jaga

CLIMATE DESIGNERS

Heating

Light cooling

Deep cooling

Ventilation

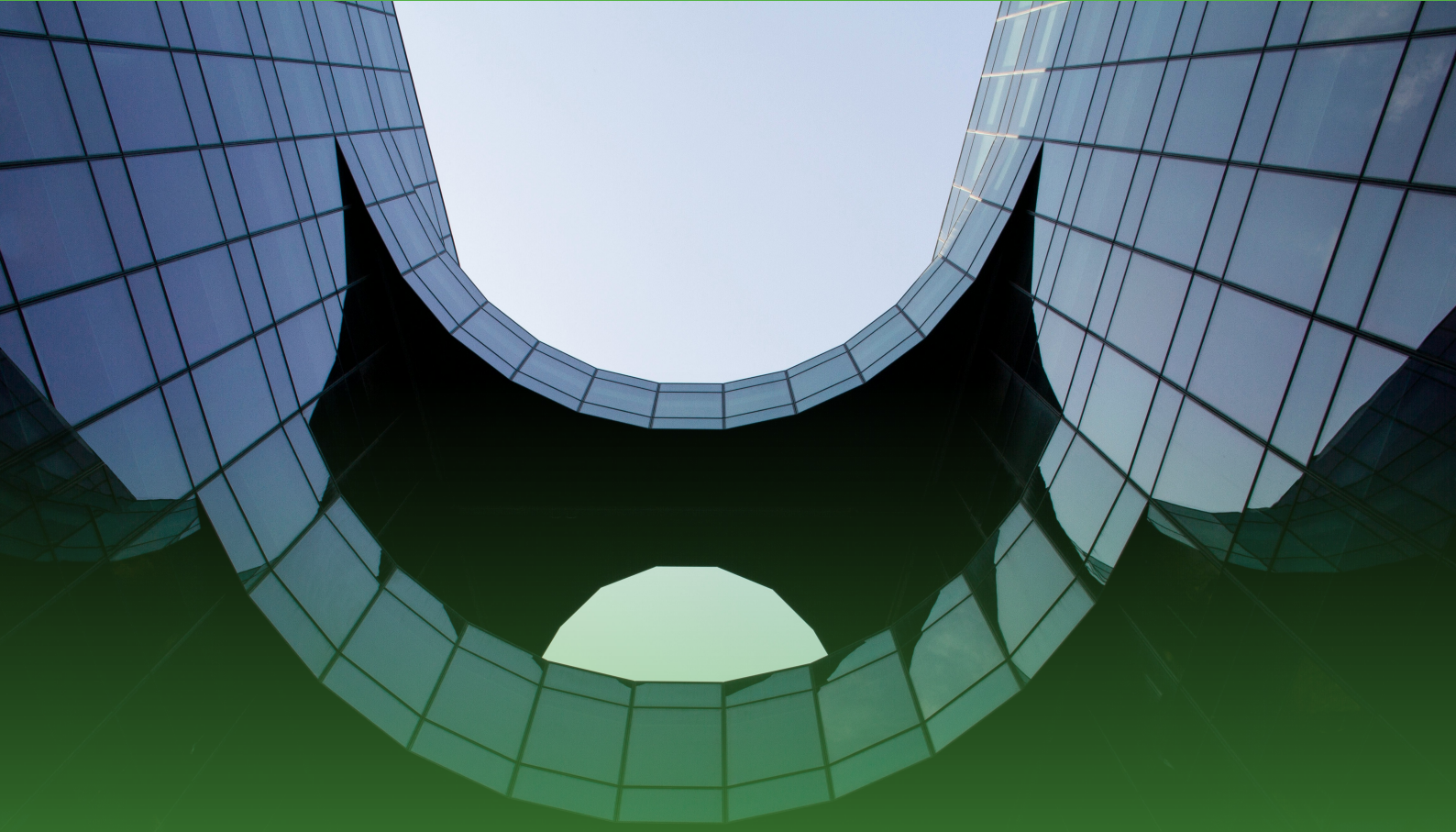
BREEAM UK

THE MOST ECOLOGICAL SYSTEMS

Jaga are pioneers in ecological Low-H2O heat exchangers for low water temperatures, and dynamic systems for heating, and passive/ active cooling systems.

Jaga has contributed to numerous leading ecological BREEAM, LEED and DGNB certified building projects. Our solutions can be an important factor in your pursuit of a better environmental score.

