

Training - Low-carbon fuels and processes



BIOCPP-EN-P



Face-to-face only



3 days

This session provides general technical information on the characteristics and processes leading to key bio-based products and intermediates: existing and developing biofuels, petrochemicals and chemicals

Level

Expert

Public

Professionals from different technical departments in sectors ranging from refining to petrochemicals or involved in the energy transition

Objectives

Attendees will be able to implement the following skills:

Upon completion of the training, participants will be able to:

- List the main characteristics of bio-based products on the current market
- describe the principle of existing and developing processes

Pedagogical & technical resources

- Interactive course: active participation of the trainees through games and quizzes to grasp the key points of the course.
- Joint construction of a diagram of all bio-processes.

Assessment of achievements

- Trainees are assessed throughout the training through practical application phases and interactions with the trainer
- A final on-the-spot evaluation may also be carried out at the end of the course and/or at the end of each module using tests designed to verify the learners' understanding and assimilation of the knowledge linked to the training objectives

Prerequisites

Meet at least one of the following criteria:

- Have 3 months of proven professional experience in the energy sector, in a technical position.
- Or have followed a training course oriented towards the introduction to refining or petrochemical processes.

Responsible

IFP Training instructors, with expertise in the field and trained in modern teaching methods adapted to the specific needs of learners from the professional world

Program

CONTEXT AND FEEDSTOCKS

0.5 day

Challenges of carbon-free energy and bioplastics in the context of climate change.

Associated environmental and regulatory framework.

Process development strategy.

Different types of biomass: sugar biomass, starchy biomass, oilseed biomass, waste.

Biomass generations: 1G, 2G, 3G

Other feedstocks:

- CO₂, low-carbon hydrogen.
- Recycled plastics.

BIOFUELS AND PETROCHEMICAL INTERMEDIATES

0.5 day

Description of hydrocarbon molecules families: Olefins, Aromatics, Paraffins.

Main characteristics and specificities of the different biofuels and comparison between them:

- For gasoline engine (ETBE, ethanol).
- For diesel Engine (FAME, HVO).
- For Jet (HEFA, FT-SPK, ATJ, DSHC).
- For the maritime sector (Methanol, NH₃, GNL).

Other energetic fuels (H₂ /e-fuels).

Main intermediates for access to plastics or chemicals: Olefins, Aromatics, Methanol, Syngas.

Main polymers: Bio-based vs. biodegradable, bioplastics, recycled plastics.

LOW CARBON PROCESSES

2 days

Overview of processes for transforming feeds into intermediate and finished products: feedstocks and treatments, process diagrams, different technologies when relevant, typical operating conditions, advantages and drawbacks, comparison and maturity.

Current processes:

- ethanol by fermentation.
- ETBE by etherification.
- FAME by transesterification.
- HVO-HEFA by hydrotreatment.
- Co-processing.

Advanced processes:

- Biogas by digestion
- Biomethane by digestion or methanation.
- Different routes to syngas.
- Methanol and Ammonia via Syngas.
- Fuels by Fischer-Tropsch via syngas.
- Olefins by dehydration of alcohols (ethanol and methanol).
- Different routes for SAF by ATJ, DSHC.
- Bio-crude /Py-oil by pyrolysis of biomass, wastes or plastics.
- Bio-oil by hydrothermal liquefaction.
- E-fuels production.

To French entities : IFP Training is referenced to DataDock ; you may contact your OPCO about potential funding.

Please contact our disabled persons referent to check the accessibility of this training program : referent.handicap@ifptraining.com