

regards Croisés



newsletter number 14 - February 2008

École Centrale Paris

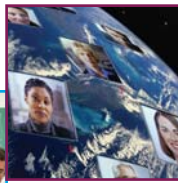
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2008, A YEAR FOR BIG PROJECTS

2007 was a very successful year for École Centrale Paris. To name just four of the most striking developments: a pedagogical reform of extraordinary scope was enthusiastically received by our student-engineers; the research program is expanding and assuming its role as a pillar of Centrale Paris; an alliance strategy is in full swing, with the creation of a Carnot Institute in partnership with Supélec; and, last but not least, human and financial resources have dramatically increased, notably through the creation of several company chairs.

All these achievements enhance Centrale Paris' dynamism and inspire us to further step up our efforts in 2008. In particular, we must continue to implement our new curriculum, increase our research and innovation activities, build up our partnerships with companies, and above all expand our global reach. Centrale Paris has always been internationally renowned, as demonstrated by our partnerships with the most prestigious universities in Europe, Asia and the United States, not to mention Centrale Beijing. More than ever, we must assert our global reach to train general engineers and prepare them for international careers.

It is thanks to such an ambitious policy that Centrale Paris will take its place among the world's elite institutions of higher learning, training general engineers and readying them to take up the challenges of the 21st century.

Hervé Biaußer, Director of Centrale Paris

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École Centrale Paris and Supélec join the ranks of founding members of the UniverSud Paris Research and Higher Education Pole

On December 29, 2007, the board of administrators of the UniverSud Paris Research and Higher Education Pole approved École Centrale Paris and Supélec's status as founding members. Previously associate members, the two institutions thus joined the three other PRES founding members: the University of Paris-Sud 11, the University of Versailles Saint-Quentin-en-Yvelines, and the École Normale Supérieure de Cachan.

► **Contact:** direction.recherche@ecp.fr

New passive solution for combustion instabilities control

Thermo-acoustic combustion instabilities occur in many practical systems (from domestic boilers to gas turbine combustors or rocket engines) and cause severe difficulties (structural vibrations, flame extinction, noise emission) and in extreme cases damage the system.

In many cases, the unsteady combustion process and acoustic field are coupled yielding strong oscillations of the flow and release of heat

within the system. An original method used to passively control such resonant coupling was developed at the EM2C laboratory during the doctoral fellowship of Nicolas Noiray (DGA/CNRS).

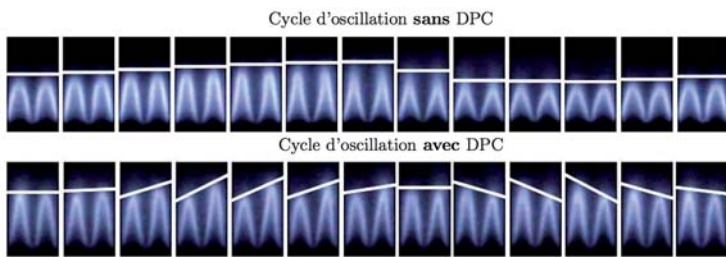
A dynamical phase converter (DPC) is used to reduce the sensitivity of a collection of flames to incident acoustic perturbations by imposing an out of phase motion of the flames. This reduces the mechanism driving the instability. It is in the same line as avoiding soldier lockstep marching on bridges to prevent from structure resonance. A patent exploiting this original DPC concept is pending.

► **Contact:** EM2C laboratory - École Centrale Paris - CNRS
Nicolas Noiray (nicolas.noiray@em2c.ecp.fr), Daniel Durox (daniel.durox@em2c.ecp.fr), Thierry Schuller (thierry.schuller@em2c.ecp.fr) et Sébastien Candel (sebastien.candel@em2c.ecp.fr)

The 2008 EGC Award Goes To Marc Joliveau And Florian De Vuyst (MAS Laboratory)

EGC Association has awarded Marc Joliveau and Florian De Vuyst, from the Applied Mathematics Research Group (MAS), for their work on Extracting Atypical Cases Of Spatio-temporal Patterns From Urban Road Traffic Network Data.

► **More on:** [MAS Laboratory website](#)



Flame front motion under acoustic excitation for (1) a classic multipoint injector and (2) a multipoint injector equipped with the DPC system. Thirteen successive phases of an oscillation cycle are presented.

