

The Upfield Food Science Centre

BREEAM-NL Case Study

June 2021



| Project information | |
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| Title | Upfield Food Science Centre |
| Client |  |
|  | |
| Website | Upfield.com |
| Location | WUR campus Wageningen, Bronland 18, Wageningen |
| Gross floor area | 7.814 m ² (and 10.261 m ² incl. Pilot Plant), footprint 2367 m ² (0,24 ha) |
| Functions | Offices & meeting (ca. 3.691 m ²) Labs (ca. 673 m ²) Industry (ca. 575 m ²) Parking and general (ca. 2.415 m ²) Not included in assessment: Pilot Plant (ca. 2.447 m ²) Vertical transportation area: ca. 426 m ² Storage: ca. 10 m ² facilities/cleaning storage, ca. 24 m ² waste storage, + process storage (chilled storage, lab storage etc.) |
| Investment costs | Construction: € 28 mln |
| BREEAM-NL score | Ambition Outstanding, ≥ 85% |
| BRL | BREEAM scheme "BREEAM-NL Nieuwbouw en Renovation" BRL 2014 v2.0, bespoke, ambition Outstanding, rating ≥ 85%. Due to the labs, this is a bespoke process, which was coordinated with the DGBC. |

| Project team | |
|--|---|
| <p>A design team consisting of Upfield representatives, Fokkema & Partners, Colliers, D&S Process Solutions, Loos van Vliet, and Arcadis have designed a stimulating innovation Centre up to preliminary Design stage which was tendered in the market. After joining forces with van Wijnen as construction company, Unica for installations, IA Architects and Nelissen as BREEAM expert, the design was further detailed out and executed into a stimulating modern building.</p> | |
| Assessor | Albert-Jan Vermeulen, MAT25 - Rotterdam |
| Expert | Iris Wijsman, Nelissen ingenieursbureau - Eindhoven |
| Architect | Fokkema & Partners Architects - Delft |
| Contractor | Van Wijnen - Arnhem |
| Building installations | Unica |
| Consultants | <p>Building management: Colliers - Rotterdam Advice technical installations and building physics: Arcadis - Rotterdam Landscape architect: Loos van Vliet - Haarlem Pilot Plant engineering: D&S process solutions – Breda</p> |

| Project description & key features | |
|------------------------------------|--|
| Introduction | <p>The Upfield Food Science Centre is a shining example of sustainability.</p> <p>On completion, the state-of-the-art Upfield Food Science Centre located in Wageningen – a world-class location for food innovation — will be BREEAM certified and comply with the highest standards for sustainability. BREEAM is an environmental standard which outlines a methodology to translate the environmental impact of a building into measurable values. In line with our vision for “A Better Plant-Based Future”, Upfield has chosen to use this evidence-based methodology as a basis for the design of the Upfield Food Science Centre with the aim of reducing the building’s environmental footprint. BREEAM credits, which are awarded for the building itself as well as the internal laboratories, kitchens and communal areas, will allow Upfield teams to work in a creative, cutting-edge and comfortable space, making optimum use of the Wageningen Food science and technology ecosystem, driving positive change in people’s health and our planet’s sustainability through the development of delicious plant-based foods that consumers love.</p> |
| Ambition | <p>At Upfield, our Purpose is to make people healthier and happier with nutritious and delicious, natural, plant-based food that is good for you and for our planet, with packaging that is free from plastic.</p> <p>Wageningen is a hot-spot for plant-based technology development due to the presence of a University which is world-leading in the subject and co-location of several R&D centres for Food multinationals, start-ups and R&D institutes</p> <p>Upfield aims to house its R&D activities in a state-of-the-art facility, located on a prime spot on the University campus, which complies with the highest standards for its sustainability.</p> |

