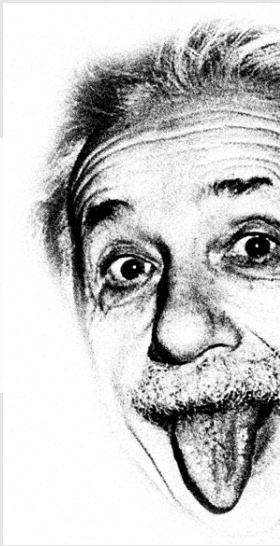
press kit

Innovation at Bouygues Construction

Awards Ceremony

3ème Concours Innovation 2010
Bouygues Construction



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Press release

Bouygues Construction rewards innovation at the Cité des Sciences et de l'Industrie

Yves Gabriel, Chairman and Chief Executive Officer, today presented the awards for the Third Bouygues Construction Innovation Competition. Demonstrating the Group's strong commitment to R&D and innovation, the ceremony was held at the Cité des Sciences et de l'Industrie at the Parc de la Villette in Paris, and was attended by Claudie Haigneré, President of Universcience.

Launched in 2006, the Innovation Competition is held every two years. It provides an opportunity to reward the best innovations by employees throughout the Group, whether in France or in international subsidiaries. This year's competition enabled some 2,000 members of staff to submit their ideas, some of them on an individual basis and others in teams. Each entry was scrutinized by a panel of judges consisting of acknowledged specialists in each of the six categories. With a strong commitment to the theme of innovation, Bouygues Construction's General Management Committee closely monitored the process of selecting the prize-winners. Awards were presented to twenty-four of the 500 projects submitted, and the vast majority of them will be promoted and circulated throughout the entire Group according to the specific profile of each business.

Commercial: The 1st prize was awarded to a proactive procedure for ordinary biodiversity that will differentiate the company's commercial offers to its customers in all its businesses. Other awards went to eco-design initiatives employed in major civil engineering and construction projects.

Works, Operations, Services: The 1st prize was won by a technical system that makes the handling of precast units safer, 2nd prize by a new method of applying self-compacting concrete, and 3rd prize by a solution for testing the overflows of sanitary fittings without wasting large quantities of water.

Technical: Two joint 1st prizes were presented to a new approach to lighting and its power source and a competitive low-carbon self-compacting concrete solution. Other prizes were won by building systems applied to underground works, post-tensioning and thermal insulation.

Human Resources and Communications: Two joint 1st prizes were presented to an innovation in internal communications (Web TV) and an initiative to encourage people with disabilities to be better accepted and integrated (Handitour). A procedure called 5@11, intended to improve site safety, which was introduced in the United Kingdom also won an award.

Management, Finance, Legal and IT: The top prize was won by a management tool which digitises site work files and can interface with other IT applications. Other prizes were awarded to supervision software for aspects of site safety and a tool for centralising and analysing multisite data for operations and maintenance.

Logistics and Procurement: The 1st prize was awarded to an innovation that pools site logistics and makes logistics management more professional (procurement, organisation of deliveries, traffic flows). 2nd prize was awarded to the joint development of an eco-designed chemical seal solution and 3rd prize to an initiative in which an in-house ergonomist is given responsibility for choosing power tools.

Over and above the prize-winning innovations, the competition serves to encourage, publicise and develop good practices suggested by employees. Bouygues Construction hopes that the wide variety of projects selected sends out the clear message that innovation applies to all occupations and businesses, and to all the geographic regions in which it operates.

Presentations of a selection of award-winning innovations

Biodiversity

Commercial category

The Biodiversity procedure, which won first prize in the Commercial category as well as a special award for Sustainable Development, enables the Group to make further progress by standardising the way in which biodiversity is considered in the immediate environment of its construction sites.

Two new ideas lie behind this innovation :

- The inclusion of questions relating to ordinary and extraordinary biodiversity in our commercial offers.
- The implementation of innovative partnership agreements signed with the France's National Museum of Natural History and environmental organisations such as Noé Conservation.