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Ceremony to mark the completion of studies for the 'Daniel Grimm' Class of 2007 engineers

On Friday, December 7, student engineers, Specialized Master students, Research Master students and doctoral students celebrated the completion of their academic studies. The ceremony was held on campus with Centrale Paris' Director presiding.

The 418 student engineers of the 'Daniel Grimm' Class of 2007, together with 73 Specialized Master, Research Master and doctoral students, from 15 different countries, were awarded their *Certificat de Fin d'Etudes d'Ingénieur*, validating the completion of their studies at Centrale Paris.

However, this only marks the completion of academic studies. Indeed, the Ingénieur des Arts et Manufactures degree is only awarded once the ad-hoc committee has established that all of Centrale Paris' degree criteria have been met (make-up work for incompletes, studies abroad fully completed, etc.).

As usual, the ceremony was held in the presence of family and friends, invited by graduating students for the occasion. They came from near and far: one father of a Specialized Master student came all the way from Lebanon specially to attend the event.

► **Contact:** direction.etudes@ecp.fr

A new Post Master professional Certificate: Rail and Transport Systems

This programme is meant to address growing needs for expert knowledge in the booming field of railway transport systems. It will contribute bringing out the advantages of this transport mode, and facing the issues of the sustainable development of territories. Railway industries and major French operators have requested the best engineering schools and universities to develop a new training programme for engineers and executives working, or called to work, in the area of rail and guided systems.

École des ponts and Ensiame (belonging to the Université de Valenciennes et du Hainaut-Cambrésis) are the leaders of the programme, cooperating with four other schools (École Centrale Paris, École Centrale Lille, ENTPE, Université Technologique de Compiègne), co-delivering the degree. Two associate schools (ICAM and ESTACA) will take part in the teaching.

► **More on:** www.ecp.fr

An International Forum

Dedicated to first-year students, the 'BRIF' (International Studies Office) is organizing the first International Forum, to be held on February 21.

Centrale Paris has committed to building up the international dimension of its training, so as to better prepare students for increasingly global professional careers. The new curriculum, launched last September, now requires student-engineers to spend at least six months studying or on an internship abroad.

Organized around conferences, roundtables and testimonials, this event will provide students with a better sense of the various training programs offered by Centrale Paris' partner universities, as well as of the various options students may pursue afterwards: S4 (second semester of second year), Masters, internships and/or time off, and double-degree programs.

► **Contact:** de-brif@ecp.fr

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Franco-Brazilian cooperation at École Centrale Paris expands to include pedagogy

Since the year 2000, the five campuses of Écoles Centrales and six Brazilian universities (PUC Rio, UFRJ, EP-USP, UFC, UFRGS and Unicamp) have been exchanging students through double degree programs. These exchanges have made clear that, in certain fields of study, pedagogical content and practices differ between France and Brazil. This is especially the case in mathematics. French and Brazilian teachers have thus decided to initiate a seminar on the theme of "Mathematics in the Training of Engineers." Patrick Obertelli, an Centrale Paris professor and the seminar's coordinator, outlined the objectives of the seminar, which will involve the mathematics professors at all the partner institutions of the "5+6" program:

- To better grasp the course content and pedagogical methods used at the six Brazilian universities and five campuses of École Centrale;
- To identify concrete ways to better prepare mathematics students who are moving between these two countries;
- To reflect upon mathematics training in the engineering curriculum.

The seminar will be held at the Federal University of Rio de Janeiro, from March 24 to 27, 2008. This initiative is made possible through the support of the Brazilian Ministry of Higher Education, the French Embassy in Brazil, and the Brafitec Program.

► **Contact:** patrick.obertelli@ecp.fr

'Recruiting engineers in China: International profiles of Chinese and French engineers'

This is the title of the Conference organized by the French Chamber of Commerce in Shanghai, in association with the École Centrale Beijing and the École Centrale Paris, on March 6, 2008.

Whether they be Chinese or foreign, companies in China today are in great need of qualified personnel. Highly trained engineers are particularly in demand. Today's engineer must possess a multicultural profile, wide-ranging scientific and technical skills, and proficiency in foreign languages.

In recent years, French engineering schools have made significant efforts to provide innovative solutions with the aim of satisfying these new needs of high-level, multicultural engineers. The École Centrale Paris and the École Centrale Beijing train western engineers who speak Chinese and Chinese engineers who speak both French and English. Totally bicultural with no linguistic barriers, these engineers are of infinite value to industry in China.