| | <p>Our priorities for the building are:</p> <ul style="list-style-type: none"> • a healthy, comfortable, and stimulating working environment for our people • a flexibility which future proofs the building for adaptations in the activities and the ways of working • a low energy consumption • maximised use of durable and recycled materials | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|---|------------|-------------------|--------------------|---------------------|---------------------|------------------|-------------------|----------------------------|----------------------------|--------|-------------------|--------|-------------------|--------|-------------------|----------------|-----|----|----|--------|----|--------|----|--------|----------------|-----|----|----|--------|---|--------|----|--------|-------------|-----|----|----|--------|----|--------|----|--------|---------------|----|----|----|-------|----|-------|----|-------|-----------|----|---|---|-------|---|-------|---|-------|----------------|-------|----|---|-------|---|-------|---|-------|-----------|------|---|---|-------|---|-------|---|-------|---------------------------|-----|----|---|-------|---|-------|---|-------|----------------|-----|----|----|-------|----|-------|----|-------|--|-------------|------------|------------|---------------|-----------|---------------|------------|---------------|
| <p>Planning</p> | <p>Timeline</p> <ul style="list-style-type: none"> • Design Started: January 2020 • Building permit: 8 October 2020 • Detailed engineering started: July 2020 • Construction started: 21 October 2020 • Expected building completion: Q1 2022 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Process</p> | <p>A design team consisting of Upfield representatives, Fokkema & Partners, Colliers, D&S Process Solutions, Loos van Vliet, and Arcadis have designed a stimulating innovation Centre up to preliminary Design stage which was tendered in the market. After joining force with van Wijnen as construction company, Unica for installations, IA Architects and Nelissen as Breeam expert the design was further detailed out and executed into a stimulating modern building, which allows Upfield teams to work in a creative environment and make optimum use of the Wageningen Food science& technology ecosystem.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>BREEAM-NL credits</p> | <p>Most of the BREEAM credits are implemented. A detailed overview will be published soon.</p> <p>overzicht totaal</p> <table border="1"> <thead> <tr> <th rowspan="2"></th> <th rowspan="2">Veging</th> <th rowspan="2">Beschikbare punten</th> <th colspan="2">Kantoor/Bijeenkomst</th> <th colspan="2">Industrie/unctie</th> <th colspan="2">Bespoke (Labo/Pilot Plant)</th> </tr> <tr> <th>Punten</th> <th>score + innovatie</th> <th>Punten</th> <th>score + innovatie</th> <th>Punten</th> <th>score + innovatie</th> </tr> </thead> <tbody> <tr> <td>MAN Management</td> <td>12%</td> <td>16</td> <td>16</td> <td>12,00%</td> <td>16</td> <td>12,00%</td> <td>16</td> <td>12,00%</td> </tr> <tr> <td>HEA Gezondheid</td> <td>15%</td> <td>14</td> <td>13</td> <td>14,93%</td> <td>7</td> <td>13,13%</td> <td>17</td> <td>16,00%</td> </tr> <tr> <td>ENE Energie</td> <td>19%</td> <td>27</td> <td>25</td> <td>18,58%</td> <td>25</td> <td>18,58%</td> <td>30</td> <td>18,81%</td> </tr> <tr> <td>TRA Transport</td> <td>8%</td> <td>12</td> <td>12</td> <td>9,00%</td> <td>12</td> <td>9,00%</td> <td>12</td> <td>9,00%</td> </tr> <tr> <td>WAT Water</td> <td>6%</td> <td>8</td> <td>7</td> <td>5,26%</td> <td>7</td> <td>5,26%</td> <td>7</td> <td>5,26%</td> </tr> <tr> <td>MAT Materialen</td> <td>12,5%</td> <td>17</td> <td>8</td> <td>6,36%</td> <td>6</td> <td>6,77%</td> <td>6</td> <td>6,77%</td> </tr> <tr> <td>WST Alval</td> <td>7,5%</td> <td>7</td> <td>7</td> <td>8,56%</td> <td>7</td> <td>8,56%</td> <td>7</td> <td>8,56%</td> </tr> <tr> <td>LE Landgebruik & ecologie</td> <td>10%</td> <td>11</td> <td>8</td> <td>7,27%</td> <td>8</td> <td>7,27%</td> <td>8</td> <td>7,27%</td> </tr> <tr> <td>PCL Vervulling</td> <td>10%</td> <td>12</td> <td>11</td> <td>9,17%</td> <td>11</td> <td>9,17%</td> <td>10</td> <td>8,33%</td> </tr> <tr> <td></td> <td>100%</td> <td>124</td> <td>107</td> <td>92,58%</td> <td>99</td> <td>90,68%</td> <td>113</td> <td>92,94%</td> </tr> </tbody> </table> | | Veging | Beschikbare punten | Kantoor/Bijeenkomst | | Industrie/unctie | | Bespoke (Labo/Pilot Plant) | | Punten | score + innovatie | Punten | score + innovatie | Punten | score + innovatie | MAN Management | 12% | 16 | 16 | 12,00% | 16 | 12,00% | 16 | 12,00% | HEA Gezondheid | 15% | 14 | 13 | 14,93% | 7 | 13,13% | 17 | 16,00% | ENE Energie | 19% | 27 | 25 | 18,58% | 25 | 18,58% | 30 | 18,81% | TRA Transport | 8% | 12 | 12 | 9,00% | 12 | 9,00% | 12 | 9,00% | WAT Water | 6% | 8 | 7 | 5,26% | 7 | 5,26% | 7 | 5,26% | MAT Materialen | 12,5% | 17 | 8 | 6,36% | 6 | 6,77% | 6 | 6,77% | WST Alval | 7,5% | 7 | 7 | 8,56% | 7 | 8,56% | 7 | 8,56% | LE Landgebruik & ecologie | 10% | 11 | 8 | 7,27% | 8 | 7,27% | 8 | 7,27% | PCL Vervulling | 10% | 12 | 11 | 9,17% | 11 | 9,17% | 10 | 8,33% | | 100% | 124 | 107 | 92,58% | 99 | 90,68% | 113 | 92,94% |
| | Veging | | | | Beschikbare punten | Kantoor/Bijeenkomst | | Industrie/unctie | | Bespoke (Labo/Pilot Plant) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Punten | score + innovatie | Punten | | score + innovatie | Punten | score + innovatie | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MAN Management | 12% | 16 | 16 | 12,00% | 16 | 12,00% | 16 | 12,00% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| HEA Gezondheid | 15% | 14 | 13 | 14,93% | 7 | 13,13% | 17 | 16,00% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ENE Energie | 19% | 27 | 25 | 18,58% | 25 | 18,58% | 30 | 18,81% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| TRA Transport | 8% | 12 | 12 | 9,00% | 12 | 9,00% | 12 | 9,00% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WAT Water | 6% | 8 | 7 | 5,26% | 7 | 5,26% | 7 | 5,26% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MAT Materialen | 12,5% | 17 | 8 | 6,36% | 6 | 6,77% | 6 | 6,77% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WST Alval | 7,5% | 7 | 7 | 8,56% | 7 | 8,56% | 7 | 8,56% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | 100% | 124 | 107 | 92,58% | 99 | 90,68% | 113 | 92,94% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Cost-benefit</p> | <p>As Breeam offers a methodology which allows to translate the environmental impact of a building into measurable values, Upfield has chosen to use the methodology as a basis for the design of the building and the choice of measures taken to reduce the environmental footprint of the building. This is fully aligned with Our vision for a “Better Plant-Based Future” drives positive change in people’s health, their daily lives and our planet’s sustainability.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Technical Features | |
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| <p>Sustainability aspects (techniques, processes and measures, on PPP)</p> | <p>Focus on energy and climate efficiency. The interior has been carefully designed, taking every detail into consideration to ensure it is energy efficient, with a low climate impact and meets an A-rating standard. Several state-of-the-art measures have been employed including climate ceilings to allow heating in the winter and cooling in the summer and narrow grid of sensors to allow adaptation of the climate within designated zones (40m²) based on the presence of people in the area. This is controlled by a building management system which allows real-time adjustment of the building's heating, cooling and ventilation. Ventilation can be adjusted based on real-time CO₂ concentration measurement in the rooms and the heating can be adjusted based on the preference of the individuals in the area. Within the kitchen and restaurant zones proper ventilation is guaranteed by all-air systems, whilst limiting the energy use by heat-recovery from the air exhausts. And, when daylight is insufficient, LED-lighting provides a replacement of natural light.</p> <p>The building has a façade with a large area of specially-designed glass to maximise daylight into the building. To avoid overheating in the summer, and to minimise glare-levels on computer screens, automated sunscreens are mounted at the south façade of the building. To avoid loss of warmth in the winter triple glazing will be installed.</p> <p>Designed to be flexible. The building has been designed as a modular concept to enable full flexibility; future-proofing the space and ensuring that the exchange of office areas, collaboration areas, concentration zones and meeting rooms is easy. Many of the interior barriers can be re-positioned without drastic changes in the building support systems. This does not compromise on the environment. Special attention is given to the acoustics of the workplaces and the avoidance of noise from meeting rooms and all workspaces have been designed to have a direct view of the surroundings of the building.</p> <p>Water use Separate rain and sewer water drainages allow re-use of the rainwater for irrigation of the building vegetation and for the sanitary installation. For this rainwater is temporary stored in cisterns below the building's garden. Surplus rainwater is drained in the water way next to the plot. The sewer system is equipped with fat-separators to avoid accidental contamination of the city's wastewater treatment plant.</p> <p>Ecology To reduce the ecological impact of the building horizontal areas of the building are planted with plants or sedum where possible on the areas not needed to place the solar panels. In the gardens housing is arranged for birds and flying insects, whereas the creeping insects can find a place in the sand pit in the shade of the building.</p> |