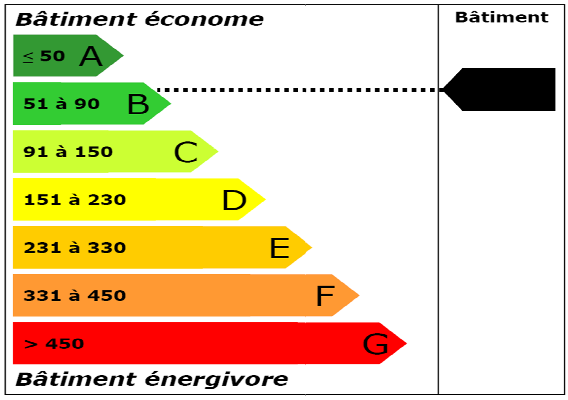
By-Home

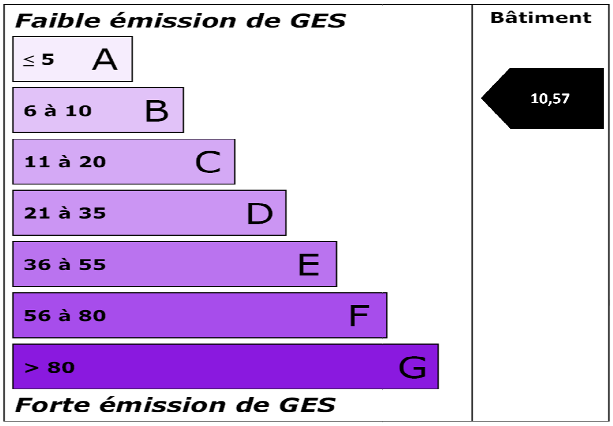
Commercial category

By-Home provides the Group's customers with eco-designed houses offering optimised design, guaranteed energy consumption performance and a tightly controlled purchase price. Three energy-consumption labels (including the French Low Consumption Building label) are available for four standard houses.

Thanks to its flexibility and the wide range of choice, By-Home represents an ideal solution for the construction of social housing that can be adapted to customers' needs as well as to any specific requirements imposed by urban planning.

In the context of government-driven programmes seeking to expand the housing stock and combat homelessness, By-Home offers efficient housing at controlled prices and should contribute to putting an end to unfit housing.



