

# SUSTAINABLE SUPPLY SYSTEMS LIBRARY

Assessment of interconnected energy systems



## MODELING AND SIMULATION OF INTERCONNECTED ENERGY SUPPLY SYSTEMS

The CATIA Sustainable Supply Systems (SuSy) Library enables designers and engineers to simulate, analyze, and optimize hybrid energy systems earlier and faster than ever before. Built on Modelica's multi-domain modeling capabilities within CATIA Dymola, SuSy brings digital prototyping of energy systems to the earliest design stages—bridging visionary thinking and implementable system architectures for buildings, grids, mobility and beyond. SuSy supports sustainability by design, allowing engineers to test strategies that reduce cost, emissions, and energy consumption before any prototype is built.

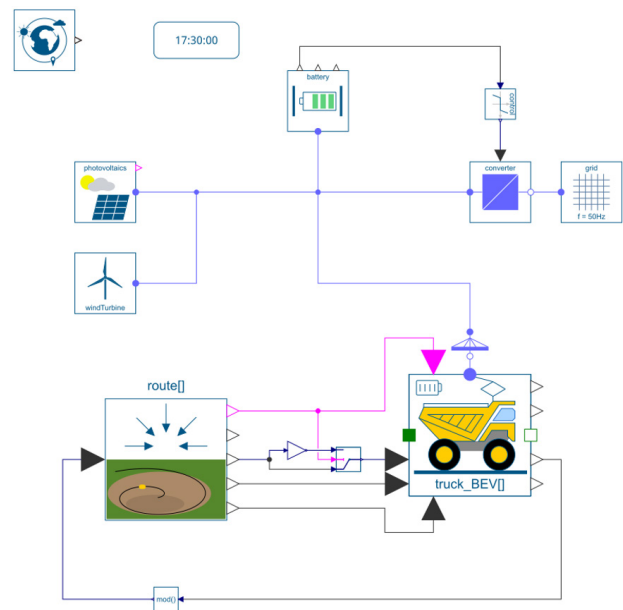
## APPLICATION

Typical applications are interconnected energy supply systems composed of components for the generation, conversion and storage of various energy forms, for example, to integrate fluctuating renewable energy sources, storage systems and various consumer types within a single system. Typical use cases include:

- Optimize production costs for green hydrogen and other Power-2-X technologies
- Find the best operating strategy and powertrain configurations for mobility applications e.g. mining trucks or railway operations considering pure battery, hybrid or conventional drivetrain technologies
- Analyze on-vessel energy management in marine applications including multi-fuel and multi-domain interaction of ship electrical, thermal and steam energy systems
- Perform operation studies for aircraft missions from take-off to landing while tracking operational emissions and power requirements
- Model production processes with material-flow, identify bottlenecks, predict production line energy requirements and unit costs

## BENEFITS

- **Perform trade-off studies:** balance technical performance against cost and emissions
- **Multi-energy modeling:** seamless integration of electricity, heat, fuels, steam, water and material domains.
- **Minimum data input:** pre-parametrized yet highly customizable models for fast simulation setup with minimum data on hand
- **Scalable and robust models** for complex and large-scale systems
- **Refinement of control strategies** before building prototypes for early-stage testing



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