The aim of this conference is to present the specificities these engineering students train in both Paris and Beijing. Participants will hear from experts from the École Centrale Paris, the École Centrale Beijing, Chinese partners of both schools, former students, and company representatives.

► **Contact:** aline.faes@ecp.fr



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Third Annual 'Year Off Meetings'

On January 8, the third annual session of 'Year Off Meetings' was held. This mini-forum brought together students applying for a year off (between their second and third years) and companies that are particularly interested in their profiles.

There was a sharp increase in demand, both on the part of students and companies, this year: 27 companies met with around 170 students, to the great satisfaction of all.

The following companies participated in these meetings: AMADEUS, BAIN & COMPAGNIE, BNP PARIBAS, BUSINESS OBJECTS, CAP GEMINI CONSULTING, CARREFOUR, COLOMBUS CONSULTING, DELOITTE, EIFFAGE, ERNST & YOUNG, FAURECIA, GROUPE SAFRAN, HSBC, L'OREAL, LEON GROSSE, LOUIS VUITTON, MAZARS, MCKINSEY&COMPANY, NATIXIS, OLIVER WYMAN, PSA PEUGEOT CITROEN, SOCIETE GENERALE, SUEZ ENVIRONNEMENT, TF1, TOTAL, UNILOG, VEOLIA ENVIRONNEMENT.

The PREMIUM Partnership: We remind you that you may offer 'year off' internships for students between their second and third years (two 6-month internships with two distinct missions within a single company, or two internships at two different companies).

► **Contact:** Company Partnerships - sylvie.mazurat@ecp.fr

PREMIUM Event: LEHMAN BROTHERS, February 7, 2008

On February 7, Benoit SAVORET (Class of '89), Lehman Brothers' Chief Operating Officer for Europe and the Middle East, gave a presentation for all students on Banking Careers at LEHMAN BROTHERS.

► **Contact:** Company Partnerships - sylvie.mazurat@ecp.fr

Air France: A new partner in the Center for Excellence in 'Enterprise Architecture' (CEISAR)

Air France has become CEISAR's (Center for Excellence in 'Enterprise Architecture' at École Centrale Paris) latest company partner, joining Axa, BNP Paribas, Michelin and Total. CEISAR's goal is to bring together leading experts in information systems, in order to survey and formalize the best international practices in the field, as well as to apply these practices in a training program. CEISAR published its first white papers in October 2007.

► **More on:** www.ceisar.org

Do not forget the 'Taxe d'Apprentissage', due in February

Invest in tomorrow's engineers with École Centrale Paris. Support École Centrale Paris through the 'Taxe d'apprentissage'. Payment due by February 29, 2008.

► **Contact:** lara.wolfman@ecp.fr

Forward your offers of training courses and jobs YOUR TRAINING COURSES OFFERS 2008

Operator training:
At least 6 weeks at the end of the 1st year

Internship Abroad:
At least 6 weeks at the end of the 3rd year from April to November

Contact:
The Office of the Training in Companies:
de-bfe-stages@ecp.fr

YOUR JOB OFFERS

Contact:
Association des Centraliens,
Service Carrières & Emploi
carrieres@centraliens.net





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A prestigious inauguration for Centrale Paris' new educational program

On December 19, Hervé Biaisser, Centrale Paris Director, and Dominique Pareau, Dean of Studies, presented Centrale Paris new educational program to an assembly of 250 people, including two distinguished guests — Louis Gallois, CEO of EADS and Axel Kahn, President of the University of Paris V.

The implementation of the new curriculum undoubtedly constituted the major event of 2007 for École Centrale Paris. And three months after its launch, Centrale Paris was ready to report the program's innovations and very positive student feedback to its partners — companies, institutions, students, etc.

A roundtable was organized to discuss visions for the 21st century engineer. "Engineers must start with a very solid scientific and technical foundation, and then develop throughout their studies qualities such as mobility, both intellectual and geogra-



Axel Kahn

phic, curiosity, creativity and the ability to work in cross-disciplinary teams," said Louis Gallois. "The reality for today's engineer is that he must not only be able to execute well, which is a given, but that he must also be prepared to explain how what he is doing is beneficial for society," added Axel Kahn.

All of these objectives are key elements of Centrale Paris' new educational program, which undertakes to train general engineers to become leaders, entrepreneurs and innovators, fully prepared to pursue international careers and to take up the major challenges of the 21st century.

