ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

in partnership with VINCI

ParisTech Chair

Eco-Design of buildings and infrastructure

Schools supporting the chair

MINES ParisTech

École des Ponts ParisTech

AgroParisTech

Experts who will coordinate Eco-Design research

- **Bruno Peuportier**, expert in ecodesign of buildings, MINES ParisTech
- **Fabien Leurent** , transport scientist, Ecole des Ponts ParisTech
- **Jean Roger-Estrade,** agronomics scientist, AgroParisTech

Bringing out new concepts and assessment tools in construction and infrastructures

Creating town planning concepts that respect the environment is a shared ambition, but implementing this ambition will be complex. All the key players involved in designing and making the town need to be involved: urban designers, architects, politicians, researchers and of course, construction companies, operating companies and concessions.
Achieving such an ambition involves implementing "eco-design" in city projects. This means designing structures and developments that integrate solutions for preserving the environment. It will oblige companies to rethink their methods and activities.
To take up this challenge, three ParisTech schools – MINES ParisTech, École des Ponts ParisTech and AgroParisTech – have joined up with VINCI, world leader in concession and construction and have initiated the first Chair in Eco-Design of buildings and infrastructure. By ensuring cross-fertilisation of thinking, this partnership aims to create tools for diagnosis and simulation which will be a real aid to improving environmental performance through all stages of the decision-making process.

Three main lines for research in eco-design

The principal advantage of the Chair is that its partners are complementary. The approach will be systemic and cross-disciplinary and the results will be applied to real projects at VINCI.

▶Assess the environmental quality of buildings and districts (eco-districts, renovation)

Eco-design principles and life cycle analysis have already been applied in many countries at the building level, and to infrastructure. The scope will be extended to whole districts, by linking construction to the town planning system of which it is a part. This approach will be developed both for new construction projects and for renovation projects, which are a major area for development throughout much of Europe.

▶Analyse the life cycle of transport infrastructure and its impacts

In transport, three major elements influence environmental performance: construction materials and methods, the quality of their integration in the natural environment (biodiversity in particular); and operations, which specifically affects the energy consumption of vehicles. The Chair aims to study strategies for eco-labelling, as well as models for innovative designs which will provide greater efficiency over the life cycle of new infrastructure.

▶Equip buildings and transport systems to regulate their use for optimum protection of the environment

Combining the assessment of environmental aspects of both districts and transport makes it possible to set out requirements for more efficient "habitat-transport" systems thereby enhancing protection of the environment. By producing knowledge and action methods to optimise use of buildings and transport systems, the Chair will be tackling a major challenge for local authorities as well as those involved in the economy who will use these facilities.

ParisTech Chair
Eco-Design of buildings and infrastructure

Train engineers and specialised researchers

With its inclusion in the engineering students' programme, with specialised Master's students and PhD students in the three schools, the Chair will help to develop a nucleus of specialised researchers, both for the ParisTech network and for VINCI. It will also offer students essential skills for entering the job market.

The Chair will be based on a set of existing courses:

► Engineering level:

- Course in Energy and buildings (Ecole des Ponts ParisTech)
- Course in Environmental impact of infrastructure (Ecole des Ponts ParisTech)

► Master's:

- Transport and Sustainable Development (ParisTech, Fondation Renault, Ecole Polytechnique, MINES ParisTech, Ecole des Ponts ParisTech)
- Ecology, Biodiversity, Evolution (Paris XI, AgroParisTech, MNHN)

► Specialised Master's:

- Environmental engineering and management (MINES ParisTech)

New courses will eventually be developed to match the topics dealt with at each level.

►*Governance*

The Guidance and Assessment Committee supervises and monitors the activity of the Chair.

Composition:

- *1 representative from each school*
- *1 representative from ParisTech*
- *3 representatives from VINCI*
- *3 external qualified experts*

The Steering Committee defines and follows up the research topics.

Composition:

- *1 representative from each school*
- *3 representatives from VINCI*

► ***Duration: 5 years***
(2008 to 2013)

A joint commitment with VINCI for a new eco-responsible course

► Knowledge sharing

The Chair will allow sharing of knowledge between the researchers and those who apply the results of the research at VINCI. It will be passed on through articles published in science and technology reviews, study projects sponsored by line managers at VINCI, and open events aimed at professionals. This Chair provides VINCI with a pre-competitive advantage, thanks to privileged access to this complex area of work and the ability it now has to direct it.

► International reputation

The Chair will disseminate its work within Europe and internationally. It will act as a knowledge bank, identifying other research activities conducted in Eco-Design applied to construction and management of buildings and infrastructure. Each year, an international symposium on these topics will be organised by the Chair; details of the symposiums will be published on the web site.

Contact
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