

SynTrac Key Innovation

Our structured approach provides a strong scientific foundation for next-generation transport solutions.

Increased Integration: Unlocking synergies & maximizing efficiency

Cross-Disciplinary Collaboration: Dissolving boundaries between disciplines and methods

Non-Linear Interactions: Finding new design optima by understanding how local design decisions interact nonlinearly with each other

System View: Emphasizing a holistic view of aircraft

Future-Oriented Thinking: Investigating potentials for overall aircraft efficiencies that surpass existing forecasts

New Work: Embracing flexible, interdisciplinary collaboration and dynamic methodologies

Research Boundaries defined

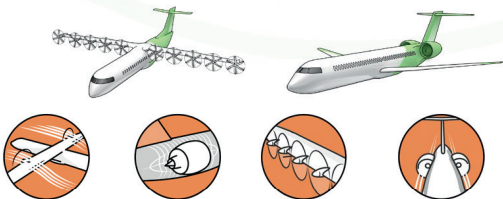
Energy Source Independence: The research is not tied to any specific energy source

Aircraft Configuration Neutrality: Independent of particular aircraft configurations, except for

Configuration Use for research organization:

Aircraft configurations are used solely for bookkeeping purposes

Configurations & Guiding Concepts



Connect with SynTrac



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Synergies of Highly Integrated
Transport Aircraft



Towards Sustainable Aviation



Scientific foundations for the transition to climate-neutral air transport by maximizing efficiency through the integration of aircraft and propulsion system technologies

DFG Deutsche
Forschungsgemeinschaft

Gefördert durch die DFG: Projektnummer 498601949 – TRR 364

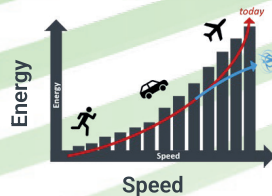
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Drivers of **SynTrac**



Global mobility gives all of us access to the products and services we are used to, labour markets, education, personal development and fulfils our individual needs.

Thanks to flight speeds of up to 970 km/h, air transport means that even long distances pose very little challenge in our lives.



We pay for our irresistible desire to overcome long distances with increasing speed of locomotion with the energy that we have to invest to move a given mass.

To reduce the associated negative consequences, new scientific foundations must be created. In the SFB-TRR 364 'SynTrac', we are researching the interfaces between the propulsion system and the aircraft in order to increase overall aircraft efficiency. This will minimize the energy invested for high-speed transport and decrease its environmental impact.

SynTrac Project Overview

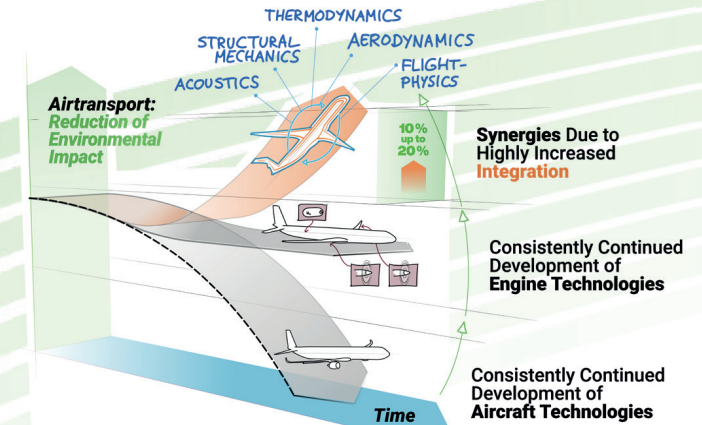
Climate-neutral air traffic is crucial for achieving society's sustainability goals!

To realize the vision of a future, climate-neutral air transportation system, the overall efficiency of aircraft must be significantly increased.

Isolated improvements in Aircraft Technologies and Engine Technologies cannot deliver the required reduction of the environmental impact.

Utilizing the diverse technical synergies that arise from the **Integration** of propulsion system and aircraft closes the gap.

Research Process: SynTrac investigates how advanced physical models, experimental techniques, and numerical methods interact and integrate to unlock synergies in highly integrated transport aircraft. Organized around three research areas A - Assessment,



B - Integration and C - Physical Processes, SynTrac focuses on realizing these synergies—arising from physical processes at aircraft and drive system interfaces — and assessing their full potential.