► **Contact :** alexandrine.urbain@ecp.fr

Let's Celebrate the 10th Anniversary of the Raid Total Centrale Paris

10 years of racing, mountain biking, orienteering and other great sports!

The 10th anniversary of the Raid will be held on April 10th at the Esplanade de la Défense in Paris. Climbing wall with several levels of difficulties, cross countrying, hot air ballooning and a giant urban race are some of the activities plan on this day.

After this celebration day, get ready for the challenge! Indeed, on April 26th all teams will meet again in the Basque Country to start the Raid.

► **More on:**

For more informations on this event please visit www.raidecp.net/journee_anniversaire Photos, videos and schedule are available at www.raidecp.net

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The Doctoral Program at Centrale Paris: Excellence in training through research

As part of its mission to train students for and through research, the Doctoral Program at Centrale Paris prepares students for careers in research and R&D at public and private laboratories. With over 230 doctoral students this year, it has reason to be proud of its dynamic development and stands as proof that training through research remains attractive to young engineers.

Since 1986, École Centrale Paris has been entitled to confer the degree of Doctor of École Centrale Paris, through the Doctoral Program in Engineering Sciences. The program consists primarily of the seven laboratories of École Centrale Paris and many partner laboratories at CESTI, CEA, ONERA, etc., in close collaboration with industrial and services companies. Around fifty doctoral degrees are awarded each year, half of which are financed by a company or a large research institute within the framework of work contract.

“The Doctoral Program welcomes French as well as foreign students who hold a Research Master, or equivalent degree, attesting to their ability to conduct research. Around 1 out of 6 doctoral students comes from École Centrale Paris, and about 30% are foreign,” says Jean-Hubert Schmitt, Director of Research.

The Doctoral Program offers students the opportunity to acquire further training, which is defined in accordance with their initial curriculum and professional project. Students must take a minimum of 100 hours of coursework over three years, in basic scientific subjects, scientific English, communication and personal development skills, and an introduction to careers in research and development.



“Our Doctoral Program is clearly pitched as a professionalizing program: it provides future Centrale Paris doctors with all the skills necessary to pursue a career in the fields of innovation, research and development. Around 60% of Centrale Paris doctors are hired in the private sector, half of these in R&D departments,” says Jean-Hubert Schmitt, Director of Research.

“Our four-year plan clearly emphasizes research as one of its two priorities, together with training. Further development of our doctoral training program is the cornerstone of this policy, as it aims to increase the number of students, especially foreign students, we host in our laboratories. This is one of the essential conditions for École Centrale Paris to gain international visibility and recognition at the highest level,” adds Hervé Biaisser, Centrale Paris’ Director.

► **Contact:** ecole.doctorale@ecp.fr

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The Doctoral Program at Centrale Paris: Excellence in training through research

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Training through research: A doctoral student's testimony

Antoine Mazas is starting his second doctoral year in the EM2C lab, working on high pressure oxy-combustion, in partnership with the industrial group Air Liquide. This Centrale student (Class of 2006) explains why he chose training through research.



Were you planning on doing training through research when you were admitted to École Centrale Paris?

Definitely not. I completed my first two years without any intention of doing so, and then took a year off during which I worked as a business analyst in the strategic planning department of a large automobile company. That very rewarding experience helped me refine my professional project: I went back to Centrale Paris with the firm intention of making the most of my third year (which I completed in the MAE-Energy specialization and the SMF option). I then did my graduation internship at the EM2C laboratory, on a topic suggested by Air Liquide, to determine whether I liked research and to consider the possibility of pursuing a doctorate. The topic suggested by Air Liquide was ambitious; I decided to take up the challenge.

What is your status?

I was hired by Air Liquide to complete my doctorate. I divide my time between the laboratory and Air Liquide's research center, where I spend an average of one day a week, to attend meetings and seminars, and present the results of my research. A CIFRE scholarship has enabled me to situate myself at the intersection of the industrial and academic worlds.



What qualities does doctoral training help you to develop, in your opinion?

It is an ideal complement to the training received in classes préparatoires and later at engineering school. It involves taking up a complex problem that has never been examined by anyone before and trying to find a solution. Self-reliance, perseverance, curiosity, as well as a certain degree of humility are all necessary attributes!

How do you envision your future?

It is wide open. My doctorate constitutes both a first professional experience as well as an internationally recognized degree. I will also have done specialized work in the specific scientific field I am interested in. But this doesn't mean my professional career will lack variety either.

► **Contact:** ecole.doctorale@ecp.fr