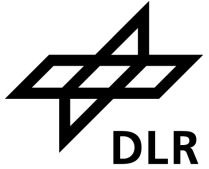


USING TFS FOR MODELING AIRCRAFT ENVIRONMENTAL CONTROL SYSTEMS

TFS Community Event 19/06/2024



Digital Twin for aircraft environmental control system



- European Research project TheMa4HERA:

Thermal Management for Hybrid Electric Regional Aircraft

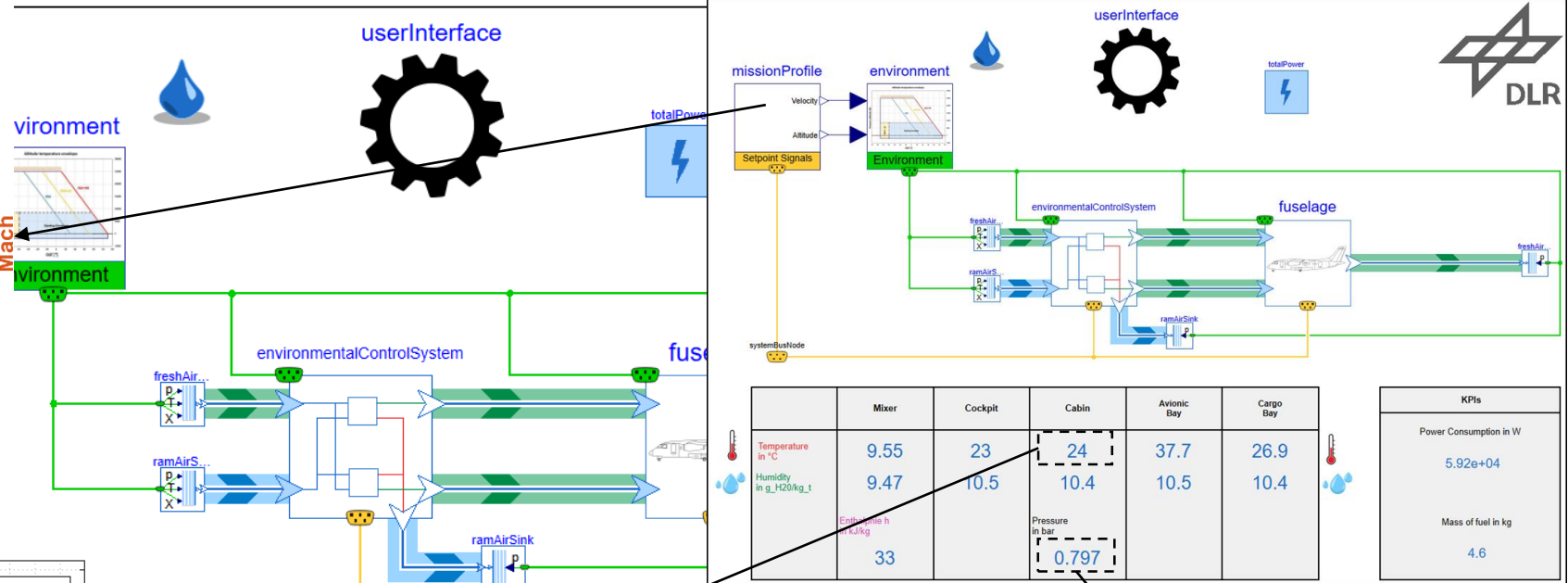
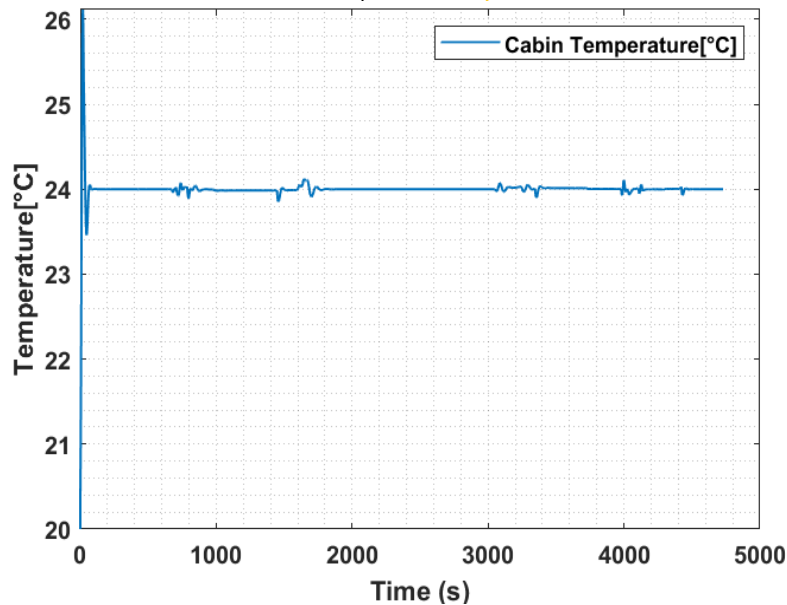
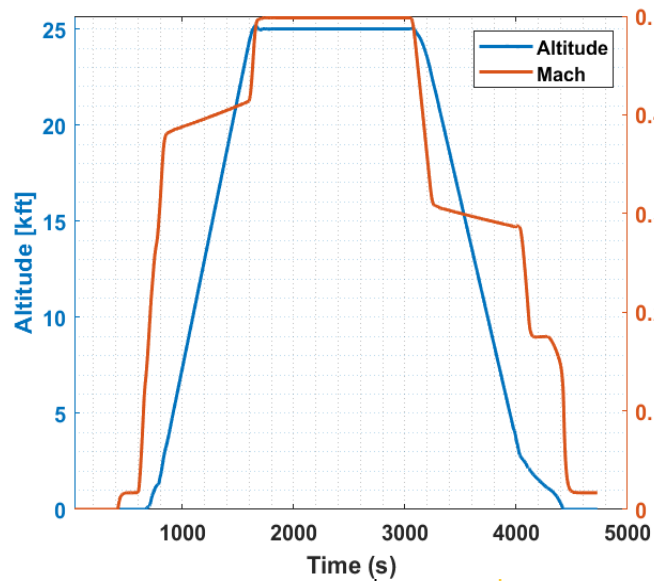
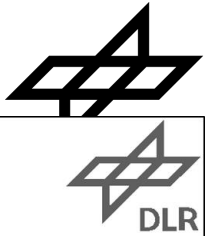


