency are available for a total of 50 different installation configurations and a sound absorption coefficient can also be achieved in the cassette.

The best sound absorption results are achieved with perforated materials. The highest quality configuration consists of perforated panels backed with an acoustic fleece cladding, behind which a sound-insulating layer of mineral wool is installed. All sound insulation and absorption measures can be installed in the factory.

Achieving the Optimum Performance

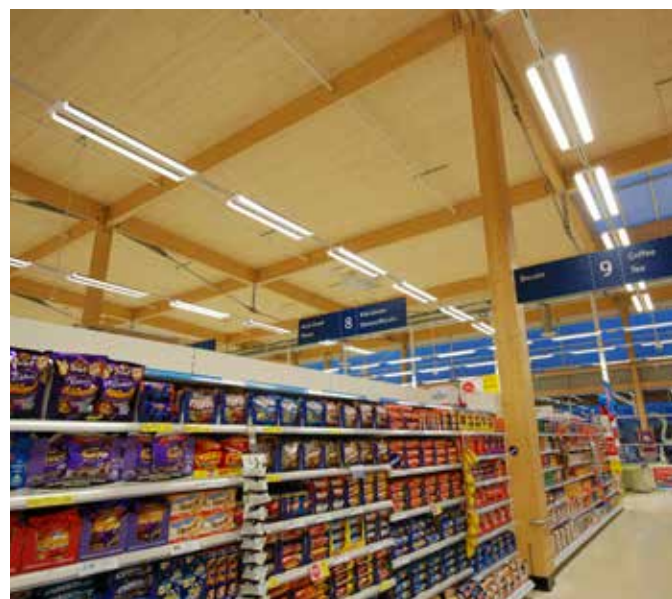
The performance of any new building is critical - the envelope needs to work for owners and occupiers to ensure it is energy efficient and provides a comfortable environment when the building is in use. There are many factors involved in achieving this - not only those that are visible. Great consideration is given by designers on how the envelope fulfils its functional use.

The products within the cassettes are specifically chosen to naturally blend in order to meet the design specification of the envelope for:

- Thermal performance
- Acoustic resistance
- Acoustic absorption
- Airtightness
- Fire performance

The emphasis on performance is never more critical than in office applications. Excellent airtightness and thermal performance lower energy costs but are also crucial to providing employees with a comfortable environment in which to work.





Acoustics and noise levels are two areas that are often taken for granted. To minimise disruption from others within the building and the outside world, so that productivity is not effected, good acoustic design is essential. This is where timber cassettes come into their own - as the cassettes can be designed to resist sounds traveling into the space and the different levels of frequencies which the sound travels on.

It is also an important consideration for open plan offices to ensure that the acoustics do not adversely affect others in surrounding areas. This is an area where acoustic absorption is crucial, particularly with large expansive roofs where the noise can travel great distances - perforated soffits can play a vital part in ensuring the noise levels are controlled.



Speed is the Key

Timber cassettes have many advantages - offering alternative solutions to varying problems. This is never more evident than in retail stores where there are three key drivers in selecting systems:

- Speed of construction and programme certainty
- Removal of secondary items
- Creating an alternative customer experience



Each of the following is significant for different reasons.

Ensuring the stores are opened on schedule is of upmost importance, as retailers invest time and money in promoting the launch of a new store to the local community. Due to the cassettes being fabricated up to 22m in length and 4.5m in width - prefinished internally and externally - the roof is erected and watertight much faster than it would be when using traditional building techniques and reduces working at height making for a safer build.

Due to the large format of the cassette, and its capability of spanning up to 8 meters (loading dependent), it eliminates the need for secondary members, delivering streamlined soffits. This coupled with the different soffit options delivers a cleaner, warmer store environment when compared to traditionally built stores.

Soffits can be constructed in a variety of forms, not only to enhance aesthetic appeal but also to meet the fire and acoustic requirements of the building. Cassettes are adaptable to offer many soffit choices from white metal liners to varying timber options, to suit individual stakeholder's requirements.

Masters of Material



As the UK's leading specialist contractor for the design and development of optimised hybrid solutions, B & K Structures' partnership with manufacturer, Rubner Holzbau, brings together their combined capabilities strategically placing them in a position to meet the detailed demands of engineers, contractors and the needs of the end user.

The right structural solution is crucial - our partnership delivers systems that meet the design and construction brief in terms of cost and performance, providing:

- Experience
- A proven track record
- Programme and cost certainty
- Enhanced construction programmes
- Reduction in weather dependency
- Exceptional accuracy and minimal defects
- Minimal impact on the environment
- Exceptional airtightness, maximising energy efficiency
- Enhanced acoustic and thermal performance
- Reduction in onsite disruption and neighbour disturbance
- Improved onsite Health and Safety
- Reduction in capital and lifecycle costs
- A faster return on investment
- The ultimate sustainable solution





B & K Structures offer a complete service from design to installation. Operating since 1974, the company is recognised for outstanding quality, innovative solutions and successful service to the construction industry - delivering a significant portfolio of quality and award winning projects.

Rubner Holzbau, now managed by the third generation of the Rubner family, is one of the leading European companies operating in the field of timber construction. With the constant desire for innovation and decades of experience, Rubner Holzbau engineering capability, production capacity and technical know-how, enable the company to deliver complex and architecturally challenging projects.



Experts in Delivering Optimised Hybrid Structures

For detailed up to date information, to book a CPD session or to arrange a meeting please contact:

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