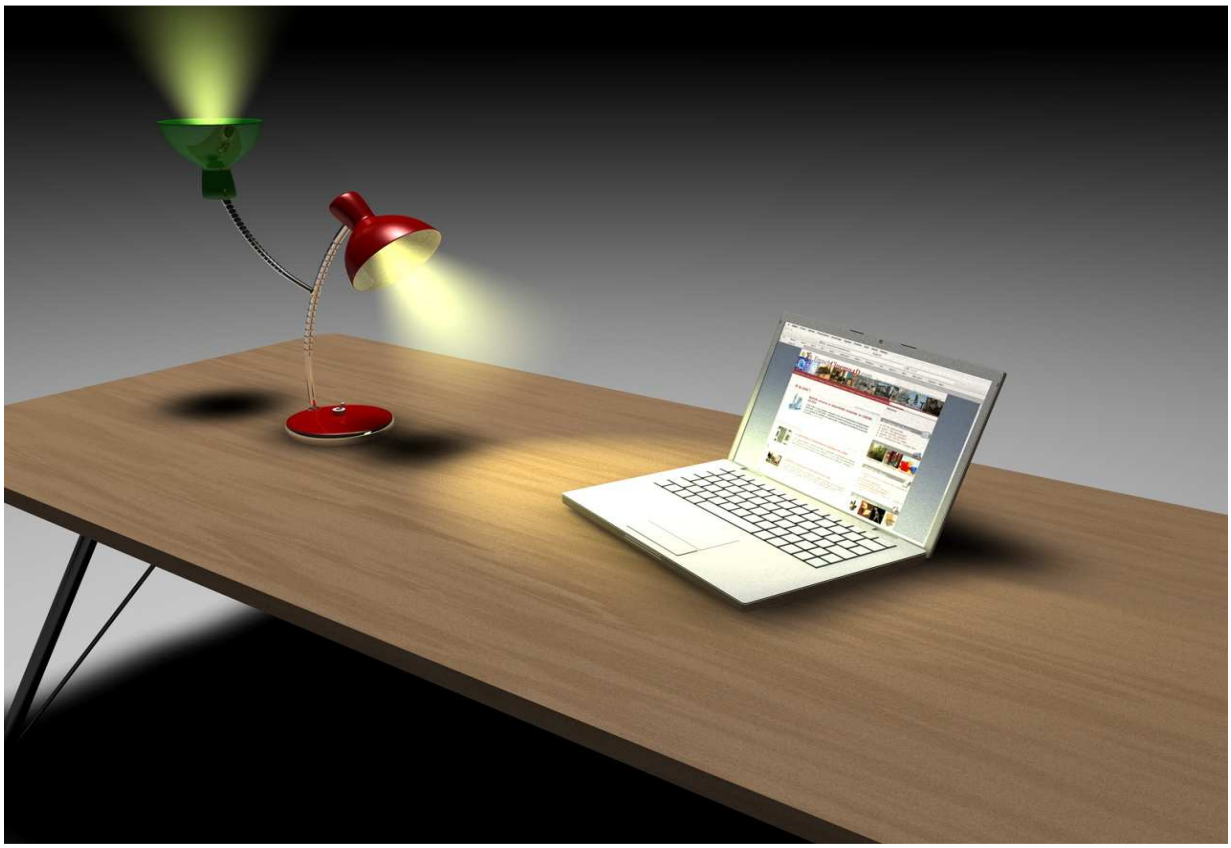


Eco-light

Technical category

Eco-light, winner of the first prize in the Technical category, constitutes a novel approach to lighting and power sources. The innovation employs the residual energy present in RJ45 cables (the cables used by computers and telephones) to power LED lighting, which is controlled using the computer.

This lamp offers two light sources, both illuminating the desk and directing a general light at the ceiling. More traditional forms of lighting (such as fluorescent tubes) can thus be replaced, making it possible to divide the energy consumption arising from lighting in a building roughly tenfold.

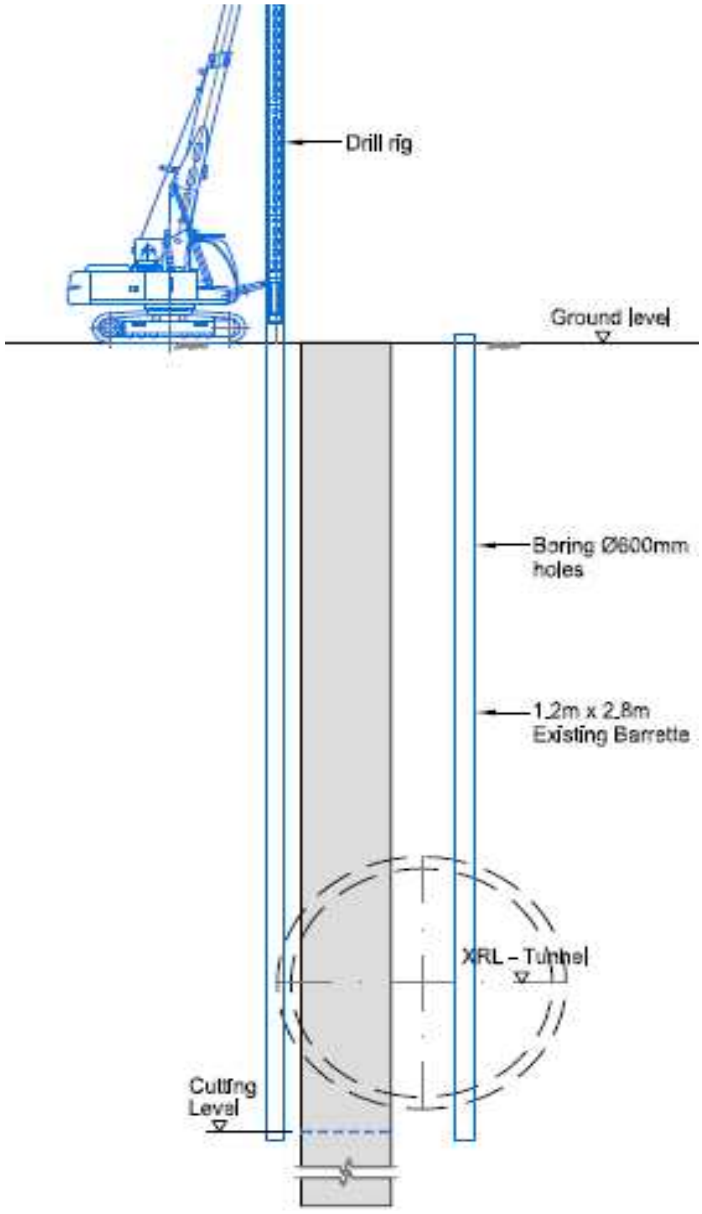


Diamanterre

Technical category

Diamanterre is an innovation designed to remove obstructions very deep underground without using traditional techniques (hard and lengthy human operations). During tunnelling performed by a TBM, the machine can sometimes be confronted by deeply buried concrete foundations that it is unable to bore through.

In a similar way to keyhole surgical procedures, the Diamanterre process is used to cut up buried concrete blocks by drilling a hole and using diamond wire saws.