- TFS library used to create the base models of a Digital Twin for the thermal management system
- Goals:
 - Simulation of gate-to-gate flight mission under several outside conditions
 - Virtual demonstration of different technologies

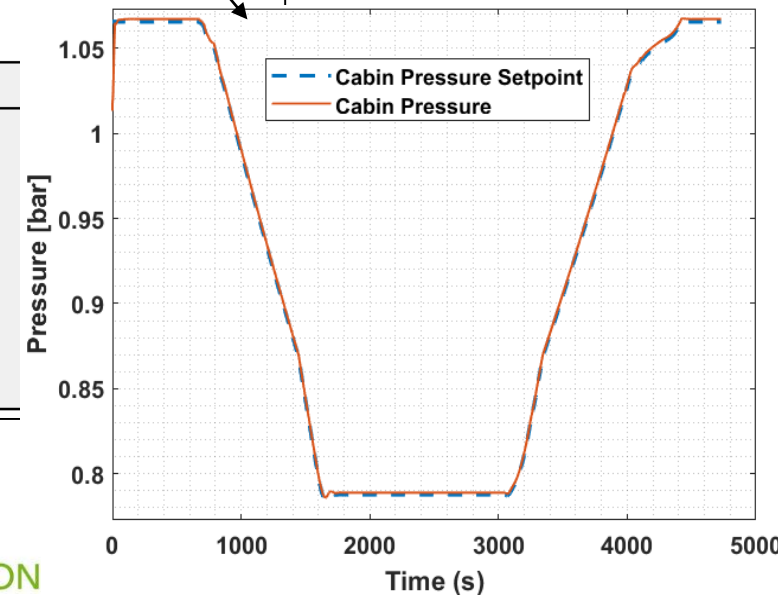


Co-funded by
the European Union

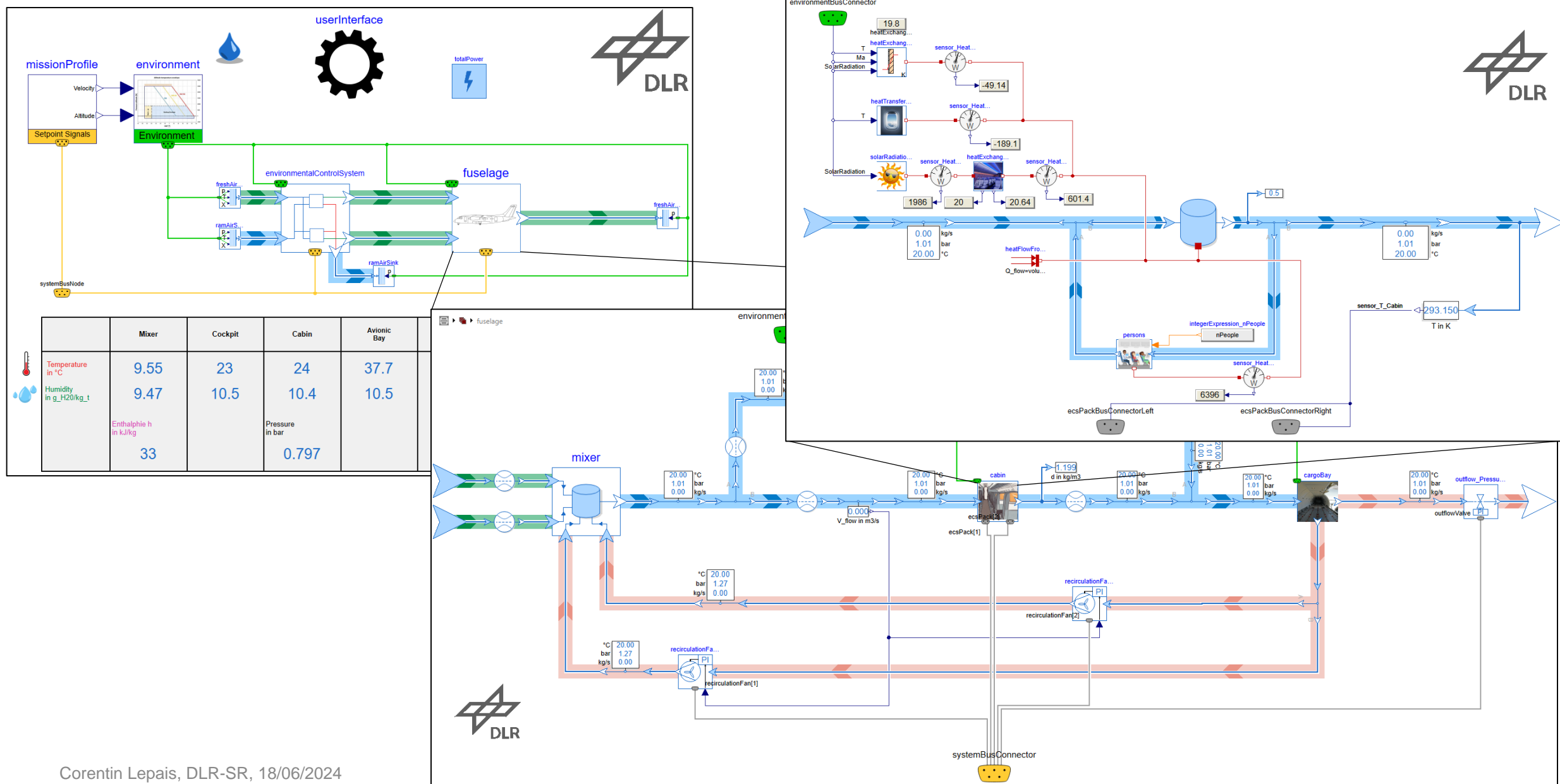
Digital Twin for aircraft environmental control system