| Expected energy use | |
|---|---------------------------------|
| <p>Reduced energy usage</p> <p>Not only does the building reduce the need for energy through its design, it also has a number of measures to ensure that the energy that is required is kept to a minimum. Solar panels will be installed on the roofs of both structures. In the summer, the building is cooled by storing energy in the ground, which in the winter can be recovered for heating, allowing more than 70% heat-recovery. For comfort, energy efficiency climate ceilings are used for heating in all office and meeting areas.</p> <p>The façade is essentially airtight, well insulated and equipped with triple pane glass to reduce energy loss via the outer shell of the building. The use of LED lighting throughout the building and a granular presence sensor network limits the energy use for lighting, and the elevators and cold storages are designed for low energy consumption.</p> | |
| Expected energy use | 50 kWh/m ² BVO |
| Expected fossil energy use | 0 kWh/m ² BVO |
| Expected use of renewable energy sources | 30 kWh/m ² BVO |
| Expected water use | 11 m ³ /persoon/jaar |
| expected% of the water consumption that is obtained via rainwater or gray water | Ca. 50% |

| Recommendations | |
|---|--|
| Recommendations for further sustainability in the future. | <p>Upfield will participate in Wageningen initiatives to improve environmental impact of travel to and from the site by employees.</p> <p>Upfield will stay active to further improve its environmental Footprint, both by taking action in the supply chain of the ingredients of Upfield products as well as increasing the awareness of Upfield's customers and consumers by communicating products environmental impact of the products from growing in the field up to consumption.</p> |