Amazon HQ Seattle "The Spheres" Jaga Low-H_2O Installation in a wall recess ▶
Image: Sunita Martini / Seattle Refined

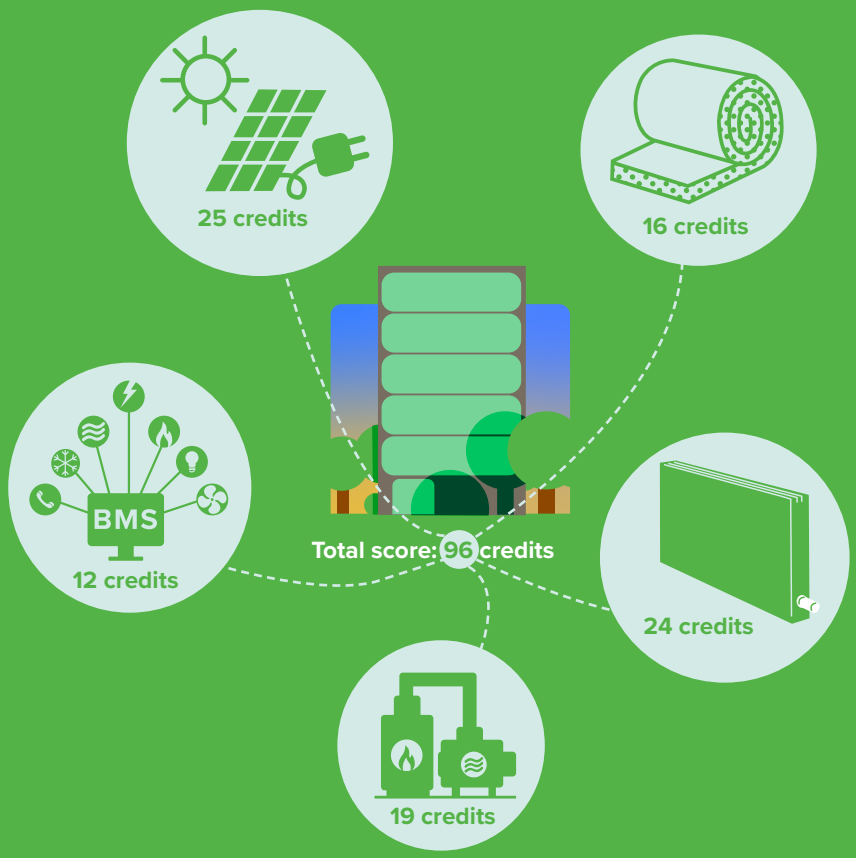


BREEAM & JAGA

BREEAM is the world's leading sustainability assessment method for masterplanning projects, infrastructure and buildings. BREEAM is a registered trademark. It recognises and reflects the value in higher performing assets across the built environment lifecycle, from new construction to in-use and refurbishment.

As a company with innovation and creativity at it's core, Jaga continuously strives to create better, more efficient, durable and sustainable solutions.

Jaga products are designed with the environment in mind so they naturally align with BREEAM requirements. Independent analysis shows that Jaga products can contribute BREEAM credits across a number of categories; most significantly, in the areas of thermal comfort, energy efficiency and waste and pollution reduction.



Different building products can add value to the BREEAM score due to their unique properties. By combining that, your overall project score will increase.

OVERVIEW BREEAM CREDITS

Jaga can contribute up to **23 credits** for BREEAM International New Construction certificate, which increases the value of the building. Analysed by Encon, an independent assessor organisation.

10 CATEGORIES FOR CREDITS ACCORDING TO BREEAM:

		max. credits	**Jaga potential**
MANAGEMENT			
MAN 04	Commissioning and handover	4	**2**
HEALTH & WELLBEING			
HEA 02	Indoor Air Quality	4	**1**
HEA 04	Thermal comfort	3	**3**
HEA 05	Acoustic Performance	3	**1**
ENERGY			
ENE 01	Reduction of energy use and carbon	13	**2**
ENE 02	Energy monitoring	2	**2**
ENE 04	Low carbon design	3	**2**
TRANSPORT			
WATER			
MATERIALS			
MAT 01	Building life cycle assessment	7	**1**
MAT 06	Material efficiency	1	**1**
WASTE			
WST 05	Adaptation to climate change	1	**1**
WST 06	Design for disassembly and adaptability	2	**2**
LAND USE & ECOLOGY			
POLLUTION			
POL 01	Impact of Refrigerants	3	**2**
POL 02	Local air quality	2	**2**
POL 05	Reduction of noise pollution	1	**1**
INNOVATION			

MANAGEMENT

MAN 04: COMMISSIONING AND HANDOVER

AIM: To encourage a properly planned handover and commissioning process that reflects the needs of the building occupants.