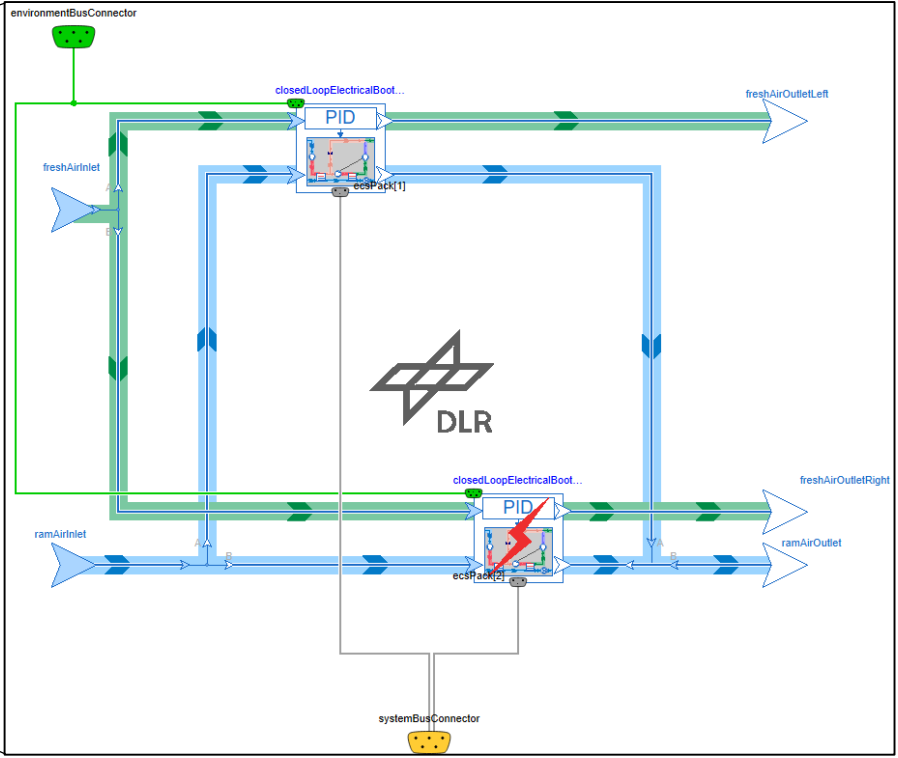
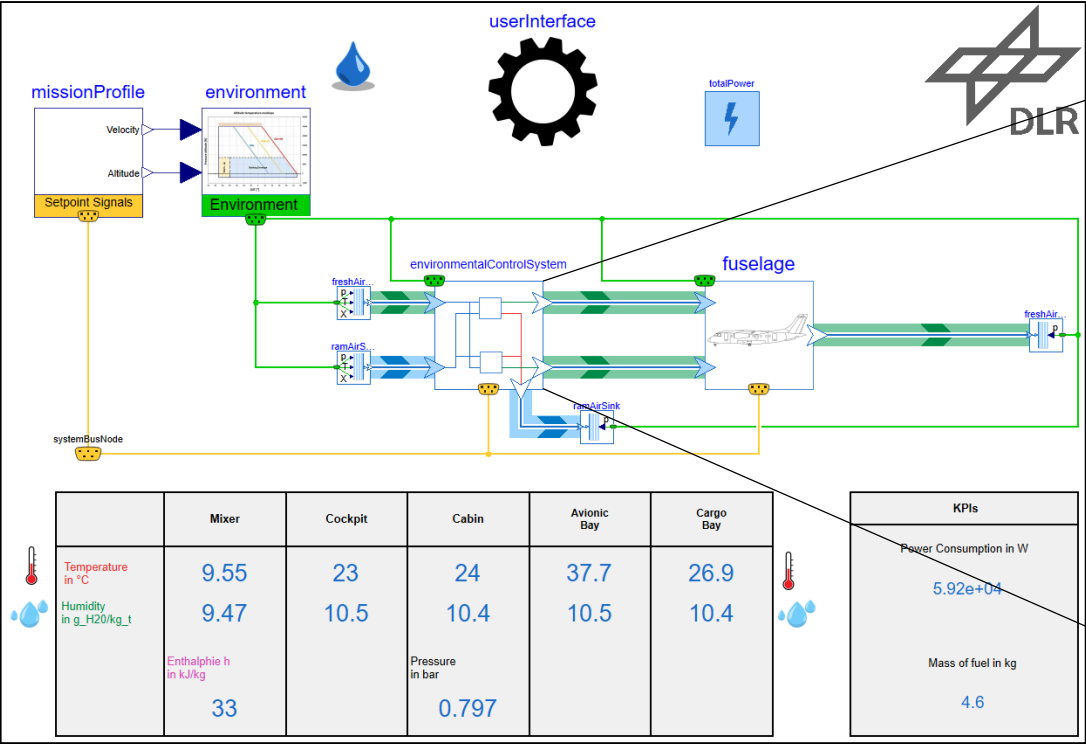
Cockpit	Cabin	Avionic Bay	Cargo Bay
23	24	37.7	26.9
10.5	10.4	10.5	10.4
Pressure in bar			
0.797			



