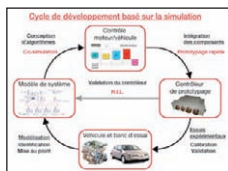


# IFP positions in the field of Powertrain Engineering

## Engine Control Research Engineer



*In order to address the various technological challenges in the transport sector, IFP proposes innovative engine control solutions. Its work focuses on powertrains and the optimization of on-board energy use and draws on both IC engine technologies (innovative combustion, new fuels, after-treatment systems) and technologies specific to hybrid vehicles (electric powertrains, batteries, transmission). IFP boasts unique expertise in this field, based on cutting-edge skills in control, modeling and rapid prototyping tools, and on a broad range of very powerful test resources. This environment enables IFP to validate new control strategies that can rapidly lead to industrial applications.*



### Responsibilities

Working as part of a multidisciplinary team, an engine control research engineer designs control laws for innovative powertrains, in liaison with automobile manufacturers and equipment suppliers:

- he/she contributes to projects serving research and industry;
- he/she participates in the development of innovative solutions, from the design of control laws to their implementation;
- he/she takes responsibility for research and innovation projects and communicates the results of his/her work both internally and externally (clients and the scientific community);
- he/she designs control algorithms and implements them in prototyping systems.

As part of his/her job, the engine control research engineer may be required to participate in on-site technical projects for clients, especially major European car manufacturers.

### Required expertise

- engineering degree (*Grandes Écoles d'ingénieurs*) or equivalent. A thesis in automation or electronics would be an asset for certain positions;
- mastery of hybrid vehicle or powertrain control optimization, mastery of the real-time computing system environment, programming of simulation codes (Matlab/Simulink);
- discipline, scientific curiosity and a feeling for innovation, analytical skills and global approach;
- team player;
- fluent English.

### Career development opportunities

The engine control research engineer develops very high-level technical expertise, which he/she can put to good use within the context of multiple projects and partnerships. There are therefore numerous career development opportunities: scientific and technical expert, project manager, team manager, marketing engineer, either within IFP or with our partners, in France (D2T-ETS<sub>m</sub>) or abroad.

IFP is a world-class public-sector research and training center, aimed at developing the technologies and materials of the future in the fields of energy, transport and the environment.

## Personal experiences

**Philippe Moulin,**  
Engine control engineer,  
project manager in the Technology,  
Computer Science and Applied  
Mathematics Division



*Philippe is a graduate of the École des Mines de Paris, with a major in Automation.*

### Why did you choose IFP?

A few years spent with engineering companies working on vehicle development projects confirmed my interest in the field of engine control. But I wanted more contact with R&D, and in 2003 I had an opportunity to join the new engine control team being set up in IFP's Technology, Computer Science and Applied Mathematics Division.

### What does your job involve?

I am in charge of engine control strategy development projects, aimed at optimizing engine operation in order to comply with the stringent requirements in terms of reducing fuel consumption and cutting pollutant emissions.

### What do you like about your job?

My job plays a central role in the automotive sector, located at the intersection of some very different scientific disciplines. The automobile sector is a very exciting one because it constantly involves technologies and developments that are especially innovative. In addition, IFP's positioning between R&D and industry gives us the opportunity to study new problems while staying in touch with industrial realities.

### How do you see your career developing?

The opportunities opened up by new powertrain technologies are broad and numerous and I want to continue to expand my knowledge. In the longer term, depending on IFP's strategic directions, I might move into a completely different scientific field since automation has a broad range of applications.

**Olivier Grondin,** Engine control  
engineer, project manager in  
the Technology, Computer Science  
and Applied Mathematics Division



*Olivier holds a graduate research degree in Automation and Signal Processing (University of Poitiers) and a PhD in energetics (University of Rouen).*

### Why did you choose IFP?

After my graduate research degree in automation, I started work on a PhD in energetics related to the field of engine control. The convergence between my PhD topic and the work of IFP's team led me to a postdoc, then a permanent position, in the Control, Signal Processing and Real-Time Computing Department.

### What does your job involve?

Engine control serves to optimize the increasingly complex systems associated with new powertrains and to improve their performance. I develop control laws for many of the subsystems (injectors, turbochargers, etc.) of an internal combustion engine (gasoline, diesel, gas, flex fuel), for both conventional and hybrid vehicles.

### What do you like about your job?

New powertrain technologies are raising a number of questions in fields as broad as automation, signal processing, real-time computing, modeling, physics, thermodynamics, etc. I love the wealth and breadth of the topics tackled, which give a very complete vision of a powertrain system and make engine control engineers key players in the innovations of tomorrow.

### How do you see your career developing?

Engine control, especially on hybrid vehicles, is quickly going to occupy a significant place among transport-related professions. Against this background, I can foresee a number of interesting potential career paths.

To apply for a position: <http://recruitment.ifp.com>

IFP (Head office)  
1 & 4, avenue de Bois-Préau  
92852 Rueil-Malmaison Cedex - France  
Tel.: + 33 1 47 52 60 00 - Fax: + 33 1 47 52 70 00

IFP-Lyon  
Rond-point de l'échangeur de Solaize  
BP 3 - 69360 Solaize - France  
Tel.: + 33 4 78 02 20 20

[www.ifp.com](http://www.ifp.com)