Parameters:

Commissioning, design and preparation (1 credit)

- For buildings with complex building services and systems, a specialist commissioning manager is appointed.
- For simple building services, this role can be carried out by an appropriate project team member.

Handover (1 credit)

Prior to handover, develop 2 building user guides

- Technical for facilities manager.
- Non-technical for building occupiers.

Prepare two training schedules

- Technical for facilities managers.
- Non-technical for building occupiers.

Jaga systems perform as intended. Jaga has extensive and comprehensive manuals for installation and usage that are available to the building manager and/or user.

HEALTH & WELLBEING

HEA 02: INDOOR AIR QUALITY

AIM: **To encourage and support healthy internal environments with good indoor air quality.**

Parameters:

Indoor air quality plan (prerequisite)

A site-specific indoor air quality plan has been produced and implemented. It considers removal of, dilution and control of contaminant sources, procedures for pre-occupancy flush out, third party testing and analysis, maintaining good indoor air quality in-use.

Ventilation (1 credit)

- The building has been designed to minimize the indoor concentration and recirculation of pollutants according to national best practice standard for ventilation.
- Some focus points include sufficient distance between air intake & exhaust and CO2 or air quality sensors.

Jaga systems help maintain the indoor air quality and ensure good ventilation. Jaga's decentralised ventilation system OXYGEN can work independently and in controlled balance with extraction based on integrated CO2 and RH measurements.

HEA 04: THERMAL COMFORT

AIM: To ensure that appropriate thermal comfort levels are achieved through design and controls are selected to maintain a thermally comfortable environment for occupants within the building.

Parameters:

Thermal modelling (1 credit)

- Calculated using software in accordance with CIBSE AM11 and provides full dynamic thermal analysis.
- Thermal comfort levels (air-conditioned buildings) in accordance with CIBSE Guide A environmental design or ISO 7730:2005.

Design for future thermal comfort (1 credit)

- First credit achieved.
- Thermal modelling demonstrates that the relevant requirements are achieved for a projected climate change environment.

Thermal zoning and controls (1 credit)

- First credit achieved.
- Zones within the building and how the building services could efficiently and appropriately heat or cool these areas.
- Occupant control required for these zones.

Jaga systems have precise control over thermal comfort levels in seasonal variations and even for a projected climate change. Due to their compact design, they heat up a lot faster than regular heaters ensuring complete thermal comfort. Furthermore, the Jaga systems can deliver different services depending on the requirements for the building (heating/cooling certain areas more than others). There is a possibility for the building occupants to have control of the temperature via thermostats.

HEA 05: ACOUSTIC PERFORMANCE

AIM: To ensure the building's acoustic performance, including sound insulation meets the appropriate standards for its purpose

Parameters:

Acoustic performance (1 credit)

- The building meets the appropriate acoustic performance standards and testing requirements (vary between types of building).
  - Sound insulation

Jaga's devices have been measured according to ISO3741 at independent accredited laboratories. The published sound pressure levels take into account an attenuation of 8 dB (A) compared to the measured ISO3741 sound power levels because of a presumed room volume of 100 m^3 and a reverberation time of 0.5 seconds, at 2 metre distance from the device.
(F.E. lower than 30 dB(A) sound pressure level) The detailed ISO3741 sound power measurements in 10 octave bands can be handed over at the request of the customer.

ENERGY

ENE 01: REDUCTION OF ENERGY USE AND CARBON EMISSIONS

AIM: To minimise operational energy demand, primary energy consumption and CO_2 emissions.

Parameters:

Energy performance

- Calculate energy performance Ratio for New Construction (EPR NC) and compare with benchmarks.

Jaga systems are very energy efficient according to multiple studies by TU Eindhoven, Kiwa and BRE. Installing Jaga systems will help in achieving credits towards energy reduction. *According to a study from BRE (2003): a saving of 15% can be achieved in mild weather and 10% in winter season.

ENE 02: ENERGY MONITORING

AIM: To encourage the installation of energy sub-metering to facilitate the monitoring of operational energy consumption.

