

TECHNOLOGIES FOR THE ENERGY TRANSITION – 9 CFU LM

Fantozzi (72 hours)

Review of thermodynamics and fossil hydrocarbon fuels-based energy systems.

Residual and renewable hydrocarbon fuels: biomass and waste.

Direct combustion-based waste-to-energy systems: combustion technologies - emission formation and abatement.

Thermochemical processes – Gasification – Pyrolysis – Carbonization – Hydrogen production;

Physicochemical processes – Oil extraction – Pelletization – Transesterification – Hydrogenation – Hydrogen methanation.

Biochemical processes – Anaerobic digestion – Alcoholic fermentation.

Biofuels: Solid (wood pellet – biochar) – Liquid (Biodiesel – HVO – Bioethanol – Methanol) – Gaseous (Biogas – Biomethane – Hydrogen – Syngas).

Nuclear Energy – Radioactivity – Fission and Fusion – Traditional and Innovative Technologies – Fuel Life Cycle.

Supply Chain Sustainability and Life Cycle Analysis.

Preliminary Plant Design and Technical, Economic, and Environmental Analysis.