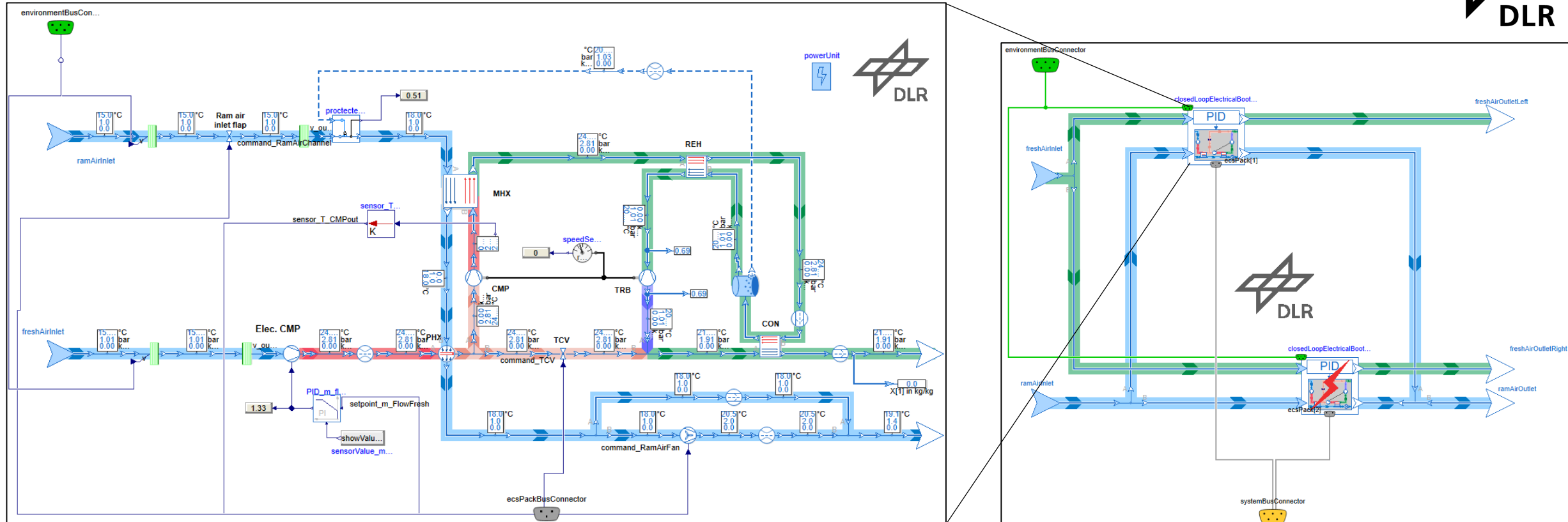
Environmental Control System modeling



Environmental Control System modeling



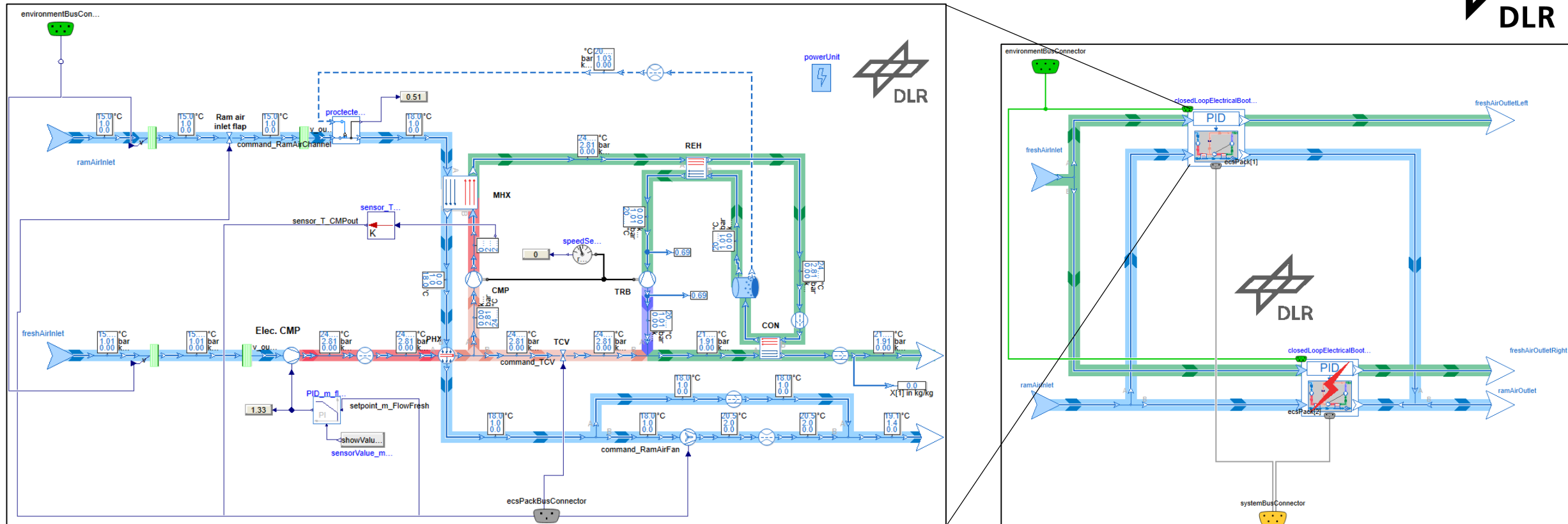
Environmental Control System modeling



Bootstrap cycle as a reference:

- Electrical compressor to replace bleed air
- High-pressure dehumidification
- Control of the fresh air mass flow and cabin temperature

Environmental Control System modeling



Bootstrap cycle as a reference:

- Electrical compressor to replace bleed air
- High-pressure dehumidification
- Control of the fresh air mass flow and cabin temperature

Later on, to be replaced by a VCS to compare the performances.

Topic: **Lorem ipsum consetetur sadipscing**
Duis autem vel eum iriure dolor in hendrerit in vulputate velit
esse molestie consequat et justo duo dolores

Date: 2023-01-01 (YYYY-MM-DD)

Author: First name Last name

Institute: Lorem ipsum dolor sit amet

Image sources: All images “DLR (CC BY-NC-ND 3.0)” unless otherwise stated