Parameters:

Sub-metering of end-use categories (1 credit)

- Install energy metering systems to track annual energy consumption.
- Energy monitoring & management system or pulsed energy sub-meters.

Sub-metering of high energy load and tenancy areas (1 credit)

- Install energy metering systems for sub-metering per floor.
- Energy monitoring & management system or pulsed energy sub-meters.

The energy consumption of the Jaga system can be monitored, either at system level or floor level. The products have a low energy consumption, but Briza 22 is often used as a main source of heating/cooling. Therefore, it has the highest energy consumption and it is more interesting to measure it's consumption.

ENE 04: LOW CARBON DESIGN

AIM: To encourage the adoption of design measures, which reduce building energy consumption and associated carbon emissions and minimize reliance on active building services systems.

Parameters:

Passive design analysis (1 credit)

- Demonstrate that the building design delivers good thermal comfort levels in occupied spaces (Hea 04).
- Analyse and implement passive design measures to reduce the total heating, cooling, mechanical ventilation, lighting loads and energy consumption.a
- Quantify the reduced total energy demand and CO_2 emissions resulting from the passive design measures.

Free cooling (1 credit)

- First credit achieved.
- Execute a free cooling analysis and identify opportunities for implementation.
- Examples include night time cooling, natural ventilation, ground coupled air cooling, ground water cooling,... .

Jaga systems help in reducing the overall building energy demand. They can apply Jaga light cooling, a passive form of non-condensing cooling.

MATERIALS

MAT 01: BUILDING LIFE CYCLE ASSESSMENT

AIM: To reduce the burden on the environment by recognising and encouraging measures to optimise construction product consumption efficiency and the selection of products with a low environmental impact over the life cycle of the building

Parameters:

Building services (1 credit)

- Measuring the life cycle environmental impact of the superstructure in concept and technical design.
- Services (heat source, space heating and air conditioning, ventilation, fuel installations/systems).

Jaga systems can contribute to lessening the environmental impact of a building. Their compact design requires less materials, they have a long lifespan and can be recycled at the end of their life. By including Jaga systems in the BREEAM scope, this can help in achieving credits. Previously the Ecolizer 2.0 of OVAM has been used to measure an LCA score.

MAT 06: MATERIAL EFFICIENCY

AIM: To avoid unnecessary materials use arising from over specification without compromising structural stability, durability or the service life of the building.

Parameters:

Material efficiency (1 credit)

- During the Preparation and Brief and Concept Design stages, set targets and report on opportunities and methods to optimise the use of materials.
- Report on achieved targets and the actual material efficiency.

Jaga systems are very material efficient. They are lighter and smaller than traditional heaters but still have the same or greater power. These systems have a long lifespan and can be recycled, further contributing to the efficient use of materials. Furthermore, Jaga heat exchangers have a 30 year guarantee where the hydronic water complies with VDI2035.

WASTE

WST 05: ADAPTATION TO CLIMATE CHANGE

AIM: To minimise the future need of carrying out works to adapt the building to take account of more extreme weather changes resulting from climate change and changing weather patterns.

Parameters;

Resilience of structure, fabric, building services and renewable installations (1 credit)

- Conduct a climate change adaptation strategy appraisal via risk assessment. It covers the installation of building services and renewable systems, as well as structural and fabric resilience aspects.
- Develop recommendations or solutions based on the climate change adaptation strategy appraisal and implement where practical and cost effective.

Jaga systems are very responsive and reliable, ensuring a comfortable indoor climate that can adapt to climate change. This fast heating/cooling capacity is made possible due to the compact design and the Low-H_2O technology. The low mass and low water content of Jaga units, in combination with the instantly adjustable fan speed, ensures that there is virtually no inertia in the energy transfer. Jaga's appliances can follow exactly the heating or cooling demand, provided that an adequate control system is used. This avoids overheating, a characteristic of high inertia systems.

WST 06: DESIGN FOR DISASSEMBLY AND ADAPTABILITY

AIM: To avoid unnecessary materials use, cost and disruption arising from the need for future adaptation works as a result of changing functional demands and to maximise the ability to reclaim and reuse materials at final demolition in line with the principles of a circular economy.

Parameters:

Recommendations (1 credit)

- Conduct a study to explore the ease of disassembly, the functional adaptation potential of different design scenarios and develop recommendations or solutions.

Implementation (1 credit)

- The proposed recommendations or solutions are implemented where practical and cost effective.
- Produce a building adaptability and disassembly guide to communicate to future tenants.