The VSL saddle

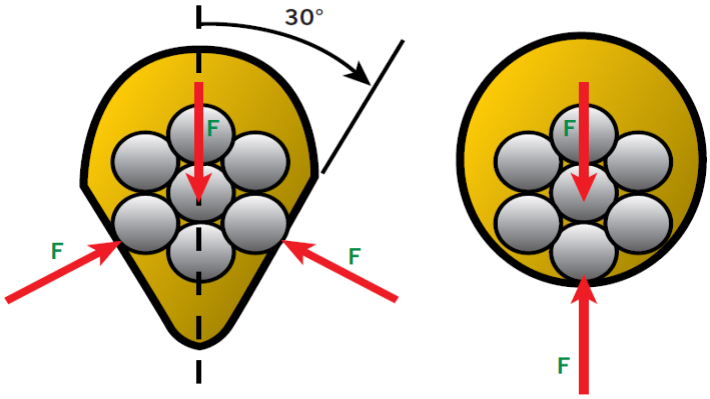
Technical category

Saddles are the elements used for anchoring stay cables in bridge pylons.

Traditional saddles have two major flaws:

1/ Resistance to fatigue does not comply with the requirements of new specifications.
2/ They do not prevent cable strands from slipping in the saddle, a flaw that is normally resolved by anchorage points with sufficiently wide access inside the pylon.

The specific profile of the VSL saddle is designed in such a way as to resolve the problem, thus making it possible to reduce the section of the pylons.



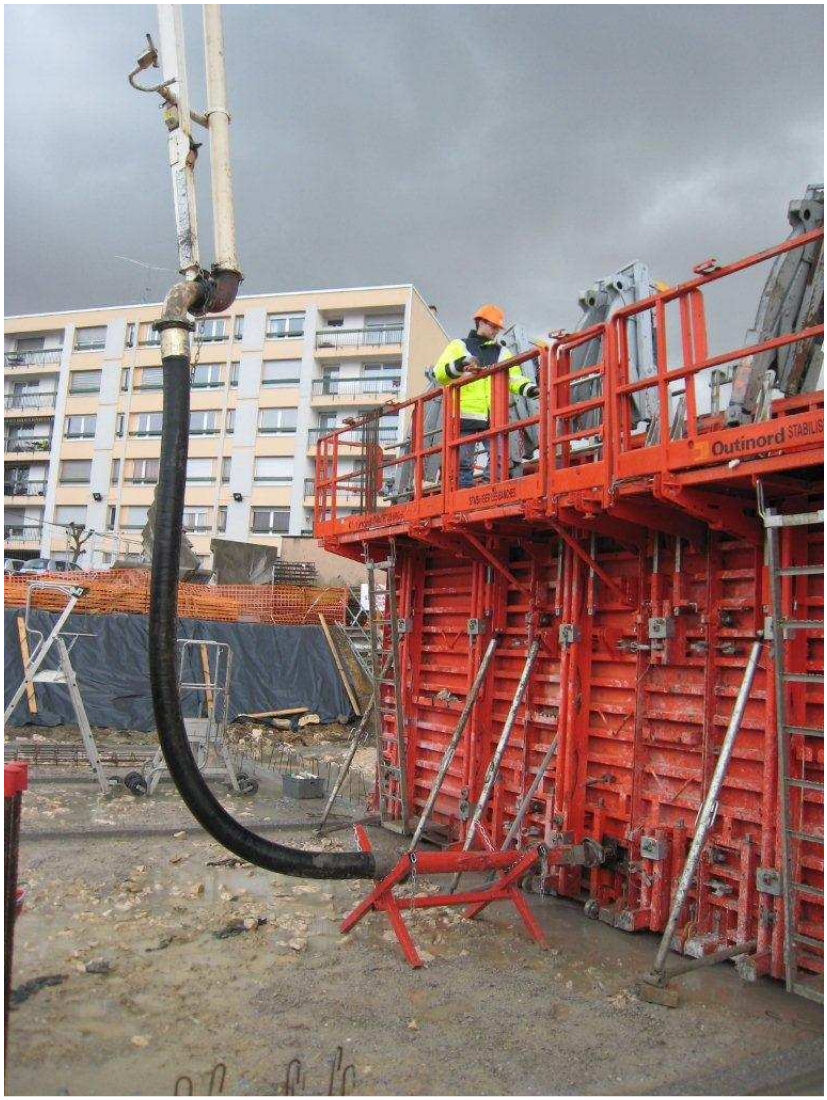
Injecting concrete at the foot of the form panel

Works, Operations, Services category

A prize winner in the Works, Operations, Services category, this innovation makes it possible to apply self-placing concrete by the bottom of form panels. The concrete pump is connected at the foot of the form panel. Because of its excellent fluidity, the self-compacting concrete flows very easily, and requires no vibration (a very noisy operation).

