

# ENVIRONMENTAL CONTROL LIBRARY



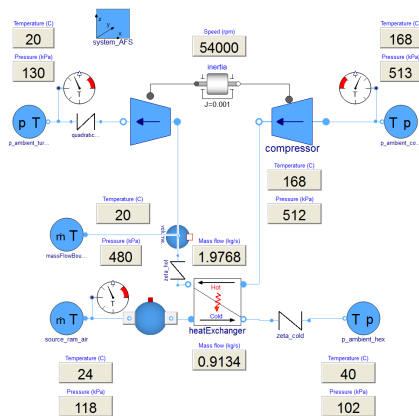
- ▶ Environmental Control Library targets design and verification of aircraft environmental control systems, including prediction of energy consumption, thermal conditions and human comfort.

**E**nvironmental Control Library is a Modelica model library for aircraft environmental control systems analysis and design. The library is designed to study energy consumption and thermal conditions that affect the level of comfort for passengers and crew. These performance aspects are driven by large variations in ambient

conditions such as humidity and temperature. The models provided by Environmental Control Library account for these effects through first principles and fully support bidirectional flow.

Environmental Control Library is used in system and component development and assists in the assessment of system performance and transient characteristics. Since a number of years it has been developed by Modelon together with a European airframer, and is now publicly available.

The library provides an efficient and numerically robust framework suitable for large-scale complex systems. Component models include heat exchangers, compressors, turbines, ejectors or jet pumps, water separator, valves, cabin, ram air, and pipes.



## KEY FEATURES

- Flexible composition of user-defined system architectures for efficient model management
- Real-time capable high performance models enabling Hardware-In-the-Loop (HIL) applications
- Full support for bidirectional flow for analysis of all modes of operation on ground and in flight
- Efficient representation of moist air enabling robust and fast simulation of large-scale systems
- Online visualization of simulation results for intuitive understanding of the system behavior
- Configurable model fidelity for faster simulation and right complexity level

**Modelon**