Jaga systems are quickly installed due to their compact design. If buildings have a well designed plumbing system and provision of water, the Jaga systems can be installed in different locations (wall/floor/ceiling) depending the need and/or functionality of the room.

POLLUTION

POL 01: IMPACT OF REFRIGERANTS

AIM: To reduce the level of greenhouse gas emissions arising from the leakage of refrigerants used to heat or cool the building.

Parameters:

Impact of refrigerant (2 credits)

- The direct effect life cycle CO_2 equivalent emissions (DELC) of ≤100 CO_2-eq/kW. For systems which provide cooling and heating, the worst performing output based on the lower of kW cooling output and kW heating output is used to complete the calculation.
- Refrigerants have a Global Warming potential (GWP) ≤ 10.

Jaga systems use water as a coolant. Both the ODP and the GWP of water comply with the BREEAM criteria. Furthermore, the systems use a very small amount of water.

POL 02: LOCAL AIR QUALITY

AIM: To contribute to a reduction in local air pollution using low emission combustion appliances in the building.

Parameters:

Local air quality (2 credits)

- Heating and hot water is supplied by non-combustion systems (powered by electricity).
  OR
- Emissions from combustion systems do not exceed levels set in BREEAM UK.

Jaga systems heat up quicker and on lower temperatures than regular heaters but still have the same power. The systems are powered by electricity, which BREEAM favours over other conventional ways of heating. The efficiency of energy transfer in Jaga's devices enables low temperature heating and high temperature cooling. Therefore a heat pump can be used as an energy source.

POL 05 : REDUCTION OF NOISE POLLUTION

AIM: To reduce the likelihood of noise, arising from fixed installations on the new development, affecting nearby noise sensitive buildings.

Parameters:

Reduction of noise pollution (1 credit)

- No noise sensitive buildings in the vicinity (800m)
  OR
- Noise impact assessment compliant with BS 4142:2014.
- The assessment is carried out by a qualified acoustician.
- Sufficiently low external noise levels (-5dB background noise throughout day/night).
- Remedial works if noise sources from the assessed building are greater than the levels according to BREEAM.

Jaga systems are installed inside the building. They will not cause any noise towards the nearby buildings.

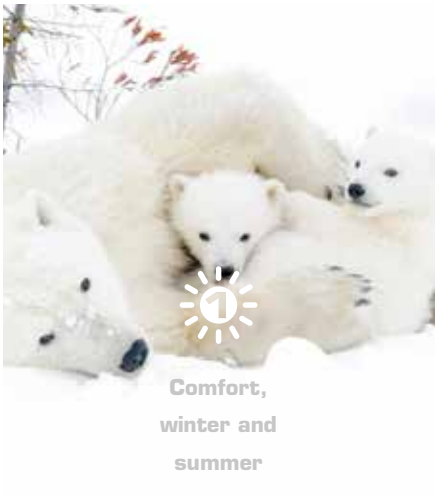
BECOME A JAGA CLIMATE DESIGNER

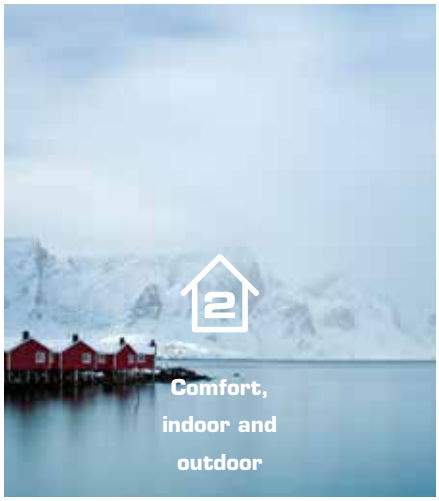
" CLIMATE CHANGE AND EVOLUTION OF CONSTRUCTION TECHNIQUES DEMAND NEW ECOLOGICAL SOLUTIONS FOR HEATING, COOLING AND VENTILATION. "

New technologies have to consume far less energy. They have to ensure a better indoor climate without damaging the outdoor climate. Traditional systems with fire and carbon emissions have to be extinguished. We have to evolve towards a green flame and build a sustainable path towards a better future. Choosing the sustainable path is no longer a matter of choice, it's an obligation.

Always honouring its values, Jaga Climate Designers continually look for the most ecological solutions for heating, cooling and ventilation.

Join us and become a Jaga Climate Designer.





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