The new process offers a number of advantages:

- It makes work less strenuous and improves safety because workers no longer have to climb on the formwork and handle the hopper.
- It eliminates bubbling and segregation in concrete walls and therefore saves material in the finishing phase.
- It removes the need for a crane, which is no longer needed to hoist the hopper.



Low-carbon self-compacting concrete

Technical category

Thanks to this innovation, site teams can have access to extremely high-performance concrete at a competitive price.

- It is **self-compacting**, which means it is very easy to apply and it eliminates the noise pollution associated with vibrating concrete.
- It requires a smaller quantity of fines (cement and admixtures) to produce by comparison with self-compacting concrete available on the market, so its manufacture consumes less “grey matter” than other concretes, resulting in a better carbon audit. It is a **low-carbon concrete**.
- It has very good **thermal inertia** and **acoustic** properties.
- It can be manufactured **economically**, enabling it to compete with more conventional concretes.

Web TV

HR and Communications category

Launched by ETDE, the Energy and Services subsidiary of Bouygues Construction, Web TV is an original form of internal communications.

It is a fully-fledged TV portal and has replaced the subsidiary's printed in-house magazine.

Web TV offers a wide choice of short videos, interactive zones and access to other services that can be accessed by speciality or topic.

5@11

HR and Communications category

5@11 is a practice in which site work is interrupted for five minutes at 11 o'clock every morning. The time of 11 a.m. was chosen because statistics show that this is when accidents occur most frequently.

During this 5-minute break in work, each person present onsite is asked to check on the safety conditions in his or her immediate environment, asking such questions as: Are the protective rails installed correctly? Do I have all my personal protective equipment (hard hat, glasses, gloves, boots, ear protectors)? And do all the people around me? Are the tools I'm using correctly fitted with the right protective systems?

The aim is to achieve a further drop in site accidents and to encourage behaviour that will result in greater safety.

Innovation and R&D at Bouygues Construction

Bouygues Construction relies upon R&D and Innovation to anticipate and keep pace with changes impacting its areas of expertise and its businesses. Sustainable construction is central to its research programmes and accounts for more than half of its R&D budget.

In late 2009, the Group introduced a new organisation, with a new R&D, Innovation and Sustainable Construction Department. Under the leadership of Group Executive Vice President Gaëtan Desruelles, it is responsible for defining the Group's sustainable construction strategy.

Sustainable construction is more specifically dealt with by a specialist unit which associates and coordinates the company's top experts in the field (roughly 150 people) and also calls on the expertise of external bodies, such as the CSTB (the French Scientific and Technical Centre for Building), industrial partners, laboratories, universities and engineering schools.

One example of this is Bouygues Construction's collaboration with Lafarge to improve the thermal properties of concrete, which has resulted in the development of **Thermedia 0.6 B** concrete, for which Bouygues Construction possesses a two-year market exclusivity. The first product in a new range of insulating concrete, Thermedia 0.6 B significantly reduces the amount of heat lost from the facades of buildings and is an innovative response to demands for improved energy efficiency in buildings. The Group has also introduced **Hypervision**, a new software tool that allows real-time supervision of a building's energy consumption. It has been rolled out by a number of Group subsidiaries in the context of public-private partnerships involving the operation and maintenance of buildings.

Numerous other fields of research are being explored by the Group, including virtual reality. In this field, R&D teams are working on the **Callisto-SARI** project in partnership with the Cité des Sciences et de l'Industrie, the CSTB, Immersion SAS, Art Graphique et Patrimoine, Arts et Métiers Paris Tech (ENSAM) and the Ecole Centrale Paris, as well as the Laboratoire des Usages en Technologies d'Information Numériques, part of the University of Paris 8.

Callisto-SARI consists in constructing a virtual reality room in which it is possible to simulate a tour of the interior of a building, in real time and with all aspects realistically rendered full-scale. During the course of the tour, the visitor is able to interact with the building, modifying specific elements and immediately visualising the consequences.

Visitors will experience the sensations they would if they were touring the genuine building, particularly with regard to what they can see and hear.

The project provides an opportunity to advance the processes used in designing buildings. Enabling both visualisation and interaction with a building or structure while it is still at the design stage makes it easier to take decisions without the need to build a model structure or building.

Callisto-SARI also constitutes the first step towards a new approach to restoring our heritage. The quality of immersion achieved by Callisto-SARI is so high that it is possible to envisage reconstituting historic sites and scenes and allowing the public to be immersed in reconstituted events and places. The first virtual reality room will be opened at the Cité des Sciences in 2011, first to professionals and then to the general public.