ENERGY AND PRODUCTS

APPLIED GRADUATE STUDIES

Language: **French** | Duration: **16 months** | Degree: **Master's degree/Specialized engineering degree**

Did you know that compatibility of an engine/fuel pairing is a critical challenge in the development of more sustainable transport? Energy efficiency of engines, hybridization, alternative fuel development: for each of these challenges, the best technological options must be developed to ensure compliance with increasingly demanding environmental standards and to meet society's expectations. Through our Energy and Products program, you'll play a key role in the energy transition in the field of transport and energy converters for power generation. Support these transforming industries through this multifaceted, operations-based graduate program.

HIGHLIGHTS

- Alternating school/company program
- Diverse topics and specializations/job prospects
- Highly practical instruction (significant majority of lecturers come from industry)

In the coming years, the projected increase in demand for energy and the challenge of climate change pose fundamental questions for the planet's sustainable growth. We must therefore plan for the future and ensure the transition to a new global energy framework.

Faced with increasing need for mobility, demand for energy associated with transport will post the greatest increase. Players in the industry (land, air and sea) are faced with the two-fold challenge of gaining oil independence and limiting CO_2 emissions through the implementation of innovative solutions.

Challenges concern conventional engine efficiency, improvements in conventional fuels (gasoline, diesel, kerosene, etc.), the development of substitute fuels with a lower carbon footprint (biofuels, natural gas, LPG, synthetic liquid fuels) and the development of alternative engines.

The Energy and Products program deals directly with the question of engine/fuel compatibility. Fuel-related changes also impact the downstream logistics sector, which is fully covered (transport, storage, distribution) in the program.

Non-energy by-products (lubricants, grease, bitumen) are widely studied in the program, since they must be developed with regard to environmental and energy efficiency requirements.

Demand for energy in the electricity industry will also rise quickly in the coming years; it faces the same challenges as the transport sector with regard to energy converters (boilers, ovens, burners, gas turbines/co-generation) and related fuels (heavy fuel oil, biomass, gas, etc.).

For all products, from source to end use, safety aspects, life cycle analysis and waste recycling are challenges that require considerable technological expertise.

The existence of an educational program dedicated to product marketing and markets enables those drawn to a technical/sales career to invest in niche opportunities, where technical added-value to products is essential to the supplier/customer relationship.

The Energy and Products program brings together young students and professionals, who bring a wealth of experience and a wide range of scientific backgrounds. It lies at the crossroads of several sectors, leading to a variety of career opportunities in the energy industry and the field of sustainable transport.

CAREER OPPORTUNITIES

- **Energy sector**
- **Additive and lubricant manufacturers**
- **Transport and equipment manufacturer sectors**
- **Professional committees and biofuel producers**

Find out more: **www.ifp-school.com**

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TYPICAL CLASS PROFILE/ MAIN SPONSORS

Students in this program are almost all sponsored by companies (through apprenticeships, sponsorships or seconded professionals) that finance their living expenses during the academic period and contribute towards their tuition.

Among these companies, the following have been IFP School partners in recent years (non-exhaustive list):
Afton Chemical, Air Liquide, BP, Chevron Oronite, EDF, ExxonMobil, Filtrauto, Fuchs Lubrifiant, Groupe PSA, Marine nationale, Renault, SEA, Shell, Total, Volvo Powertrain.

PROGRAM CONTENT

→ The program covers **4 main topics**

Fuels and energy products
- Refining processes
- Conventional and alternative fuels
- Fuel logistics
- Gas, electricity production, environment

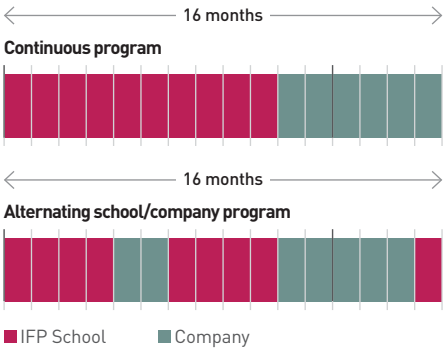
Oils and other non-energy products
- Lubrication
- Automotive lubricants
- Industrial lubricants

Engines for ground transport
- Energy conversion and engine testing
- Powertrain technology
- Combustion and reduction of pollutant emissions

Cross-disciplinary topics
- Trading, marketing and product markets
- Methodological tools
- Aeronautical and non-automotive applications

PROGRAM SCHEDULE

The two examples of schedules shown below correspond to the most frequently encountered cases for students in this program: a 16-month continuous program for students with a 4- or 5-year engineering degree, and a 16-month alternating school/company program for students with a 5-year engineering degree.



Other situations may arise, such as:
- a 10-month continuous program for a student with a 5-year engineering degree who has already had placements for at least 4 months in a company, approved by IFP School at the time of admission;
- a 22-month alternating school/company program for an engineering student in the penultimate year of a major European school or university having signed a double-degree agreement with IFP School.

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